



Fire fighters reach for gas masks, drilling under model Westinghouse ARP system.

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# C O N T E N T S

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June 29, 1942

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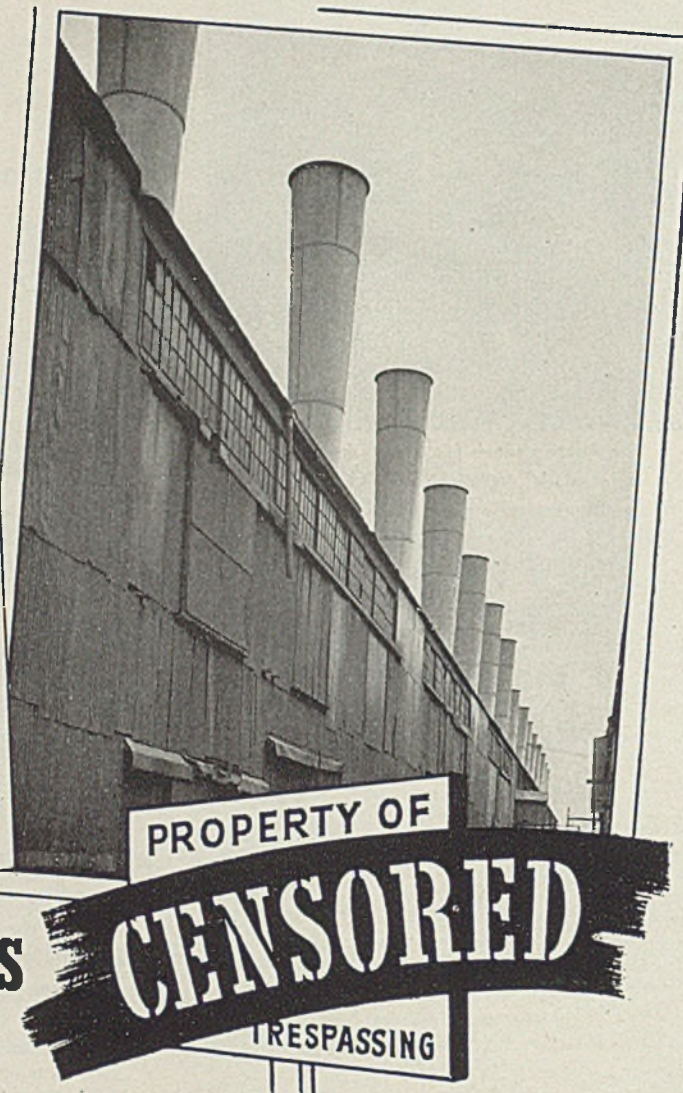
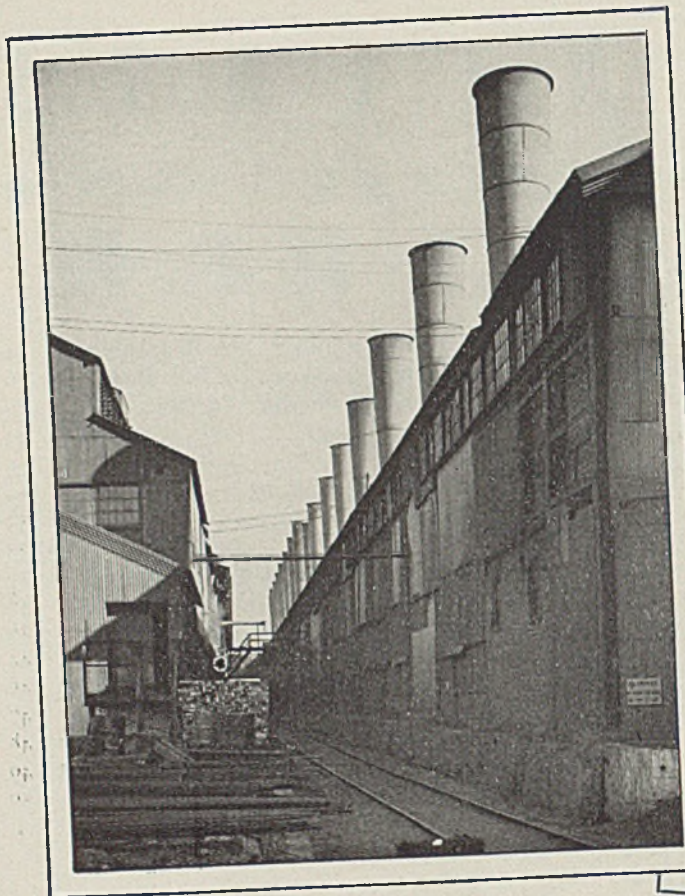
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The location is

**CENSORED**

TRESPASSING

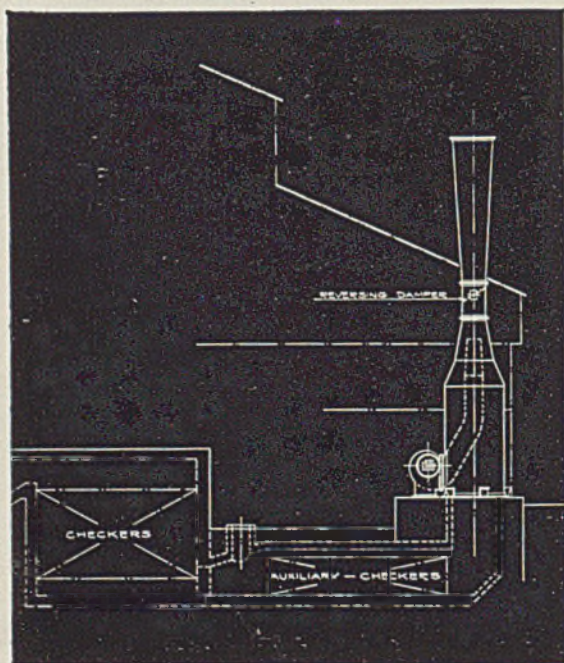
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# ISLEY Regenerative Combustion Control



# HIGHLIGHTING

this issue of **STEEL**

**NEWS** The extent to which railroad equipment will be manufactured this year now has been partially clarified. Freight cars released for construction this year number 18,000 (p. 98). But the locomotive program remains to be fixed; of 950 locomotives on builders' books the outlook is that 525 or more will have to carry over into 1943 (p. 34).

Leo T. Crowley, alien property custodian, has seized German properties, patents and copyrights (p. 36).

Sponge iron now is under investigation in the Senate—and some of the senators think the industry is "holding back" the development of this process, apparently not informed of the fact that millions of dollars have been spent on sponge iron and without any worthwhile results (p. 44).

A new union of coal mine supervisors has been recognized by the NLRB (p. 39). A Supreme Court decision permits a company to contract with employees for a fixed weekly salary regardless of number of hours worked. St. Louis machinists earning \$100 to \$135 a week are striking for more pay.

Sweden is to have a new government-owned electric steel plant (p. 27).

**PRIORITIES** Continued depletion of steel warehouse stocks rapidly has increased to a point where war contractors fear shutdowns in the near future through inability to acquire needed items. The warehouse must have more adequate deliveries if serious trouble is to be averted (p. 46).

Continuous audit of American industry will be inaugurated by WPB July 1 in connection with the distribution of materials under the Production Requirements Plan (p. 26). An amendment clarifies interim procedure to be followed by companies which have not yet received a PRP certificate; it also redefines permissible use of rating by companies already operating under PRP (pp. 36 and 38). Additional industry advisory committees have been appointed (p. 37).

**PRODUCTION** The steelmaking rate (p. 29) dropped ½-point to 98½ per cent of ingot capacity last week, due to repairs and lack of scrap. Fears are more pronounced as to the scrap supply next winter (p. 47). Keels for the 16 new lake iron ore carriers are being laid and some of these vessels may be in service late this year (p. 48). Expansion of pig iron capacity in the

next 12 months is to be 7,795,000 net tons (p. 50). If second half steel output equals that of first half, 1942 ingot output will be around 85,000,000 net tons (p. 49).

**CONSERVATION** In preparing plans for new oil refineries designers are asked to conserve on the use of steel and critical alloying elements wherever possible (p. 32). Production of large commercial truck trailers will cease on July 1 (p. 34). Three minor exceptions have been made in the steel conservation order, M-126. Melting of vanadium is under limitation (p. 37).

**TECHNICAL** A model industrial air raid precautions system at the Westinghouse East Pittsburgh plant (p. 54) is manned 24 hours a day, employs the services of 2000 employees trained for emergency duty including 450 men in rescue and demolition squads, 625 fire fighters. Some 188 air raid warden posts, first aid headquarters, fire department and roof-perched plane spotters are connected by direct telephone lines.

Professor Macconochie explains (p. 56) how excess stock in forging can be reduced by such improved forging procedures as better die design and coining while work is still hot. One example shows a 25 per cent reduction in stock required. Such savings are of special importance when every pound of metal is needed.

Machining shortcuts are helping to raise our output of war work. Broaching, for instance, is being employed to speed a number of operations (p. 60) in making tank engines. Another is the semiautomatic control (p. 82) that operates standard machine tools.

With war work demanding the employment of more and more women to replace workers lost to the armed forces, a detailed analysis (p. 62) of the factors involved in getting the best results from women workers is timely.

**MARKETS** OPA has established uniform rules for application of extras and other charges on cold-finished steel bars and shafting (p. 24); it also has ruled certain buyers must be allowed a discount on concrete reinforcing bars. A revision permits abnormal freight rates on steel castings to be charged to customers (p. 36). A price exception has been allowed in one case on dead-burned grain magnesite (p. 37).



# Again, We Fight for Freedom



*"Yesterday the greatest question was decided which ever was debated in America—" So wrote John Adams on July 2, 1776, when the Continental Congress voted independence. Two days later on July 4th Congress adopted the Declaration of Independence.*

AMERICA is about to commemorate one of the greatest events in human history—the Declaration of Independence, signed July 4, 1776. With but few exceptions, the Anniversary of Independence has been a day of peace. But, now we are at war—fighting to preserve the freedom so gallantly won by our forefathers more than a century and a half ago.

This year America's fighting men are at battle stations—in Australia, the Far East, Iceland—around the world. At home, millions of skilled workers will not think of Independence Day as one for rest and pleasure—but, as a day for the making of more ships, tanks, guns, shells—a day of work, dedicated to victory and to freedom.

At Inland, as throughout America, men will be sweating and toiling—white streams of molten steel will be cascading from great open hearth furnaces—enormous mills will be rolling plates, shapes, billets, bars—the tough steel from which America makes its fighting tools.

Yes—the Fourth of July—traditionally a day of celebration—will be a day of work—and, Inland men will be on the job, doing their part in the new fight to uphold these truths, "—that all men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are Life, Liberty, and the Pursuit of Happiness."

*Dedicated  
to Victory*

## INLAND STEEL CO.



# AS THE EDITOR VIEWS THE NEWS

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**STEEL**

June 29, 1942

## POSTWAR PLANNING IS A "MUST" FOR AMERICAN INDUSTRY

If you were to get a dozen typical industrial executives together and were to ask them what they think about "postwar planning", the answers would run in these channels:

A few would say that it is inadvisable to give serious attention to postwar problems at this time. They would contend that production for war is industry's No. 1 job and that everything else — including postwar preparation — should be sidetracked until victory in war is more definitely assured.

Others — perhaps a majority — would say that winning the war and winning the peace are integral parts of the same big problem. They would point out that many branches of the federal government have men engaged in studying postwar social and economic problems and would argue that industry will be behind the eight ball if it does not do likewise.

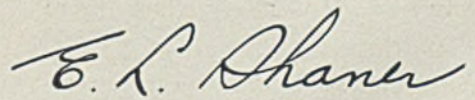
It now seems likely that the trend of events may force industrialists to swing more and more to this last mentioned attitude. Already there are signs that certain questions arising from wartime conditions cannot be answered without taking into account their postwar implications.

A case in point is the 1942 revenue bill, now being considered by the House Ways and Means Committee. Obviously the chief objective of this legislation is to provide funds to help defray the cost of the war.

But last Tuesday this committee, by a close vote, recommended that "14 per cent of the adjusted excess profits net income" be returned to corporation taxpayers to assist them in meeting the problem of converting from a wartime to a peacetime footing after the war ends. Under the proposal, the earmarked money would be put into non-negotiable, non-interest bearing bonds which would be assignable after the cessation of hostilities and would mature at stated intervals thereafter.

This proposal deserves serious consideration by industry. It is much more than a mere tax detail. In its broader sense, it is an important policy identified with postwar planning. It goes right to the root of the problem which gave private enterprise and the capitalistic system black eyes during the recent depression.

Postwar planning involves unfinished prewar business. We cannot — must not — evade our responsibility to tackle these problems intelligently and realistically.

  
Editor-in-Chief



# Conversion Charges, Extras and Discounts Under OPA Regulation

◆

*Henderson acts to stabilize and make "fair and reasonable" costs of iron and steel products to buyers, especially those engaged in producing war materials*

◆

WASHINGTON  
FURTHER stabilization of the cost of iron and steel products to buyers, especially those engaged in war production is sought in action taken last week by the Office of Price Administration.

Price Administrator Leon Henderson said the new rules established in Amendment 6 to Price Schedule No. 6 should make such costs "fair and reasonable."

Three requirements relating to processing and conversion charges, extras, and discounts were set up in the amendment. They are:

1. Producers of iron and steel products were directed to file with OPA data covering conversion and processing charges. The data, Mr. Henderson said, will be studied to determine whether charges are fair and reasonable, and whether any future regulation of them is necessary.

2. Uniform rules for the application of extras and other charges on cold-finished steel bars and shafting were issued. These rules are designed to clarify such charges, and eliminate the possibility of the charging of several overlapping extras on the same product. This step, the administrator said, will result in "substantial savings" to buyers.

3. Conditions under which producers of concrete reinforcing bars are required to give discounts were defined by OPA. The Tennessee Valley Authority and Bureau of Reclamation as well as concrete reinforcing bar fabricators, were list-

ed as customers entitled to the discount of 25 cents per hundred pounds on such bars.

Commenting on the request for data on conversion or processing charges, Mr. Henderson said that in the past, steel mills have sometimes purchased billets or other steel from persons who were able to obtain such steel on the market and have processed or converted it under an agreement to resell. In these cases, the purchases by the steel producer and subsequent resale to the former owner have been at ceiling prices. With these sales, the Office of Price Administration is not greatly concerned so long as the prices are within the permissible maximum, Mr. Henderson said.

## To Study Processing Charges

"However, in some cases," he added, "the practice has been for the owner of the steel to turn it over to the producer for processing and converting and for the steel mill to perform these services without taking title to the steel. In this latter case, a conversion or processing charge is made. It is with regard to these charges that information has been found to be desirable. It is expected that information pertaining to the conversion charges made on such operations as the conversion of billets into rods or bars, or on such processing as annealing and heat treating, will be of value in ascertaining whether such steel is being delivered to the ultimate customer at reasonable

prices, and whether any regulation of such charges in the future will be necessary."

In regard to the new uniform rules for the application of extras, the price administrator said that extras applicable to sales of cold-finished steel bars and shafting, both in the carbon steel and alloy steel classifications, have for some time been confused. Both bars and shafting are highly important in the war program. Substantial savings to the purchaser are anticipated in the following rules issued by OPA.

1. An extra of 10 cents per hundred pounds for magnetic testing may be charged only when the specification expressly calls for magnetic testing or when the specifications for surface seams or other defects of this type are sufficiently critical so that magnetic testing is necessary to determine whether or not the material will be acceptable.

2. The extra of 25 cents per hundred pounds for United States government specifications requiring physical inspection or physical testing may be charged only when the steel is produced to definite physical specifications requiring tensile, impact, fracture, or similar tests.

3. The extra of 10 cents per hundred pounds for United States government specifications requiring chemical inspection or chemical testing is eliminated and such extra may not be charged.

4. The extra of 25 cents per hundred pounds for extensometer testing may be charged when the use of this instrument is specifically required in the specification, and this extra may not be charged when the extra of 25 cents per hundred pounds for physical testing is charged.

5. Extras for quality, such as "special requirement quality" and "shell quality" may be charged only when and in the amount that such extra has been charged by the producer of the hot-rolled steel from which the cold-finished steel is made. In the case of producers making both hot-rolled and cold-finished bars, such extras may be charged only when properly applicable to the hot-rolled bars.

6. When a stress or strain relieving or stabilizing by baking is specified or required, to meet physical requirements of the U. S. Army and Navy specifications for certain ordnance, the extra of 75 cents per hundred pounds for annealing or normalizing may be charged, but such charge shall include all charges for physical testing, and no other charge for physical testing may be charged. This revision recognizes the reduced costs resulting from greatly increased levels of production and institutes a reduction of from \$5 to \$7 per ton under previous prices for these items.



This price reduction has already been adopted by several members of the industry.

With respect to sales of cold-finished alloy steel bars, amendment 6 provides:

1. On analyses of alloy steels for which chemical extras and extras for alloy content are not included in the standard extra lists, the applicable charge for chemical composition and alloy content shall be calculated from the list of extras for hot-rolled alloy steel bars as published and filed by Carnegie-Illinois Steel Corp.

2. For U. S. government specifications requiring physical testing, such as tensile, impact, or fracture testing, an extra of 25 cents per hundred pounds may be charged, provided (a) that when this extra is charged, the extra of 25 cents per hundred pounds for use of extensometer shall not be charged, and (b) that this extra shall not be charged when the steel is heat-treated and/or stress relieved by the cold-finished bar producers.

3. The extra of 10 cents per hundred pounds for U. S. government specifications and/or inspection may be charged only when such extra has been charged by the producer of the hot-rolled steel from which the cold-finished steel is made, or, in the case of integrated producers, only when applicable to the hot-rolled bars.

4. The maximum extra which may be charged for the stamping of heat numbers and symbols on

one end of individual bars shall be 25 cents per hundred pounds regardless of the number of stamps which may be required.

5. When bars in the form of rounds or hexagons are furnished in coils, a discount of 15 cents per hundred pounds shall be deducted from the selling price.

6. The extra of 50 cents per hundred pounds for steel guaranteed free from decarburization may not

be charged when the steel is turned, turned and polished, or turned, ground and polished.

It was pointed out that in regard to the foregoing extras, "U. S. Government specifications" are to be interpreted as including British, Russian and other governmental specifications of a similar nature, and also other specifications designed to procure steel for ordnance purposes.

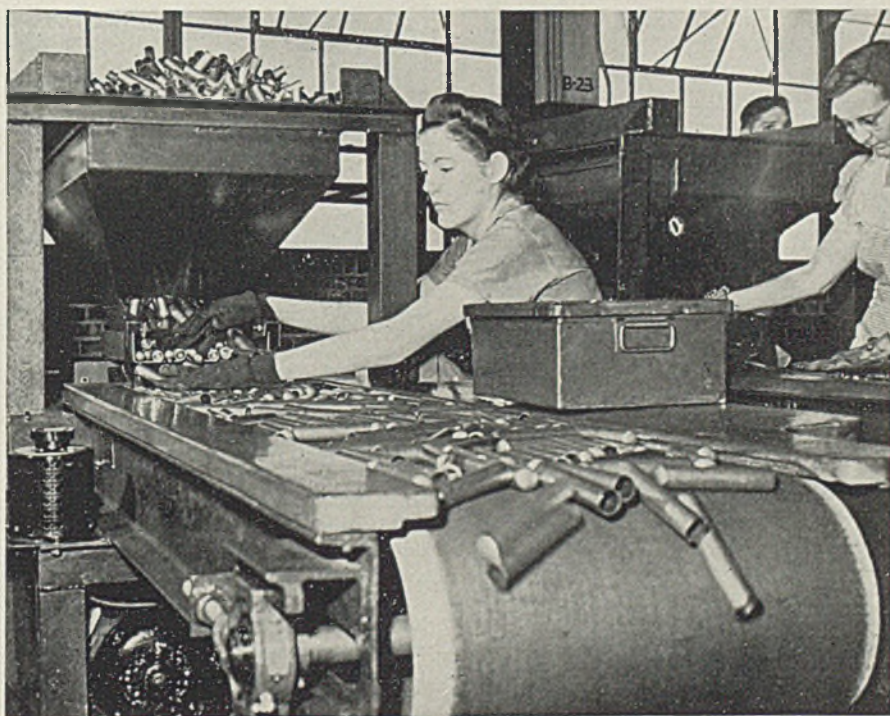


## More Punch Per Bullet

TOUGH armor on tanks and planes calls for ammunition with greater piercing power. This is exemplified in 50 caliber bullets for this purpose, in mass production at St. Louis Ordnance plant

Top view shows bullet assembling machine tooled up to perform ten operations at each motion of its ram. Note that woman operator is protected by a shatter-proof glass shield which covers the tools completely, yet affords full visibility

Lower photo shows how visual inspection of brass cartridge cases, at intermediate stage in drawing, is speeded up by use of traveling belt inspection table fed from a hopper. Women inspectors have become adept at "spotting" and removing from the rapidly moving belt all shells having imperfections which would mean hazards in the finished product. NEA photos, passed by censors





# Manufacturers Operating Under PRP Face Continuous Audit by War Board

WASHINGTON  
CONTINUOUS audit of a large segment of American industry will be inaugurated by the WPB July 1, when the Compliance Branch will commence successive surveys of the records of manufacturers operating under the Production Requirements Plan.

Nine thousand companies have adopted the plan since the establishment last December of this overall method of extending priority assistance. Beginning July 1, it is expected that this number will at least be doubled as a result of the mandatory provisions of Priorities Regulation No. 11, which requires that all manufacturing users of metals in excess of \$5000 worth per calendar quarter file PRP applications not later than June 30.

WPB's Compliance Branch has enlisted the aid of the field investigation staff of the Wage and Hour Division of the Department of Labor in its program. Field work will be directed by the eight regional compliance chiefs, and accountants' reports of audits will be reviewed by analysts on their staffs.

First to have their operations checked over will be those firms now operating under PRP.

Cases of apparent violation of PRP regulations will be referred to field investigators, for further scrutiny of the circumstances. A company believed to be operating in contravention of WPB orders may be given opportunity to present its case to a regional compliance commissioner. Following such a hearing, the commissioner will forward the testimony to Washington, together with his recommendations in the case.

In more serious instances of diversion of scarce materials, the investigators' reports may be referred directly to the Department of Justice for appropriate action.

Since the signing by the President last March of the second war powers bill, criminal prosecution may be instituted against priorities violators.

The nation-wide audit will be directed from Washington by Joseph I. Lubin, deputy chief, Investigation Section, Compliance Branch. Mr. Lubin is a member of the firm of Eisner and Lubin, certified public accountants, New York. He resigned as chairman of the Selective Service appeal board of New York county to join the WPB staff.

In preparation for the coming survey, special schools in PRP pro-

cedure attended by the WPB and Wage and Hour personnel who will participate, were held in Boston, Philadelphia, Atlanta, Cleveland, Kansas City and San Francisco. Accountants who have completed this explanatory course are already conducting audit investigations of some of the firms currently operating under PRP.

## Chicago Area Plants To Get Subcontract Directory

WPB officials have ordered the Stanley plan, a directory of subcontract opportunities in codified form, to be placed in permanent operation throughout the Chicago region, which includes Illinois, Indiana, Iowa and southern Wisconsin. This decision was reached after several weeks' trial, chiefly in metalworking and machine shops near Chicago.

The plan, evolved by James S. Stanley, Richmond, Va., special WPB consultant, calls for distribution to small contractors of a periodic directory of available war

contracts. Machine tools and man-hours needed to complete each job are listed in code symbols, enabling contractors to determine quickly if they are qualified.

## Machine Tool Shipments Continue To Increase

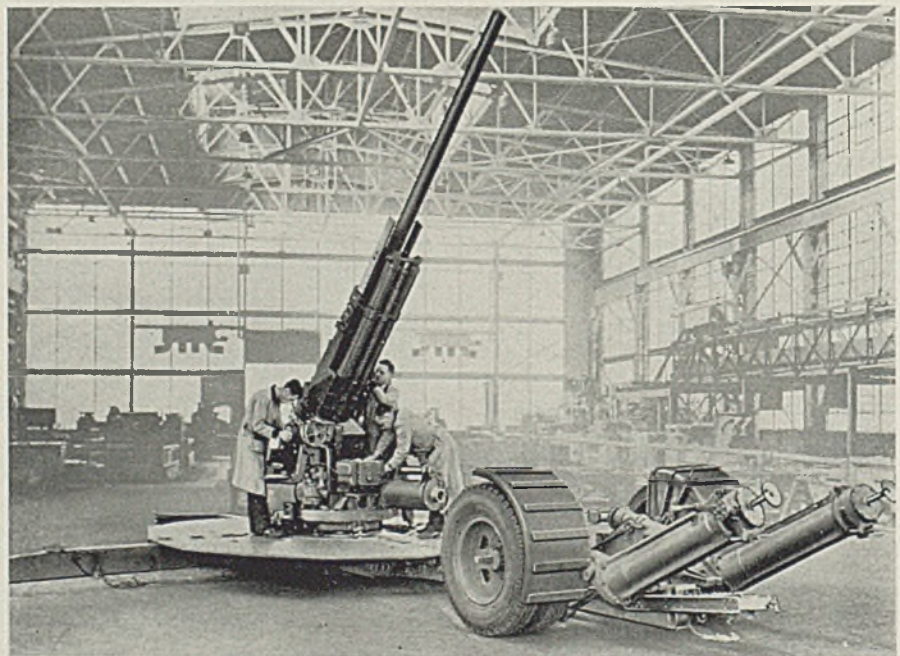
May shipments of machine tools, presses and other metalworking equipment amounted to \$118,500,000, compared with \$114,100,000 in April, according to the WPB Production Division.

Machine tool shipments alone totaled 25,700 units valued at \$107,300,000, against 25,400 units valued at \$103,364,000 in April.

Metalworking machinery production now is at a rate of \$1,400,000,000 an increase of 61 per cent over 1941. May production increased 80 per cent over that of May a year ago.

Treasury award flags were presented to employees of three Allegheny Ludlum Steel Corp. plants in recognition of more than 90 per cent participation in the purchase of War Bonds under the company's payroll allotment plan. Presentations were made by Army and Navy representatives in ceremonies at Brackenridge, Pa., Watervliet, N. Y., and Dunkirk, N. Y.

## Heavy Ack-Ack Gun Has 30,000-Foot Range



NEW type of antiaircraft gun now in production in plants of Fisher Body Division of General Motors Corp., five months ahead of schedule. Of undisclosed caliber, but appearing to be approximately 90-millimeter, the gun is said to have a range of more than 30,000 feet. It is a mobile type, firing an explosive shell, and can be actuated by remote control. Special types of precision machinery and fixtures have been assembled in various Fisher plants to handle the job on a progressive assembly system. Operators were given special training to master different phases of manufacturing operations, including 25,000 lineal inches of welding on each gun



# Britain's Confidence Rising with U. S.

## Production of War Supplies; Belgians Refusing To Obey German Masters

*Delivery of steel from conquered little country only one-third of maximum, and six to seven months late . . . Sweden receiving metal from Reich, building new works . . . Spain sends ore to England*

By J. A. HORTON

British Correspondent, STEEL

BIRMINGHAM, ENGLAND  
(By Mail)

CONFIDENCE is increasing in Britain, as it is believed the war situation has altered materially in favor of the United Nations.

Many facts support this, not least among them being the enormous strides in output made in America since the attack on Pearl Harbor.

The battle of Midway Island also has strengthened the view that America shortly will be handing out to Japan some of the reckoning which surely awaits her. Prime Minister Churchill's statement that though we have not topped the ridge we are well in sight of it has received general approval, because he is known as one who never errs on the side of optimism.

Air offensives greater than anything ever undertaken by any nation have been started by Britain. The first 1000-bombers raid struck at the very heart of the enemy. Cologne, Germany's third largest city, received a smashing blow.

Industrially it is a vital center, while as a vast railway junction it forms part of Germany's communications with Holland, Belgium and Northern France. There was, indeed no lack of targets, for the suburbs of the city contain some of the best known factories engaged in manufacturing war goods. These include diesel engines for submarines, tractors, aircraft engines, electric motors and locomotives; iron and steel plant equipment, foundries, wire and tube mills.

In another big raid on the Ruhr,

Britain struck a blow at the great iron and steel center of Essen. The Ruhr, of course, had been bombed before but this raiding was on a far larger scale. Here are coal fields, blast furnaces, arms factories, steelworks, engineering shops and tube mills, spread over an area 50 miles from east to west and 25 miles north to south.

The question is, how long can German industry function if the R.A.F. goes over and does this deadly work "city by city"—as Prime Minister Churchill has put it.

### Germany Tightens Restrictions

Meager reports come through from Germany and the occupied countries as to the industrial situation. Tightening of steel restrictions has been evident. The Iron and Steel Commissioner, with the approval of the Minister of Economics, has issued an order under which steel alloys may be delivered to works outside the Reich only with the approval of the German Iron and Steel Control. The same ruling applies to deliveries to the Bohemian Protectorate and the Polish General Government. There are few specialized exceptions to this general order.

Interesting sidelights appear on the attitude of the occupied countries of Europe toward their taskmasters. It is admitted even by Germany that sabotage is growing and according to a reliable Belgian source this is so obvious that the Germans have intervened by dismissing the directors of several concerns and have

brought these concerns under their control. This has happened in electrical and metallurgical works. It is stated that manufacturers and workmen in occupied Belgium have made an agreement to reduce the production of all material which might be of use to the German army.

Despite all of German efforts, industrial output continues to diminish. In November, 1941 the enemy had ordered goods from the metallurgical construction industry to the value of 300,000,000 francs. The manufacturers supplied only 140,000,000 francs worth. In defiance of threats, no locomotives were delivered that month. Steel deliveries are six to seven months late.

It is learned from a reliable source that the Belgian steelworks are turning out only one-third of their maximum output, and also that production of coal in occupied Belgium has diminished by 60 per cent. The German military authorities have assumed powers to control industry and may forbid construction or expansion of existing works or order closure of any plant. They can also decree "concentration" methods.

That Germany has a stranglehold on Belgium's industrial activity is evident. Apart from German firms which began business immediately after the occupation, a large number of others have begun to work in Belgium. Some of them have opened offices with a few employees, but many others have started branches, and work and repair shops.

German companies are investing large sums in these Belgian concerns, and so are able to nominate their representatives on the board's of directors. Coal and steel industries figure among those worked by the Germans. German capital has also shown great interest in the aluminum industry and the manufacture of tubes. It is, however, noteworthy that although they remove the greater part of Belgian coal production they no longer can keep the pits working. Certain types of mine timber are completely lacking.

The Swedish-German trade plans provide for Germany to supply Sweden with 4,000,000 metric tons of coal and 1,000,000 tons of coke this year. During 1941 the deliveries amounted to about 3,200,000 and 1,600,000, respectively. Germany apparently is to provide the same quantities of iron and steel in 1942 as in 1941. Although it undertook to supply Sweden with 300,000 tons of merchant steel last year it sent only 230,000 tons.

Plans for construction of a government-owned iron and steel plant in northernmost Sweden are advancing. A site near Lulea has been chosen. It will be operated entirely with water-generated electric power. Con-



struction was started several months ago, and the whole plant, including two blast furnaces, will be in operation in the spring of 1943.

As one of the few remaining powers outside the war, Spain is in a peculiar position today. Many persons assume that its sympathies are entirely with the Axis but there are reasons for believing this is not the case. One is that it is sending iron ore to Britain. It has good reason for keeping out of the conflict, for it has not recovered from the civil war that ravaged it. The industrial position is not yet re-established and food supplies, transport and agriculture are disorganized. Spain is unlikely to spare any of its copper output for Germany since its production is only about half of the annual consumption of 12,000 tons. Neither is it possible to spare any significant quantities of zinc and lead, as output is restricted.

In the British iron and steel industry production is believed to be nearing the peak, although in the absence of statistics it is difficult to get a true picture. The variety of specifications for special steels and alloys has grown enormously in the last few months. Aircraft and war vehicle factories are using vast

quantities of such metals and receive widely different specifications from the various ministries.

Steel is being supplied in adequate quantities for all essential purposes. Government has tightened regulations. An example of this is that structural engineers complain they have building contracts which they cannot execute because they cannot get the necessary authorization for steel. On the other hand, material is being directed where it is most needed, namely to armament and munition works, shipbuilding yards and industries concentrating on the war effort.

A recent statement on the British scrap situation is interesting. It points out that not more than 500,000 tons of scrap was imported from the United States in the early part of the war. It is to make good this deficiency that scrap campaigns have been launched.

The Ministry of Works and Buildings has three campaigns for scrap collection under way: 1, "Blitz" scrap; 2, Railings; 3, Scrap Falling Under National Survey. The function of the Iron and Steel Control has been to supervise proper distribution. Much of the scrap collected by the Ministry of Works and Buildings is of light weight, hav-

ing limited use.

The broad picture of the scrap situation at present is that the deficiency in imported supplies is being met, but to some extent by grades less suitable for maintenance of peak output than material imported previously. The gap between the normal supply and present consumption is being made good by scrap of a capital nature which it is hoped will last for a considerable period.

### Canada Curtails Manufacture of Farm Machinery and Auto Parts

TORONTO, ONT.

IN ADDITION to government orders curtailing manufacture of hundreds of non-essential products, further restrictions have been announced to conserve steel. Department of Munitions and Supply has ordered that 1943 production of farm machinery be limited to 25 per cent of 1940 output, with imports similarly restricted.

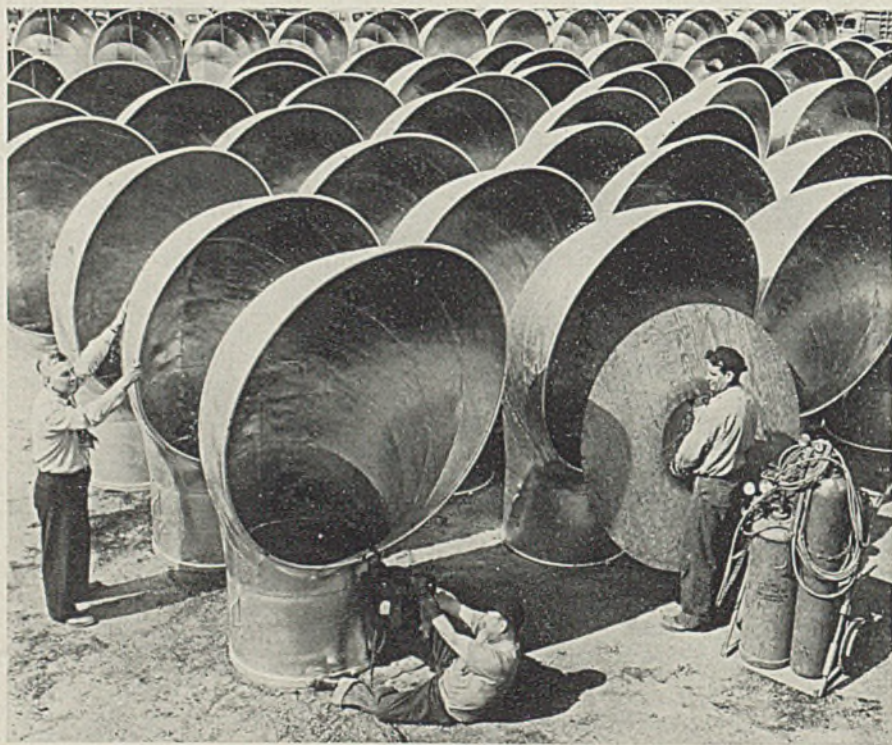
Following an order issued some time ago, prohibiting manufacture of motor cars, a new regulation by J. H. Berry, motor vehicle controller in the Department of Munitions and Supply, reduces the output of replacement parts for automobiles and trucks. Beginning with May, June and July and continuing for each succeeding three-month period they are limited to 70 per cent of the dollar value of similar parts sold or supplied during the corresponding period in 1941. Restrictions also are imposed on inventories of finished parts. A priority system is being developed for distribution of existing supplies.

The motor vehicle controller also has announced that rubber, metal and other materials no longer may be used in production of motor vehicle accessories, with the exception of heaters, defrosters and other equipment required by law.

Canadian import duty of 5 per cent *ad valorem* and war exchange tax of 10 per cent *ad valorem* have been removed on tin in blocks, pigs or bars and the latter have been exempted from the special excise tax of 3 per cent heretofore applying only under the general tariff. Duty on materials imported into Canada by manufacturers of sintered hard metal compounds of the tungsten carbide type, for use in manufacture in their own factories, has been removed under the British preferential and intermediate tariffs and reduced 10 per cent *ad valorem* under the general tariff.

Increased production of tungsten ore in New Zealand has followed an appeal by the minister of mines. The government is participating and has ordered a six-day week with double shifts where possible, according to the Department of Commerce.

### Ship Ventilators Drawn in Two Operations



FORMED on a huge drawing press, thousands of cowl ventilators like these are being fabricated by Weber Showcase & Fixture Co., Los Angeles, for installation on 10,000-ton Liberty Cargo vessels. Ventilators are 20 to 70 inches in diameter and the largest are more than 8½ feet in height. Formerly made by a combination of pressing, riveting and hammering, they now are drawn in halves and welded together. The press, designed by Weber engineers, weighs 210 tons and delivers a force of 1100 tons per square inch



## National Tube Struck; First in 46 Years

Wildcat strike, involving 3000 or more members of the United Steelworkers of America, pledged to no work stoppages for the duration of the war, halted operations at the pipe division of National Tube Co., Lorain, O., engaged in 100 per cent war production.

The strike was the first in the 46 years since National Tube, a United States Steel Corp. subsidiary, was organized.

William F. Donovan, district director for the USA, said: "The union doesn't condone this stoppage, but regards it as entirely illegal and against CIO principles. Nevertheless, two wrongs don't make a right and the company should help out by meeting the committee (union) and agreeing to adjust accumulated grievances."

The union had charged the company with "stalling" in the matter of settling grievances.

## Rust Engineering Will Build New War Plants

Contracts totaling \$5,000,000 for construction of two plants for Defense Plant Corp. which will be operated by the Vanadium Corp. of America have been awarded to Rust Engineering Co., Pittsburgh. Plants will be financed by government funds. One will be operated under a lease agreement and the other under a management contract.

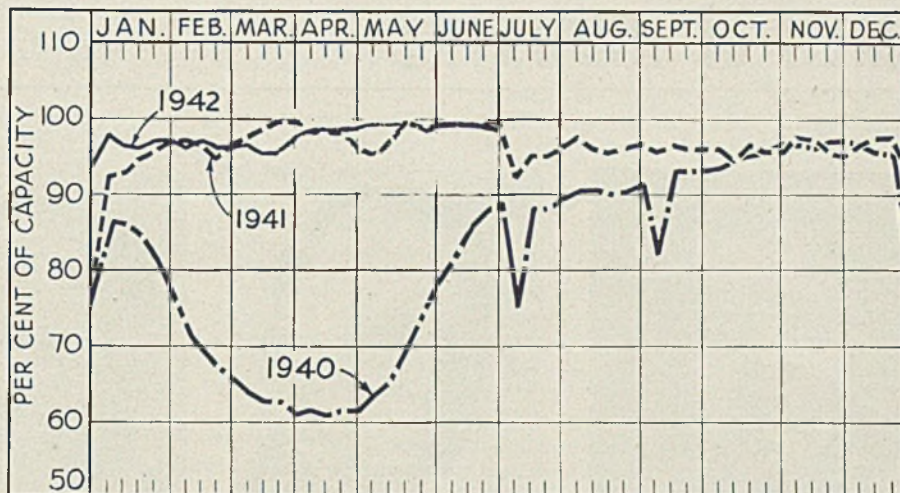
## Cambria Iron Co. Stock Bought by Bethlehem

Stockholders of Cambria Iron Co. have accepted the offer of Bethlehem Steel Co., Bethlehem, Pa., to buy its stock at a price equivalent to \$55 per share. The stock carries ownership of Cambria Iron Co. properties at Johnstown, Pa., and elsewhere.

Bethlehem Steel Co. has been operating the properties on a 999-year lease which it took over when it bought the Cambria Steel Co. several years ago.

## Expansion in Abrasives

The abrasive industry has greatly expanded its capacity in line with the increased requirements dictated by the War Production Program. Production in 1942 will be about double that of 1939 and also will be well ahead of 1941. Further increases are projected for 1943. One complete new plant is being constructed in the Southeast and a number of companies are adding equipment, including continuous kilns.



## PRODUCTION . . . . Down

PRODUCTION of open-hearth, bessemer and electric furnace ingots last week declined  $\frac{1}{2}$ -point to 98 $\frac{1}{2}$  per cent. Two districts advanced, four were lower and six were unchanged. A year ago the rate was 99 $\frac{1}{2}$  per cent; two years ago it was 89 per cent, based on capacity as of those dates.

**Cincinnati**—Dropped 6 points to 89 per cent. One interest is operating all open hearths, another has two idle.

**Detroit**—Removal of furnaces for repairs was not balanced by others returned to service, resulting in a loss of 3 points to 92 per cent.

**Buffalo**—Advanced 2 $\frac{1}{2}$  points to 93 per cent as Republic Steel Corp. relighted its last idle open hearth; of 43 furnaces in the district 40 are active.

**Chicago**—Receded  $\frac{1}{2}$ -point to 103 per cent, one producer having two open hearths idle because of lack of scrap. Reserves are sufficient for only a few days.

**St. Louis**—Unchanged at 95 $\frac{1}{2}$  per cent for third week.

**Cleveland**—Addition of an open hearth by one interest increased the rate 2 points to 94 per cent.

**Pittsburgh**—At 95 $\frac{1}{2}$  per cent for

fourth week. Carnegie-Illinois Steel Corp. blew out Mingo No. 3 blast furnace for relining and blew in Ohio No. 5 after repairs.

**Central eastern seaboard**—Steady at 96 per cent for fourth week.

**Birmingham, Ala.**—With 23 open hearths active, production held at 95 per cent.

**Wheeling**—Declined 2 points to 79 $\frac{1}{2}$  per cent.

**Youngstown, O.**—Three bessemer and 74 open hearths operating, continuing the rate 95 per cent. Lack of scrap prevents an increase. Republic Steel Corp. took off an open hearth at its Warren, O., plant at the week end and July 4 may cut slightly into this week's production.

**New England**—Maintained 100 per cent production, with little change indicated for this week.

## Plate Record for Inland

In a single 24-hour run, the 76-inch continuous hot strip mill at Inland Steel Co.'s Indiana Harbor works rolled 3515 net tons of ship plates, A. P. Miller, assistant general superintendent, announced last week. The mill averaged 146.4 net tons per hour, the best contribution to the mill's new record coming on the 4 p.m. to midnight turn, when 1304 net tons were rolled.

Directors of Wickwire Spencer Steel Co., New York, last week authorized payment of company's Reconstruction Finance Corp. loan and arranged for a new loan from a bank. Upon payment of the RFC loan, voting trust of the company's stock will terminate and voting trustees will then send letters to certificate holders announcing this fact.

## District Steel Rates

Percentage of Ingot Capacity Engaged  
In Leading Districts

	Week ended June 27	Change	1941	Same week 1940
Pittsburgh . . . .	95.5	None	100	82
Chicago . . . . .	103	— 0.5	102.5	91
Eastern Pa. . . .	96	None	97	83
Youngstown . . .	95	None	98	80
Wheeling . . . . .	79.5	— 2	84	90
Cleveland . . . .	94	+ 2	98	85.5
Buffalo . . . . .	93	+ 2.5	90.5	90.5
Birmingham . . .	95	None	95	88
New England . . .	100	None	100	85
Cincinnati . . . .	89	— 6	91	81
St. Louis . . . . .	95.5	None	98	70.5
Detroit . . . . .	92	— 3	96	92
Average . . . . .	98.5	— 0.5	99.5	*89

\*Computed on basis of steelmaking capacity as of those dates.



# MEN of INDUSTRY



W. M. Black



B. H. Gedge



P. P. Somerville



H. N. Eavenson

**WILLIAM M. BLACK** has been made a vice president, American Brake Shoe & Foundry Co. Since 1940 he has been president of American Manganese Steel Division of American Brake Shoe & Foundry, Chicago Heights, Ill., and will continue in that capacity. He joined the division in 1912, becoming general sales manager in 1934, and vice president in 1935.

**Burton H. Gedge**, assistant to vice president in charge of operations, American Steel & Wire Co., Cleveland, has been promoted to new duties specializing in production activities of the vice president's office. **Harry L. Jenter** has been made assistant to vice president and will concentrate in office work for the vice president.

**J. Dell Baster** has been promoted to general superintendent, Cuyahoga works, while **Charles M. Sackerson** has been named superintendent of cold rolling mills, and **James W. Futhy**, general foreman of cold rolling at the Cuyahoga plant.

**Albert F. Barner**, secretary, Cleveland Pneumatic Tool Co., Cleveland, has been elected to the newly created post of vice president in charge of finance. **Harlan B. Collins**, assistant secretary, succeeds Mr. Barner as secretary.

**Albert C. Seitz**, formerly a member of the sales department of Globe-Wernicke Co., Cincinnati, has been promoted to the rank of captain. He is with an antiaircraft unit of the coast artillery, stationed at Fort Brady, Mich.

**Frank Clarke** has been named general manager of warehouses,

Pittsburgh Plate Glass Co., Pittsburgh, succeeding **B. J. Cassady**, who has resigned because of ill health after 44 years of service. Associated with the company 29 years, Mr. Clarke has been district manager at St. Louis since 1934.

**P. P. Somerville** has been appointed general manager, Gilmore Wire Rope Division, Jones & Laughlin Steel Corp., succeeding the late Robert Gilmore. Mr. Somerville has been with Jones & Laughlin since 1938 when he joined the company to supervise installation of equipment in the plant then under construction at Muncy, Pa. When the new plant went into production he was appointed superintendent, which position he has held since.

**Phillip S. Graver**, vice president, Graver Tank & Mfg. Co. Inc., Chicago, has been re-appointed by Mayor Edward J. Kelly to a five year term as a commissioner of the Chicago Park district. He also was re-elected for the sixth consecutive time as vice president of the Chicago Park district.

**L. Abbett Post** has been appointed to a newly created position of manager, American Institute of Steel Construction, New York. A graduate of Stevens Institute of Technology in 1918, he joined Post & McCord a year later, subsequently becoming vice president. The past year Mr. Post has been attached to the Construction Branch, Production Division, War Production Board, Washington.

**Don U. Bathrick**, general sales manager, Pontiac Motor Division, General Motors Corp., Pontiac,

Mich., has been appointed assistant to **R. H. Grant**, vice president of the corporation in charge of relations between General Motors and the government at Washington in connection with war materials.

**Howard N. Eavenson**, Pittsburgh mining engineer and consultant, has been re-elected president, Bituminous Coal Research Inc., Columbus, O. **W. C. Hull**, vice president, Chesapeake & Ohio railway, Cleveland, and **Kenneth A. Spencer**, vice president, Pittsburg & Midway Coal Mining Co., Kansas City, have been named to the board of directors. All other officers and directors have been re-elected.

**W. J. Hogan** has been named general manager, Grand Trunk Western railroad, Detroit, succeeding the late J. A. Clancy. His duties will include an executive office in the Detroit Terminal railroad and the Detroit & Toledo Short Line, in each of which the Grand Trunk shares ownership.

**Walter F. Cahill** has been appointed agent for Lincoln Park Tool & Gage Co., Lincoln Park, Mich., in the state of Michigan, exclusive of Wayne county and Toledo, O. The past nine years he has been associated with National Automatic Tool Co., Richmond, Ind., as a sales engineer in the Detroit office, and before that was with Excell-O Corp.

**W. R. Beatty** was elected chairman of the board, Beatty Machine & Mfg. Co., Hammond, Ind., at a meeting of the board of directors recently. **L. C. Beatty** was elected president; **P. H. Beatty**, vice president; **Charles Aaron**, secretary;



W. Perz, treasurer; Miss C. Kaston, assistant secretary-treasurer.

Harold S. Osborne, plant engineer, operating and engineering department, American Telephone & Telegraph Co., New York, was elected president, American Institute of Electrical Engineers for the year beginning Aug. 1, 1942, at the annual meeting of the institute in Chicago. Other officers elected were: Vice presidents, K. B. McEachron, Pittsfield, Mass.; C. R. Jones, New York; A. C. Dewars, Minneapolis; E. T. Mahood, Kansas City, Mo.; E. W. Schilling, Bozeman, Mont.

G. C. Gridley, vice president and works manager, Mechanics Universal Joint Division of Borg-Warner Corp., Rockford, Ill., has been appointed president and general manager. He succeeds E. C. Traner, who previously acted as president of both the Mechanics Universal Joint and Rockford Drilling Machine Divisions, and who, at his own request, has been relieved of the one responsibility.

Other new officers of the Mechanics division are: R. R. Rolph, vice president and director of sales; Arch A. Warner, works manager; and W. E. Gustafson, treasurer and assistant secretary. G. A. Shallberg continues as secretary.

Donald McDonald, president, Zenith Dredge & Shipbuilding Co., Duluth, has been elected a director, Pettibone Mulliken Corp., Chicago, to succeed S. J. McIntyre.

Forrest Nelson, MacWhyte Co., Kenosha, Wis., has been elected president, Milwaukee Association of Industrial Advertisers. Formerly vice president, Mr. Nelson succeeds E. T. Slackford, Harnischfeger Corp. Rueben Freitag, Briggs-Stratton Co., has been elected vice president; Max G. Andrietsch, Trico Fuse Co., secretary; Ken Cook, Heil Co., assistant to president; and Ralph Diehl, Falk Corp., assistant to vice president. Ervin Goes, Koehring Co., has been named national director to represent the M.A.I.A. in the National Industrial Advertisers' Association.

C. S. Swayze, general manager, Delco Radio Division, General Motors Corp., Kokomo, Ind., has been transferred to the Eastern Aircraft Division, Linden, N. J., as assistant to L. C. Goad, general manager.

Berry W. Cooper, comptroller, Delco-Remy Division, Anderson, Ind., and of the Delco Radio Division, has been named general manager of Delco Radio. J. D. O'Brien, production manager of Inland Mfg. Division, Dayton, O., has been

named general manager of that division, succeeding Wallace S. Whittaker, who is on leave of absence with the Army.

Norman M. Ross, works manager, Brown-Lipe-Chapin Division, Syracuse, N. Y., has been appointed general manager of that division which is now a separate division of the corporation and no longer affiliated with the Guide Lamp Division.

Phillips W. Carbaugh, assistant metallurgist, Mechanics Universal Joint Division, Borg-Warner Corp., Rockford, Ill., is now chief metallurgist, Oliver Farm Equipment Co., Charles City, Iowa.

Clifford Wiggins, chief metallurgist, Northwestern Steel & Wire Co., Sterling, Ill., has become special metallurgist, Federal Machine & Welder Co., Warren, O.

A. H. Pepper has been promoted to assistant manager of steel sales, Dominion Steel & Coal Corp. Ltd., Sydney, N. S. Associated with the company 30 years he has been on loan to the Canadian government the past eight months, working on special duties for the War-Time Shipping Board.

## Officers are Nominated By Mechanical Engineers

Nominations for 1943 officers of American Society of Mechanical Engineers were announced recently by H. W. Smith, chairman of the nominating committee. This committee held its sessions during the semiannual meeting of the society in Cleveland June 8-10. Nominees are as follows:

For president, Harold V. Coes, vice president, Ford, Bacon & Davis Inc., New York.

For vice presidents, Joseph W. Eshelman, president, Eshelman & Potter, Birmingham, Ala.; Thomas E. Purcell, general superintendent of power stations, Duquesne Light Co., Pittsburgh; Guy T. Shoemaker, vice president, Kansas City Light & Power Co., Kansas City, Mo.; and Walter J. Wohlenberg, professor of mechanical engineering, Yale university, New Haven, Conn.

For managers, Roscoe W. Morton, professor of mechanical engineering and head of department, University of Tennessee, Knoxville, Tenn.; Albert E. White, director of engineering research, University of Michigan, Ann Arbor, Mich.; and Alexander R. Stevenson Jr., staff assistant to vice president, General Electric Co., Schenectady, N. Y.

Election will be held by letter-ballot of the entire membership of 16,000, closing Sept. 22, 1942.

## DIED:

John W. Braffett, 49, retired general manager of sales, Oliver Iron & Steel Corp., Pittsburgh, at his home in Detroit. Mr. Braffett had also previously served as district manager of sales in the Detroit area.

Col. Carmi A. Thompson, 71, prominent in Ohio and national politics and identified with the iron ore industry many years, in Cleveland, June 22. He was general manager of Great Northern Iron Ore Properties from 1913 to 1917 when he became vice president and general manager of Tod-Stambaugh Co. He was chairman of Midland Steamship Co., and was a director of Central National Bank and of several iron ore and coal companies.

George T. Pew, 55, head of the Pew Pump & Equipment Co., Cleveland, June 18, at his home in that city.

George L. Cadman, 80, associated with Beloit Iron Works, Beloit, Wis., 35 years, in an engineering capacity, June 15, in that city.

Marcellus Reed Houdlette, 69, former president and treasurer, Fred A. Houdlette & Son Inc., Boston, June 11, at Melrose, Mass.

Hugh Aikman, 72, secretary and publicity manager, J. H. Williams Co., Buffalo, June 20, in that city.

Clifford Hammond, 63, electrical engineer with Cutler-Hammer Inc., Milwaukee, for many years before his retirement in 1932, in that city, June 21.

Earl G. Swanson, 49, assistant vice president of traffic, Chicago, Burlington & Quincy railroad, Chicago, in Aurora, Ill., June 22.

Roy de Staebler, 70, for 29 years vice president, Beck & Corbitt Co., St. Louis, June 6, at Joplin, Mo.

Howard Colman, 70, president, Barber-Colman Co., Rockford, Ill., June 25 near Elgin, Ill., when his automobile was struck by a truck.

Charles Edward Bowron, 71 at his home in Birmingham, Ala., June 17. At one time he was a mining engineer for Tennessee Coal, Iron & Railroad Co. and was chief engineer for Gulf States Steel Corp. from 1916 until its purchase by Republic Steel Corp. Later he served as consulting engineer for Alabama.



# Alternate Alloys Hold Interest at A.S.T.M. Meeting

ATLANTIC CITY, N. J. HOW the most can be made of United States supplies of strategic alloying materials, the application of the NE steels, and accomplishments already made in conserving scarce metals came in for important discussion at the forty-fifth annual meeting of the American Society for Testing Materials at the Chalfonte-Haddon Hall here June 22-26.

The convention program included 18 technical sessions, 100 reports and papers and approximately 150 committee meetings.

One of the more interesting sessions to the steel industry was a round-table discussion on alternate alloys, led by John Mitchell, Carnegie-Illinois Steel Corp.

H. J. French, War Production Board, Washington, discussed the status of raw materials necessary for making steel. C. H. Herty Jr., Bethlehem Steel Co., outlined what has been accomplished by steel manufacturers to conserve manganese and other strategic elements.

Steps taken by tool steel manufacturers to conserve elements considered necessary in that field were discussed by N. I. Stotz, Universal-Cyclops Steel Corp., Bridgeville, Pa.; and application of stainless steels to conserve elements regarded necessary for corrosion or heat-resisting alloys, by V. M. Whitmer, Republic Steel Corp., Cleveland.

C. M. Parker, American Iron and Steel Institute, New York, described the co-operative effort of the institute and technical societies, and told how the National Emergency steels were established and what measures had to be considered so as to effect conservation. W. P. Eddy, Yellow Truck and Coach Mfg. Co., Pontiac, Mich., discussed WPB committees, how they were set up, what duties they were expected to perform, what progress had been made and what remained to be done. He presented general details concerning the Alloy Bar, Billet and Bloom Committee now in operation.

Accomplishments of the aircraft engine industry in conserving strategic elements were outlined by A. W. F. Green, Pratt & Whitney division, United Aircraft Corp., Hartford, Conn., who also described steps taken by engine manufacturers in changing parts; what testing is now in progress; and what is being accomplished by the plane manufacturers toward the use of sheet steel as a substitute for aluminum.

M. J. R. Morris, Republic Steel



H. J. Ball  
Elected president, American Society for Testing Materials

Corp., discussed the application of NE steels and what the future holds for further work along similar lines of conservation.

H. J. Ball, professor of textile engineering, Lowell Textile Institute, Lowell, Mass., was elected president, to succeed G. E. F. Lundell, chief, chemistry division, National Bureau of Standards, Washington. P. H. Bates, chief, clay and silicate products division, National Bureau of

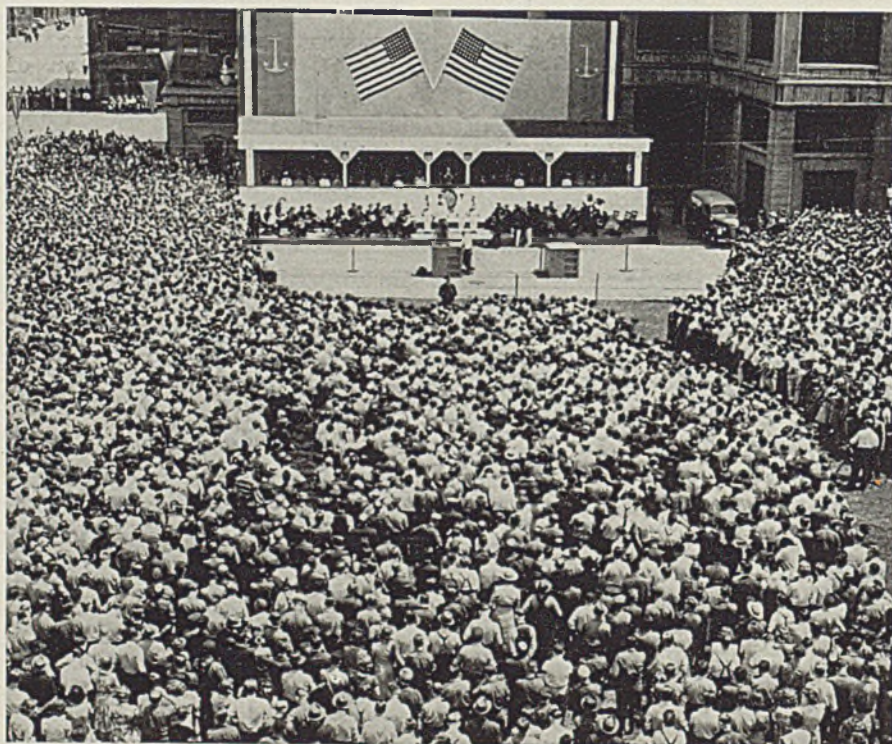
Standards, was elected vice president for the usual 2-year term, an office also held by Dean Harvey, materials engineer, engineering laboratories and standards department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., who is now entering his second year.

New members of the executive committee, all for a 2-year term, are: R. P. Anderson, secretary, division of refining, American Petroleum Institute, New York; Maurice H. Bigelow, director of technical service, Plaskon Co. Inc., Toledo, O.; J. H. Foote, supervising engineer, Commonwealth & Southern Corp., Jackson, Mich.; Alexander Foster Jr., vice president, Warner Co., Philadelphia; and Lawford H. Fry, railway engineer, Edgewater Steel Co., Pittsburgh.

Introduction of the new officers was a feature of a general session held on Wednesday evening and which combined some of the events of the formal opening session of previous years.

At this session Mr. Lundell delivered the annual presidential address, entitled "Chemical Requirements and Chemical Analysis;" Brigadier General Charles D. Young, director of procurement and distribution, Services of Supply, United States Army, and a past president of the

## 20,000 See Navy "E" Awarded to GE Plant



A CROWD of 20,000 witnessed the presentation of the Navy "E" to the Schenectady, N. Y., plant of General Electric Co., June 20. The plant, which produces a variety of important operating and fighting equipment for the Navy, is the fourth GE works to receive the award during June. Sharing the honor with its employees, the "E" lapel button was presented to John D. Myers, a veteran of 52 years' continuous service, and to Miss Lucy Taylor, with 43 years' service



society, gave an address entitled, "Organization of the Services of Supply of the War Department;" and reports were submitted by the executive committee, committee E-10 on standards and committee E-9 on research.

A feature also was the presentation of the sixteenth award of the Charles B. Dudley Medal to F. C. Todd, assistant professor, petroleum and natural gas engineering, and A. W. Gauger, director, mineral industries research, Pennsylvania State College, for their paper on "Studies on the Measurement of Water Vapor in Gases," presented before the society at the 1941 annual meeting.

The seventeenth Edgar Marburg lecture was delivered by Graham Edgar, director of Research, Ethyl Gasoline Corp., on the subject of "Gasoline—Past, Present and Future." The significance of the A.S.T.M. tests for gasoline was discussed, together with trends of the physical and chemical nature of gasoline over a period of years, the impact of the war on gasoline, and the probable future trends of gasoline after the war.

## Asks Conservation Of Steel in Oil Refinery Design

### WASHINGTON

WPB is allocating sufficient steel plate each month to permit the completion of petroleum refinery projects which are scheduled before July 1, 1943, according to Max B. Miller, head of the Equipment and Procurement section, Refining Division, Office of Petroleum Co-ordinator. Considerable difficulty is being experienced, however, because of the improper distribution of orders among the mills which are capable of supplying the material. In some instances, the delivery of the plate falls behind even though the orders are scheduled because the particular mill with which the orders are placed has more work than it can do.

"In other instances," said Mr. Miller, "the orders could be readily handled without confusion. In some cases, plate deliveries are delayed because the purchaser requires an unusual width whereas the cutting and welding of plate of lesser width might very easily fulfill the requirement.

"Each fabricator, each contractor, and each principal engaged in the erection of these plants could do much towards the elimination of this

(Please turn to Page 103)

## REVISIONS AND ADDITIONS TO PRIORITIES—ALLOCATIONS—PRICES

as published in Section Two of STEEL, April 20, 1942

### "M" ORDERS

**M-6-e (Amended): Nickel Scrap**, effective June 19. Requires segregating of ferrous nickel scrap in same manner as provided in M-24-e. Includes scrap containing 1% nickel or over, instead of 0.50% as originally specified. Except metal, the principal part of which is aluminum, or metal containing over 40% copper. Removes 300-pound limitation on amount of scrap which may be melted in any month. Prohibits dealers from melting nickel scrap without WPB authorization. Permits any melter to receive nickel scrap required to fill orders rated higher than A-2, without regard to primary nickel allocated to him in conformity with the original order.

**M-23-a (Amended): Vanadium**, effective June 23. Restricts melting or processing of vanadium except pursuant to approval of melting schedule under Order M-21-a, or upon specific authorization by Director of Industry Operations. Filing of PD-209-A and 209-B not required of persons receiving delivery of not more than 10 lbs. of contained vanadium in one month.

**M-24-e: Alloy Scrap Segregation**, effective June 17. Sets up classifications of alloy steels, provides for their segregation by classifications and prohibits mingling of segregated alloy scrap except in the melting process.

**M-65 (Amendment): Cadmium**, effective June 24. Permits delivery of cadmium to distributors and users only upon specific authorization by WPB for essential military and civilian uses.

**M-68-2: Oil Industry Materials**, effective June 20. Modifies previous regulations to permit obtaining necessary materials to drill approximately 800 new wells in Missouri, Kansas and Oklahoma.

**M-79 (Amended): Asbestos**, effective June 18. Restricts use of certain grades of imported asbestos to ship installations and certain military purposes. Releases inventory restrictions on South African asbestos. Limits use of 85% magnesite pipe coverings containing any type asbestos to uses authorized by Director of Industry Operations, to installations where temperatures of 212 degrees or higher occur, to ships or to underground installations.

**M-175: Ethyl Cellulose**, effective June 18. Provides for complete allocation control. Deliveries of 50 pounds at one time in one month do not require specific authorization of WPB. Larger orders must be filed with producers by 15th of each month accompanied by PD-550. Producers file PD-549 with WPB by 20th of each month to report deliveries.

### "P" ORDERS

**P-98 (Amendment): Petroleum**, effective June 19. Extends practically the same priority assistance to Canadian petroleum operators as prevails in the United States to obtain materials for use in production, refining, transportation and marketing of petroleum and petroleum products.

**P-109 (Amendment): Aircraft Products**, effective June 17. Permits suppliers not required to come under Production Requirements Plan to extend ratings to fill orders of producers rated under P-109 and P-109-a after the latter orders have expired.

### "L" ORDERS

**L-38 (Amendment): Refrigeration and Air Conditioning Machinery**, effective June 18. Permits sale of certain equipment without necessity of obtaining preference rating to cover installation of finished product. Excludes repair parts from provision of the order. Bans production of ice cream cabinets and evaporative coolers except on direct Army or Navy orders. Appeals for relief from order provisions must be made on PD-250.

**L-154: Power, Steam and Water Auxiliary Equipment**, effective June 17. Schedule I bans use of stainless steel or nickel alloys in manufacture of water meters. Copper and its alloys eliminated from all parts except internal gears and workings. Tin prohibited except as an alloy in copper.

### "E" ORDERS

**E-1-c: Machine Tools**, effective June 16. Assigns A-1-a rating to machine tool orders of certain Canadian purchasers.

### PRICE SCHEDULES

**No. 41 (Amendment): Steel Castings**, effective June 25. Allows foundries to apply for permission to charge buyers abnormal freight costs on shipments of castings arising from deliveries beyond normal shipping area.

**No. 71 (Amendment): Cadmium**, effective June 22. Permits sales of cadmium in containers of 5 pounds or less at prices not higher than maximum level of individual sellers in October, 1941, or the last previous date on which a sale in such container was made.

**No. 75 (Amendment): Dead-burned Grain Magnesite**, effective June 20. Permits Westvaco Chlorine Products Corp. to charge \$40.50 per ton on sales to Vanadium Corp. of America and Mathieson Alkali Works Inc. on shipments from Patterson, Calif., plant.

**No. 166—Zinc Oxides**, effective June 22, 1942. Maximum delivered price for carload lots of leaded zinc oxides containing 35% or more lead set at 7.00c per lb. Premium for less-carload lots ¼-cent.

Reconstruction Finance Corp. has adopted a program intended to increase further the production of strategic metals. The agency will make loans up to \$5000 to finance drainage, retimbering, making accessible or other preliminary development of mine workings when such loans are deemed advantageous to the war program.



## **Railroads expected to obtain only 68 per cent of steel requirements this year . . . Borrowing power of Reconstruction Finance Corp. and Commodity Credit Corp. may be increased**

### **WASHINGTON**

RAILROADS likely will not be able to obtain more than 4,500,000 tons of steel in 1942, compared with their estimated requirements of 6,613,113 tons; and builders of locomotives may have to carry over into 1943 construction of 525 engines now on their books, according to J. J. Pelley, president of the Association of American Railroads.

This means steel shipments to the carriers will be only about 68 per cent of requirements.

Outlining the railroads' position with respect to steel product supplies, Mr. Pelley said that as of June 1 a total of 950 locomotives were on order by United States railroads, and that, under government agency authorization, materials were to be allocated for 710 engines for 1942 construction.

Mr. Pelley pointed out, however, that Electro-Motive Corp., largest builder of diesel engines, might have to stop construction of railroad locomotives due to the necessity of building diesels for the Navy. Because of this factor, shortage of materials and other diversions, it looks now as though production from June 1 to the end of 1942 may not exceed 425 units, leaving 525 to be carried over.

He also pointed out that the outlook for locomotives was complicated by the fact that the Army has come in for a large number of steam units for overseas use, and because there is a growing demand for diesels for smaller naval vessels, making it possible that these war needs may take preference and farther reduce prospective 425 units which the carriers are expecting this year.

Regarding steel supplies, Mr. Pelley said that the 4,500,000 tons expected this year would compare with 5,800,000 tons used in 1941 and with 8,100,000 tons used in 1929, although business in ton miles being done this year is much in excess of that done in 1929.

Commenting upon freight cars, Mr. Pelley stated that on June 1 there were 21,646 freight cars on order, authorization for construction of which had been given by government agencies. In addition, the railroads had about 31,000 cars on order concerning which up to June 20 no authority for construction had been given. Mr. Pelley said

there is no question that 21,646 units could be constructed before the end of 1942.

### **Price Subsidy Bill May Be Introduced in Senate**

Price subsidy legislation may be introduced in the Senate which will propose an increase in the borrowing power of the two government lending agencies, RFC and the Commodity Credit Corp., and will specifically authorize them to use their money for price subsidies when OPA certifies that subsidy is needed.

It is understood an attempt will be made in the bill to establish standards for determining when a subsidy should be certified by OPA but officials say these standards will be couched in general terms. OPA probably will be required to determine: 1, that government payments are necessary to maintain the flow of essential civilian products; 2, that industries involved take steps to economize on their operations as much as possible.

OPA officials say subsidies will be restricted as much as possible to the producer level and that they will be used chiefly as a stop-gap measure designed to insure the adequate flow of civilian goods under existing price ceilings while some program is being worked out to simplify and economize on manufacturing processes.

### **New Measures Ordered To Conserve Critical Metals**

Production of commercial truck trailers having a load-carrying capacity of 10,000 pounds or more will be halted July 1, under the terms of Supplementary Order L-1-g. Restrictions in the order do not apply to third axle attachments which add substantially to the capacity of two-axle trucks.

WPB also has restricted the use of cadmium to essential military and civilian uses and will permit delivery of the metal to distributors and users only upon specific authorization. Users of cadmium must obtain the WPB authorization on Form PD-441.

Use of critical metals in water meters has been sharply restricted. No stainless steel or nickel alloys may be used; tin is prohibited, ex-

cept as an alloy in copper; copper and copper-base alloys are eliminated from all parts except internal gears and workings. Use of copper in these appliances is expected to be reduced from 3300 tons to 300 tons annually.

Specifications have been established covering maximum amounts of chromium and nickel which may be used in manufacture of exhaust valves in all types of automotive equipment after July 1.

Limited production of razors and blades has been extended to July 31 by WPB. Output of safety razors at 70 per cent of the 1940 rate is permitted. Straight razors and blades may be produced at full 1940 rate.

### **Three Minor Changes Made in Steel Conservation Order**

Three changes in the steel conservation order, M-126, have been made by the Director of Industry Operations.

The first permits the use of iron and steel for maintenance and repair of coffee roasting machinery. This requires only a small amount of metal and was not permitted by the original order.

"Manicure implements" are eliminated from List A of M-126 as their manufacture now is covered in detail by Order L-140.

The original order prohibited the use of iron and steel in the manufacture of identification, key, name and price tags. Amended order permits the manufacture of tags or badges for these uses:

1. To identify workers in governmental agencies.
2. To identify workers in industrial plants.
3. Metal tags required by federal or state law for livestock or poultry.
4. Pin or wire attached tickets for price marking of soft goods.

### **Eastman Asks Non-War Travel Be Deferred for Duration**

Deferment for the duration of the war of all meetings, conventions, and group tours which are not closely related to furtherance of the war effort has been called for by Joseph B. Eastman, director, Defense Transportation. Mr. Eastman asked also that all state and county fairs be postponed.

Attendance at meetings which are closely related to the war program should be skeletonized, Mr. Eastman said.

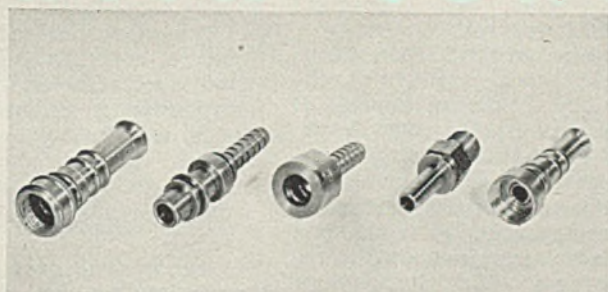
Pointing to the steady rise in the volume of passenger traffic on rail-





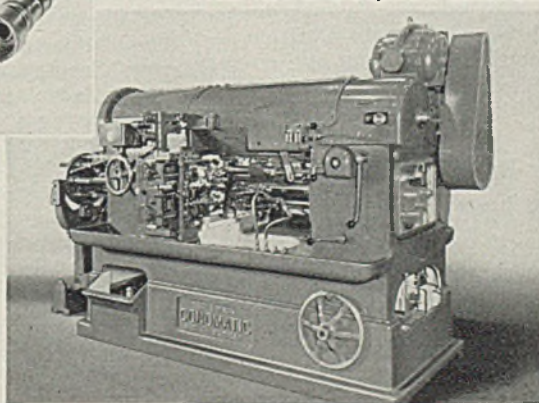
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road and bus lines, Mr. Eastman appealed to the people voluntarily to impose certain restrictions on their travel.

Vacations should be staggered throughout the year, he said, and vacation travel should be scheduled so that trips would neither start nor terminate on weekends. Private passenger cars should not now be used for extensive vacation travel, he added.

### PRP Interim Procedure Clarified by War Board

Priorities Regulation No. 11, which makes the use of the Production Requirements Plan mandatory for a large segment of American industry, last week was amended in two respects: To clarify the interim procedure to be followed by companies which have not yet received a PRP certificate; and also to redefine the permissible use of ratings by companies already operating under PRP.

The regulation as originally issued permitted companies who had filed their PRP applications before July 1, 1942, but had not yet received the PRP certificates, to receive deliveries and apply preference ratings within certain limitations. The amendments omits the specific date, and makes this procedure available to any company which is not in default in filing its application, so as to permit the placing of purchase orders at any time before the deadline for filing the PRP applications, which may in certain cases be extended beyond June 30.

Another section of the amendment allows companies which have been operating under the PRP during the second quarter of 1942 to accept delivery of materials rated on their second quarter PRP certificate during the third quarter, if such delivery has been delayed, in addition to the materials which they are authorized to receive by their third quarter certificate.

### Adjustable Pricing Permitted In Steel Castings Order

Revised Price Schedule No. 41 has been amended to allow foundries to apply for permission to charge buyers of steel castings the abnormal freight costs on shipments of castings directly related to the war effort if such costs are occasioned by unusual circumstances such as deliveries beyond the normal shipping area.

That the production of defense material may not be impeded during the time that such permission is being obtained, the schedule has further been amended to permit the Price Administrator to allow foundries to adjust their prices on deliveries made during the period their

application is being considered by OPA.

Formerly, adjustable pricing was permissible only on contracts for steel castings where delivery was not required until six months or more after date of contract.

The changes have been effected through Amendment No. 2 to Revised Price Schedule No. 41, steel castings.

### New Packing Methods May Save Space, Critical Materials

Savings of at least 20 per cent in some critical materials, including metals, are expected from experiments now being conducted in the Army's Services of Supply, looking toward reduction of packing bulk for overseas shipments.

Apart from savings in bulk, making more space available, savings in critical materials are typified in the work of the Small Arms Division in the Office of the Chief of Ordnance where experiments in non-metallic moisture protectives in place of terne plate case liners are

working out successfully, it is reported.

A satisfactory wax-dipped package has been evolved which may make the use of terne plate unnecessary, the Army reported, adding that the Frankford Arsenal expects to discontinue use of this metal for such purposes.

Aircraft packing for overseas shipment offers numerous problems, which the Army reports it is on the way to solving. Magnesium and aluminum are susceptible to moisture, so that full protection has to be assured. New protectives now enable the Army to ship pursuits, as well as larger aircraft, on deck where formerly knock-down shipments were usual.

Steel has an important place in Army packing; 1½ billion feet of steel bands and wire will be used to bolster wooden packaging, while 75,000,000 pounds of nails will be required, for this year alone. Shovels, for example, formerly crated, are now shipped strapped with wire, and the change saves 20 per cent in space.

## Enemy Properties, Copyrights, 750 Patents Seized by United States

Leo T. Crowley, alien property custodian, last week seized several properties of German nationals, 750 enemy-owned patents, and five German copyrights and copyright claims. Included were:

Stock control of the Nirosta Corp., New York; stock control of the Lingner Corp., Chicago; control of J. M. Lehmann Co. Inc., New York; control of the Adlanco X-Ray Corp., New York.

The Nirosta Corp., known as Krupp-Nirosta until 1940, is engaged solely in administration and licensing of patents which it acquired from Friedrich Krupp, A. G., Essen, Germany. The patents relate to alloy and stainless steel.

The Lingner Corp., succeeded by assignment to all trademarks, patents, secret formulas, and manufacturing processes of Odol Chemical Co., all of which were owned originally by Lingnerwerke, A. G., Berlin, Germany.

The J. M. Lehmann Co. was originally founded by a firm of the same name in Dresden, Germany. It manufactures machinery used in the ink and paint industries. Vesting of the German stock control of the company will eliminate all barriers to immediate conversion of the company's plant to war production.

Adlanco X-Ray Corp. was a subsidiary of the huge Siemens electrical interests of Germany, and act-

ed as American agents for the distribution of Siemens x-ray equipment. Its principal function now is repair and maintenance of equipment now in use.

The patents seized vary widely in nature, covering an automatic drill and riveter for use in aircraft construction, a conveyor already in wide use in this country in coal mines, certain processes in oil refining, and chemicals, including adrenalin compound and chlorinated rubber.

Among the copyrights and copyright claims vested were several dealing with climatology and geography which will be made available to the armed services. Also taken over was the copyright to Alfred Rosenberg's *Twentieth Century Myths*, one of the basic texts of Nazi philosophy.

Last week, the alien property custodian ordered that all persons claiming any interest in patents or patent applications now or formerly owned by nationals of designated foreign countries to report their interest, including any license agreement or claims of ownership, on Form APC-2 by Aug. 15.

Purposes of the order, Mr. Crowley said, are to locate and describe enemy-owned patents and interests in patents, to protect the rights of American citizens in foreign-owned



patents and in patents which were once foreign owned, and to obtain information which will aid in administration of patents which are seized by the alien property custodian.

### **Exception Granted in Price Schedule for Magnesite**

To insure an adequate supply of maintenance grade dead-burned grain magnesite for the Vanadium Corp. of America and the Mathieson Alkali Works Inc., Price Administrator Leon Henderson has granted permission to the Westvaco Chlorine Products Corp. to increase its selling price for this commodity to \$40.50 per ton in sales to these two consumers.

The change in the maximum price, which applies only to these two customers and to shipments from Westvaco's Patterson, Calif., plant, was effected by Amendment No. 2 to Revised Price Schedule No. 75. The amendment becomes effective June 20.

Under Revised Price Schedule No. 75, dead-burned grained magnesite, which became effective Jan. 28, 1942, the maximum price for the maintenance grades of domestic dead-burned grain magnesite was established at \$22.00 per ton, f.o.b. cars Chewelah, Wash. However, in recognition of high-cost war production, Westvaco was granted permission to charge a maximum of \$32.00 per ton, f.o.b. cars, Chewelah, Wash., to its regular customers in California. Mr. Henderson explained that since the present price of \$40.50 per ton applies f.o.b. cars, Patterson, Calif., Westvaco will only obtain the same realization on sales to Vanadium and Mathieson as previously obtained on sales to California steel mills.

### **Melting of Vanadium Limited: Permissible Deliveries Reduced**

Melting of vanadium, and delivery of any amount over 10 pounds per month, have been placed under complete control of the Director of Industry Operations in an amendment to the vanadium conservation order, M-23-a.

Essential to manufacture of certain kinds of alloy steel, and as a catalyst in sulphuric acid manufacture, vanadium has been under allocation control for nearly a year. Nothing in the previous order restricted the melting of vanadium, and the amendment prohibits melting of any present or future stocks unless by specific authorization of the Director of Industry Operations, or unless the melter's schedule has been approved as provided in the iron and steel alloy order, M-21-a.

Amendment also requires the fil-

ing of requests for allocation on Forms PD-209A and PD-209B with WPB by the buyer on or before the 20th of the month preceding the month in which he wants delivery. Buyers must also file Form 209B with their suppliers. Deliveries to a total of 10 pounds in any one month are exempted from this reporting provision. The original order permitted the delivery of a total of 50 pounds per month without restriction.

### **Nickel Scrap Order Amended To Conform with Segregation Rule**

Order M-6-c, covering nickel scrap, has been amended by WPB to make it conform to the new alloy steel scrap segregation order, M-24-c.

Changes in M-6-c brought about by this amendment provide that:

1. Nickel scrap covered by the order is scrap containing 1 per cent nickel or over, instead of 0.50 per cent as originally specified.

2. Nickel scrap does not include metal the principal part of which is aluminum nor metal containing over 40 per cent copper. Both such alloys are covered by orders M-1-d and M-9-b respectively.

3. Ferrous nickel scrap must be segregated in the same manner as provided in order M-24-c covering alloy steel scrap.

4. The provision of the original order limiting the amount of scrap which may be melted in any month to 300 pounds nickel-content is removed.

5. Any melter may receive nickel scrap which he requires to fill orders bearing preference ratings higher than A-2, without regard to primary nickel which may have been allocated to him in conformity with the original order.

6. Dealers must not melt nickel scrap without specific authorization of the WPB Director of Industry Operations.

In all other important respects the order operates as originally issued.

### **Small-Lot Cadmium Sales Exempted from Price Schedule**

Small-lot sales of metallic cadmium—going mostly to distributors or laboratories for experimental purposes—will be permitted at levels no higher than those at which the individual seller did business during October, 1941, or the last date previous thereto on which such a small lot sale was made, OPA announced last week.

On Jan. 19 a formal price ceiling was placed on all metallic cadmium sales in Price Schedule No. 71. These maximums were 90 cents per pound, delivered buyers' plant, for sticks and 95 cents for anodes and special shapes. This formally placed a

ceiling on prices at the same levels at which major producers of cadmium had been operating under a voluntary agreement with OPA since August 30, 1941. No special provision was made at that time for small-lot sales.

However, until Jan. 19, 1942, small-lot sellers had been obtaining premiums over full-lot transactions in their sales of metallic cadmium in bottles, cannisters and similar receptacles containing five pounds or less. Because of labor and other costs involved in chemical houses' operations in preparing, packaging and handling such small quantities, the Office of Price Administration feels that such small-lot sales warrant special consideration and will restore them the privilege of obtaining such premiums.

### **Additional Industry Committees Appointed**

New industry advisory committees established by the WPB last week include:

#### **Brass Mill**

Francis R. Kenney, research advisor, Copper Branch, is the government presiding officer.

Committee members: John A. Coe Jr., The American Brass Co., Waterbury, Conn.; Robert L. Coe, Chase Brass & Copper Co., Waterbury, Conn.; J. A. Doucett, Revere Copper & Brass Inc., New York; W. M. Goss, Scoville Mfg. Co., Waterbury, Conn.; J. P. Lally, C. G. Hussey & Co., Pittsburgh; H. L. Randall, Riverside Metal Co., Riverside, N. J.; F. L. Rigglin, Mueller Brass Co., Port Huron, Mich.

#### **Cast Iron Boiler and Radiator**

W. W. Timmis, chief, Plumbing and Heating Branch, is government presiding officer.

Committee members: R. E. Daly, American Radiator & Standard Sanitary Corp., Pittsburgh; V. A. Good, Burnham Boiler Corp., Irvington, N. Y.; L. N. Hunter, National Radiator Co., Johnstown, Pa.; John P. Magos, Crane Co., Chicago; J. F. McIntire, United States Radiator Corp., Detroit; H. F. Randolph, International Heater Co., Utica, N. Y.; Stanley K. Smith, The H. B. Smith Co. Inc., Westfield, Mass.; Lester O. Stearns, Columbia Radiator Co., McKeesport, Pa.; W. R. Stockwell, Well-McLain Co., Michigan City, Ind.

#### **Copper Wire & Cable**

Francis R. Kenney, research advisor, Copper Branch, is government presiding officer.

Committee members: W. E. Sprackling, Anaconda Wire & Cable Co., New York; D. R. G. Palmer, General Cable Corp., New York; H. L. Erlicher, General Electric Co., Schenectady, N. Y.; Wiley Brown, Phelps Dodge Copper Products Corp., New York; C. A. Scott, Rome Cable Corp., Rome, N. Y.; F. C. Jones, Okonite Co., Passaic, N. J.; Everett Morss, Simplex Wire & Cable Co., Cambridge, Mass.

#### **Ferrochromium Producers**

Andrew Leith, chief, Manganese and Chrome Branch, is government presiding officer.

Committee members: W. J. Priestley, Electro Metallurgical Co., New York, N. Y.; Ward A. Miller, Vanadium Corp. of America, New York; Charles F. Colbert Jr., Pittsburgh Metallurgical Co., Niagara Falls; L. G. Pritz, Ohio Ferro-Alloys Corp., Canton, Ohio.



# OPA Warns LCL Sales of Iron, Steel To Obtain Higher Prices Evades Law

WASHINGTON

SELLING iron and steel products in quantities just under carload weight with the view of obtaining the higher prices permitted for less-than-carload shipments is an evasion of Revised Price Schedule No. 49 on such products, according to OPA.

"Revised Price Schedule No. 49 provides that mill carload prices shall be charged for straight carloads sold out of warehouse stock," said Price Administrator Henderson. "The schedule establishes 40,000 pounds as a minimum carload shipment on iron and steel products with the exception of rails, where a minimum carload lot is 56,000 pounds.

"Splitting of orders into near carload shipments, or encouraging customers to place orders for not over 39,999 pounds with the intent of getting the higher less-than-carload price is an evasion of the law.

"The flat statement by a seller that 40,000-pound orders will not be accepted, the obvious intent being to force the buyer to split a 40,000-pound requirement into quantities commanding a higher price, is an evasion."

The price administrator emphasized that Revised Price Schedule No. 49 says its price limitations "shall not be evaded either by direct or indirect methods in connection with a purchase, sale, barter, delivery or transfer of iron and steel products." OPA, said Mr. Henderson, considers this to be fair and and reasonable in view of the following circumstances:

## Certification Required

"The War Production Board now prohibits carload shipments from warehouses, other than mixed cars, except on certification. This is not to be construed, however to mean, that the War Production Board legislates generally against shipments in carload quantity from warehouses. They may exclude specific shipments for specific reasons, but it is their wish, along with the Office of Price Administration, that a certified carload shipment be made at proper carload price as established by the Office of Price Administration.

"The Office of Price Administration has established a reasonable maximum price for a mixed car, containing not less than three product items or one product item of not less than ten specific sizes and/or gages. This covers normal warehouse business, for seconds dealers

as well as warehouses handling primes.

"For straight carload shipments necessitated by the war effort, the Office of Price Administration will fix a price on certification by the War Production Board.

"Unassorted cars, sold by seconds dealers, are and should be priced at not higher than mill price for comparable products of prime quality. In ordinary times, these are priced at less than mill price for prime material.

"In many cases, a warehouse or seconds dealer selling at mill price a straight car of a product like strip picks up enough on the conversion from sheets to realize a substantial profit."

## Metal Mill Operators Partially Excluded from Use of PRP

Operators of metal mills have been partially excluded from use of the Production Requirements Plan by Amendment No. 1 to Priorities Regulation No. 11.

Regulation No. 11 as originally issued required any company which uses in a calendar quarter more than \$5000 worth of metal in the forms described in an accompanying metals list, to operate under the Production Requirements Plan. This was intended primarily to apply to companies which buy metals in such forms for processing into finished parts or products.

Some metal mills purchase metal in the forms described in the list and process or alloy the metal into other forms also described in the list, but do not manufacture it into finished parts or products. Amendment to regulation No. 11 exempts from the required use of the PRP, purchases by metal mills under such circumstances.

However, metal mills must obtain maintenance and repair material under the PRP, and must also use PRP as their application for priority assistance to obtain any metal which they process into forms not included in the metals list which accompanies the regulation, if their total purchases of metals for these two purposes amount to more than \$5000 in a quarter.

For example, a brass mill which makes castings for a manufacturer would not obtain preference ratings under PRP to cover its orders of copper or brass for that purpose, but would extend the rating on the order from the manufacturer in the manner previously used. However, if the same brass mill also makes

finished parts of brass for electric motors, preference ratings on the brass for this purpose would have to be obtained under the PRP, as would ratings on maintenance and repair material used by the mill.

## Emergency Purchases by U. S. Exempt from Price Regulation

Purchases by the United States government for immediate delivery of any commodity for which there is an emergency need are excluded from the General Maximum Price Regulation through an amendment announced by OPA.

Originally Supplementary Regulation No. 4 in exempting sales of armaments to the government from the general regulation, provided in addition for the exclusion of emergency purchases of goods not exceeding \$1000 in value. Amendment No. 5 to this supplementary regulation, effective June 30, 1942, removes this monetary limitation on such purchases.

The person making an emergency purchase on behalf of the United States or any of its agencies must file a report with the Washington office of OPA certifying that it was made in a situation in which it was imperative to obtain the commodity immediately and in which it was impossible to obtain or unfair to require, immediate delivery at the applicable maximum price. The report must set forth:

1. The name and address of the seller,
2. The date of purchase,
3. The date of delivery,
4. Description of the commodity purchased,
5. Quantity purchased,
6. Price at which purchased,
7. A brief statement of the facts giving rise to the emergency situation which necessitated the purchase at a price higher than the applicable maximum price.

## Detroit Designer Appointed Army Ordnance Consultant

War Department has retained George W. Walker, Detroit, industrial designer, as a consultant to Brig. Gen. G. M. Barnes, chief of the Research and Development Service, Ordnance Department.

Mr. Walker will devote two days per week to his new work. He will make studies and artist's sketches with the object of streamlining and improving the ballistics and contours of the Army's automotive vehicles and carriages (see STEEL, June 22, p. 44, for sample designs).

Bolivian exports of tin in 1941 reached 43,876 metric tons, only 3210 tons less than the all-time high of 47,086 tons shipped in 1929, the peak of Bolivian tin production.



# Supreme Court Upholds Contract

## Guaranteeing Fixed Wage, No Overtime

EMPLOYERS may make individual contracts with employees, setting an arbitrary low hourly rate, pay them time and a half on this rate and guarantee a flat weekly salary no matter how many hours they work. This ruling was handed down by the United States Supreme Court in a four-to-five decision in the case of Walling (federal wage-hour administrator) against A. H. Belo Corp., publisher of the *Dallas Morning News*.

At the same session the court held, in another case, that where there is no contract, overtime must be paid on the regular hourly rate of pay and not on the minimum wage.

The Belo Corp. contracted with each of its employees for a basic hourly rate of pay, for one and a half times that rate for all hours over 40 a week, and for a basic guaranteed wage of \$40 a week. The basic hourly rate was fixed in each case so that an employee would work 54½ hours each week before his regular and overtime pay exceeded the guaranteed \$40 a week.

The wage-hour administration attacked the contracts as an evasion of the law and argued that the \$40 guarantee really fixed the basic rate and that the hourly rates named in the contracts were so computed as to avoid an increase in the company's wages even though it continued to work its employees more hours than the wage-hour act contemplated.

### Contract Held Legal

The wage-hour administrator demanded that the company compute its basic rate of pay by dividing the maximum number of hours into the \$40 a week and that the company pay one and one-half times this rate for all hours over the maximum.

The high court rejected this contention and held that the contract arrangements were legal.

Nothing in the act bars an employer from contracting with his employees to pay them the same wages that they received previously so long as the new rate equals or exceeds the minimum required by the act, the court held.

While the decision is interpreted as one that would affect seriously the wage-hour act during an employers' labor market, it is not expected to have far-reaching influence under present conditions. With labor scarce and employee turnover high, such a plan might cause labor difficulties.

Where extremely short and ex-

tremely long weeks are worked, such a contract might be welcomed by employees; they might prefer to receive, for example, a straight \$35 wage weekly rather than \$10 one week and \$60 the next.

### Supervisors' Union Gains Recognition, Closes Mine

#### PITTSBURGH

Recently the National Labor Relations Board extended recognition to a new union in the coal mines, the Mine Officials Union of America. Last week the union closed an important mine operated by Republic Steel Corp.

The union was established to give collective bargaining security to supervisory officials denied membership by United Mine Workers locals. The "straw boss" union was recognized by NLRB in an order for an election among 57 supervisory employees of Union Collieries Co., to determine whether or not the union, which is not affiliated with any national labor organization, should be collective bargaining agent for these men.

The union promptly walked out of Republic's Crescent No. 2 mine, near California, Pa., stating the company was not sharing the work equally among all supervisors. Following this, the United Mine Workers called out its members, claiming that there were not enough supervisors working to insure the men proper safety facilities.

The company notified UMW headquarters that the mine would be open to work and that UMW members were expected to report. Company said there were enough qualified supervisory employees in the mine to insure adequate safety measures.

### Machinists, Paid \$100 to \$135 A Week, Striking for More

#### ST. LOUIS

American Federation of Labor's pledge of no strikes in important war industries has turned out to be just another scrap of paper—or a large slice of bologna—in the St. Louis sector.

On the heels of a strike of 406 members of the AFL Machinists' Union in 11 plants producing precision tools and other important war materials came a walkout of 200 members of the AFL Molders and Foundry Workers' Union, Local No. 59, employed by the Banner Iron Works.

The machinists, who with over-

time have been receiving from \$100 to \$135 a week each, are demanding that their wages be increased 32 per cent for tool and die makers, 36 per cent for machinists, and 25 per cent for apprentices.

Under the contract which expired June 1 the tool and die makers received \$1.25 an hour basic wage, minimum; the machinists \$1.10 an hour, and the apprentices 40 cents. Wages for semiskilled workers in the various plants affected are geared with those received by tool-makers and machinists..

The walkout at Banner works was the second there in six weeks. May 12 molders went on strike because the company refused to discharge a man who was \$7.55 delinquent in his union dues. The company is engaged in manufacturing machine tool castings for war purposes.

Toolmakers and machinists strike was condemned in a statement issued by the CIO United Electrical, Radio and Machine Workers' Union of St. Louis. Leaders declared it was "injurious to the nation's war efforts." An appeal for the men to return to work pending settlement by negotiation failed.

### Farm Employment Increased Substantially During May

A total of 11,917,000 persons were employed on the nation's farms on June 1, according to the Department of Agriculture. This was 1,121,000 more than on May, representing an increase that is just about normal for the season.

The department reported that farm wage rates had increased only seasonally during May.

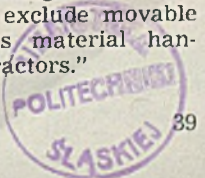
In sections where demand for labor by war industries is heavy, farm employment decreased.

### Munitions Board Explains "Construction Work"

STEEL, May 11, p. 60, published a list of items whose use is prohibited for construction work for all supply arms and bureaus of the Army and Navy. As stated, the list of prohibited items also had been made applicable by the War Production Board to all other public and private construction.

A reader who was not certain as to just what came within the definition of the word "construction" as used in this prohibited list applied to the Army and Navy Munitions Board for an interpretation. The board's ruling follows:

"This office has interpreted the list to include buildings and fixed equipment, but to exclude movable equipment such as material handling trucks and tractors."





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# MIRRORS of MOTORDOM

## DETROIT

"RECAP" of the progress of war assignments undertaken by Packard Motor Car Co. is of interest because it exemplifies what one independent manufacturer of automobiles has done in the space of a couple of years. Stacked up against published claims of the larger integrated manufacturers, it makes the latter appear to have been asleep at the switch, which makes for a pleasant argument but is not exactly a correct deduction.

Dollar volume of Packard shipments for May was twice that of the peak month in car shipments. Employment already is 6000 beyond the peak peacetime level and still going up. Plant space is 81 per cent given over to war work, with the balance consigned to storage.

Two principal products at the moment are Rolls-Royce Merlin aircraft engines, translated from a British design that left a lot to be asked for in terms of American manufacturing practice; and 12-cylinder marine engines for Navy PT or torpedo boats. The Rolls engine goes into Spitfire and Hurricane planes for the British and into the Curtiss Warhawk pursuit plane, known more recently as the P-46.

This is the engine which is criticized sharply by De Seversky in his recent book for being underpowered to meet present-day requirements in pursuit ships. He claims the logical engine would have been the 2000-horsepower Napier, rather than the 1350-horsepower Rolls. Settling this argument involves going back through a long series of negotiations and politics which could serve no useful purpose. Suffice it to say that the Rolls of today probably is not the Rolls with which De Seversky is familiar. It is now in volume production and refinements are being made continuously.

### Among Top Producers

Production figures cannot be detailed, but output last month and this month will exceed the production of Pratt & Whitney engines coming out of the Ford plant here, although it is still some distance from the Allison engine production rate, the Allison being an engine similar in size and contour to the Rolls-Royce. It will be recalled in this connection that Ford at one time was considering manufacture of the Rolls engine, but abruptly turned it down and decided to make the Pratt & Whitney radial.

Expansion of present output of Rolls engines is now under way, aiming at schedule 75 per cent in excess of current rates. This will

**To expand schedules for Rolls-Royce engines at Packard by 75 per cent . . . 80,000 operations on major parts of single engine . . . Auto-aircraft industries organize joint traffic conference**

involve some additional plant capacity, including new engine test cells, a refurbished aluminum foundry and other facilities. Three new buildings, two of them extensive affairs, were added to the original Packard car plant to accommodate Rolls production.

Amount of precision machining on the engine can be appreciated from the fact there are about 10,500 individual parts, compared with a total of only 7140 separate parts in a complete 1942 Packard Clipper sedan. Approximately 3400 new machines were installed for the engine job, and more are on the way.

Take the case of a single part, the upper crankcase, requiring 138 separate operations involving 77 individual machines. In all about 80,000 operations are required in the machining of only the major parts of the engine. Thirty-five man-hours to machine a Rolls connecting rod, against ½-hour for a car engine rod; 62 man-hours to complete a cylinder block, against 7.7 for a car block; 67 hours for a Rolls crankshaft, against 3.3 for a car engine shaft. The cost of the Rolls crankshaft alone exceeds the cost of a complete car engine.

### Assembly Takes 194 Hours

Just to assemble the Rolls engine requires 194 hours, plus 228 hours more for teardown, inspection and rebuild. Contrast this with the 5 hours required to assemble a car engine. Packard has worked out a departure in the teardown, with the introduction of a conveyor system on which parts are hung as they are removed from the engine after the "green run" in test cells. The first piece taken off in the teardown is the last to be reassembled, as the disassembled engine makes a complete turn around the conveyor system. This practice now has been adopted by Rolls-Royce in England and by other U. S. air engine plants.

This teardown, test and reassembly of airplane engines is a laborious technique. Packard has 20 test cells now in operation, but the number is being doubled to meet the expansion program. Each engine gets an initial run of 6 hours; then it is torn down, inspected and

reassembled, following which it is given a 10-hour "red" run before shipment. It takes a trained crew only 20 minutes to connect an engine on the test stand, compared with hours formerly required. Fuel requirements of the bank of test cells are 23,000 gallons of gasoline and 3600 gallons of oil every 24 hours.

Shipping of these engines is an art in itself. The approved unit first is drained, then sprayed with oil and all openings sealed. Then it is covered with a pantasote cover and sealed in a heavy airtight cellophane bag, into which is placed 10 pounds of moisture-absorbing crystals. The assembly then is set carefully in a heavy wood packing crate which is sealed tightly with a special compound. A peephole is left in the crate so that inspection of the moisture crystals can be made regularly. Large numbers of spare parts and engine subassemblies like crankshafts and superchargers, are packed similarly.

### Marine Engines Easier

Swinging the Packard marine engine into quantity production was not the enormous job of the Rolls operation. There were no 2500 British "left-hand" blueprints which had to be translated into standard American blueprints, with the added job of converting all dimensions from the metric system. Much of the equipment for the marine engine work could be obtained from car manufacturing divisions; in fact, about three old machines could be used for every two new ones purchased. Production of these engines is at a rate of about one-fourth the Rolls-Royce schedule, but it is still an important undertaking. First of these engines was built in 1939 and the work has served as a valuable training ground for key personnel transferred to the aircraft engine division.

Accomplishments of automobile plants and their allied industries—for that matter, all American industry—in the past year and a half constitute about the only cheering note in the war picture, so the constant emphasis perhaps can be pardoned, since we as a nation must have something to crow about. To many it is disheartening that so much of the outpouring of American plants may already have fallen into the hands of the

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enemy without even the opportunity of its being turned against him. A wag here with a company supplying parts to the Detroit (Chrysler) Tank Arsenal wondered the other day how soon orders for spare parts for Chrysler tanks would be coming through from Field Marshal Rommel. It was suggested to him that perhaps Rommel could be induced to write some endorsements of these tanks which might be used to improve the morale of workmen in this country.

#### Organize Air Traffic Group

First instance of the actual formal joining of hands of the automotive and aviation industries was marked last week by organization of the Aircraft War Traffic Conference, a group comprising traffic managers of automotive companies engaged in aircraft manufacture (22 of them) and of aircraft manufacturers (also 22). K. A. Moore, manager of the traffic division of the Automotive Council for War Production, was named manager of the new conference which will seek to expedite the solution of aircraft transportation problems and to serve as a clearing house for research, interchange of experience, technique and information on all phases of aircraft traffic—loading and shipping, rates, classification, bills of lading, routing and other factors. It will present the views of manufacturers to interested regulatory government agencies and freight carriers, and also will work with the Army Air Forces, the Navy's Bureau of Aero-

navics and other governmental groups in advancing the war traffic effort.

Executive committee; advisory committees on aircraft and aircraft parts, aircraft engines, propellers and miscellaneous parts; and working committees on engineering loading, bills of lading and routing, rates and classification were named at a two-day organizational meeting in Detroit recently. Headquarters of the Conference will be here.

W. J. Goehausen, traffic manager of the Airplane Division of Curtiss-Wright Corp., was elected chairman of the Conference; C. A. Sullivan, general traffic director of Fisher Body, was named vice chairman.

#### Housing Question in Uproar

Problem of providing housing facilities for employees at the Ford Willow Run bomber plant is fast becoming a political football of first magnitude. Apparently in the belief that the only housing problem in the Detroit area was at the bomber plant, the Federal Public Housing Authority stepped in and drew up plans to spend about \$35,000,000 on dormitory-type houses for 60,000 on farm land near the plant. Then the UAW-CIO rushed out suggestions for modifying the designs to suit their members better and these were promptly accepted. Meanwhile private builders, ready to erect 30,000 houses on improved lots throughout this area if they can get needed materials, are virtually forced out of the picture by a WPB order freezing these materials from private builders but apparently releasing them for the

Federal Public Housing Authority.

Recently crews from the FPHA descended on the property near Willow Run and in spite of howls from farmers and county officials, began a speedy campaign to clean up options. Farmers protested that their crops were being trampled down, that some agents were even peeping in their windows. Last week, the FPHA boys began driving some stakes on property owned by Henry Ford. They were promptly ejected and their stakes ripped up. Mr. Ford, along with nearly everyone else except the FPHA, feels that creation of homes on this site "is not only a mistake but an unnecessary, wasteful and extravagant use of government funds and vital war materials." So he proposes to "resist by every legal method at his disposal not only the acquisition of the property but continuation of the project."

It is the old story of private enterprise versus the socialized methods of the government, backed of course by labor unions. There are no improvements at all on the site of the "bomber city"; insufficient water and sewage facilities; no roads, no schools of sufficient size to accommodate the number of people contemplated. Yet a government agency goes blundering ahead, squandering millions of dollars on a project which experienced builders and local officials call fantastic. The Detroit Board of Commerce points out that less than 25 per cent of the workmen to be added to the Detroit district in the next year will be employed at Willow Run, yet the FPHA is directing its entire effort toward this single locality.

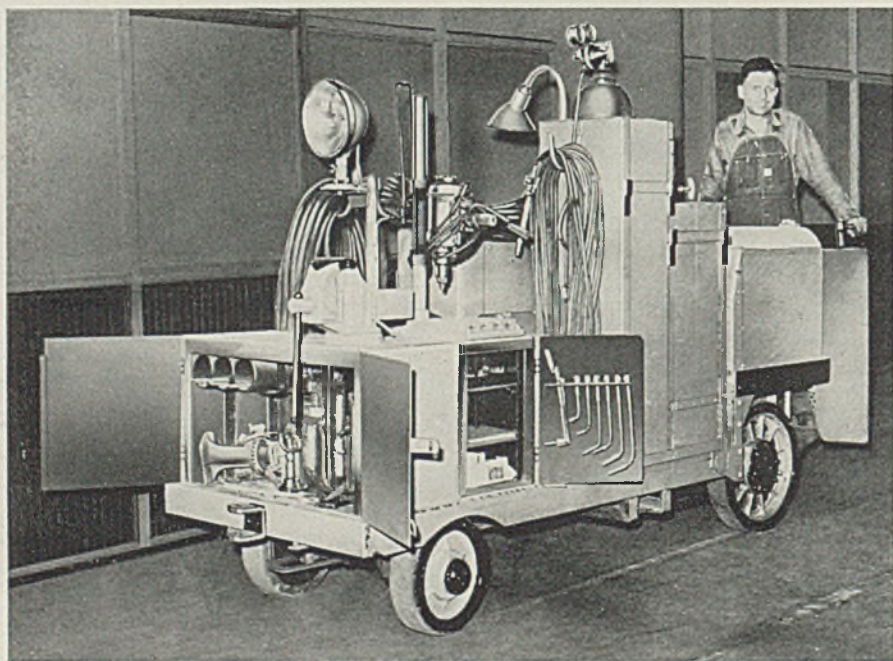
New type of war machine, an amphibian tank, is being built by Graham-Paige Motors Corp. here for the Navy department. Carrying no armament of its own, the vehicle will convoy perhaps 20 or 30 fully armed men, negotiating water or land. Power is derived through two tracks carrying curved steel treads which in water act as fins to propel the vehicle.

The craft has been accepted by the Navy.

#### General Motors Output Growing

Deliveries of war materiel from General Motors in the United States and Canada for May totaled \$119,332,117, an increase of \$9,305,517 over April. Total deliveries of war materiel for the first two months this year amounted to \$486,838,088, compared with \$406,149,273 for all of 1941.

In the week ended June 6 total hourly rated factory employment in General Motors' United States plants was 195,822. Average number of salaried and hourly employees for May was 245,326.



READY for any plant emergency, this unique maintenance unit has been developed by Fisher Body engineers, and a counterpart installed in every Fisher plant. It is designed primarily to remove debris and assist in maintaining essential plant services





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FROM AN ORIGINAL DRAWING BY ORISON MACPHERSON

## OPEN-HEARTH MEN SPEED PRODUCTION OF FIGHTING STEELS

These men of the open-hearth steel furnaces move into action like army engineers working under fire. Swinging their shovels in determined, fighting rhythm they heave dolomite through the flame-licked door—making “bottom” in their furnace—preparing it for another charge of molten iron and steel scrap. Within minutes the furnace roars at white heat to produce more fighting steel for ships, planes, tanks, shells, guns, bombs . . .

On the charging floor at this battery of open-hearths, workmen are making steel at a fighting pace—a pace that prevails in all departments of the works every hour of every day—speeding every ton of it on the way to help win the war. By their skill and sweat these men of steel are doing what once seemed unbelievable—getting production from their furnaces and mills greater than 100% of their rated capacity.



**JONES & LAUGHLIN STEEL CORPORATION**

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PARTNER TO INDUSTRY IN WAR PRODUCTION





# Sponge Iron for Scrap? Senators' Plan Impractical

TESTIMONY by members of Senate investigating committees that certain big steel interests were "holding back" development of sponge iron manufacture and that sponge iron plants would provide the answer to lack of scrap iron and steel was taken lightly last week by informed steelmen. They considered it just another sad example of politicians being led far astray.

The charges were made by Senator Joseph C. O'Mahoney, Wyoming, who as chairman of the Temporary National Economic Committee "investigated" the steel industry several years ago, and by Senator Harry S. Truman, Missouri, chairman of the war investigating committee.

Senator O'Mahoney, testifying before an agriculture subcommittee, said a steel shortage was impeding the war program and proposed the construction of sponge iron plants "at the mouth of every ore mine" to produce raw materials for the steel furnaces.

Senator Truman testified along the same lines and charged that "dollar-a-year men from the big steel firms absolutely control the steel policy" of the WPB. He said his committee was studying the sponge iron process and soon would hold hearings on it.

## Sponge Iron "Ideally Suited"

Insisting that the greatest immediate need was finding a substitute for scrap steel, Senator O'Mahoney is reported to have said this could be found in sponge iron—iron produced by melting ore in a roaster . . . The product is wholly free from carbon and "because of that fact is ideally suited to the manufacture of the highest type of steel."

"It is a process which would render available every undeveloped deposit of iron ore in the United States. It has been represented to me that pure iron can be made by the sponge process at \$5 a ton less than it is being made by the blast furnace method."

A reply to this was not long in forthcoming from those who understand iron and steel manufacturing methods.

Sponge iron reduction processes have been studied experimentally and semi-commercially in this country for at least 25 years, and not

(Please turn to Page 45)

## "Jeeps", Now in Mass Production for War, May Have Even Wider Peace-Time Uses

VERSATILITY characterizes the "jeep", now being produced in large numbers at Willys-Overland Motors plant, Toledo. The vehicles are Jack-of-all-trades around United States Army camps and in various war fronts abroad, being used for almost any task, from liaison work to plowing.

Willys-Overland engineers believe the jeep's future still is unexplored, that it can be converted to do more peace-time than military chores.

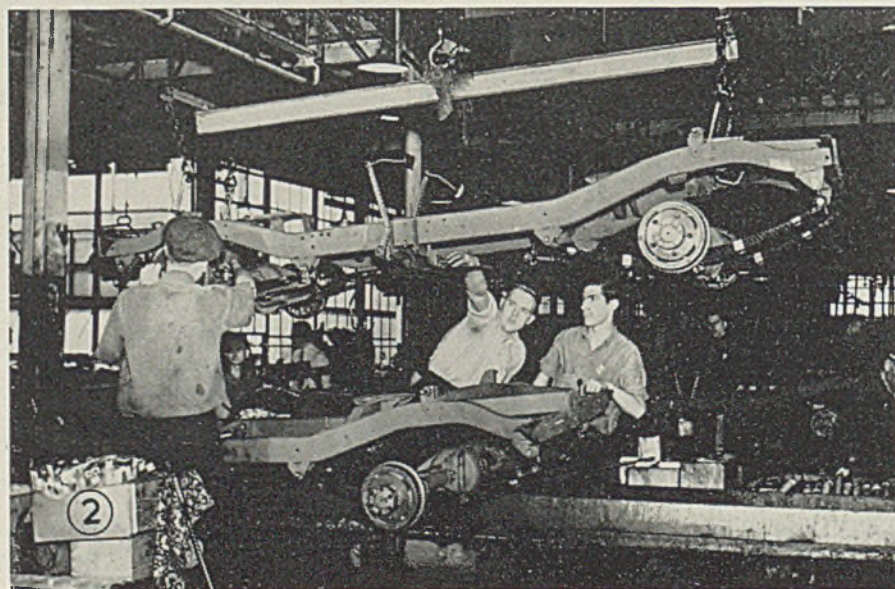
Fig. 1—Assembled jeeps lined up in the yard at Willys-Overland.

Fig. 2—Early stages in assembly. Frame is lowered; beneath are the axles and driving shaft. Frames come down from the conveyor at a rate of one every 90 seconds.

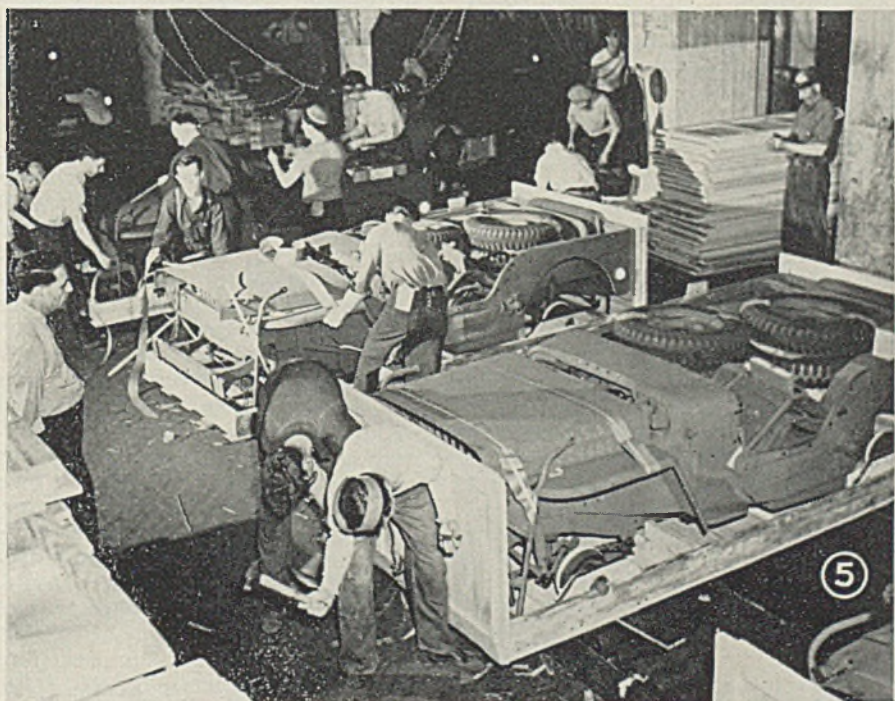
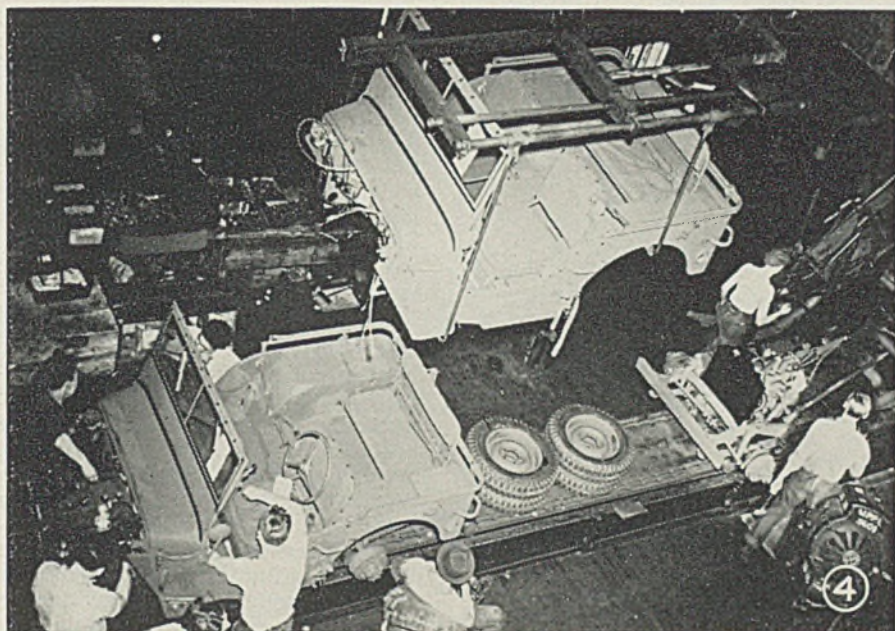
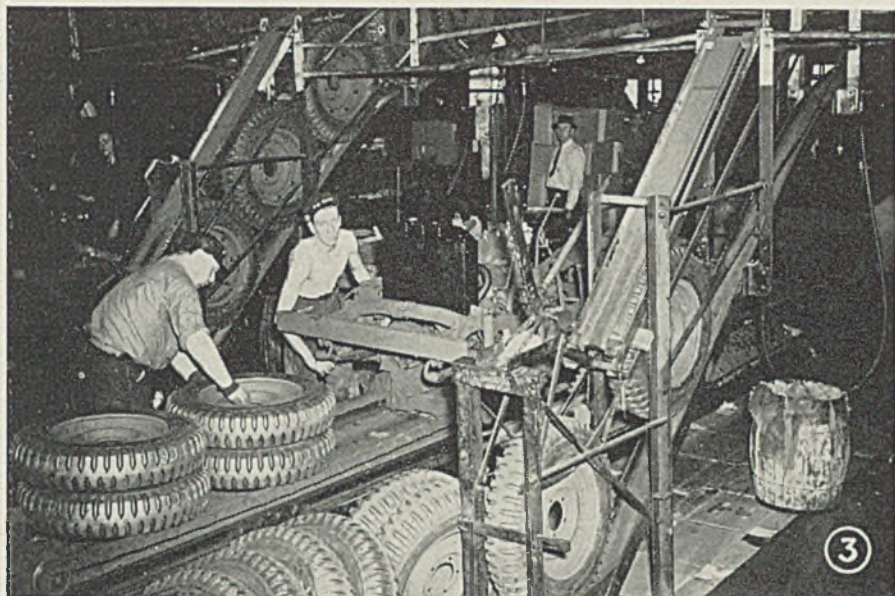
Fig. 3—Tires are placed on the assembly line to be mounted later.

Fig. 4—Body and dashboard are lowered. Girls (not shown in photo) working in crews of four or five wire lamps, tail lights and dashboard.

Fig. 5—Even the packing and crating department moves on an assembly line system. Wheels and windshields are removed and carefully packed before shipping. NEA photos







## Sponge Iron for Scrap?

(Concluded from Page 44)

one has ever proved its worth commercially. For a summary of this development, the senate committee members might consult *STEEL* for April 10, 1939, and they would learn why the charges are little short of ridiculous.

One of the leading steel companies years ago spent an estimated \$4,000,000 on a sponge iron process involving the use of gas-fired rotary kilns. The entire project proved unsuccessful and was written off as a total loss.

Over the years scores of inventors, chemists, metallurgists and plain day-dreamers have attempted to promote various methods for reducing iron ores directly to sponge iron. Many of their projects looked promising in the laboratory or pilot plant stages, but practical difficulties always interfered with the profitable commercial application of their ideas.

Only recently a plant supposedly has been under construction by the Madaras Steel Corp. in Longview, Tex., to reduce East Texas ores by a direct process, using natural gas fuel, but so far as is known the project has never materialized commercially. Proponent of the process, Julius D. Madaras, formerly had an office in Detroit, but it is now closed, Mr. Madaras apparently now being located in Texas.

## Murray Again Sharp in His Criticism of Steel Industry

Philip Murray, head of the CIO and its United Steelworkers of America, unloosed another verbal barrage at the steel companies last week before the WPB's Labor Production Division.

He accused them of letting "inefficiency and greed" delay the tank and shipbuilding programs. Production of steel plates for ships, he charged, is 23 per cent behind the needs because the big corporations are more interested in the sheet and finishing tin plate business, "which could be distributed to small companies now facing bankruptcy."

Hinting at a government investigation, Murray said: "It is not the present purpose of the United Steelworkers of America to assay the underlying motives of men responsible for these inexcusable steel bottlenecks—that will soon be done before the appropriate branch of the federal government."

Production of airplane parts from plastic bonded plywood soon will be added to the war production program of H. J. Heinz Co., (57 Varieties), Pittsburgh.



# Depleted Warehouse Stocks Cause Slowing War Material Production

UNLESS the steel warehouses are placed in a better position in regard to inventory replenishment, war production lines will begin to bog down in the near future.

This statement is based on a canvass among producers of key ordnance items, conducted last week by STEEL.

Those questioned are important manufacturers of aircraft parts, aerial cameras, tanks, tank controls, gun carriages, recoil mechanisms, machine tools and other items covered by highest priorities.

They report that warehouse stocks now are badly depleted and continue to be drained off at a rapid rate. So far most of these consumers have been able to get necessary materials, or substitutes for them, although it has been "nip and tuck." In many instances they have had to reach out to warehouses in cities hundreds of miles away to find urgently needed steel.

Some of these consumers say that these procurement difficulties already have caused serious delays in ordnance production. Nearly all say they fear drastic shutdowns will take place if the situation grows any worse—and at the present rate of warehouse inventory depletion such shutdowns seem just around the corner.

"Up to recently we were having difficulty in obtaining about half a dozen items that we get from our warehouse sources," says an Ohio machine tool builder. "These items include mainly rounds, flats, squares and hexagon bars in different sizes. Today we are having difficulty in obtaining some 50 to 75 items and we must exercise unusual and costly expedients to keep our production going. We think nothing of turning down an 8-inch round to get a 6-inch round when we need the latter and cannot locate it in a warehouse. We frequently mill a round to get a flat—and there certainly is no milling capacity to spare for such an operation."

## Must Split Orders

Another Ohio machine tool builder adds the following: "Where we used to give a warehouse an order, say, for quantities of a dozen items, we now have to split the order among, say, four to six different warehouses, depending on which of them have the items we want. In the past couple of months we have obtained steel bars and bar sections from warehouses in Cleveland, New York, Cincinnati, Buffalo, Pittsburgh, Detroit, Indianapolis and St.

Louis. An immense amount of telephone and paper work is necessary, particularly because a Chicago warehouse, naturally, would prefer to keep its goods for regular customers rather than ship them to an occasional buyer in Ohio. By turning down large rounds, or by milling to needed shapes, or even by having forge shops make bars for us which we cannot get from the warehouses in rolled form, we so far have gotten by with only occasional delays in production, even though these expedients have increased our costs."

## 100 Items Difficult To Obtain

A manufacturer of a highly important ordnance item being made in large quantities has this to say: "The items of steel that we require and which we either cannot get or are having trouble in getting number about 100. If there is no improvement in the present distribution setup we are faced with an early shutdown. . . .

"Our troubles are of several varieties. The major one is the extent to which stocks are being drained out of iron and steel warehouses. One reason for this is that warehouses cannot order a restock on a high priority rating until they actually ship the tonnage involved, which often means, under today's conditions, four to twenty weeks will elapse before they will get shipment from the mills. This precludes a warehouse from anticipating the war requirements of its customers. The situation is further aggravated because ratings of A-1-a must be extended for prompt stock replacements, but the warehouse is required to fill order with ratings as low as A-10. Under present mill conditions, the warehouse rating of A-1-k is wholly ineffective.

"Another is that all seamless tubing coming from the mills comes under allocations for aircraft, so that we cannot have any seamless tubing for our product despite the fact the specification stipulates seamless tubing. We have managed to get by up to now but unless we can get seamless tubing we will have to discontinue production; the alternative is that we be permitted to substitute welded for seamless tubing—and we do not yet have any such authorization or any indication that it will be given.

"Ordnance inspection also is a headache in certain respects. For example, we had some steel rejected because it ran 85,000 pounds tensile strength instead of 55,000 pounds as

specified. We did not believe this extra tensile strength would do any harm but were overruled. What is involved here is the need for information from our warehouse suppliers that they have not had to give us heretofore. They have to give us chemical analyses of the steel they are delivering to us, also physicals, so that we may be certain the material will meet the government specifications."

A contractor who is producing a vitally important accessory for the air forces requires hot strip, cold drawn bars, seamless tubing and aluminum, brass, bronze and stainless steel sheet. "As far as we are concerned the warehouse situation is extremely bad and it has been necessary for us to send out expeditors to locate material we need," says this manufacturer. "It now has gotten to a point where warehouse stocks mean very little to us because they just do not exist in a number of items. Our latest contract from the government calls for delivery by September and we now are quite certain we are going to be unable to make this date for the reason we cannot get the necessary materials out of warehouse stocks. We are trying to work the problem out through substitutions and do not know yet what the outcome will be."

Contractors working for the Army Air Corps also report serious trouble. One who is heavily engaged on tooling for the Air Corps needed a fair quantity of 2½-inch hot-rolled SAE 1020 rounds. The best he could do was get 25/16-inch rounds and turn them down in a lathe. He now needs a small quantity of 1-inch round alloy bars to be delivered in final manufactured form early in August and so far he has been unable to locate them in any warehouse, even though they are for the Air Corps, and the best delivery quoted him by a mill is next January.

## Operators Can't Make Profit

A number of war contractors report a bad situation in warehouse bar flats. Even the stocks of standard sizes now are badly depleted and are being further depleted at a rapid rate. They report that warehouses are entirely out of 70 per cent of the bar sizes normally carried.

"There is another way in which the seriousness of the warehouse situation is being reflected," remarked an important government contractor in Cleveland. "Two friends of mine who used to prosper in the warehouse business have left their jobs for other employment. The reason was that the volume being handled by their employers had shrunk so much that their compensation was approaching the vanishing point."



# Peak Output Only Goal, Says Inland, Charged with Scrap Price Violation

## CHICAGO

ANY violation of OPA regulations with which Inland Steel Co. may be charged could have resulted only from the company's single goal of maintaining peak production for victory, a company official indicated in a statement here last week.

Referring to a petition for a temporary injunction filed by OPA in United States district court and charging the company with paying higher than ceiling prices for iron and steel scrap in violation of Price Schedule No. 4, Leigh B. Block, vice president, declared:

"The company has been purchasing each month approximately 100,000 tons of scrap, or about 2000 carloads. As a general thing there are no two cars of scrap shipped which are identical due to the fact that scrap by its very nature as offal, varies greatly in shape and form and, under the circumstances, a carload of scrap might contain some material which did not conform to OPA specifications.

"There have been a number of revisions and amendments in the regulations for the scrap schedule under a law which is comparatively new, and, in consequence, it is only natural that there would be many different interpretations by the large number of people affected by the changes. After a period, however, when all concerned by such rules and regulations become familiar with them, infractions are practically eliminated.

"We have not yet been served with the complaint and therefore have no particulars of the violations with which we are charged, but when some weeks ago the OPA came to us and objected to some of our practices, we at once changed them to suit their wishes. We feel certain that the complaint cannot be based upon any occurrences subsequent to that time.

"The primary object of this company is to make as much steel as possible to fulfill demands from the War Production Board. Inland's total output is going for war purposes, all orders scheduled carrying the highest rating and, therefore, the company is concerned with maintaining maximum production.

"The company is using all the pig iron it can make but, nevertheless, requires approximately 50 per cent scrap in its charge for the production of steel. The scrap shortage throughout 1942 has been a constant threat to steel production and notwithstanding the strenuous efforts that have been made to keep

supplied, the company's inventory of scrap has steadily been reduced.

"Due to the shortage of scrap at our plant at this time, the company has been obliged to reduce operations by taking off three of its open-hearth furnaces. While we understand that the flow of scrap at other plants has been adversely affected where similar court actions have taken place, nevertheless, we hope that with the allocations granted us by the War Production Board we will shortly be able to resume capacity operations."

## Miscellaneous Collections Diminish; Dealers Threatened

### PITTSBURGH

Miscellaneous scrap collections have slowed to a point where collectors and small dealers are facing a serious situation. One reason is that miscellaneous scrap, from homes, farms and other sources, is non-recurring. Once collected, it's gone. The other cause is closer inspection and greater penalties for shipment of off-grade material.

Public scrap drives and constant collection by junk dealers have cleaned up a larger portion of available material. People are saving and repairing rather than junking household equipment. This in itself eliminates much potential scrap.

The tighter regulations also have contributed to the junk collector's difficulty as dealer buying prices for miscellaneous scrap have declined. If a car is rejected, it automatically drops a full grade, which amounts to about \$4 per ton, instead of being adjusted by negotiation as before.

Result of this is that the farmer, housewife, or whoever else is selling the scrap does not get enough to pay for collecting it.

## Metals Reserve Co. Buys Abandoned Railroad Track

War Production Board has asked 102 New Jersey municipalities for quick clearance of a government track removal project to recover more than 60,000 tons of abandoned rails embedded in city streets. A total of 616 miles of such rails in 11 counties has been transferred by Public Service Co-ordinated Transport, Newark, to the Metals Reserve Co. Cost of removal and repaving will be met by the government. Metals Reserve Co. will sell the rails to steel mills.

Avondale branch of the Baltimore

& Ohio railroad, in Delaware county, Pennsylvania, is being stripped of rails, about 500 tons. This is one of the oldest lines in the United States. Usable relayers are being reclaimed and the remainder sold for scrap. Recently the New York, Westchester & Boston railway was dismantled (STEEL, May 25, p. 65) to reclaim some 15,000 tons of scrap from rails and other equipment.

## Michigan Farmers Gather 1,633,220 Pounds of Metal

### DETROIT

Farmers in 27 Michigan counties have gathered 1,633,220 pounds of scrap metal and 146,583 pounds of scrap rubber from homes, barns and farmyards and turned it over to the war production program during the past month.

These figures were released last week by the War Production Board's Bureau of Industrial Conservation and the Michigan Works Progress Administration, which have collaborated. The rural scrap drive has been active thus far in only 27 counties. It will be extended to 30 more counties in the state by July 30.

## Consumption in May Sets New High Record

More iron and steel scrap was consumed in May in the manufacture of iron and steel than in any other month in history, according to the Institute of Scrap Iron and Steel Inc. It estimates the amount as 4,857,000 gross tons, compared with 4,840,000 tons in March, the former record. April was third highest, 4,672,000 tons.

In the first five months this year 23,235,000 tons was consumed, a record for the period, in contrast with 22,127,000 tons in the comparable portion of 1941.

The five months melt this year exceeded consumption in all 1938 and was two and one-half times tonnage consumed in 1932.

## Aluminum Scrap Collection Results Termed Disappointing

Collections in the aluminum scrap campaign conducted by the Office of Civilian Defense in July, 1941, resulted in 11,173,979 pounds of aluminum and other scrap, according to a report issued last week by WPB's Bureau of Industrial Conservation.

"Actual results of the collection campaign were disappointing when measured against the expected performance," a BIC statement said. "It was hoped that around 15,000,000 pounds of aluminum would be collected. Actually, only 6,398,051 pounds or 57.4 per cent of the total scrap collected was in the form of aluminum."



# Government Orders Construction of Sixteen Great Lakes Iron Ore Carriers, With Service Details To Be Determined

◆

**Keels laid for some units of \$32,000,000 fleet . . . Established companies likely to operate boats, to be completed early in 1943 . . . Proposal for purchase agreement set aside . . . War-born expansion in total of 21 new vessels**

◆

KEELS for several of the 16 Great Lakes iron ore carriers awarded this year to builders by the Maritime Commission are reported to have been laid, and a few of the vessels may be launched and actually in service late this year.

Great Lakes Engineering Co., Detroit, has orders for ten; American Shipbuilding Co., Cleveland, for six. All are to be completed and in commission some time in 1943. They are to be standard 600-foot boats, 12,000 tons carrying capacity. Total cost will be approximately \$32,000,000.

The commission awarded the boats directly to the builders, and there has been no arrangement so far as to who will operate them, although it is expected they will be handled by some of the long-established companies.

A program originally proposed called for sale of the ships, upon completion, to vessel operators, with the option of trading in some of their older and smaller vessels as provided for ocean vessels in the Merchant Marine Act of 1936, as amended. However, this deal was not completed, one stumbling block being the cost of these new vessels, estimated at \$2,000,000 each, or about twice as much as similar vessels now in operation.

The average length of service of the boats now in the Great Lakes iron ore fleet is 32 years. It is expected that at the close of the war the oldest vessels will be scrapped, and the new government boats will be sold to private interests at terms then to be negotiated.

The greatest mass production of bulk carriers on the lakes will soon be under way. From 1929 up to

1937 there was no construction of such vessels. Then the United States Steel Corp.'s subsidiary—Pittsburgh Steamship Co.—built four; and these have been followed by five launched for the company in recent months. The first of these five actually to see service was loaded a few days ago, taking on 16,500 tons of ore—not a record for one boat—but a very large tonnage.

These five boats, plus the Maritime Commission's 16, make 21 on which work has been or will be in progress in the course of two years.

## Alterations in Fleet

War's requirements have wrought startling changes in the character and even in the appearance of the fleet plying the Great Lakes, since every available vessel, from converted automobile carrier to grain boat, has been put to the task of moving to lower lake docks what may become the all-time record tonnage of ore, estimated variously at 85,000,000 to 90,000,000 tons.

This challenge to augment by 10

per cent the great achievement of 1941 has been met as an opportunity by vessel owners, by lakeside shipyards and by mine operators, all of whose functions have been geared to the machinery set up by the government for greater development of vital raw materials and control of their movement and ultimate distribution. The progress in mining development is being matched by efficient operation of ore fleets, by utilization of maximum cargo space and by redoubled efforts to complete new ships on schedule. If fair weather holds through fall, there is likely to be an epic chapter added to the history of the iron ore trade.

Vicissitudes of war have cut off the several million tons of iron ore formerly supplied central eastern seaboard furnaces by South American mines. The mills now look to the lake region.

Recognizing the necessity of coordinating operations of all lake carriers, the Office of Defense Transportation went into action recently by ordering under its control nearly 3,000,000 tons of Great Lakes shipping facilities representing about 430 vessels, and including 297 ore carriers. A. T. Wood, director of the ODT Great Lakes office, was authorized to determine ore-carrying capabilities of each vessel. Ships outside the ore trade were ordered to refuse grain cargoes without special permission; those found to be of possible use for ore were to be adapted. While it was admitted that Lake Superior coal docks must not be permitted to go into the winter without adequate coal—the upper lake region takes about 9,000,000 tons annually—coal loadings to other lakes were rearranged to allow for the handling of at least an additional 2,000,000 tons of ore.

Six automobile transports belonging to Nicholson Universal Steamship Co., Detroit, have been converted into ore carriers and five of these vessels, of 33,200 tons total capacity, are now in commission. The sixth, of 6000 tons, will be ready for service soon.

A large part of the Canadian fleet of 53 ships has been employed on American contracts and is expected to account for the movement of about 2,000,000 tons before the season ends.

Up to June 1, a total of 21,204,656 gross tons of ore had been handled, an increase of 3,278,303 over the comparable 1941 period. Making up this greater tonnage was some contribution from reopened mines in the Iron River district of Michigan and others in southeastern Minnesota. The whole Lake Superior region, which last year furnished 81 per cent of the total output of American iron ore, is in a war-born era of exploration, development and production.

## Reprints of Flag Cover Available

ADDITIONAL copies of this week's front cover of STEEL, featuring the American flag, are available to subscribers. Send requests to STEEL, Reader Service Department, Penton Building, Cleveland, O.





STEEL plants celebrate the Fourth this year working at top speed—"going like blazes", as a plant manager said when asked about this week's schedules. Since Pearl Harbor, seven months ago, a steady succession of new production records have been reported for pig iron, steel ingots and finished steel products, especially plates, the composite result being an achievement unparalleled in steel history

## 85,000,000 Tons of Steel This Year If Second-Half Duplicates the First

STEEL ingot production for the first six months of 1942 apparently totals more than 42,500,000 net tons.

Output in the first five months was officially reported as 35,548,092 tons. An estimate for June based on STEEL's weekly operating average is 7,152,000 tons. It is expected that when actual figures for June are compiled this week, the six-months total will be approximately 42,700,000 tons, or 1,831,796 more than in the comparable period of 1941.

At the half-way mark, and with industry operating close to capacity, steelmen will not venture to forecast—without qualifications—what the record for the full year will be.

The chief uncertainty is the problem of scrap—how much still is available, and how much will be collected. There seems to be a disposition to anticipate a lower scrap tonnage in the last six months this year than in the first six months, as

the most easily obtained supplies are taken first. The amount remaining however, is conceded to be very large, and drives probably will be intensified. Additional pig iron capacity will be available in the last half.

The consensus at this time is that steel ingot output this year will not be less than the 82,836,000 tons made in 1941—and may be substantially more. "Liberal" estimates stop at 85,000,000 tons.

In the past six months there has been an outpouring of steel the like of which this country never saw before. It overtops any full-year output from the beginning of records in 1887 until 1916. In only 14 years of the 26 from 1916 to the present did a full-year output exceed that of these last six months.

In contrast with the 42,700,000 tons are the following figures showing full-year tonnages during the

United States participation in World War I; also, in the depression and recovery periods of the 30's:

Year	Net tons	Year	Net tons
1916....	47,906,522	1935....	38,183,705
1917....	50,467,880	1936....	53,499,999
1918....	49,797,923	1937....	56,636,945
1931....	29,058,961	1938....	31,751,990
1932....	15,322,901	1939....	52,798,714
1933....	26,020,229	1940....	66,982,686
1934....	29,181,924	1941....	82,836,946

A practical interpretation of the industry's achievement in the six months of 1942 was given recently by Walter S. Tower, president, American Iron and Steel Institute, when he said:

"The United States alone has been producing each month about as much steel as Japan probably is able to produce in a year. The industry can make every six days as much as Italy can make in six months, and it is producing at nearly three times the probable rate of all the European industry which is under German control or is available to Germany. To put it another way, the United States alone has double the critical material strength, measured in tons of steel, that is now possessed by all enemy countries."



# War Program Causes Sharp Shifts In 1941 Distribution of Steel

STEEL shipments for war purposes during 1941 have been consolidated into various industry classifications in the American Iron and Steel Institute's analysis of the distribution of a record-breaking production of 62,484,162 tons.

Figures on war consumption were withheld for military reasons. Similarly, shipments for export, which in 1940 represented the largest single outlet for steel, were not published separately for 1941.

The survey shows, however, that consumption of steel for shipbuilding in 1941 was nearly 200 per cent greater than in 1940. Last year shipbuilders received 2,733,413 tons, or 4.4 per cent of the total shipped

to all classes of consumers. In 1940, approximately 940,000 tons were used by shipbuilders, or 2 per cent of that year's lower production.

Jobbers, dealers and distributors were the largest single buying group last year, taking 9,200,000 tons, or 14.7 per cent of the total. In 1940, the warehouse group distributed 6,686,534 tons, 14.6 of that year's total output.

The building industry, under the impetus of erecting many huge new war plants, used 8,127,889 tons, 13 per cent of the total. In 1940, the industry used 4,967,984 tons, about 10.8 per cent of the total.

Automotive and aircraft industries have been combined in the sur-

vey. Together they used 6,392,000 tons, 10.2 per cent of the total. In 1940, the two industries took 7,233,345 tons, 15.8 per cent of production.

Railroad and railroad car industries used 5,680,801, or 9.1 per cent. This compares with a total of 3,777,377 tons, or 8.2 per cent in the preceding year.

Shipments to the container industry amounted to 4,489,410 tons, 7.2 per cent of the total, compared with 2,985,338, about 6.5 per cent in 1940.

The agricultural market, including farm implement and equipment making, used 1,153,678 tons, 1.8 per cent, compared with 919,502 tons, or 2 per cent, in the year before.

Oil, gas and mining increased consumption from 1,132,201 to 1,985,140 tons, and from 2.5 to 3.2 percentagewise.

Pressing, forming and stamping operations showed the largest tonnage increase of any industry, from 2,159,715 to 6,321,536 tons.

Steel converting and processing industries, including manufacturers of wire products, forgings, bolts, nuts and rivets, consumed 4,797,803 tons, compared with 2,928,842 tons in 1940.

The following table presents a percentage comparison of steel shipments for 1941, 1940 and 1939; 1941 and 1940 figures are those of the institute while those for 1939 were prepared by STEEL:

	1941	1940	1939
Automotive, Aircraft	10.2	15.8	18.1 <sup>1</sup>
Construction	13.0	10.8	13.13
Railroads	9.1	8.2	9.29
Containers	7.2	6.5	9.38
Pressing, Forming,			
Stamping	10.1	4.7	3.61 <sup>2</sup>
Machinery	4.6	4.1	3.79
Oil, gas, mining	3.2	2.5	5.48 <sup>3</sup>
Shipbuilding	4.4	2.0	(4)
Agriculture	1.8	2.0	1.9
Warehouses	14.7	14.6	15.64
Exports		17.7	6.53
All other	21.7 <sup>4</sup>	11.1	13.15

<sup>1</sup> Does not include aircraft. <sup>2</sup> In 1939, this figure was for furnishings for buildings and is not strictly comparable. <sup>3</sup> Includes utilities. <sup>4</sup> Included in "all other". <sup>5</sup> Includes exports.

## Pig Iron Expansion To Total 7,795,000 Tons

Blast furnace expansion program now under way will increase pig iron capacity by 3,372,000 net tons by the end of 1942, and an additional 4,423,000 tons by July 1, 1943, a total of 7,795,000 tons.

This includes 20 stacks of which one has just been placed in production. Five of these furnaces are in the Far West, 12 at inland points, two in the South, and one on the eastern seaboard.

The remainder of the original planned expansion program has been postponed.

United States pyrites production in 1941 reached a new record, 659,498 gross tons, valued at \$2,035,000, a 5 per cent increase over 626,640 tons, valued at \$1,920,000, in 1940, according to the Bureau of Mines.

## Steel Consumption by Industries—1941 and 1940

	Net Tons	
	1940	1941
<b>Steel Converting and Processing Industries</b>		
Wire drawers and wire product manufacturers	503,694	535,741
Bolt, nut, and rivet manufacturers	707,958	1,160,767
Forging manufacturers	574,478	1,144,442
All other steel plants and foundries	1,142,712	1,956,853
<b>Total</b>	<b>2,928,842</b>	<b>4,797,803</b>
<b>Jobbers, Dealers and Distributors</b>		
Oil and natural gas industry	653,936	1,018,371
All other	6,032,598	3,181,440
<b>Total</b>	<b>6,686,534</b>	<b>9,199,811</b>
<b>Construction Industry</b>		
Public (municipal, state, national)		518,555
Highways		708,613
Railways		102,494
Automotive and aircraft		406,463
Utilities		515,003
Building trim, accessories and builders' hardware		1,020,109
All other		4,356,552
<b>Total</b>	<b>4,967,984</b>	<b>8,127,889</b>
<b>Shipbuilding Industry</b>	<b>940,124</b>	<b>2,733,413</b>
<b>Pressing, Forming and Stamping Industry</b>		
Metal furniture and office equipment	470,373	676,944
Hardware and household equipment	949,855	1,746,810
All other	739,487	3,897,782
<b>Total</b>	<b>2,159,715</b>	<b>6,321,536</b>
<b>Container Industry</b>		
Oil and natural gas industry		437,367
All other		4,052,043
<b>Total</b>	<b>2,985,338</b>	<b>4,489,410</b>
<b>Agricultural, Including Implement and Equipment Manufacturers</b>	<b>919,502</b>	<b>1,153,678</b>
<b>Machinery and Tools</b>		
Machinery and tools, excluding electrical equipment	1,108,463	1,569,712
Electrical machinery and equipment	776,945	1,301,275
<b>Total</b>	<b>1,885,408</b>	<b>2,870,987</b>
<b>Automotive and Aircraft Industry</b>	<b>7,233,345</b>	<b>6,392,202</b>
<b>Railroad Industry</b>		
All railroads	2,575,181	3,533,566
Car and locomotive builders and parts manufacturers	1,202,196	2,146,335
<b>Total</b>	<b>3,777,377</b>	<b>5,680,801</b>
<b>Oil, Natural Gas and Mining Industry</b>		
Oil and natural gas, including pipe lines	990,876	1,735,983
Mining, quarrying and lumbering	141,325	249,157
<b>Total</b>	<b>1,132,201</b>	<b>1,985,140</b>
<b>Miscellaneous Industries and Export</b>	<b>10,234,455</b>	<b>8,731,492</b>
<b>GRAND TOTAL</b>	<b>45,850,825</b>	<b>62,484,162</b>



## War Goods Production Gaining Momentum

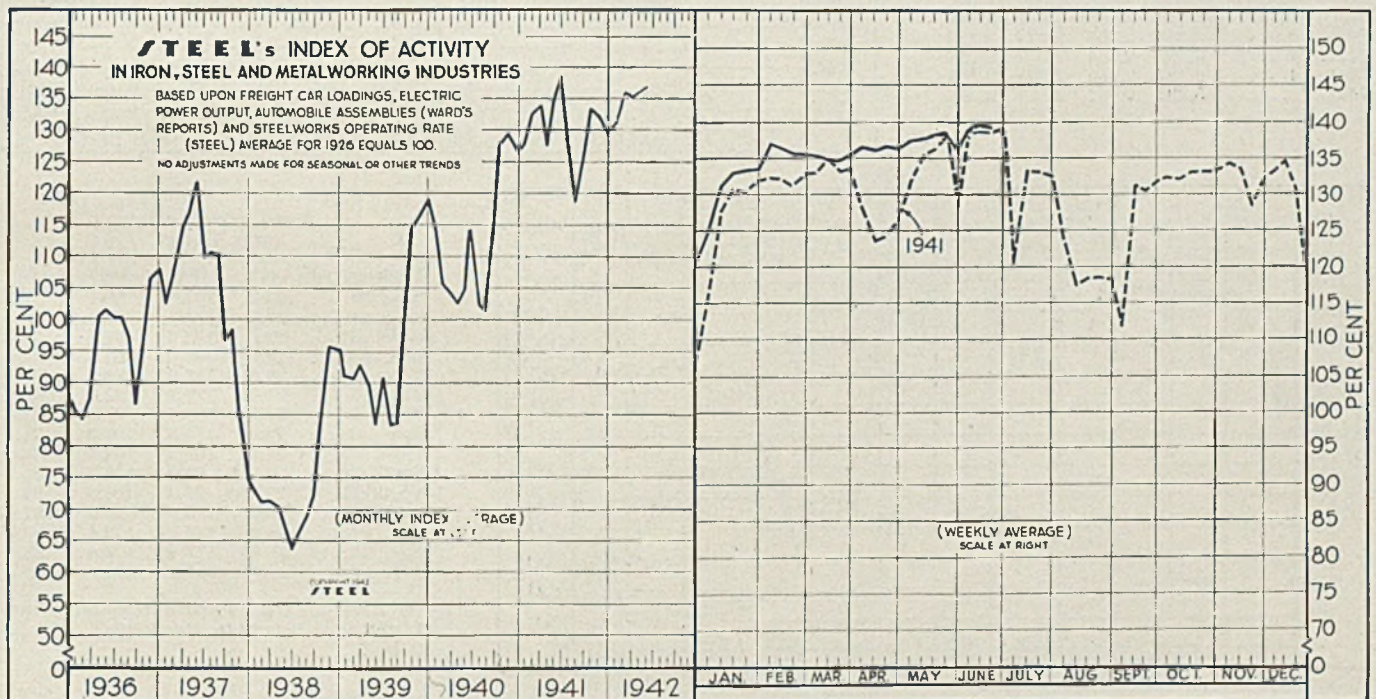
CONVERSION of the industrial system to output of military goods has made marked progress in the brief period we have been officially at war. It is thought by some that by the end of the third quarter of this year the greater part of the conversion job now believed necessary will have been accomplished.

STEEL's index was off slightly during the week ended June 20 to 139.3, compared with 139.5 in the preceding period and 138.7 recorded in the corresponding week a year ago.

In the period ended June 20 steelmaking operations held steady at the 99 per cent pace for the fifth consecutive week. Steel scrap is moving in sufficient volume to sustain capacity operations. Necessary repairs to open-hearth furnaces has been the chief factor in keeping steel output below the capacity rate.

Revenue freight carloadings turned slightly upward during the latest period, totaling 844,913 cars. This compares with 832,726 in the preceding week, but is below the 885,558 cars loaded in the corresponding period last year. More efficient handling is an important factor in present carloading figures. While about 40,000 fewer cars were moved in the week ended June 20, 1942 than in the corresponding week a year ago, the tonnage of freight carried probably was greater.

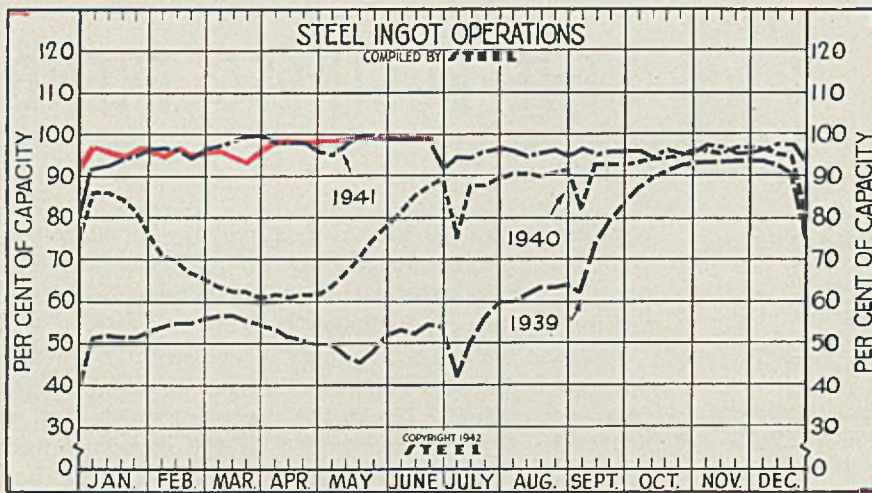
Electric power consumption in the week of June 20 totaled 3,433,711,000 kilowatts. This is off slightly from the preceding week's volume, but represents a gain of 11.1 per cent over that consumed in the 1941 period.



STEEL's index of activity declined 0.2 point to 139.3 in the week ending June 20:

Week Ended	1942	1941	Mo. Data	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931
April 4.....	136.7	128.9	Jan.	131.3	127.3	114.7	91.1	73.3	102.9	85.9	74.2	58.8	48.6	54.6	69.1
April 11.....	136.1	123.8	Feb.	136.3	132.3	105.8	90.8	71.1	106.8	84.3	82.0	78.9	48.2	55.3	75.5
April 18.....	136.6	124.2	March	135.2	133.9	104.1	92.6	71.2	114.4	87.7	83.1	78.9	44.5	54.2	80.4
April 25.....	136.3	126.5	April	136.6	127.2	102.7	89.8	70.8	116.6	100.8	85.0	83.6	52.4	52.8	81.0
May 2.....	137.2	132.6	May	137.4	134.8	104.6	83.4	67.4	121.7	101.8	81.8	83.7	63.5	54.8	78.6
May 9.....	137.5	135.9	June	.....	138.7	114.1	90.9	63.4	109.9	100.3	77.4	80.6	70.3	51.4	72.1
May 16.....	137.9	136.1	July	.....	128.7	102.4	83.5	66.2	110.4	100.1	75.3	63.7	77.1	47.1	67.3
May 23.....	138.1	138.6	Aug.	.....	118.1	101.1	83.9	68.7	110.0	97.1	76.7	63.0	74.1	45.0	67.4
May 30.....	136.0	128.4	Sept.	.....	126.4	113.5	98.0	72.5	96.8	86.7	69.7	56.9	68.0	46.5	64.3
June 6.....	138.4	138.4	Oct.	.....	133.1	127.8	114.9	83.6	98.1	94.8	77.0	56.4	63.1	48.4	59.2
June 13.....	139.5	138.7	Nov.	.....	132.2	129.5	116.2	95.9	84.1	106.4	88.1	54.9	52.8	47.5	54.4
June 20.....	139.3	138.7	Dec.	.....	130.2	126.3	118.9	95.1	74.7	107.6	88.2	58.9	54.0	46.2	51.3





### Steel Ingot Operations

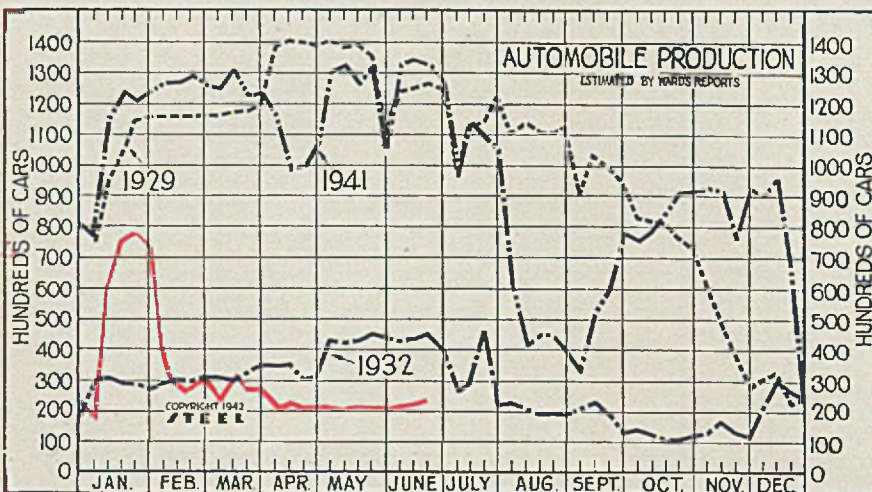
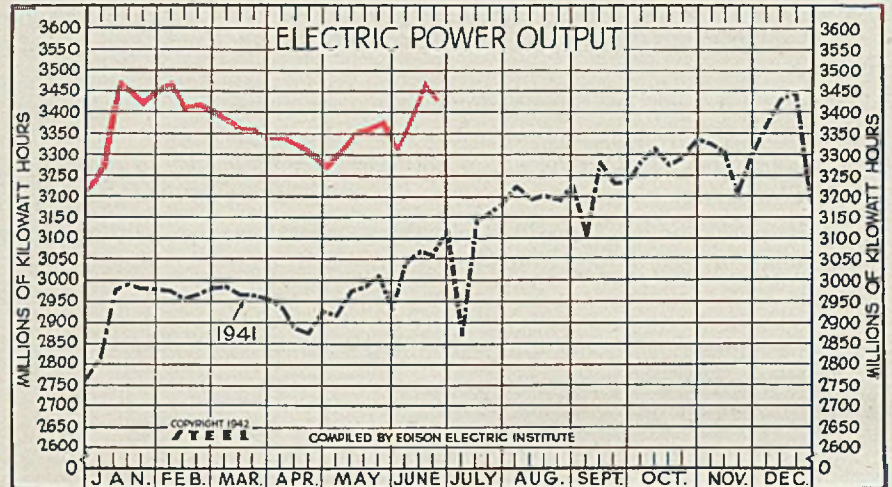
(Per Cent)

Week ended	1942	1941	1940	1939
June 20....	99.0	99.0	88.0	54.5
June 13....	99.0	99.0	86.0	52.5
June 6....	99.0	99.0	81.5	53.5
May 30....	99.0	99.0	78.5	52.0
May 23....	99.0	100.0	75.0	48.0
May 16....	99.5	99.5	70.0	45.5
May 9....	99.0	97.5	66.5	47.0
May 2....	99.0	95.0	63.5	49.0
April 25....	98.5	96.0	61.5	49.0
April 18....	98.5	98.0	61.5	50.5
April 11....	98.5	98.0	61.0	51.5
April 4....	98.0	98.0	61.5	53.5
Mar. 28....	97.5	99.5	61.0	54.5
Mar. 21....	95.5	99.5	62.5	55.5
Mar. 14....	95.5	98.5	62.5	56.5
Mar. 7....	96.5	97.5	63.5	56.5

### Electric Power Output

(Million KWH)

Week ended	1942	1941	1940	1939
June 20.....	3,434	3,056	2,654	2,362
June 13.....	3,464	3,066	2,665	2,341
June 6.....	3,372	3,042	2,599	2,329
May 30.....	3,323	2,924	2,478	2,186
May 23.....	3,380	3,012	2,589	2,778
May 16.....	3,357	2,983	2,550	2,235
May 9.....	3,351	2,975	2,516	2,239
May 2.....	3,305	2,915	2,504	2,225
April 25.....	3,299	2,926	2,499	2,244
April 18.....	3,308	2,874	2,529	2,265
April 11.....	3,321	2,882	2,530	2,235
April 4.....	3,349	2,938	2,494	2,244
Mar. 28.....	3,346	2,956	2,524	2,272
Mar. 21.....	3,357	2,964	2,508	2,258
Mar. 14.....	3,357	2,965	2,550	2,276
Mar. 7.....	3,392	2,987	2,553	2,285



### Auto Production

(1000 Units)

Week ended	1942	1941	1940	1939
June 20....	23.2	133.6	90.1	81.1
June 13....	22.3	134.7	93.6	78.3
June 6....	22.0	133.6	95.6	65.3
May 30....	21.5	106.4	61.3	32.4
May 23....	21.6	133.6	96.8	67.7
May 16....	21.8	127.3	99.0	80.1
May 9....	21.5	132.6	98.5	72.4
May 2....	22.0	130.6	99.3	71.4
April 25....	21.9	108.2	101.4	86.6
April 18....	21.7	99.9	103.7	90.3
April 11....	23.0	99.3	101.9	88.1
April 4....	22.3	116.3	101.7	87.0
Mar. 28....	28.9	124.2	103.4	86.0
Mar. 21....	28.9	123.8	103.4	89.4
Mar. 14....	30.6	131.6	105.7	86.7

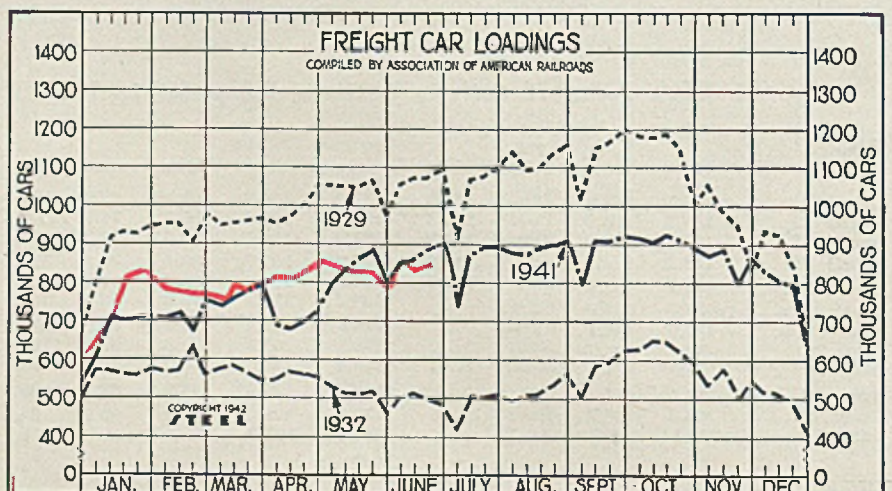
†Canadian trucks and automobiles and United States trucks, since week of Feb. 21 last.

### Freight Car Loadings

(1000 Cars)

Week ended	1942	1941	1940	1939
June 20.....	840†	886	728	643
June 13.....	833	863	712	638
June 6.....	855	853	703	635
May 30.....	796	802	639	568
May 23.....	838	866	687	628
May 16.....	839	861	679	616
May 9.....	839	837	681	555
May 2.....	859	794	666	573
April 25.....	855	722	645	586
April 18.....	847	709	628	559
April 11.....	814	680	619	548
April 4.....	829	683	603	535
Mar. 28.....	805	792	628	604
Mar. 21.....	797	769	620	605

†Preliminary.

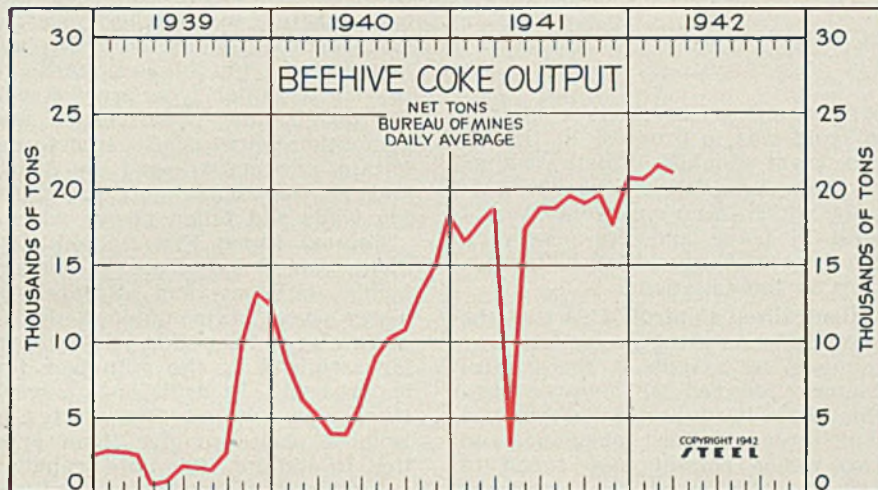
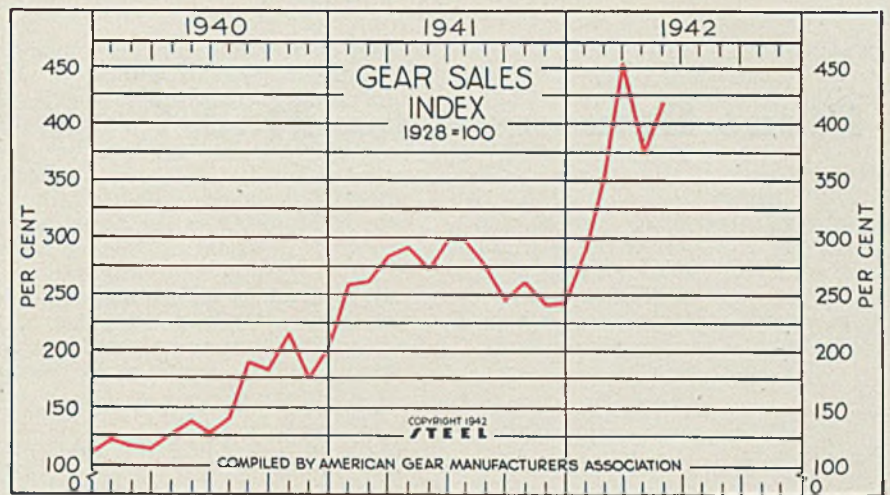




### Gear Sales Index

(1928 = 100)

	1942	1941	1940	1939	1938
Jan.	288	259	123	91.0	93.0
Feb.	353	262	116	86.0	77.0
Mar.	455	288	114	104.0	91.0
April	378	292	128	88.0	74.0
May	421	273	133	93.0	70.0
June	...	299	129	90.0	58.0
July	...	298	141	89.0	67.0
Aug.	...	276	191	96.0	76.5
Sept.	...	243	183	126.0	80.5
Oct.	...	261	216	141.0	72.5
Nov.	...	241	173	126.0	72.0
Dec.	...	243	208	111.0	81.0
Ave.	...	269.6	155.0	103.0	76.0



### Beehive Coke Output

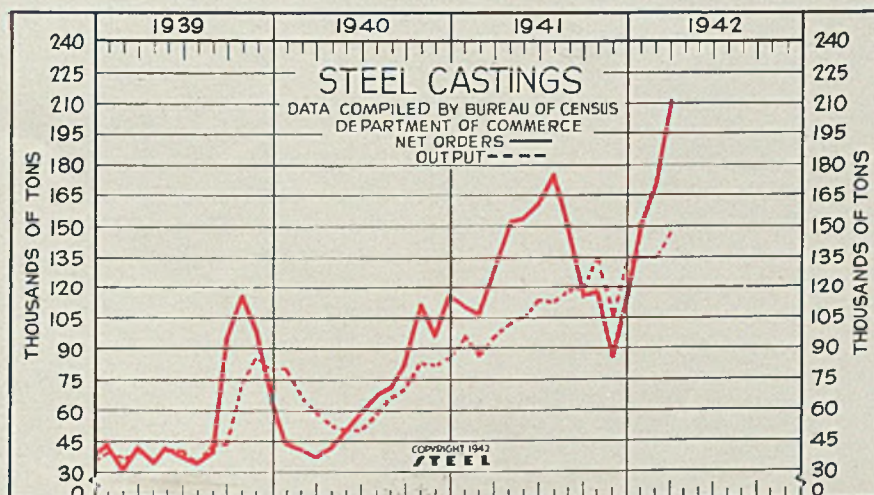
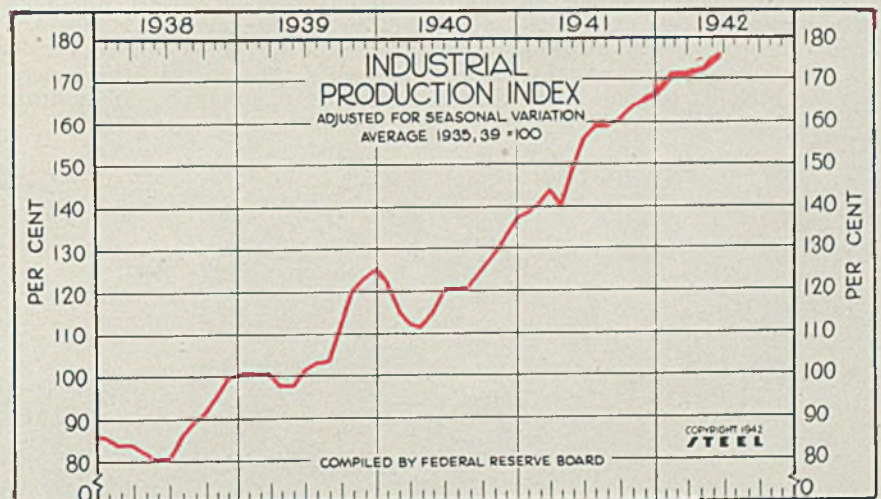
(Daily Average)

	1942	1941	1940	1939
Jan.	20,874	16,581	8,826	2,973
Feb.	21,771	17,729	6,212	2,954
March	21,032	18,890	5,196	2,544
April	...	3,100	3,938	796
May	...	17,458	3,930	919
June	...	18,803	6,036	1,992
July	...	18,655	8,877	1,852
Aug.	...	19,697	10,293	1,633
Sept.	...	19,133	10,872	2,892
Oct.	...	19,768	13,441	9,831
Nov.	...	17,727	15,138	13,315
Dec.	...	20,968	18,516	12,544
Total	...	17,402	9,256	4,498

### Industrial Production Federal Reserve Board's Index

(1935-39 = 100)

	1942	1941	1940	1939	1938
Jan.	171	139	122	102	86
Feb.	172	141	116	101	84
March	172	143	112	101	84
April	173	140	111	97	82
May	176	150	115	97	80
June	...	157	121	102	81
July	...	160	121	104	86
Aug.	...	160	121	104	90
Oct.	...	163	129	121	95
Nov.	...	168	133	124	100
Dec.	...	167	138	126	101
Year Ave	...	154	122	108	88



### Steel Castings

—Net Orders— —Production—

	1942	1941	1942	1941
Jan.	150,551	110,579	134,778	94,409
Feb.	179,880	105,125	133,726	84,492
Mar.	211,081	126,140	146,507	95,185
Apr.	...	152,007	...	101,977
May	...	153,143	...	104,971
June	...	161,512	...	113,988
July	...	175,892	...	112,364
Aug.	...	147,316	...	117,703
Sept.	...	115,066	...	118,543
Oct.	...	117,516	...	135,272
Nov.	...	84,534	...	104,605
Dec.	...	113,034	...	131,518
Total	...	1,561,864	...	1,316,027



## Plant Demonstrates Model

# Industrial ARP System

**V**OLUNTEER air raid vigilantes at the Westinghouse Electric & Mfg. Co.'s East Pittsburgh works recently snuffed out incendiary bombs, bandaged imaginary wounds and demonstrated how fellow workers in this war production plant will be protected if enemy planes pierce their way to Pittsburgh. The same protection system is in effect at Westinghouse's 25 manufacturing and 35 repair plants throughout the nation.

Because it is regarded as an excellent example of the type of effective air raid precautions that should be taken in every industrial plant, the system is detailed here.

In the recent test, the ringing of a telephone in a sand-bagged control center set in motion the alarm

system announcing that a similar air raid was in progress at the 77-acre plant grounds. Whistles sounded their eerie "alert" and "danger" calls, which in an emergency would send 14 plane and fire observers, 174 fire watchers and 188 plant wardens to their stations.

**Centralized Control:** Heart of the Westinghouse plant protection communications system is the control center. Manned 24 hours a day, this alarm headquarters is equipped with three "outside" telephones and two radios continuously tuned to pick up police short wave messages and regular broadcast warnings of approaching enemy bombers. In case of air raids, messengers will stand ready to relay the orders on foot if telephone communications

are bombed out of action.

On call for emergency duty are 450 men and women trained and equipped to administer first aid, carry victims on stretchers, operate emergency hospitals on the plant grounds and put on gas masks to remove workmen from areas struck by gas bombs. The rescue and demolition squad is prepared to extricate persons trapped in debris and remove such dangers as collapsing walls and fallen power wires.

**Combat Fires:** Fire fighters—225 men trained to battle incendiary bombs, oil fires, and all types of blazes—have been equipped, drilled and assigned to specific jobs as regular members of the volunteer fire department. In drills once a week these men put out fires started in isolated places to give them practice. In addition, 400 more employees volunteered to serve as auxiliary firemen and are receiving special training. And for further protection, 37 tons of sand, buckets, long handled shovels and 20-pound sand bags have been distributed to 300





strategic locations throughout the plant.

The system under which firemen are summoned to blazes provides constant fire protection in all sections of the plant. A central station fire brigade answers all calls, working with the firemen in the affected zone. In addition, other brigades stand by at designated posts to extinguish flames that might be started simultaneously by saboteurs.

**Protection Against Sabotage:** On guard against saboteurs and other

intruders are 190 policemen, high-wire fences and 101 searchlights. To enter any Westinghouse plant, employees must present both passes and badges bearing their photographs.

Unlike saboteurs who strike without warning, air raids would be preceded by advance alarms. If enemy aircraft succeed in getting to within 100 miles, or 20 minutes' flying time of Pittsburgh, the regional information center will notify the Pittsburgh control center by tele-

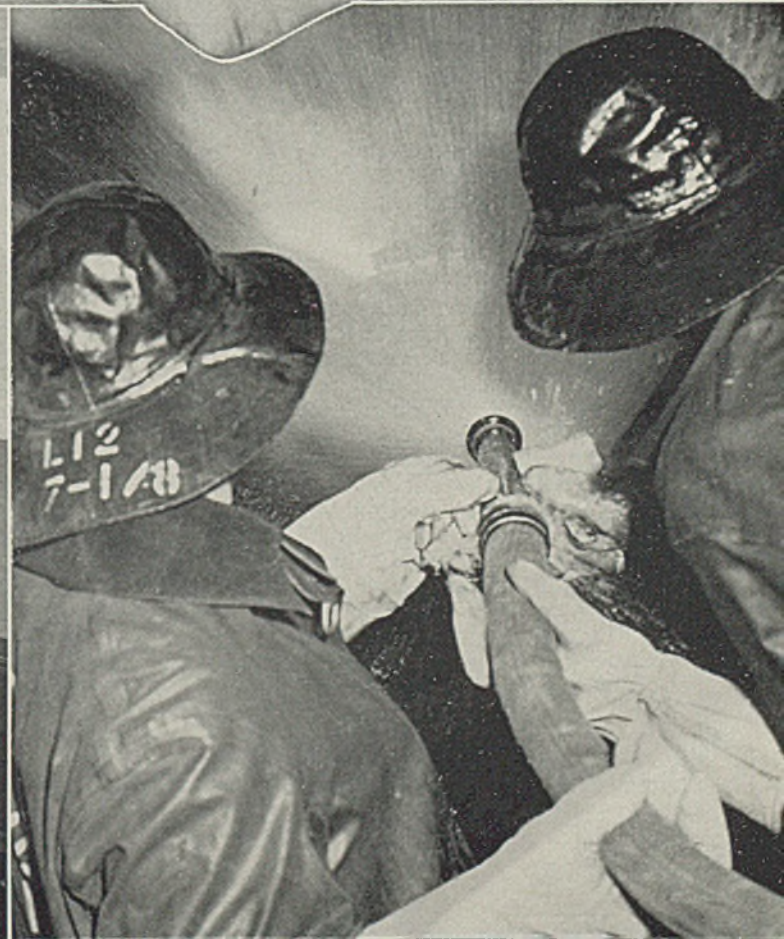
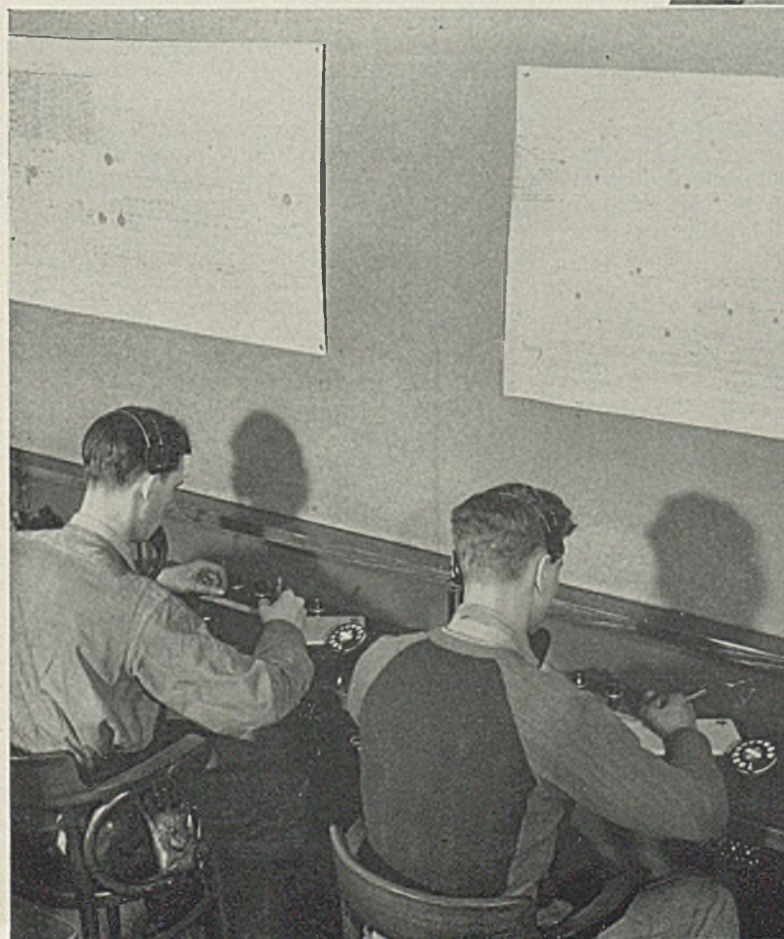
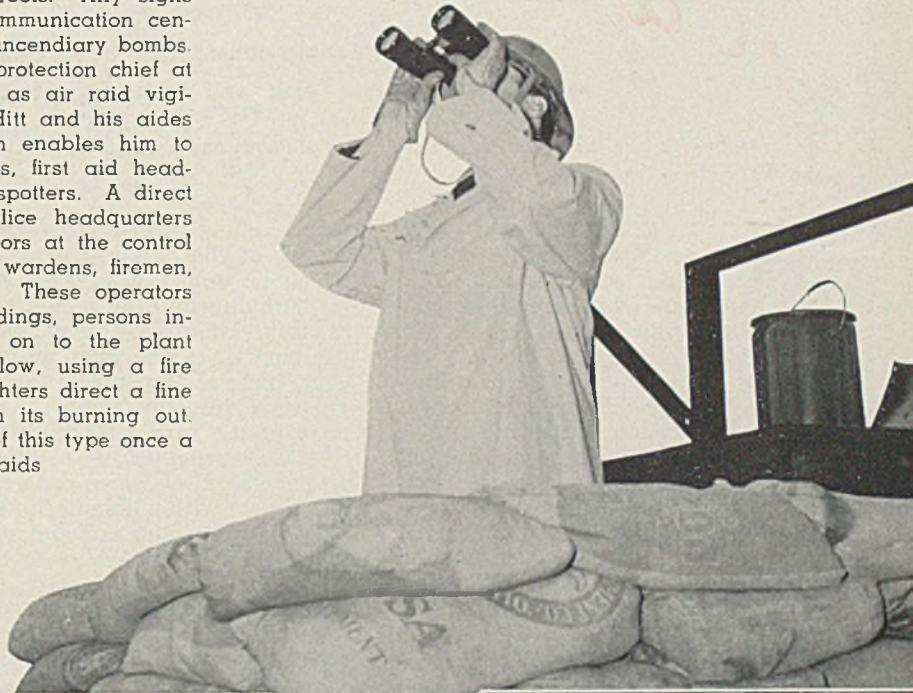
phone. This warning immediately will be flashed by telephone to Westinghouse, other industrial plants, hospitals and key points in the Allegheny county.

The power house is then notified to sound the alert signal, which sends to their posts plant wardens, observers, fire watchers and control center operators—key plant protectors who will be at their posts in less than 2 minutes.

If the bombers reach a point 50  
(Please turn to Page 72)

Right, plane spotter scans sky for enemy bombers. If invading planes come within 100 miles of plant, the alarm would send 14 plane spotters to telephone-equipped posts atop roofs. Any signs of enemy aircraft would be relayed to plant's communication center. Note sand, bucket and shovel for combatting incendiary bombs. Extreme left, opposite page, Walter L. Hitt, plant protection chief at East Pittsburgh, heads up 2000 employees trained as air raid vigilantes. Here in his sand-bagged control center, Hitt and his aides direct defense tactics. Telephone key box shown enables him to dispatch instructions to 188 air raid warden posts, first aid headquarters, fire department, and roof-perched plane spotters. A direct voice connection between control center and police headquarters is also maintained. Center, below, trained operators at the control center relay warnings and instructions to air raid wardens, firemen, first aid squads, plane spotters and fire watchers. These operators also receive all reports of bombs falling on buildings, persons injured and fires started, which then are passed on to the plant protection chief at the control central. Right, below, using a fire hose equipped with a fog nozzle, volunteer fire fighters direct a fine spray of water at an incendiary bomb to hasten its burning out. Some 225 employe firemen go through maneuvers of this type once a week to prepare for possible air raids

55





# Forgings and Forging Practice

... some considerations in designing dies and forged parts

(Section 12 in a Series on Forgings, Forging Methods and Forging Equipment)

NO REFERENCE has been made in the outline of die-making technique in Section XI of this series to those major considerations which govern die design. Indeed this must be, in the very nature of the problem, more of an art than a science for all efforts at analysis encounter insurmountable obstacles. Yet the forger himself must of necessity form some preliminary concept of the way in which the hot metal will flow under the hammer or the press even though he himself may not be conscious of the logical train of thought which enabled him to arrive at his conclusions.

At all times the pressures applied must be sufficient to cause plastic flow in the directions desired in order that the grain may be properly oriented, yet rupture must always be avoided. To secure these ends, stock must be gathered here and the cross section of the stock reduced there by fullering and edging operations. Or, on occasion, these time-consuming operations may be eliminated by die rolling at the mill.

If the action which occurs during forging with closed dies be closely studied, it may be observed that the main body of the hot metal moves radially to fill the principal impressions in the die, but friction prevents more than a small portion from entering the much thinner flash. Further, that portion which *does* enter, being relatively thin, tends to cool more quickly than the main body of the forging, which still retains a considerable measure of plasticity. Thus the hydrostatic pressure within the metal tends to rise and the smaller impressions in the die are completely filled.

Impact velocity greatly influences these conditions in forging with the hammer since there is a definite

inertia effect which rises with the square of the hammer velocity and which no doubt plays a large part in "jumping up" the metal into the die impression. This inertia effect on the part of the forging must, however, have a proper relation to the pressure resulting from the stoppage of the ram in order to secure effective penetration of hammer work. Thus if we attempt to forge a heavy part with a hammer of insufficient capacity and are compelled to make up in speed what we lack in mass, the form of the part may be attained, but the physical characteristics of the forged metal may suffer.

The answer to the problem of hammer capacity cannot, however, be found by the application of dynamics, and so once more we must rely on the large fund of experience at our disposal. In brief, it is usually better to use an oversize hammer rather than an undersize one. Those factors employed in the determination of correct size of the forging hammer for any particular job include the area of the face of the die; the number of cubic inches of metal to be displaced; and the amount of preliminary drawing, fullering, edging, bending and the like. If the section is relatively thin, the drop board hammer will probably serve the purpose best on account of its lower maintenance cost and readier adaptability to the load. But the weight of the die to be manipulated and the number of impressions necessary have an important bearing on the type of tool selected and on the size of the ram.

Assuming, then, that the forging dies have been correctly designed and the blank properly prepared both in regard to form and temperature, the actual forging operation is usually performed in short order

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with a relatively small number of blows or with one or more heavy squeezes in a powerful press. Here, perhaps, our principal consideration is the conclusion of the act before the flash has had time to chill since a cold flash will effectively prevent die closure and quickly ruin both tool and dies.

While the forging operation is unquestionably the most important, the trimming operation may also be critical, especially since the cost of a set of trimming dies may exceed that of the forging dies. Good punch fits and proper relief angles are essential to success in trimming since good forgings can easily be ruined here as well as excessive burdens placed upon the machine shop. Trimming may be done either hot or cold, the former having the advantage of permitting the removal of some of the draft and thus reducing machining time. But occasionally the flash is trimmed wide to avoid marking the surface and thus establishing centers of fatigue.

## How To Reduce Trimming Costs

Trimming costs can often be held down by taking advantage of hard-facing materials such as welded Stellite cutting edges and renewable steel inserts. After trimming, a setting or restriking operation may be employed to correct the resulting deformation and so reduce the cost of subsequent machining operations still further.

Among the major objectives of good forging practice, is primarily, the production of a sound piece of metal with grain flow properly oriented in order to give maximum resistance to fracture, wear and fatigue. But the speed of the operation is important, too, since it is closely identified with the cost per pound. Standing out prominently among other considerations is the necessity to hold down excess metal to the lowest practicable limits.

In this connection, a few examples of unexplored possibilities kindly furnished by Eugene C. Clarke, president, Chambersburg Engineering Co., Chambersburg, Pa., may be of interest.

Fig. 1 exhibits the excess stock on a cartridge starter—a typical example; Fig. 2 similarly indicates how the excess on a breech powder chamber could be reduced; while Fig. 3 shows the relatively large excess on a breech barrel forging. The saving in steel is of less importance in this case than the elim-



Fig. 1—Shown here in red is the excess stock that could be saved on a cartridge starter by improved forging methods such as changing the die impression and coining while work is still hot. Weight of the finished part (black) is 1 pound, 7 ounces. Weight of present forging (black plus white plus red) is 3 pounds, 12 ounces. Weight of improved forging (black plus white) is 3 pounds, 5 ounces. The saving by improved forging as represented by the red amounts to 7 ounces

Fig. 2—By merely changing the die impression, it is possible to save 8 ounces on this forged breech powder chamber. Weight finished part (black), 1 pound, 3 ounces. Present forging (black plus white plus red) weighs 2 pounds, 12 ounces. Improved forging (black plus white) weighs 2 pounds, 4 ounces. Saving (red) is 8 ounces

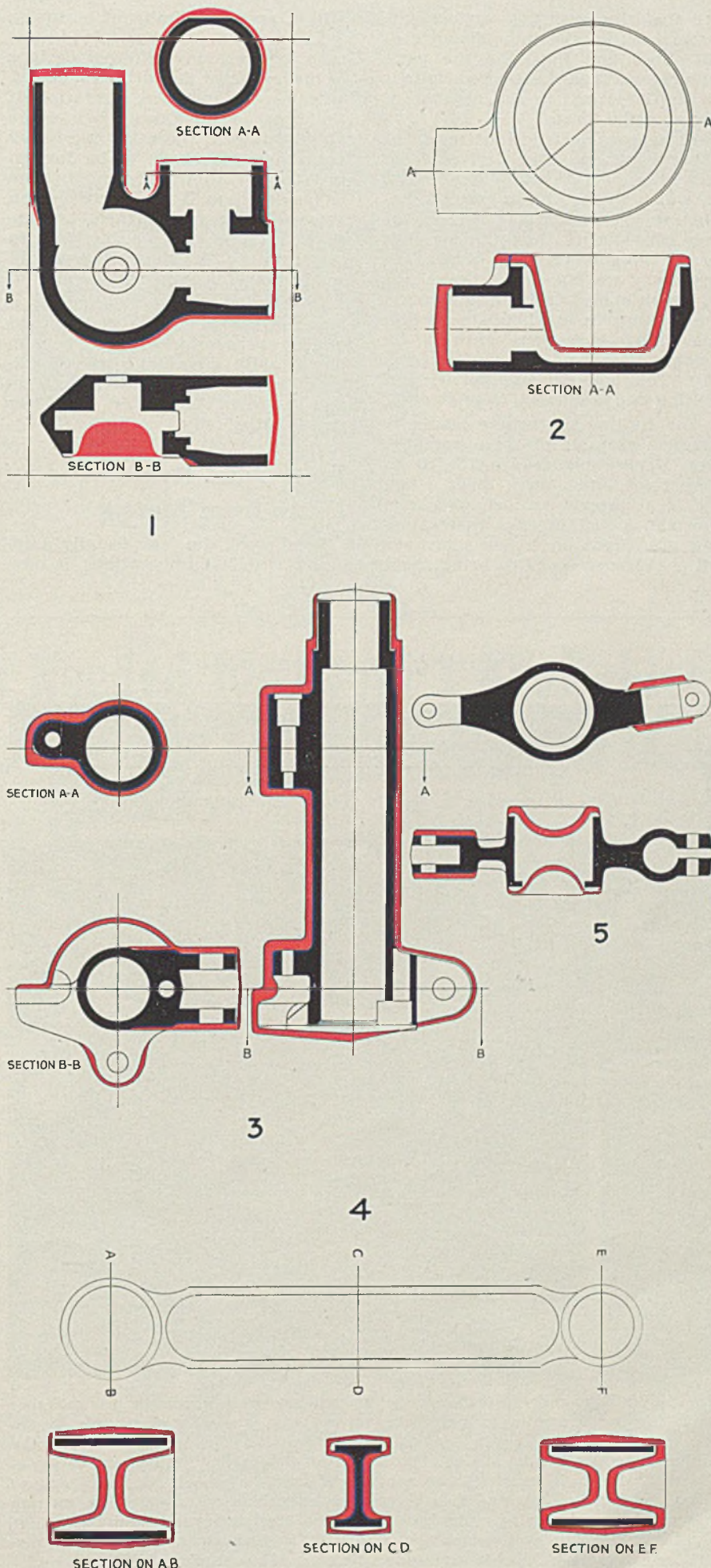
Fig. 3—The red shows where 12 ounces of excess stock can be saved on a breech barrel forging by changing the die impression, changing the stock size and coining while work is still hot from heat treatment. The hot coining can save much machining

Fig. 4—Here are shown how changing die impression and stock size can save 1 pound, 3 ounces of stock when combined with a hot coining operation while work is hot from heat treating. Stock saved is shown in red. These changes would reduce weight of forging more than 25 per cent, from 4 pounds, 1 ounce to 2 pounds, 14 ounces. In addition, hot coining the center section would insure stronger metal there without sacrificing any of the accuracy now obtained by machining

Fig. 5—While not much stock would be saved here, 2 ounces (shown in red), changing the die impressions and hot coining while hot from heat treating would afford an important saving in machining required. All illustrations furnished by Chambersburg Engineering Co., Chambersburg, Pa.

ination of much of the finishing by a hot coining operation.

Again in the connecting rod shown in Fig. 4, the forging weight could be cut by 75 per cent, a hot coining operation giving the necessary accuracy now attained by machining and at the same time insuring stronger metal in the center section of the rod. As a last illustrative exhibit in this group, the machining time on the rocker arm shown in Fig. 5 could be materially reduced. The term coining is derived, as might be imagined, from the making of coins from precious metals in presses. In its simplest form, the operation is performed between flat dies, but where the limits are close, contact blocks are either built into the dies or are part of them. By limiting the minimum distance between the dies in the closed position, these contact blocks offer a guaran-





tee that the squeezing surfaces approach within the same distance at all times and thus size the piece accurately, regardless of variations in hardness and in the amount of metal in the forging.

As a characteristic illustration of the advantages to be derived from precision operations in the forge, in which the saving in cost on machining operations was perhaps of less consequence than the inability of the manufacturer to obtain the necessary machine tools, the maker of a well known design of automatic rifle was able to eliminate certain machining operations entirely by coining of several pieces after forging. Thus both expense and delay in getting into production were avoided.

The forging of turbine blades is another example of these possibilities. These blades are forged to such close limits on a taper which starts at around an inch and runs down to a feather edge that grinding operations on a few spots are all that is necessary to bring them

within specified limits of accuracy.

The problem is complicated in this case by the many different designs of blades which the turbine requires. In some, for instance, a rotation of the cross section takes place, as we proceed toward the tip, while heavy transverse ribs have to be formed in others. Admittedly die upkeep is heavier than if the tolerances on these blades were larger, but apparently it is more economical to maintain the dies than to engage in costly machining operations.

In jobs of this type there is a question as to whether the acid etching process might not be employed with advantage to recondition dies in which the alterations required are of the order of a few thousandths only.

### Steel Wool Removes Burrs from Metals

Steel wool, the type usually associated with hand operations, is now

being used to remove burrs from nonferrous metals.

Manufactured in form of ribbons by American Steel Wool Mfg. Co. Inc., Long Island City, N. Y., the Type-A steel wool is used by wrapping it around a small shaft and then mounting the completed shaft or spindle in a chuck. In one single operation, it is said, it is possible to clear burrs from any corner. Also, the spindle makes no permanent grooves. When the spindle is worn down, it is only necessary to add an additional length of ribbon steel wool on that remaining on the spindle.

### Revises Standards for Cutting and Welding

Revised standards governing installation and operation of gas systems for welding and cutting were adopted recently by the National Fire Protection Association at its forty-sixth annual meeting in Atlantic City, N. J. They apply to all gas welding and cutting systems and cover all gases used with oxygen for welding, cutting, heating and heat treating operations.

The standards do not apply, however, to systems in or upon cars or other rolling stock or upon vessels.

The installation and operation of stationary acetylene generators are regulated with regard to location, generator rooms or compartments, ventilation, lighting and heating of generator rooms or buildings, and in other important details. Portable acetylene generators, service piping systems for all gases, the manifold of cylinders to headers for shop pipeline supply systems, storage of cylinders of gases and of calcium carbide, and operating procedure, all are carefully considered and regulated.

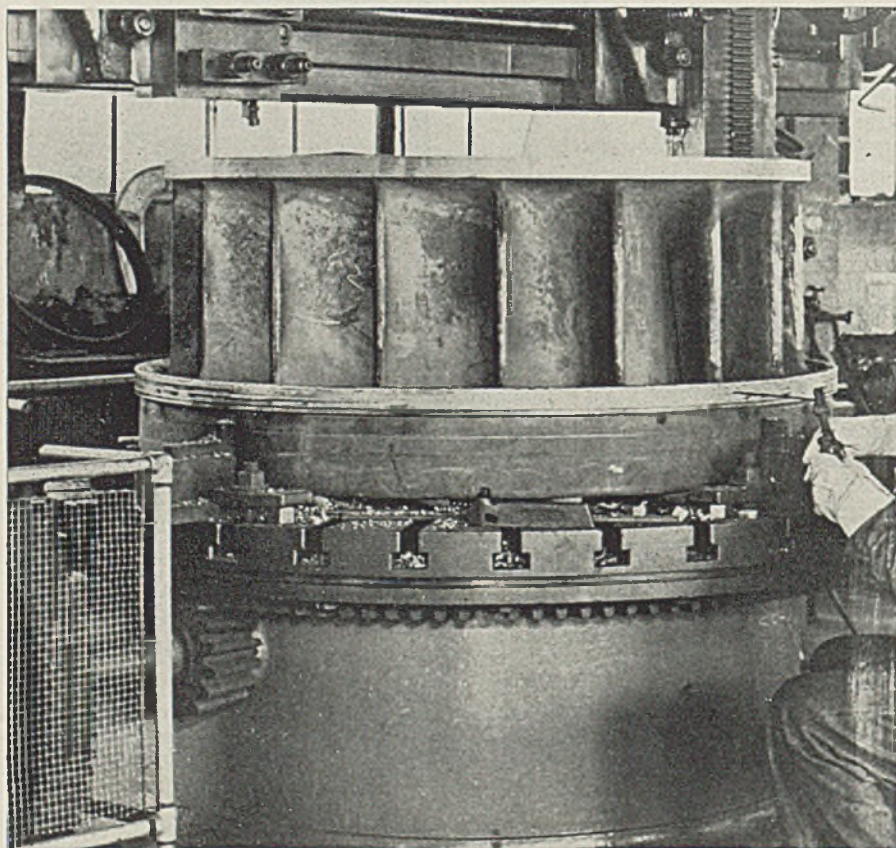
### Autos and Rubber Supply

*Automobile Transportation in the War Effort*, by Charles L. Dearing; paper, 47 pages, 5 $\frac{1}{4}$  x 8 inches; published by Brookings Institution, Washington, for 25 cents.

In the present situation, with automobile transportation dependent on rubber, this study of the situation deals with the dependence on this mode of travel that has grown up in the past few decades, social changes it has brought about and the effects of the present emergency.

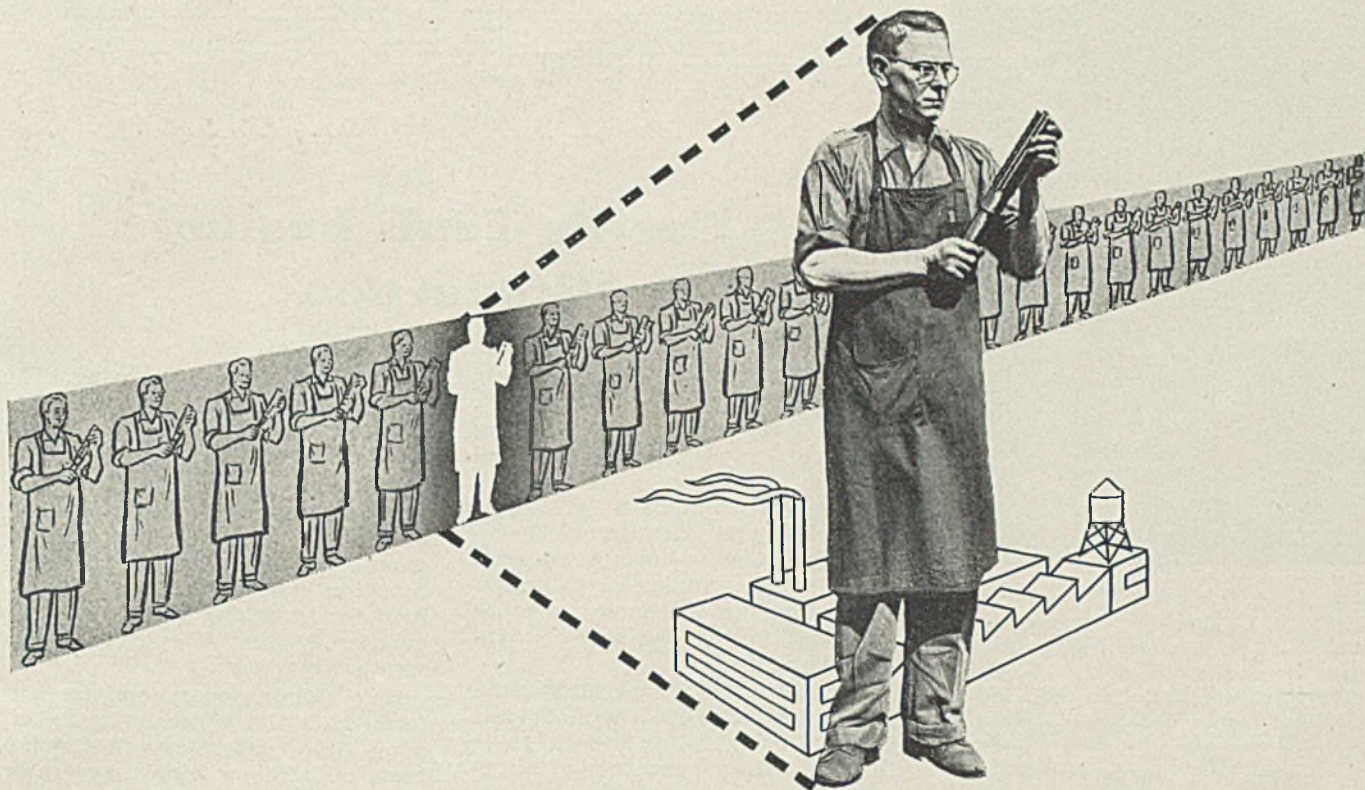
It deals with the number of automobiles required to support the domestic economy and problems of maintenance of the number necessary to keep the economy functioning. It takes up the life expectancy of automobiles, distribution of usable vehicles and the tire and rubber situation.

### "Pouring" in a Seal Ring



SIXTY PER CENT represents the amount by which expense of renewing a seal ring on this hydraulic turbine for an electric power plant was reduced recently by the use of welding, according to Hobart Bros. Co., Troy, O. The job, performed at the Turlock Irrigation District in California, consisted of "pouring" weld metal on top of the base of the old band without removing it from the wheel. Ordinarily, these rings are made of iron and then shrunk on the turbine wheel—just like an iron wagon wheel. Machining of the inside surface of the band is a tedious task as the band is only a little over  $\frac{1}{2}$ -inch thick and 5 feet in diameter, and it has to be machine finished to a pin-gage diameter of about minus 0.062





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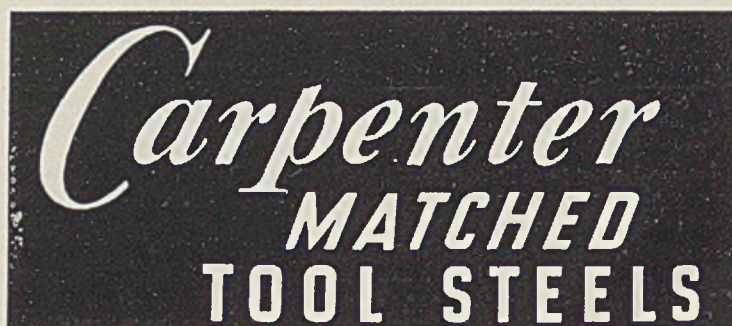
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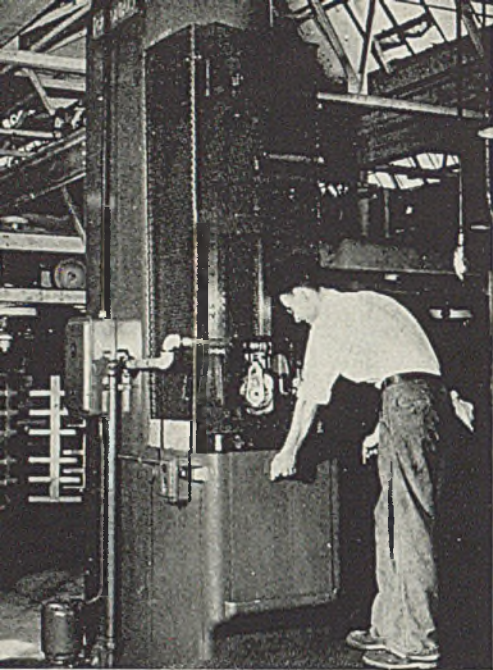


Fig. 1—A 10-ton 42-inch stroke press used at Continental Motors Co., Detroit, for machining the flats on flanges of cylinder barrels of the 9-cylinder 400-horsepower radial engine used in military tanks and training planes

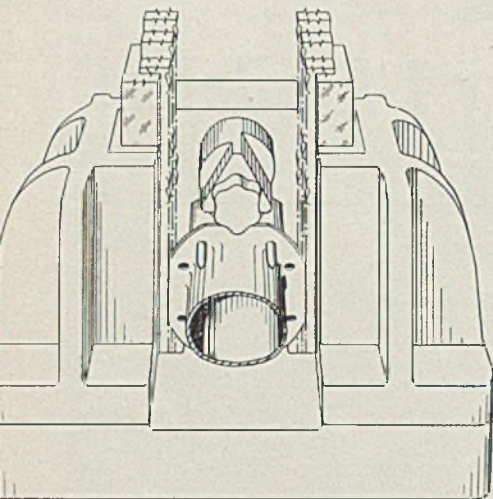


Fig. 2—Sketch of fixture for broaching flats on flanges of airplane engine cylinders in three passes. Cylinder is located on pins passing through holes in flange. Advance for each pass is controlled by faced off portions of face cam mounted above cylinder. Operator rotates one-third turn for each advance

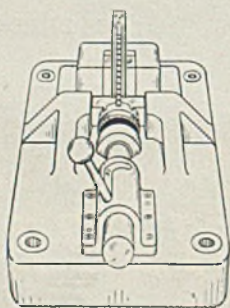


Fig. 3—Fixture for broaching slots in special nut which is placed on short spindle and locked in position for each pass by bar and lever. Three passes are required to slot each nut

# BROACHING

## Speeds Tank Engine Production

IN PRODUCING 9-cylinder 400-horsepower radial aircraft engines for military tanks and training planes at the completely renovated plant of Continental Motors, Detroit, a number of surface and hole broaching and burnishing operations are now performed on such parts as the crankcase, cylinders, counterweights and many smaller parts making up the complete engine assembly.

For some of the operations, the presses are equipped with special fixtures incorporating broach guide bars for extreme accuracy of alignment. For instance, the surface broaching of four flats on the flange of each cylinder by a 10-ton 42-inch stroke press, Fig. 1, is considered an outstanding development worthy of special attention. The press is made by Colonial Broach Co., Detroit.

The four flats on each cylinder flange permit a closer spacing of the cylinders around the periphery of the crankcase and also reduce its overall depth, thus increasing the compactness of the engine. The ram is equipped with an attachment having two drawing bars, the broaches being fitted with three sets of cutting teeth on each side. Fig. 2. A series of three cuts is taken on each pair of flats, the cylinder being advanced by a manual indexing fixture. About 9/16-inch of metal is removed in the three passes, the final dimension being held to close limits. The operation is performed much more rapidly than by milling and with greater precision.

Another unusual application is in slotting a special packing nut, using a 3-ton 24-inch stroke Colonial press. While "castellating a nut" would normally be of no special interest, since this operation is usually done by gang milling, the precision required for the finished part and the demand for a much higher productive capacity than obtained when the parts are milled singly compels the use of a more accurate method. Therefore broaching was selected.

The fixture used to index the nut, Fig. 3, is unusual since it permits making all three passes or cuts across the face of the nut in a total of approximately 15 seconds. Four seconds are required for each cut,

plus 3 seconds for indexing. The indexing is manual, the ram stopping at the top of each return stroke.

Still another operation using a similar press for broaching is done on the fuel pump drive gear. It employs a semi-automatic broach handling mechanism like the one used for broaching the flats on the cylinder flanges. The part is much smaller, however.

Hole splining operations are performed on the generator gear, oil pump drive gear, scavenger pump gear, oil strainer nipple, generator drive gear support and other parts. The tachometer drive shaft gear is cut for keyway and the vacuum pump adapter bushing is burnished using broaches.

## Publishes Book on Fluorescent Lighting

A new 312-page book, *Fluorescent Lighting Manual*, written by Charles L. Amick of General Electric's Nela Park engineering department, Cleveland, has just been published and, according to the company, is now available for \$3. Profusely illustrated with halftones and diagrammatic sketches, it treats of such matters as: Unique characteristics of fluorescent lamps; interprets the basic philosophy of illuminating engineering (with respect to foot-candle standards and lighting quality).

The book is written so that nearly anyone, whether he has had much electrical background or not, can gain interesting, practical information on fluorescent lighting from any of its ten chapters. Chief purpose of the manual, according to its author, is to provide a ready reference source for the fundamental knowledge useful in solving problems which arise in contemporary fluorescent lighting practice.

The manual reveals the principles and methods of calculating illuminating requirements of F-lamps, and designing luminaires and installations. It includes helpful pointers on how to install the lamps themselves, how to assure maximum light output, and how to locate and remedy trouble.



# Suggestions for **MORE EFFECTIVE** INSPECTION PRACTICE

1 Establish a definite wear allowance for all fixed size gages, plugs, rings, etc.

2 Check these gages periodically to determine when wear has eliminated this allowance.

3 In final inspection it is better to use an instrument than a fixed size gage when the wear allowance of the gage by the 5-10% rule is established at .0001" or less. Here the human factor is usually important enough to outweigh the effect of the wear allowance and gaging results become questionable.

4 It is ordinarily not best to use a conventional snap gage for the inspection of work having a manufacturing tolerance of .002" or less.

5 Keep plugs and rings oiled when not in use.

6 Be sure that both work and gage are clean before they are brought together.

7 Periodically check your precision gage blocks for wear, against a set of certified blocks. Redesignate them when wear is revealed.

8 In setting a comparator gage be sure that both gage and precision blocks are at the same temperature.

9 It is well to check the calibration of indicating type comparators periodically. If an error is found, it is better to send the comparator back to the factory for recalibration.

10 If you are using Multichek gages insist on the operators handling them smoothly. Work should never be jammed violently into gaging position.

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## How To Get The Best Results Through Employing

# Women in War Work

EMPLOYING women in war industries in increasing numbers is inescapable but should not be looked at as a substitute procedure. Employing a woman for any job that she can do, or can learn to do, will release a man either for work not suitable for women or for active armed service.

The employer who has never had any women employes on his force may need to be reminded, in some cases, that a new woman worker is just a new worker. Careful selection should furnish women who are good prospects—the same as men. New women need training—so do new men. They are entering a new environment, but so are farm hands who take factory jobs.

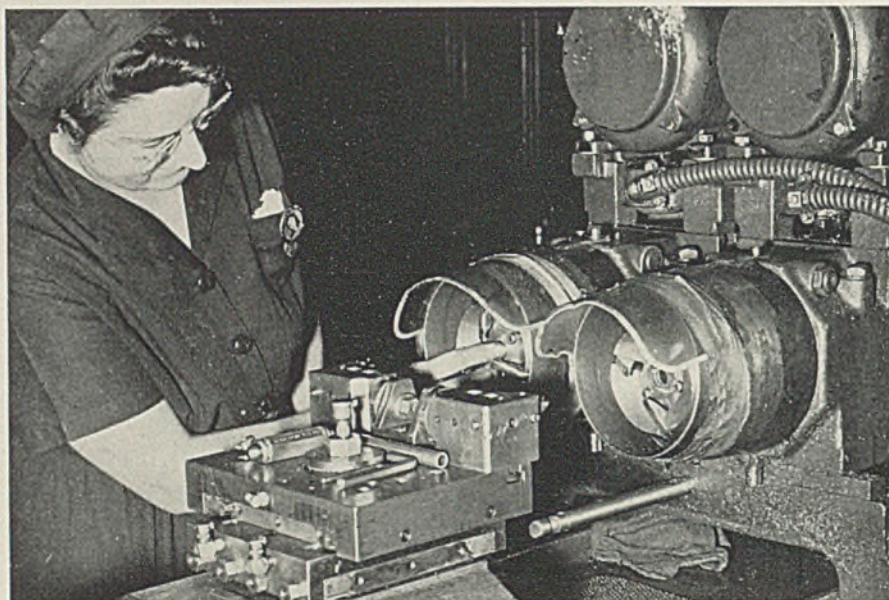
The place for women in industry has been well established since the last war. One-fourth of manufacturing workers are women, and a number are in technical or managerial fields. Employers who think that the employment of women introduces some mysterious element into the factory situation need to be reminded that they have known women workers all their lives—secretaries, nurses, waitresses, saleswomen—and that women from all these groups will inevitably become a part of the war production effort.

Here is related the experience of a number of industries where women workers have had an important part for many years and the experience of the British in war production where many women are employed.

Training Within Industry Branch,  
War Production Board.  
C. R. Dooley, Director,

**I**N MANY industrial centers there already are labor shortages. In general, women will not add to the supply of skilled labor, but they do present a large and promising source of workers for a wide variety of operations. In England it has been necessary to require young women to take part in the war effort, either through auxiliary service or actual productive

From *Supervision*.



Typical of the many jobs that can be handled by women operators with good results is this machine tool operation. In handling this high speed diamond boring machine, the operator must be alert for tool failure, quality of finish, correct amount of stock removal and indications of machine failure. Photo from N. A. Woodworth Co., Ferndale, Mich.

work in factories. There are many women who now need to earn wages. Curtailment of civilian production releases numbers of women with varying degrees of skill. These women are available for retraining for war production work.

**Special Factors To Consider in Employing Women:** Introduction of women workers in industries or plants where they have not previously been employed will often mean that women will actually be put on "men's work". It will not always be a simple placement and training process—but, when the snags are anticipated, British experience shows that remarkable results are achieved. Management needs to give advance and immediate consideration to some general facts—some limitations, some advantages and some changes in facilities and equipment.

**State Laws Regarding Women Workers:** Many states have "protective" legislation which sets standards for working conditions for women, limits hours (both as to length and time of day) and re-

stricts occupations. In some states provisions have been made to permit modification of standards where necessary for war production. State laws covering a particular plant should be checked as the first step. The industrial commission or the state secretary of labor can supply specific information.

**Physical Limitations of Women Workers:** There are some physical limitations for women. As a means of overcoming them, mechanical aids may be used—for example, in load-lifting, roller conveyors and pedestal lifts are helpful. Tools may need to be scaled to women and benches made lower for assembly workers.

**Safety and the Women Worker:** The safety records of women are better than those of men, but there are special hazards to be recognized. It may be necessary to require the wearing of protective clothing. The safety engineer who selects caps and jumpers will do well to consult with the women who will wear the clothing—his interest may be in finding a cap which



will insure that hair will not catch in a machine, while the employee may also be concerned about a cap which will protect hair from dust and not ruin a new hair-do. It is poor practice to select clothing which requires disciplinary action to enforce wearing or which causes resentment.

**Absence Record:** Women's records for days-off are worse than men's. They are not altogether due to illness but frequently to unavoidable home responsibilities. A "flying squadron" is a common solution.

**Labor Turnover:** Women do not change jobs as often as men. Good supervision, satisfactory working conditions, adequate wages, and fair treatment will hold women to their jobs and thus, by decreasing turnover, reduce overall training time.

**Supervision:** Many persons will advocate the employment of a woman personnel officer to work on problems connected with working women. This is based on the assumption that there is an innate and intangible difference between men and women as employees that will be beyond a man's experience. This is not the best basis for the introduction of women to the production shop. Women are entering war production on the same terms as men, even if it is necessary to make physical segregation in a few respects and to separate groups in individual situations. Their relation to the personnel department is the same as new men.

Women have a useful place in personnel offices, but not necessarily as concerned with women employers.

The woman who is new as a factory employee is making a change. Skilled personnel people should handle cases relating to people new to industrial situations.

Women as first-line supervisors can sometimes handle routine departmental problems concerning women more easily than men, and women can train women. The opening of even minor supervisory positions to women will provide a promotion incentive. However, if women supervisors do not correspond in authority with men in similar positions, the employees may be inclined to by-pass the woman supervisor and take their problems to the man whom they feel is "the boss".

**Selection and Placement of Women Workers:** All women will not, of course, make productive factory employees. The selection procedure should include particular attention to the background brought to the job—education, training, and aptitudes. The housewife who is untrained and perhaps free for only part-time work may move into civilian production and service operations, releasing for full-time war production employment women who have had regular work experience.

Even in the comparatively short time of the current war production, there are a number of instances of

the value of certain backgrounds of work requiring deft hands—girls who were needle-workers or hair-dressers have proved specially adaptable for precision metal work. With good training, they work to tolerances measured in ten-thousandths of an inch. Jobs requiring "feel", such as minute assembly and adjustment, are examples of jobs where placement of women has produced particularly good results, in many instances better than men.

A common opinion is, "Women have no mechanical ability." It is more accurate to say that they have little "mechanical familiarity". Women are not accustomed to working with wrenches and drills, but lowered level at which training begins also means an opportunity to begin training with correct procedures—they do not bring "picked-up" bad habits to the job.

**Training for Women the Same as for Men:** Well-planned training for women who have been selected and placed according to good standards will provide a large, productive new force and give perfectly satisfactory results in every respect.

*Get ready for the job.* What is the work? Should it be broken up into several jobs to be taught separately?

*Consider the work place, the tool.* Are changes needed?

Find out what the new workers already know. Is some preliminary instruction needed in shop arithmetic or blueprint reading? Would advance familiarity with small tools help? Will "shop" terms and procedures need special explanation? What pre-employment training is available?

*Train on the job.* Does instruction given on the job include supervised tryout and follow-up? Does the new employee know where to go for help?

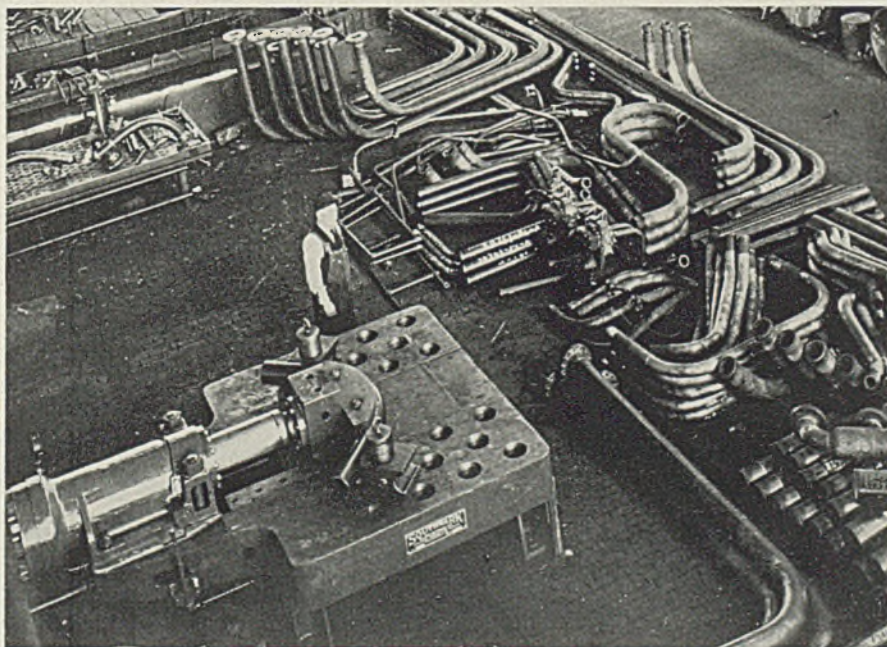
*Provide supplementary instruction.* Does the plant provide training to round out background and increase skills? Are there public vocational courses available?

*Upgrade to higher skills.* Are women being moved on to more difficult jobs as they show ability in order to make maximum use of their best skills?

**Jobs for Women in War Work:** To turn again to British experience, women are working successfully on these jobs: Assembly, bandsawing, boring, crane operation, drilling, grinding, inspecting, lathe work (including the use of calipers and micrometers) optical grinding and polishing, press operating, riveting, turning and welding.

To summarize the overall problem, the contractor must: Consider the employment of women with an open mind; recognize that there is, as always, a training job to do.

## Bends Them Cold



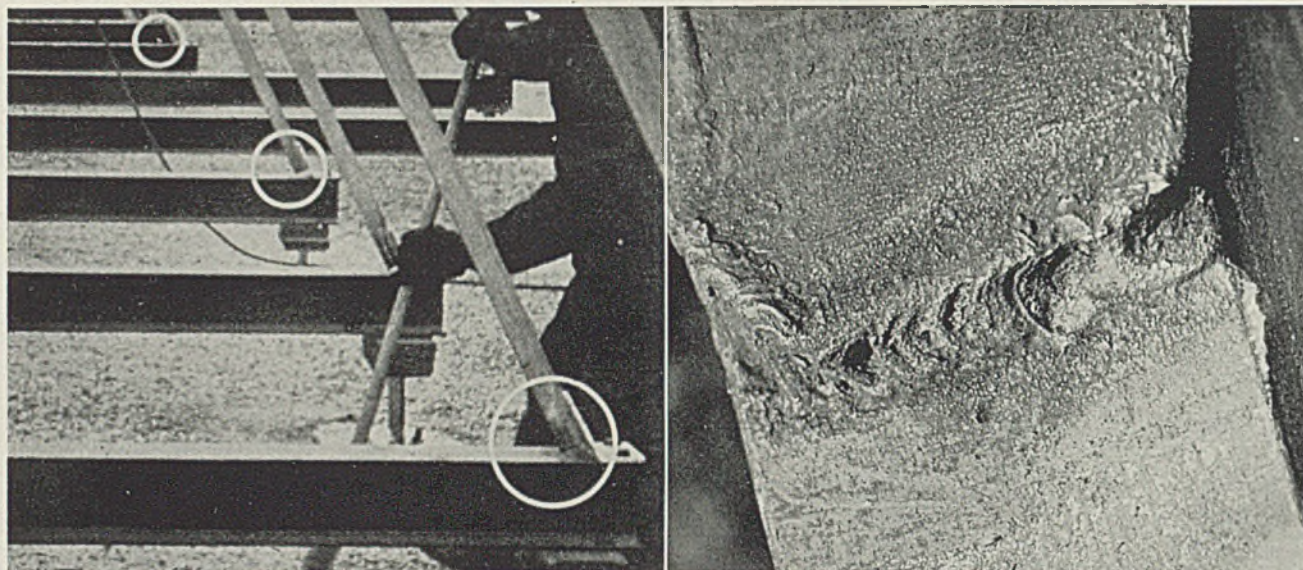
BECAUSE of its tremendous power, most bends can be made cold with this new 200-ton hydraulic pipe bending press recently introduced by Baldwin Southwark Division of the Baldwin Locomotive Works, Philadelphia. Not only does this save time required to heat pipe, but it eliminates distortion in the pipe resulting from cooling. In action the press is under control of the operator at all times



# REGALVANIZING

## Welded Seams

*... by simple procedure offers important possibilities in lengthening life of welded structures made from galvanized steel*



IN WELDING of most galvanized sheets and structural members, the intense heat developed in the base material near the weld vaporizes the zinc, thus leaving the bare foundation metal completely exposed. Obviously this makes the base material near the welds or joints subject to corrosion. Welded fabrications can be dipped in molten zinc after welding in order to cover the seam, but dipping is at best an expensive process using a great quantity of the now scarce zinc. And often it is quite impossible to dip large structures.

A method recently developed by Galv-Weld Inc., Dayton, O., makes possible galvanizing or regalvanizing of arc, gas and spot welded joints without being redipped.

After this treatment, the seams can be painted or enameled and baked without danger of sweating and without applying a filler coat.

The process was first used on frames for outdoor advertising signs. A sign erected over four years ago when the method was just being developed recently was investigated, and the joints were found still to be rust free. See accompanying illustrations. These joints withstood not only weather but also fumes and chemicals from an oil refinery in the immediate proximity.

Seams made by arc and gas weld-

Encircled in this illustration, left, above, are Galv-Welded joints showing galvanized angle braces welded to galvanized horizontal gusset plates. These are only a few of hundreds of such joints used in two large roof structures supporting display signs that have successfully withstood exposure to weather and industrial atmospheres. Right, above, closeup of one of the Galv-Weld joints after exposure for four years. Note the complete absence of rust. This was typical of all the joints in these two structures

ing with standard welding rods can be regalvanized by this method. If possible, however, use of an uncoated or a lightly coated rod is recommended in order to reduce the amount of slag on the weld to a minimum. After the weld is made, it is rubbed briskly while still red hot with a wire brush to remove slag and scale. Then a bar of low-melting galvanizing compound is placed against and moved along the weld while it is still hot enough to melt the compound. Wire brush is again applied while the galvanizing material is in a liquid state to spread it evenly over the entire weld and fill any small cracks or fissures. Weld is then allowed to cool in the usual manner—no artificial cooling being applied.

When a coated rod is used, it is

necessary to let the slag cool to a point where it can be knocked off and the weld then wire brushed briskly. By this time, the weld has cooled so much that the metal must be reheated before the regalvanizing alloy can be applied. Reheating can be done by any convenient method such as with the carbon arc or a gas flame from a torch.

The galvanizing material must be applied while the weld is still hot. If there is enough heat to damage the original galvanized coating, there will be enough left in the work to melt the compound since it fuses at a temperature of only 550 or 640 degrees Fahr., depending upon the grade of material employed. Of the two grades of material available, grade A is for use on light-gage material and with spot welding at temperatures from 550 to 640 degrees Fahr. Grade B is suitable for medium and heavy structures involving temperatures from approximately 640 to 800 degrees Fahr. For use with extremely heavy members involving temperatures above 800 degrees Fahr., a third grade may be developed. However, grade B is said to be satisfactory for most normal applications.

Bare spots as much as 1½ to 2 inches from the weld can be covered. A long seam should not be welded completely, however, before appli-



# JUNK

*—you've got what it takes*

*T*HAT old junk -- useless to you -- may provide the extra implements of war to insure Victory -- your old iron and steel, copper, brass, rubber, even burlap, paper and grease.

Take steel, for example. Every hundred pounds of scrap you turn in will help produce one more powerful demolition bomb to speed the destruction of those plants that enable the Nazis and Japs to prolong the war.

To make the steel for a large tank, 10 to 15 tons of scrap are needed. And one badly needed "sub-chaser" takes many carloads of scrap.

The steel industry is using all its resources to produce more steel, but it needs your help and needs it now, -- that's why the junk you can turn in is so vital to America's war effort.

**THE YOUNGSTOWN SHEET & TUBE COMPANY**  
*Youngstown, Ohio*





cation of the regalanizing material is started for the work may become too cool to regalanize properly. Rather, a short length (6 to 8 inches) should be welded and the regalanizing done immediately while the work is still hot, the cycle being repeated until the end of the seam is reached. The type of welding, size of electrodes and thickness of material are factors which help determine the cooling rate of the weld and therefore the length of seam that should be welded before the regalanizing is begun. A little experience will quickly determine the length of weld that can be handled satisfactorily.

This coating is said to be superior to the original galvanized coating because of the relatively deep penetration of the coating because it is applied when the base metal is at a higher temperature. This produces a new alloy within the pores of the welded steel, which greatly increases the corrosion resistance of the coating. Furthermore, the coating cannot be pried or peeled off, nor can it be removed by abrasion with a stiff steel brush.

The regalanizing material can be applied in the form of a bar or powder, or it can be heated and applied as a liquid. The material melts at the same temperature, regardless of which form is employed. Use of the rod or stick form where possible is recommended as it is the simplest to apply.

The technique of application does not change when working on horizontal, vertical or overhead surfaces except that the operator probably would depend a little more on the wire brush to keep from losing material on the overhead surface. Overhead application would probably also be slower since a little more care would be required to get the material to flow and cover all portions of the surface properly.

The process is applicable to rolled steel bars and structural shapes of all kinds, as well as to sheets and plates. It appears to have advantages in such heavy work as shipbuilding in addition to uses in general contracting trades; in manufacture of tanks, cans, barrels and other containers; in prefabricated steel houses, railroad cars, airplanes, trucks and armaments.

The process is patented, and the Galv-Weld materials employed are manufactured by Eagle-Picher Lead Co. under patents pending. License for their use may be obtained from Galv-Weld Inc., Dayton, O.

### **Blinding Glare Barrage To Foil Saboteurs**

Protective lighting in reverse, a new type glare barrage using high-powered spotlights to blind would-be saboteurs as they approach restricted zones around war plants was described recently by O. P. Cleaver, Westinghouse lighting en-

gineer, at a meeting of the American Society of Safety Engineers.

The system, which employs special beacons, makes it possible to keep guards and buildings in comparative darkness. Instead of playing lights on buildings, the beams are turned outward to direct a blinding glare in the direction of intruders.

Thus all the guards patrolling in the shadows command a view of several hundred yards somewhat in the manner that a night driver sees all objects on the road ahead of him while a pedestrian can see only the confusing glare of his headlights.

### **Plastic Cleaner Retards Weather Action**

Aircraft Specialties Corp., 601 South Anderson street, Los Angeles, announces a new Asco plastic cleaner for removing such foreign materials as grease, masking tape gum, paint, raw rubber, dum-dum, rubber adhesives etc. It is reported to be harmless to all kinds of plastic materials and is now being used in conjunction with plastic glass bomber noses, plane canopies, gun turrets and other plastic parts.

Tests of the product show it is quick-acting and requires a very small quantity in cleaning. Also, if used exclusively for clean-up work on planes after flights, it will retard the action of weather.

---

## **SAVING REJECTED SHELL BODIES**

*... by a reweighting process which the French developed and used during 1914-18*

EXACTING ballistic requirements and extremely close machining tolerances are necessary in artillery shell production to secure uniformity in projectile range and permit accurate aiming. As a result, projectile makers commonly work to the high, rather than the low, permissible limits since a shell body that is slightly overweight can usually be lightened sufficiently to pass inspection.

On the other hand, a shell body that is at all deficient in heft is usually rejected. With a permitted tolerance of not more than 1 per cent or so in many instances, the loss in shell rejected for this reason may be a serious matter.

Confronted with this problem during 1914-18, the French government allowed a certain proportion of their projectiles, if only slightly deficient in weight after machining, to be re-

By REGINALD TRAUTSCHOLD  
Consultant

weighted. Thereby quite a substantial saving was obtained. The use of any lead or lead compound, the most obvious ballast, is strictly prohibited because the destructive compound, picrate of lead, is formed in the loaded shell. So a simple method of tinning the inside of slightly underweight shell was developed and found entirely satisfactory.

The inside of the projectile is first pickled with a weak solution of sulphuric acid for about two hours—1 part acid to 10 parts water. This treatment is followed by a thorough scouring and washing, after which the shell body is filled with muriatic acid for about 10 minutes.

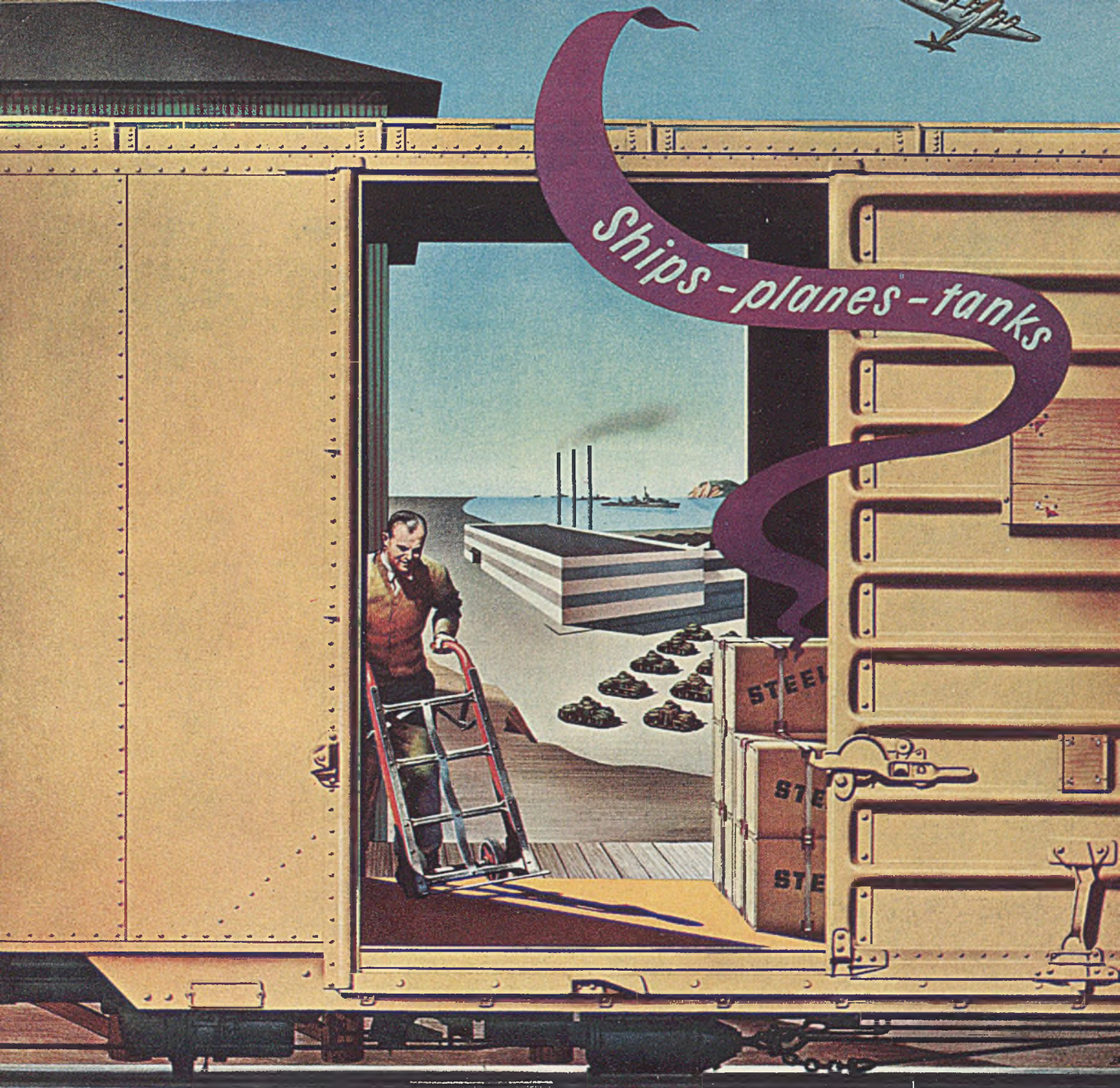
The projectile is then emptied and its exterior surfaces coated with

vaseline, or petroleum jelly, whereupon the shell is immersed for a brief interval in a bath of molten tin. The first dipping has little effect, but the second immersion adds some 25 to 30 grams to the weight of a 6-inch shell.

Following this conditioning of the interior surface, the shell body is partially filled with molten tin, an aluminum plug is screwed into the nose and the shell then inverted. As the tin cools, the thickness of the tin deposit gradually builds up and the shell gains weight. The shell nose is then rebored and the doctored shell rebalanced.

Such skill was developed in salvaging light projectiles in this manner that the French government, despite its forte for ballistic perfection of projectiles, allowed 5 per cent of shipments of accepted shell to be tinned and rebalanced.





## Even before they're made they must travel

American planes could never hope to dominate the skies . . . American tanks could never crash their way to victory . . . American ships could never hope to succor a desperate world . . . if American transportation had not first done the biggest job of its kind in history.

At a time when *everything* depends upon a free flow of traffic, the American transportation system has worked so magnificently that America, like a man with a good stomach, has scarcely been aware of its existence.

Even before ships, planes, tanks and guns are made, the railroads and other means of transportation must carry the raw materials thousands of miles from a thousand suppliers to a thousand different parts of the nation.

Koppers has been able to furnish supplies of basic materials needed by the transportation industries . . . from Koppers coal mines, from Koppers plants where ties and other wood products are pressure-treated to give them long life, from Koppers creosote refineries, from

Koppers roofing and waterproofing plants, and paint factories . . . from plants which make packing for steam locomotives and piston rings for Diesels.

Maybe, some day in the future, these products may serve your peacetime operations as they are now serving wartime safety. Koppers Co., Pittsburgh, Pa.

# KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY



*The burning question*

**HOW CAN I GET  
MORE GROUND PARTS  
WITHOUT  
MORE GRINDERS**

*First possibility:* Change the grinding wheel.

*Second possibility:* Change the grinding method.

Try one, try both — but preferably on the advice of experience.

Norton field men or Norton distributors' men in the locality may be just the reinforced manpower your shop needs.

Many times they've turned production defeat into production victory.



**NORTON ABRASIVES**

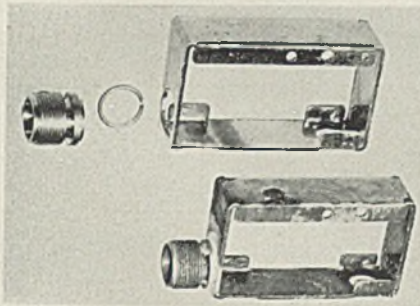
**NORTON COMPANY, WORCESTER, MASS.**  
BEHR-MANNING DIVISION, TROY, N. Y.



## Silver Alloy Brazing Speeds Switch Output

From 500 to 1500 per day—three times more than the former output of Micro switch housings—are rolling off the production line today due to a simpler method of brazing, according to Handy & Harman, New York.

Formerly, the steel stud shown in the accompanying illustration was fitted into the steel box and brazed with a high-melting-point



base metal alloy. Then, after grinding off excess alloy and cleaning, the assembly was cadmium plated.

Now the base metal brazing alloy has been discontinued in favor of a low-temperature silver brazing alloy. In using the latter no design change was necessary and the brazing procedure is simple, resulting in the increased production. After the parts are fluxed, a ring of brazing alloy is placed between the stud and the box. The assembly is then heated in a gas-fired furnace. At 1175 degrees

Fahr. the silver alloy ring melts and flows between the parts, forming a leak-tight joint.

Two other advantages were discovered by the switch manufacturer; by using the silver alloy no grinding was found necessary after the brazing procedure, and the joints remained leak-tight even when re-plating was necessary.

## Releases Report on Inspection of Welding

The many factors involved in the inspection of welds made by the arc and oxyacetylene processes are embodied in a new publication published by the American Welding Society, 33 West Thirty-ninth street, New York.

Entitled "Recommended Practices for Inspection of Fusion Welding," this 23-page report embodies the results of two years' work on the part of the society. The subjects covered include: Qualifications of welding inspectors; duties of inspectors; inspection and testing of welded structures; inspection during construction; shop and field inspections; examination of welds; radiographic inspection, hydrostatic testing and magnetic powder inspection.

A considerable part of the report deals with the welding characteristics of both ferrous and nonferrous metals. These sections describe the principal types of defects that may be encountered, indicate their usual causes and state how they may be detected and remedied. The report is available at 40 cents per single copy, with discounts for quantities.

## Putty-Like Substance Repairs Pulley Belts

A new rubber plastic product for use in making repairs on conveyor belts, pulleys and other equipment is reported by the So-Lo Works, Cincinnati. It is said to be a putty-like substance, containing a very small proportion of crude rubber, which when spread on a conveyor belt, repairs holes and worn spots, making it possible for the particular equipment to keep producing.

The company points out that an average repair made with this product on a conveyor belt or on protective clothing such as boots, gloves or deep-sea diving equipment contains less than one forty-eighth of an ounce of rubber.

## Salt Co. Offers Reprints On Gas Warfare

A reprint of an informal lecture entitled "Warfare Chemical Hazards," given by the author before air raid wardens in Delaware county, Pa., is being offered to anyone interested by the Pennsylvania Salt Mfg. Co., Philadelphia.

The reprinted lecture, which was given by L. L. Hedgepeth, manager of technical service, discusses gas warfare from the standpoint of civilian defense protective measures. It details the effects of gas and also names the principal war gases, describes their characteristics and suggests first aid treatment for victims.

The study gives the civilian a non-technical understanding of what actually is involved in gas warfare.

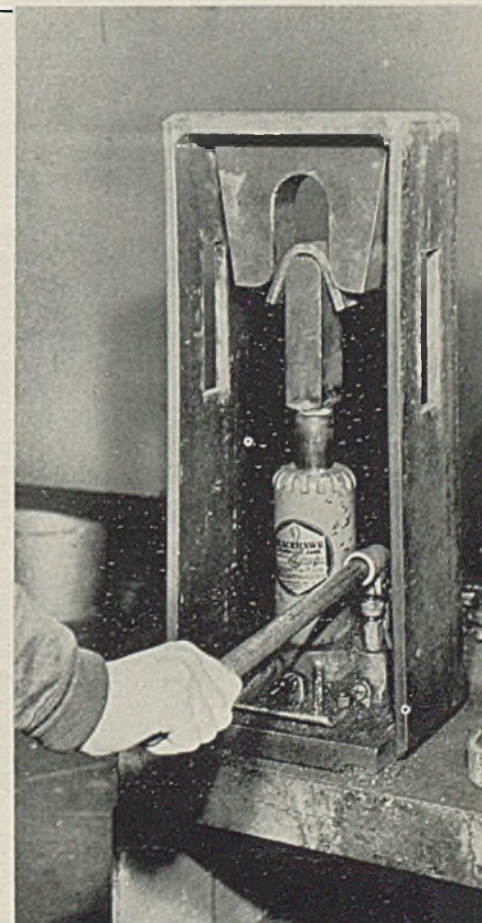
## Simple Test Setup Checks Weld Quality

To speed tests of welds, technicians at the B. H. Leonard Welding school and the plant of the Midwest Piping & Supply Co., St. Louis, designed a simple yet effective all-welded test jack for making free-bend, side-bend and back-bend tests on weld coupons both in the shop and on field construction jobs.

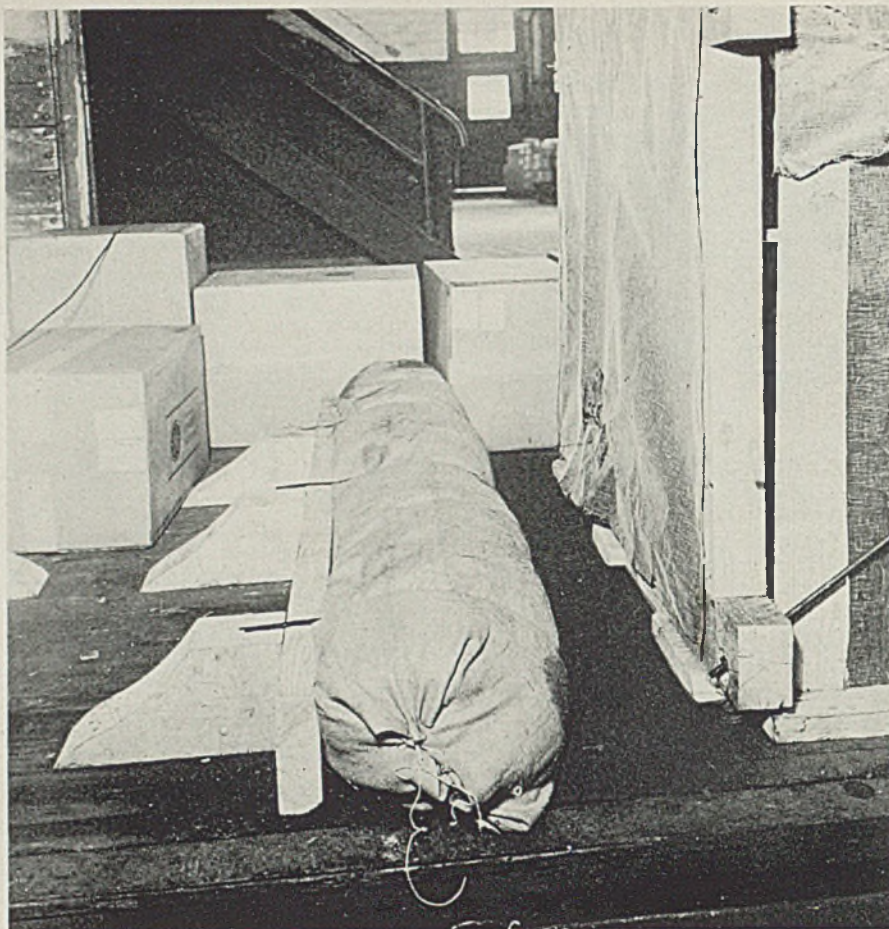
The illustration shows the male member of the guide-bend die set forcing the  $\frac{3}{4}$ -inch thick standard test coupon into the female die. The hand-operated hydraulic jack is rated at 8 tons, and the weld strength of the frame is calculated to be 100 per cent. The frame is inexpensive to make as there are no holes to drill or punch and the

parts do not have to fit accurately at the ends, permitting the use of scrap material. The assembly was arc welded with Lincoln welding equipment.

The side and top members of the frame are mild steel, 6 inches wide and  $\frac{1}{2}$ -inch thick. The male member of the die set is  $1\frac{1}{2} \times 2 \times 6$  inches with its upper end machined on a  $\frac{3}{4}$ -inch radius and its lower end welded to the upper surface of the jack. The female part of the die set also is 2 inches thick, and its curved portion is machined on a  $1\frac{3}{13}$ -inch radius. Its lower corners are rounded off. Such a test device can be constructed easily and at low cost in almost any fabricating shop.







## **"FLOATING" THE LOAD**

**... cuts handling and shipping damage, enables complete units to be shipped to save assembling costs**

THE "FLOATING LOAD" is a new solution to many diverse problems found in shipping a great variety of products. It is being used by the General Electric Co. in the shipment of steel mill control panels, rectifiers, motors, generator sets, furnaces, and most other equipment weighing from 5000 to 30,000 pounds loaded in box cars.

The primary object of floating the load is to eliminate shock ordinarily transmitted to the apparatus. When a fragile piece of apparatus is blocked solidly to the car floor, any shock to the car is transferred 100 per cent to the apparatus, which thus receives maximum shock, too.

With the floating load method, the apparatus is merely placed on the car floor, not fastened to it. Then it is held in position by two bumpers, one at either end, and by side braces which are nailed to the floor to keep the load from weaving sideways. When the freight car is subjected to shock, the car is simply knocked out from under the load, and it is the railroad equipment rather than the apparatus that receives most of the shock. A surprisingly small amount of shock

By **F. E. STEMM**  
Shipping Department  
General Electric Co.  
Schenectady, N. Y.

is transmitted to the load itself.

The method of preparing the car for the floating load is as follows: Sufficient room is left in each end of the car so that when the cars are coupled together in making up trains, the load will have ample room to shift. An "excelsior cigarette" about 18 to 20 inches in diameter, made of excelsior rolled into a burlap case, is placed in each end of the car to serve as a bumper. Faced with an impending shortage of burlap, paper or cloth may be substituted, for it is of little importance what material the excelsior is rolled in, so long as a cushion-like bumper is provided.

If the load is short and placed in the center of the car, the bumpers are moved up to within about 3 feet of the load, and car blocks are placed behind the bumpers to hold them in place. Side braces of 2 x 4's or 3 x 6's, depending on the size of the load, are extended from one

This shows a closeup of the bumper and retarders at one end of a load that is being "floated" in a box car. The retarders are merely spikes driven in ahead of the bumper to retard movement against the bumper. They stop vibration and small jars from skidding the load against the bumper, thus providing maximum cushioning effect when heavy shocks must be absorbed

end of the load to the other and nailed to the floor to prevent the load from weaving sideways. In this manner, the car can be kept in balance.

To prevent one unit from sliding a greater distance than another if more than one unit is loaded in the car, the units are bound together by heavy-gage steel straps or heavy-gage wire. The strap or wire is wound around the units several times and then tightened to form a "unit floating load".

In loading pieces under 30,000 pounds, it has been found that spikes driven into the floor just ahead of the load at both ends of the car and projecting 2 or 3 inches above the floor provide an excellent retarder. These spikes decrease the speed at which the load can move forward or backward into the bumpers when shock occurs.

Steel mill control panels ranging from 10 to 40 feet in length, consisting of several sections, each approximately 3 feet wide and of various heights, were formerly knocked down for shipment and each section placed in a separate box. In wiring the panels where wires crossed from one section to another, it was formerly necessary to cut these wires and use a connection strip. A large number of these connections were used on each panel.

When the unit floating load was developed and used for shipping panels, the cutting of the wires and use of connection strips was eliminated for it now became practicable to ship the board complete with all wiring in place between panels. This means a saving of time in tearing down the panel and in reassembling it after delivery. Although some control panels, blocked on flat cars, were occasionally shipped complete, it was not until the development of the floating load that such a practice was widely used.

When panels are loaded in box cars by floating load method, it is not necessary to box or crate up sides, ends or top. Skids, cross-pieces and tie rods are used to hold the panel in place and keep it from weaving.

The elimination of shock to apparatus means the saving of considerable sums of money for the manufacturer, the railroads and the company's customers.





*Increase  
Lower*

**HAULAGE SPEED**

**HAULAGE COSTS**

**with PORTER  
FIRELESS LOCOMOTIVES**



Porter Fireless Steam Locomotives give you SOMETHING EXTRA for every dollar you invest in them. New, unskilled workmen can quickly learn to operate and service them. They reduce haulage costs because their operating and maintenance expense is extremely low—made possible by the fact that there are no complicated parts, no diesel, electric or other motors in a Porter Fireless. They are refueled during idle periods.

If steam is available in your plant, a Porter Fireless can save up to 50% in haulage and switching costs. Built in direct and geared types, in sizes from 10 to 100 tons. Write for complete information.

**H. K. PORTER COMPANY, INC.**

**PITTSBURGH**

**PENNSYLVANIA**



## Saw Blade Compound Increases Blade Life

A paste cutting compound for power saws which is said to cling to the blade at its highest temperatures to give smooth cutting performance is reported by D. C. Cooper Co., 20 East Eighteenth street, Chicago. In using it, the compound first is mixed with water—one part compound to 30 parts water—then applied to the blade by established practices. Its odor is pleasant, and according to the company, it increases the life of saw blades 40 per cent or more.

## New Masking Material Eliminates Weld Spatter

Masking material for welding, called Turco Weldmask, which prevents spattered molten particles, or "dingles" from attaching themselves to the area surrounding the weld is announced by Turco Products Inc., Los Angeles.

Applied with a brush to the area most apt to be spattered, the masking material, after welding, can be

removed with a hard wirebrush. It is said to have no effect on the weld, does not evaporate or give off fumes, and can be used on steel, stainless steel, aluminum or magnesium.

Being a creamy liquid, the product does not dry on the work; therefore it can be applied immediately, or several hours before welding. It is soluble in water and no inflammable solvents are required for its removal.

## Gear Ratio Tables Make Solutions Easy

14,000 *Gear Ratios*, by Ray M. Page; fabrikoid, 404 pages, 8½ x 11 inches; published by Industrial Press, 148 Lafayette street, New York, for \$5.

This new book contains about 14,000 2-gear combinations and millions of 4-gear combinations. The tables are presented both in common fractional and decimal forms, divided into four main sections, each arranged to facilitate solution of different classes of ratio and speed problems.

Section I covers common fractional ratios and decimal equivalents,

119 tables, each complete on one page, with the denominator of the fractional ratio serving as an index, ranging from 2 to 120, inclusive.

Section II contains decimal ratios, their logarithms and equivalent pairs of gears. Ratios are expressed as common fractions and when a given ratio has two or more common fraction equivalents, all are given.

In section III are given tables of the total number of teeth, with equivalent gear pairs and ratios. The tables apply to all gear combinations having tooth numbers up to 120.

Section IV shows numbers and equivalent gear factors. The tables consist of all numbers from 20 to 14,400 that are the product of two factors, neither of which exceeds 120. This table is particularly useful in finding gear combinations equivalent to a given numerator and denominator representing a required ratio.

The sections are accompanied by typical examples showing how the tables are utilized in obtaining practical gear combinations for precise timing or speed relationship between driving and driven shafts.

## Air Raid System

(Concluded from Page 55)

miles or 10 minutes away, the Pittsburgh control center flashes this information to the plant. If the invading planes keep coming and get within a 5-minute hop of the plant, the Pittsburgh control center will send out the general alarm. This

will dispatch to their stations all Westinghouse firemen, first aid squads, rescue and demolition squads, emergency repair men and the salvage crew.

The general alarm sounded by the plant whistle will warn Westinghouse workmen to shut off their machines, protect vital tools, material and equipment, turn out the

lights and take shelter in a predetermined place. Employees have been assigned places of shelter at least 20 feet away from windows, under mezzanine floors, under benches, desks and tables, and in other places that offer protection against shell fragments and flying objects.

Office workers will evacuate the top three floors when the general alarm is sounded. Plant wardens will conduct them to such places of shelter as central halls, under desks and in coat closets away from windows.

In case of a blackout, lights in the plant yards and multi-storied office buildings will be extinguished as soon as the alert signal (planes 100 miles away) is received. If bombers reach a point only 25 miles away, the general alarm is sounded and all lights are turned off except dim green and red lights in the manufacturing aisles.

Extreme left, fire fighters reach for gas masks in one of the regular weekly practice sessions. Men are trained and equipped to use gas masks and battle incendiary bombs, oil fires, etc.

Left, control center, heart of plant protection system, is protected by planks and stacks of sand bags as a precaution against effect of nearby bomb hits. Control center is equipped with regular and short wave radios to pick up warnings of approaching aircraft, has 25 telephone lines to dispatch instructions and receive reports from plant ARP stations





# DON'T LET RUST

## "PUT THE FINGER" ON YOUR TURBINES

Don't wait until rust causes costly shutdowns. Refill your turbines now with new, rust-preventive Shell Turbo Oil. It meets, not just one or two, but all *three* requirements of modern turbine lubrication . . .

### RUST PREVENTION

### SUPERIOR OXIDATION STABILITY

### MINIMUM FOAMING TENDENCY

Don't "put up" with any oil that does less. Use new, tested and proved Shell Turbo Oil. Call in Shell now for details.



Lubricate with New  
Rust-Preventive

# SHELL TURBO OIL





"My boss wasn't kidding when he said he didn't have time to teach me. Yet, with the plant going night and day, I'm being called on more and more to use my own judgment in handling maintenance. That's big responsibility for new men—with piping so important. But I'm catching on—with the help of these Crane Piping Pointer Bulletins."

TODAY, Crane Shop Bulletins are doing a timely twofold job in many plants. (1) Their many practical hints on better piping practice aid in training and supervising maintenance crews. (2) They help step-up the operating efficiency of pipe lines, and assure maximum service from present equipment.

Piping Pointer Bulletins are offered free to your plant—for your employee training school, for posting in shops, for distribution to your men. Just ask your Crane Representative; he will be glad to supply them.



# CRANE

CRANE CO., GENERAL OFFICES:  
836 SOUTH MICHIGAN AVENUE, CHICAGO  
VALVES • FITTINGS • PIPE  
PLUMBING • HEATING • PUMPS

NATION-WIDE SERVICE THROUGH BRANCHES AND WHOLESALERS IN ALL MARKETS



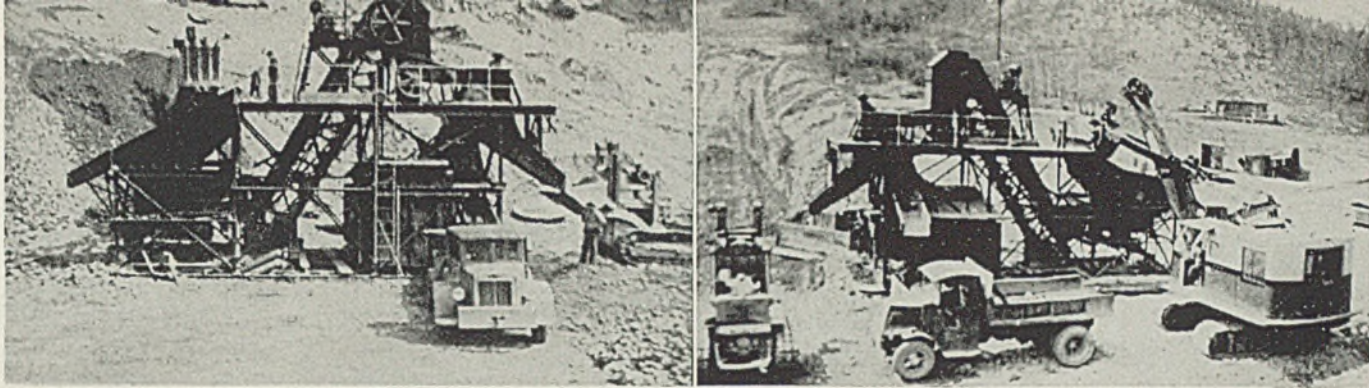


Fig. 1. (Left, above)—Side view of separating machine which is positioned near the digging operation

Fig. 2. (Right)—Disposition of slag and refuse is by a tractor-operated bulldozer, tractor bucket or trucks

## Recovery and Preparation of STEEL SCRAP

FREE STEEL in metallic form is lost in the slag and pit refuse in modern steel making operations.

Physical characteristics of this lost metal range from the commonly-recovered ladle skulls, tap hole drippings, large pieces of pit scrap, and sizeable buttons from the bottom of slag thimbles, down to minute droplets of metal which may be bound up inside solid pieces of slag or which splash out of the ladles at the time of tapping, giving the effect of many sparks, each of which is, in reality, a particle of steel.

For many years steelmakers have been aware of these losses of free metal and have devised methods and installed equipment for the purpose of recovering that portion which could be recovered economically and which may be recharged into the furnaces as cold scrap.

Attention to the recovery of usable free steel in slag and refuse first was given in Europe, due to the fact that raw materials there are more scarce and consequently higher priced. Prior to 1920 some attention had been given to the possibility of recovering permeable metallics in small sizes from various diluting materials by means of magnetic separating equipment. This principle was considered about that time, particularly in the light of its possible application to the recovery of metallics in foundry sand and even in open-hearth slag. In the early 20's several installations were made in various parts of Europe specifically for the purpose of recovering the permeable metallic gates, risers, etc., present in foundry sand, and experiments were made along the same line in effect-

By FRED E. ULLMAN  
Chief Engineer  
The Heckett Corp.  
Butler, Pa.

ing a similar recovery of free steel from steelmaking furnace slags. In 1927 E. H. Heckett, president, Heckett Corp. and Heckett Engineering Inc., Butler, Pa., became interested in the application of the magnetic separating principle to the recovery of the metallics contained in foundry and steel plant slag and refuse, and began constructing and operating recovery plants. By 1938 a total of 20 installations had been made in various European foundries and steel plants by his company. European recovery operations were of such importance to various steelmakers and foundrymen that arrangements were made by them to permit Mr. Heckett's Dutch company to operate in many of the European countries without the restrictions of blocked currency regulations.

By 1938 a preponderant number of the larger foundries and steel plants in Europe were equipped with comparatively efficient recovery installations, while at the same time visiting members of the American steel industry were becoming interested in the possibility of effecting more efficient recovery of metallics in American steel plants. It was at this time that Mr. Heckett came to the United States and investigated the possibilities for recovery operation in the American steel industry, consequently becoming acquainted with a number of American steelmakers.

With the possible exception of the last World war period there had always been a plentiful supply of

steel scrap in America. As a result steelmakers had not given serious consideration to recovery of losses of free steel in steelmaking furnace slags. Although a number of individual plants were operating slag docks and skull crackers, thereby enabling them to recover a portion of steel lost in the slag and refuse, it was apparent that American steelmakers had not recognized the full possibility inherent in the recovery of these lost metallics. They did not believe that sufficient quantities of steel were lost in the slag and refuse to warrant the installations necessary to recover these metallics. A number of the plants that were recovering some of the lost metallics found that the scrap was not of high enough quality to allow appreciable percentages to be charged in any one heat. Furthermore the steel makers were of the opinion that the metallics that were contained in the slag and refuse could not be prepared to such a quality. For these reasons little development of special equipment for recovering these metallics was undertaken by American steel makers. Because of this lack of interest it was difficult to arrange for an initial installation of a complete recovery and preparation operation.

No patents were in existence covering the application of magnetic separating machinery for the recovery of permeable metallics from steelmaking furnace slag and refuse. There were patents on magnetic separating machinery used for the purpose of recovering permeable metallics, such as nails, nuts and bolts, etc., from material, such as grain, coal, etc., in which the metallics were considered impurities which it was necessary to remove for one reason or another. With the exception of numerous small installations of magnetic separating equipment for the recovery of permeable metallics from foundry sand and blast furnace slag in slag plants, little, if any, attention had been given to magnetic separation as applied to the recovery of usable permeable metallics with the intention of utilizing the recovered metallics as cold scrap. Consequently it was possible to obtain patents covering the recovery and preparation of steel scrap from steelmaking furnace slag and refuse.

The first recovery and prepara-

Presented before Detroit section, Association of Iron and Steel Engineers, March 1942.



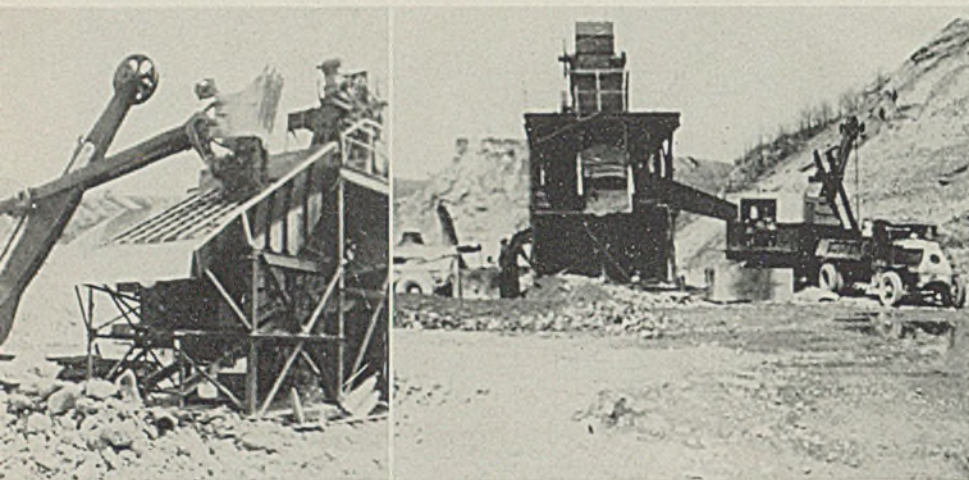


Fig. 3. (Left)—Loading operation. Oversize pieces are chuted to the ground where steel is recovered either by hand or magnet

Fig. 4. (Right)—Recovered steel and slag-containing steel are handled in pans

tion plant was erected in a midwest plant of one of the large steel companies. Due to the fact that the steel company was unwilling to sign a long-term contract without having first experienced the value of the recovery operation both as to quantity recoverable as well as to the quality to which the recovered steel scrap could be prepared, the first plant was erected for the purpose of recovering the steel contained in the refuse coming from the open-hearth furnace pits. The operation proved successful and resulted in a second operation in a southern plant belonging to the same steel company covered by a longer term contract. The second installation was designed for the purpose of recovering the steel scrap contained in an existing dump. By the time this operation had started producing, considerable interest was shown in the process by numerous other companies and four more plants have since been built and put into operation. Several more plants are being built at present and plans for more are under way.

Recovery and preparation operations are best divided under two general headings. The first is the dump operation involving the recovery and preparation of steel scrap from the slag and refuse contained in existing dumps. This type operation is particularly interesting to steelmakers at the present time due to the fact that many of the old slag dumps contain high percentages of steel scrap which may be recovered and prepared in considerable quantities thereby alleviating the scrap shortage in the individual cases where such operations can be installed.

In the dump recovery operation all of the recovery equipment is readily portable. For this reason the magnetic separator is a special-

ly built unit capable of handling 150 cubic yards per hour, complete with its own power plant and built on skids or caterpillar treads in order that it may be moved as is necessary to follow the digging operation.

Fig. 1 is a side view of the separator machine showing the side away from the edge of the dump where the digging operation takes place. In operation the shovel picks up its load of slag and refuse from the dump and deposits the material approximately  $1\frac{1}{4}$  yards at a time, on an inclined grizzly which allows pieces of 12-inch size or smaller to pass into the hopper beneath the grizzly. The actual loading operation is shown in Fig. 3 and the oversize pieces, which will not pass through the grizzly into the hopper below, roll down on a chute to the ground in front of the machine where the larger steel pieces may be picked out either by hand or by a crawler crane equipped with a magnet. Material, which has passed through the grizzly into the hopper below, is fed to a bucket elevator which raises the material to a suitable height for gravity handling. The material from the bucket elevator is fed over a magnetic separating drum which removes the metallics and slag containing metallics from the slag and refuse. The slag chute is shown on the extreme right. The recovered metallics drop on a screen below the drum where a size separation is effected. The pieces passing through a  $\frac{3}{4}$ -inch mesh screen are ultimately used in blast furnaces. The larger pieces, which do not pass through the screen, are brought out on the opposite side and ultimately used in steelmaking furnaces. The power plant and control equipment are located in the housing to the left of and below the slag chute.

Fig. 2 shows the side of the machine adjacent to the edge of the

dump where the digging operations take place. The slag chute on the extreme left and the chute carrying out the larger pieces of steel which ultimately go to the steel-making furnaces are shown. The position of the shovel is such that the shovel can dig from the dump and load directly upon the grizzly over the hopper. The dump truck shown in the foreground is placed directly behind the shovel in order that the larger pieces of steel may be loaded directly on the dump truck by the shovel.

Figure 2 also illustrates the manner in which the slag and refuse is ordinarily disposed of. The slag and refuse usually is allowed to drop on the ground from the slag chute and is pushed away by a caterpillar-type tractor with a bulldozer. In cases where the space for rebuilding the dump of worked-through slag and refuse is not sufficient, a special tractor is used which is equipped with a large bucket. With this unit the slag and refuse falling on the ground from the slag chute may be picked up and carried up a steeper grade than is possible in the bulldozer operation. The lip of the slag chute is approximately 8 feet above the ground level and in many cases the worked through slag and refuse is loaded directly into trucks and hauled to fill jobs. Where disposal of waste by tractors is impossible, the entire output of slag and refuse from the machine may be loaded in trucks and transported to any desired location.

Fig. 4 illustrates the manner in which the recovered steel, is handled. Projecting from the right and left of the machine are the steel scrap and blast furnace fines chutes respectively. Beneath these chutes are placed pans which may be handled by the pan hoist truck. When these pans are filled they are picked up by the truck, pulled out from beneath the chutes, empties replaced under the chutes, and the full pans carried to the respective stocking points. A hand-operated gate is mounted in the slag chute which permits the separator machine operators to shut off the flow of slag coming down the slag chute while a tractor or truck passes beneath the chute in transporting the worked-through slag and refuse away from the machine. Smaller gates also are mounted in the steel scrap and fines chutes in order that the flow of these materials may be stopped while the pans beneath the chutes are being replaced. These gates permit the continuous operation of the machine irrespective of transportation operation.

Due to the necessarily high strength of the magnetic drum, all materials, which could be picked up with a 65-inch industrial magnet, are recovered and are led out of the



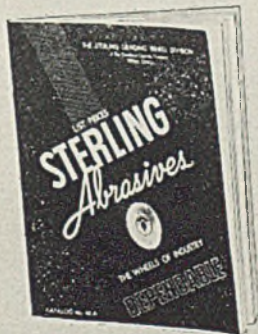


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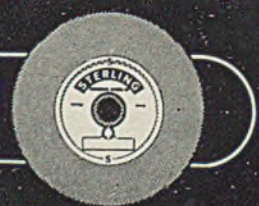


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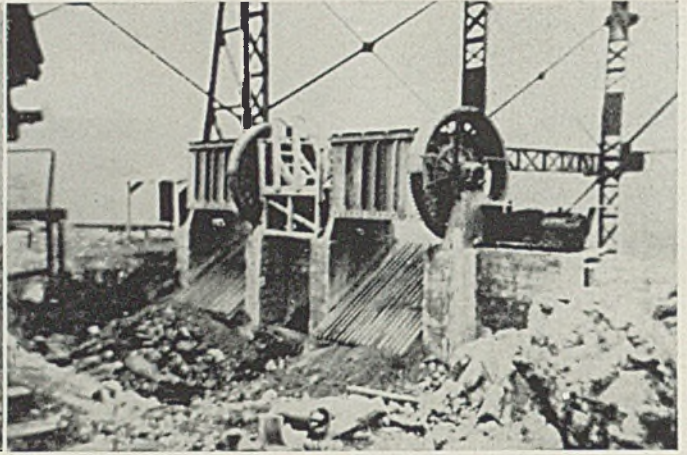
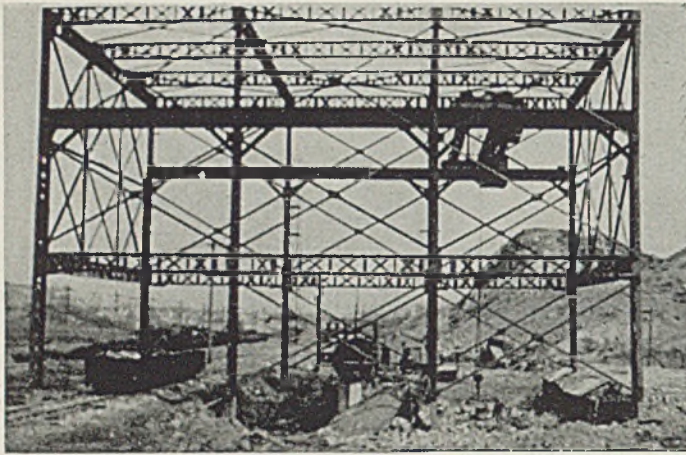


Fig. 5. (Left)—Typical preparation unit including a siding for loading out recovered material

Fig. 6. (Right)—Cleaning installation including tumbling mills of 6 tons capacity

machine over either the fines or steel scrap chutes. These materials consist of steel pieces and magnetic slags contained in the dump. A large percentage of the materials coming over these chutes consist of pieces of magnetic slag containing no free metal, but made up largely of magnetic oxides. Since the average analysis of the fines for blast furnace use is below 40 per cent iron, it is necessary that these fines be stocked and rerun through the separator machine. During the rerunning of the fines the voltage on the magnetic drum is adjusted to exclude any desired portion of the fines. By means of such adjustment the analysis of the rerun fines can be controlled to the extent that the final analysis of the fines may be brought up as high as 80 per cent iron. In cases where the analysis of the slag adhering to the fines is not too high in oxides not desirable in the blast furnaces, it often is desirable to charge the fines as they come out in the first run. This applies particularly where the recovery operation is close enough to the blast furnaces to minimize the transportation costs. The fines ready for shipment to the blast furnaces are caught in pans, transported by the pan hoist truck to a railroad siding, and dumped directly into hopper cars.

A typical preparation unit consisting of an overhead crane, a breaking pit for breaking down large pieces of steel to charging box size, a cleaning installation, and a siding under the runway for loading out recovered and prepared scrap, is shown in Fig. 5. The recovered steel scrap is brought in from the recovery operation from the extreme right and is dumped beneath the runway from the ramp under the right hand end of the runway. Two dumping chutes are located under the end of the runway, the lips of which are 6 to 8 feet above the ground to allow sufficient stocking space. Materials recovered through the separator and which pass over the steel scrap chute are dumped on one of these

chutes while the larger steel pieces loaded directly onto a dump truck by the shovel are dumped on the other of the chutes. The larger steel pieces are picked up by the magnet operated by the overhead crane and broken down to charging box size by the skull cracker method. Thick pieces of pit scrap or large buttons from slag thimbles which cannot be broken by the skull cracker ball are lanced with an oxygen and blasted with dynamite. The large and small pieces are fed into the cleaning installation in approximately equal proportions for greatest efficiency in the cleaning operation. The cleaning installation is shown in the center of the runway and after cleaning, the steel scrap is dumped into a pit shown on the left of the cleaning installation and loaded in cars or charging boxes on the siding.

The cleaning installation shown in Fig. 6 consists of large tumbling mills specially designed for the cleaning operation. These tumblers handle batches of approximately 6 tons at a time. The material is loaded in through the open top, the lid clamped on, and the tumblers rotated for sufficient period to give the desired analysis. After the cleaning has been completed the lids are removed and the tumblers dumped into the pits which are specially designed so that the material falling out of the tumblers is separated into two component parts. The tumbling action breaks down the majority of the adhering slag to granular size. Such removed and pulverized adhering slag makes up approximately 30 per cent of the total weight of the steel scrap charged into the tumblers. The tumbler pits below the rails are designed so that the fine slag drops immediately below the rails while the steel is carried further out away from the base of the rails. The mag-

netic slag, which has been recovered by the separator and fed into the tumblers, is also broken down to granular size and is also separated from the prepared scrap when the tumblers are dumped.

*(Concluded Next Week)*

## Printed Standards on Oil Heaters Ready

Printed pamphlets of the standard entitled "Flue Connected Oil Burning Space Heaters Equipped with Vaporizing Pot Type Burners, Commercial Standard CS101-43", which was accepted by the trade for new production beginning Jan. 1, 1943, are now available according to I. J. Fairchild, chief, Division of Trade Standards, National Bureau of Standards, Washington.

The standard was first announced in April, and even though the areas and conditions under which oil-burning space heaters may be installed are limited by War Production Board orders L-56 and L-79, it is expected that this standard will be adhered to for permitted installations, and that after the limitation orders have been lifted, it will be adhered to generally, according to the government bureau.

## Text on Magnetic Tools

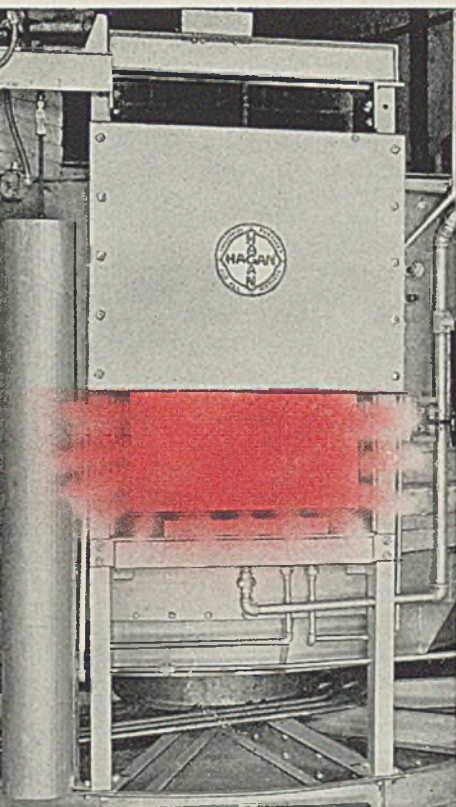
*Magnetic Tools and Appliances*, by E. Molloy; fabrikoid, 116 pages, 5½ x 8½ inches; published by Chemical Publishing Co. Inc., Brooklyn, N. Y., for \$2.50.

This volume deals with applications of magnetism in up-to-date engineering work, including magnetic chucks, clutches, lifting magnets, magnetic brakes, magnetic separators and equipment designed for magnetic detection of flaws in engineering materials.

Each application is dealt with in detail, forming a presentation useful to production engineers and works managers.



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WAR PRODUCTION demands that welding labor be distributed most economically if the battle of production is to surge ahead according to plan. Cut to its simplest form, this means every welder must be equipped in a manner that will permit him to perform his welding activities with the fewest possible interruptions. Cleaning, whether preparatory to welding or after the welding work is done, is not a function that calls for the skill of a trained welding operator. Instead cleaners or welders' helpers should be provided for this task.

In the current armament program little welding is done on plates and shapes as they are received from the steel mills. Usually the work is prepared for welding by machining or by a flame process. First machining will be studied and next the flame processes will be discussed in their relationship to the welding that is to follow.

If the plates are large, as is the case in shipbuilding, a plate planer may be used to trim and bevel the plate edges, leaving them bright and clean for welding. Then no further work is needed to condition the steel for welding. However, there are many small pieces that are machined and drilled prior to welding. These parts are delivered to the welding shop with a film of cutting oil on them. This oil burns off during the welding operation, producing fumes that are obnoxious, especially when the welding is performed in close quarters. And in certain cases weld quality may suffer from the sulphur in some cutting oils or from other chemicals that interfere with weld soundness.

Fortunately a simple remedy will eliminate this source of difficulty. Many welderies have installed cleaning tanks where suitable chemical cleaners dissolved in water and kept at constant temperatures of from 160 to 200 degrees Fahr. do the cleaning work quickly and efficiently. A typical two-compartment tank is illustrated in Fig. 1 with the dimensions omitted as these can be varied from plant to plant to fit the work

# CLEANING

## an important welding operation

By HAROLD LAWRENCE

Metallurgist and  
Welding Engineer

to be cleaned. One compartment contains the cleaning compound while the other compartment is filled with rinse water. The hot water dries quickly, leaving a surface well suited for welding.

The drawing does not indicate piping connections which can be located to suit the individual installation. Water inlet piping and drain pipes are handy while an overflow pipe in each compartment is a wonderful precaution. Although gas heating is indicated, steam, oil or hot gases from some other source are equally satisfactory. Thermostatic control will save fuel and prevent excessive evaporation of water. Another nice feature of this cleaning installation is the fact that it can be assembled from scrap plate by welding at little cost without wasting new metal.

Of course there is a practical limit to the size of the cleaning tanks. Steam guns that eject the cleaning chemical against the work are available for large work. Gun cleaning functions on the same general principle as tank cleaning. Preferably it is done out-of-doors as the removed grease and dirt must be allowed to run off where it will not soil valuable working space.

Oxygen cutting for plate edge preparation is enjoying widespread popularity on armament and ship welding because of its versatility. In addition the cutting machinery may be built more quickly and placed in

service in less time than some of the machine tools that would be specified for similar work. And the oxygen cut surface, particularly when produced mechanically rather than manually, needs no further preparation for welding.

Originally the ASME boiler code, the pioneer among codes for welding, called for grinding or other cleaning to bright metal prior to welding. But tests soon proved that well cut surfaces were suitable for welding without any additional effort being expended on them. So all modern and up-to-date specifications permit the welding of fresh flame-prepared edges, provided the cut is free from loose scale and slag. Furthermore the edge must be smooth as in Fig. 2A. Jagged places, such as Fig. 2B, must be ground to a streamlined contour like that shown in Fig. 2C before welding is attempted. Irregular points in a cut result from a discontinuity in torch travel, from an interruption in gas flow or from a jerky torch manipulation during manual cutting.

Flame cut edges have a blue discoloration that is not harmful to the weld. The amount of oxygen introduced during flame cutting offers no practical problem. Neither does the carbon change at the extremity of the cut present any actual difficulty. Nor is the heat effect objectionable unless the carbon content of the plate exceeds 0.30 per cent or unless carbon, alloys and plate section are in a combination that reduces weldability. A ready rule is that a plate that possesses good weldability may be flame cut safely.

Where secondary or used plate is to be welded, preparation may be more troublesome. Frequently sand or grit blasting is essential to clean this type of material properly. In less severe cases flame cleaning has been found quite satisfactory. And where light rust or scale is to be removed, wire brushing either with hand brushes or with motor driven brushes has done the job.

Important as cleaning is as a preparation for welding, it is during the progress of the welding that cleaning assumes its major part. For here lies the difference between the superior operator and the run-of-the-mine welder. The expert welder makes cleaning a brief op-

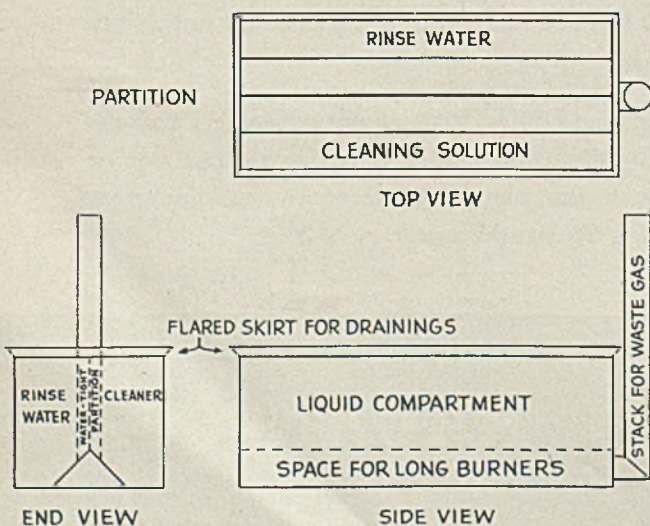


Fig. 1—This cleaning tank can be built to a wide range of proportions to accommodate most any size work to be welded. Note that in the single tank and heated from a single set of burners are two compartments—one for the cleaning solution, the other for the rinse water



eration between passes. The average welder makes cleaning a major workout between passes.

Two well recognized attributes of welding electrodes are smooth, uniform deposits and a slag that comes off the weld with ordinary persuasion. Teaming a good operator with an electrode with these characteristics minimizes the cleaning effort. The welder deposits a perfect weld and chips the slag free in readiness for the following pass. Hand tools or at most a light chipping tool should be sufficient for the work.

### Close Supervision Required

The need for close supervision of welding has become obvious as more and more plants change over to essential war manufacture. That an equal effort ought to be expended on cleaning has not received the recognition it deserves. And this condition is all the more disturbing when time spent on cleaning is appreciated. Quite often the cleaning effort is more time consuming than the actual deposition of weld metal.

A welder's chipping hammer or tomahawk is a useful and simple tool. In proper hands, it accomplishes slag removal with a slight expenditure of effort. However it remains the one cleaning tool that is likely to be abused. For with it the welder can peck away at minute slag particles in a lackadaisical and time consuming maneuver that contributes nothing to the quality of the completed weld. Therefore supervision and patient instruction are necessary to teach the welder the correct degree of slag removal. Too much cleaning sabotages our war effort by lowering productivity, so it is to be avoided as zealously as too little cleaning.

Some shops have eliminated the hand cleaning hammer in favor of a small, vibrating power tool. Even though this tool costs more to operate, precious time is saved through the extreme rapidity of its performance, while over-cleaning becomes less likely.

Hand wire brushes are part of the normal welding tool kit. This is another valuable tool provided it is used intelligently. Large, loose particles of slag are easily brushed away. But polishing, as attempted by all too many welders, is unnecessary. The very fine slag particles that come free as a result of intensive polishing would have floated out of the weld during the following pass anyhow.

Power-driven wire wheels are standard equipment in shops that feel the need for power tools as an antidote to time-wasting manual cleaning methods. With well supervised cleaning efforts, either type of tool may be used, with the final

choice resting entirely on the nature of the welding activity.

Although strictly not a cleaning operation, the removal of cover beads preparatory to X-ray examination involves the use of the same general class of tools with the addition of a grinding wheel. Straight chisels are employed to remove the bulk of the metal, following which a power grinding operation supplies the finishing touches. A study of this procedure will save an appreciable amount of time. The chipper is the important artist in this work. Good chipping will remove the reinforcing weld metal smoothly and with a nice balance for finished tolerances. Next a quick once over with the grinding wheel completes the job. Supervision at this point pays for itself in expedited work of high quality.

Chipping out defects between passes is another art. Correct chisel design is one of the secrets in this connection. Smooth fillets are important to high fatigue life in the chisel shanks. Correlation between chisel shape and welding groove must be given consideration for maximum tool life with the fewest number of interruptions due to broken tools. Moreover a reduction in the number of tool failures increases safety standards as all too frequently the sudden breaking of a chisel results in smashed fingers for the inexperienced operator.

### Praises Anti-Spatter Compounds

Another bad practice that has been prevalent is the stamping of identifying letters or numbers on the chisel body. Often this marking acts as a stress raiser and causes premature fatigue failure at the point of stamping. Good heat-treating practice makes for longer chisel life with fewer interruptions for sharpening, thereby contributing to more rapid cleaning effort.

Preparation for welding and cleaning is in order on work that is to be painted after the welding is completed. Glyptal or any of the numerous spatter resisting compounds may be applied in a wide band on either side of the welding groove. Spatter will not stick to these compounds, thus making for a speedy cleaning for painting following completion of welding. Although some anti-spatter materials have a high first cost as expressed in dollars per gallon, most of them have excellent covering power. An analysis of the cost of sprayed or lightly brushed spatter repelling coatings as against the labor saved, reduction in overhead and quicker turnover of completed product will quickly prove the advantage of this particular pretreatment.

Cleaning of nonferrous and highly alloyed metals prior to welding is too complicated a subject for this

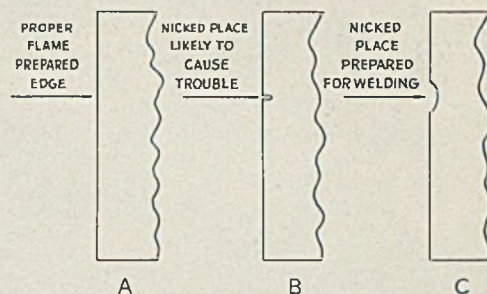


Fig. 2—This illustrates a properly prepared flame-cut edge and also how to remove a nick in preparation for welding

article. It is important to follow the manufacturers' recommendations in this regard. Some oxides must be removed by chemical treatment, while others can be eliminated through the judicious application of fluxes. The primary reason for these cleaning efforts is the elimination of welding cracks.

Because cleaning is considered to be a secondary operation in the category of a *necessary evil*, welding shops have been prone to neglect this phase of their work. Effort applied intelligently in this direction, however, will serve to speed up work by rooting out time-consuming practices that bring little constructive improvement in weld quality.

Supervised cleaning (both chemical and mechanical) can lead to startling results in stretching available manpower into more units of production.

All promising short cuts should be tried and checked by approved test methods before adoption. The cut-and-try method will enable the supervisor to work out a standard cleaning technique for each type of weld that is based upon the least possible expenditure of effort for the desired results.

### Metal Work for Schools

*Metalworking Made Easy*, by William J. Becker; cloth, 135 pages, 6 x 9 1/4 inches; published by Bruce Publishing Co., Milwaukee, for \$1.60.

The author is instructor of industrial arts, Boynton junior high school, Ithaca, N. Y. The projects covered in his book are intended for the introductory metal shop and have been used successfully in junior high school work. Directions are included so any boy of junior high school level should have no difficulty following them.

Projects are in three main divisions, art metal, sheet metal and ornamental iron, arranged in order of difficulty. They are offered to aid the student and teacher in the selection of jobs and not as an iron-clad course of study.



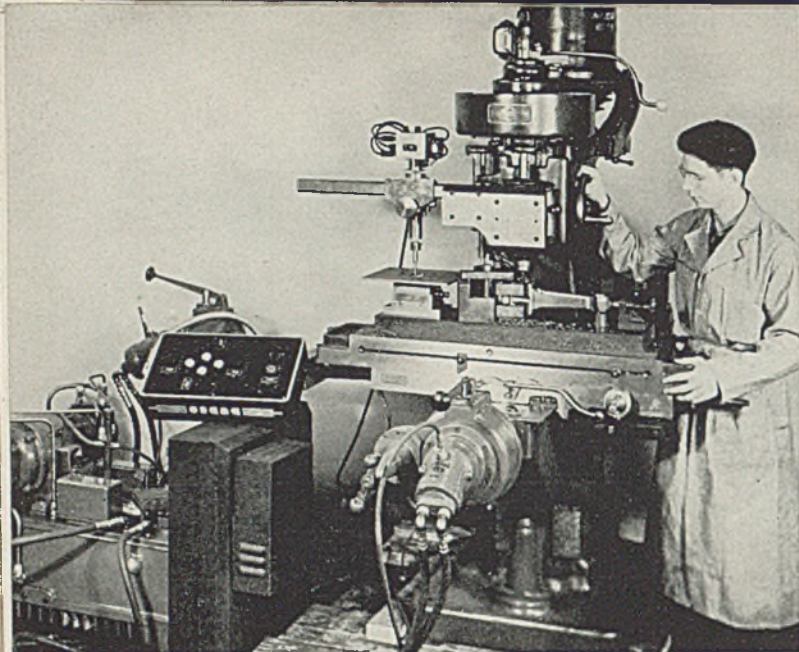


Fig. 1—The Duplimatic semi-automatic control system employs a portable unit which carries the electric motor driving two pumps in the dual hydraulic system. Control panel also is mounted on portable unit

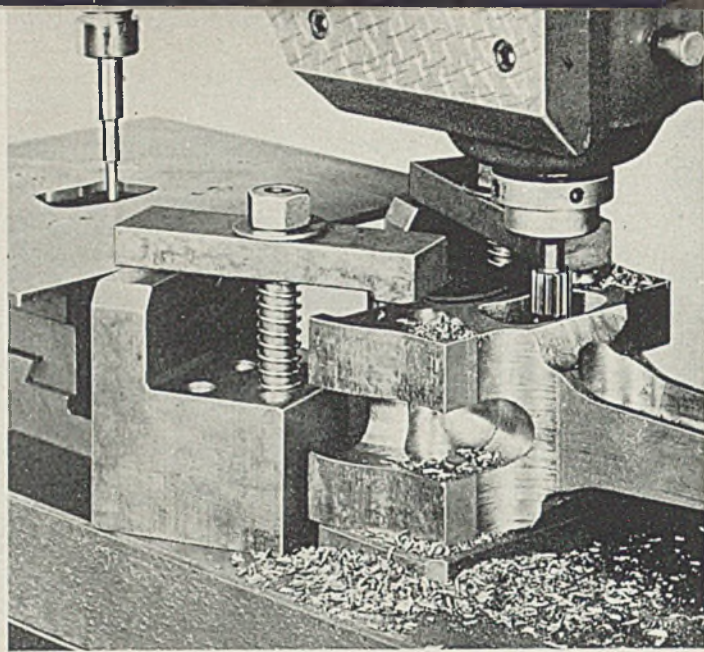


Fig. 2—Showing setup for semi-automatic control of an irregular milling operation. Templet and tracer are at left, milling cutter and work in center

## SEMI-AUTOMATIC CONTROL

### Operates Standard Machine Tools

A SEMI-AUTOMATIC control that permits contour machining with standard machine tools at speeds and accuracies considerably beyond the capacity of a human operation is being employed to control the milling of aircraft connecting rods at one of the major aircraft engine plants. The equipment, known as Duplimatic and manufactured by Detroit Universal Duplicator Co., 253 St. Aubin avenue, Detroit, controls both the transverse and longitudinal feeds of a Reed-Prentice vertical milling machine in much the same manner as would an operator using manual control alone.

Manipulation of feed screws by the Duplimatic control is in accordance with the outline of a templet which is mounted on the table with the work. Thus, the cutting tool mills along a path identical with the templet in the same manner as that controlled by an operator—except at greater speeds and closer accuracies.

The work as shown mounted in Fig. 2 has a templet fastened to the table at the left. A tracer mechanism is mounted on the head of the mill and remains immovable as does the cutting tool. This tracer is connected with the control so that during the operation the Duplimatic moves the table (and, of course, the work and templet) so that the templet is always touching the tracer finger with a predetermined and exact amount of pressure.

The sensitivity of this touch is so precise that the instant the movement begins to reduce or increase the pressure between the templet and tracer finger, the Duplimatic instantly reverses the travel and re-establishing the proper contact. And no matter how intricate the shape of the templet or speed of the cutting feed, the pressure between templet and tracer finger will always be held the same.

The sketch, Fig. 3, shows the relative position of the tracer finger and templet in the master rod milling job illustrated in Fig. 2. When the starter button is pressed, the table starts moving forward at cutting feed until the templet

touches the tracer finger as shown at B.

Longitudinal feeding begins the instant the templet has come into contact with the tracer. But the transverse feed also continues and keeps the templet in contact with the tracer. Thus, as the longitudinal feed is moving the templet from point 1 to 2, the transverse feed also is moving the table with the templet in conformity with the irregular contour. When the corner C has been reached the longitudinal feed is reduced and the transverse feed is increased as required to move the templet along the next side yet keep it touching the tracer at all times.

Meanwhile, the milling cutter has been moving along an identical path with respect to the work and thus producing an exact duplicate of the outline of the contour of the templet.

At each corner of the work the operator merely presses the proper "change-of-direction" button. However, this does not have to be done at any exact point on the radius.

If the operation requires both a roughing and a finishing cut, the same procedure is followed. First the roughing is made. Then with a slightly smaller diameter tracer finger, the operation is repeated for the fine finish required.

No major changes in the machine tool are necessary when adding this semi-automatic control system. Separate drive heads replace the longitudinal and transverse feed handwheels. The tracer arm can easily be removed whenever it is necessary. The portable control mechanism can be placed at any point alongside the machine where it is most accessible to the operator.

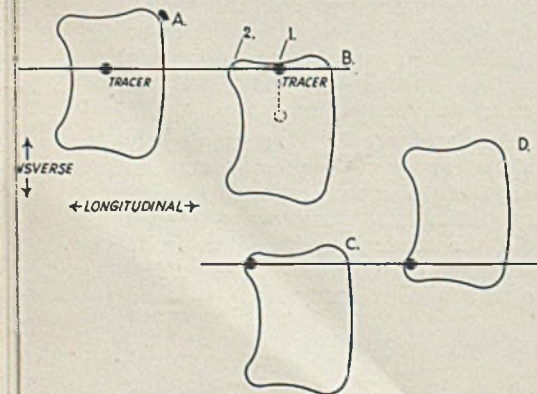


Fig. 3—Diagram showing path of tracer in milling an irregular contour. See text for explanation of operation



## Introduces New Weatherproofing Method

An improved method of weatherproofing prefabricated metals and shapes is announced by Coated Products Corp., Verona, Pa. It consists of the application of Plastipitch, a pitch of improved plastic characteristics, in a simple bonding process to weatherproof all types of metals of various sizes, shapes, forms or gages.

Only prefabricated or preformed metals can be treated by this method, according to the company. Also no further shaping or forming is required after the Plastipitch application is completed.

Outstanding characteristic of this method of weatherproofing is its ability to provide special climatic or weather resistant qualities as may be required to meet arctic or subtropic conditions—accomplished by appropriately modifying the Plastipitch before application to produce a coating that will not become brittle or chip off at low temperatures or melt and flow at high temperatures.

## New Foundry Manual Devoted to Coremaking

*Modern Core Practices and Theories*, by Harry W. Dietert, cloth, 532 pages, 6 x 9 inches, published by American Foundrymen's Association, Chicago, for \$5 to members of the association and \$8 to nonmembers.

One of the first books published dealing exclusively with the materials and equipment used for production of cores, it covers all phases of production and use of cores in the foundry. The back is a compilation of material presented by the author in lectures at the 1941 and 1942 conventions of the American Foundrymen's Association.

It deals with sands used in foundry cores, their selection and types available in various districts. The section on core binding materials deals with oil, cereal and clay binders of various types. Also core mixtures are discussed as applied to steel, gray iron, malleable, brass, bronze, aluminum, copper and magnesium castings. Storage, conditioning and handling of core materials are discussed, as well as proper mixing technique and mixing equipment.

A considerable portion of the volume is devoted to coremaking methods and equipment, core baking and core ovens and action of various types of core binders under heat. Variables are considered, such as rate of moisture elimination, atmospheric humidity, arrangement of cores in the oven and fineness of sand, oven control and fuels.



**B**OMBS that rain from the sky take a terrific toll in destroyed property and lost lives.

The special targets of enemy airmen are manufacturing plants—for here, at the source of production, battles are often won or lost before actual combat begins. So every effort is made to protect these plants where the materials of war are made . . . camouflage and black-out, anti-aircraft batteries, even balloons swaying on leash in the sky help to keep enemy air forces from coming too close.

Yes, every device is being used to protect industry and keep the wheels of production turning smoothly and swiftly every hour day and night.

But, the enemy without is not the only destructive force which must be eliminated. Dust—like enemy bombs—dangerous and destructive,

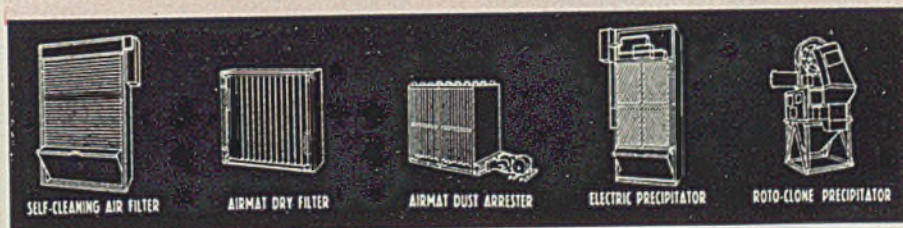
but much more insidious in the way it attacks—is the air-borne menace that strikes from within. No deafening roar of engines or wailing air-raid sirens announce its arrival, for dust in its most destructive form—comes unheralded—can even be invisible.

The menace of industrial dust that ruins irreplaceable machinery, spoils materials in process and impairs workers' efficiency can be controlled with American Air Filter equipment.

Hundreds of existing plants and practically all new war production plants are equipped with American Air Filters to eliminate atmospheric dust and AAF Roto-Clones to control process dust.

Send to Dept. 443 for helpful booklet "AAF In Industry". Canadian companies please address Darling Bros., Ltd., Montreal, P. Q.

**AMERICAN AIR FILTER CO., INC. LOUISVILLE, KY.**

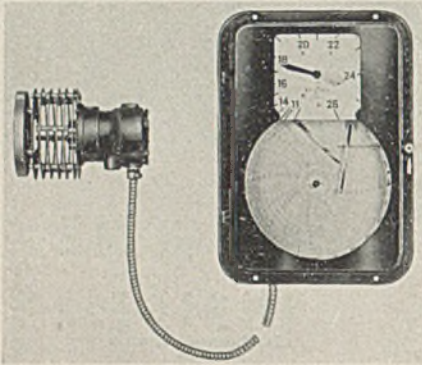




# INDUSTRIAL EQUIPMENT

## Radiation Pyrometer

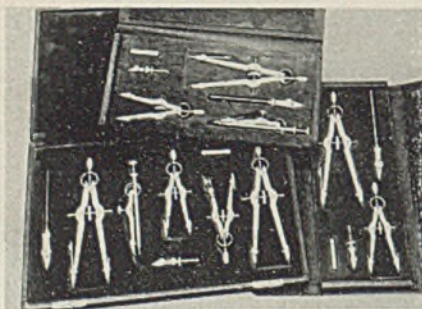
Bristol Co., Waterbury, Conn., has introduced a new radiation pyrometer, the Pyrovac, for recording, indicating, or automatically con-



trolling temperatures in furnaces and kilns above 900 degrees Fahr. In use, the unit is mounted on the outside of the furnace out of the hot zone where it picks up heat rays emitted from the object under measurement, registering its surface temperature. The pyrometer is intended for use in measuring high temperatures out of the range of the thermocouple, temperatures for which rare-metal thermocouples are used, surface temperatures, such as roof, wall, duct, lining, or retort temperatures and the temperature of the work itself rather than furnace or kiln temperatures surrounding the work, and temperatures where the object is moving, is inaccessible, or where there are space limitations.

## Drawing Instruments

V & E Engineering Co., Pasadena, Calif., announces a new line of drawing instruments said to embody new features of open truss design which increase strength and rigidity while cutting weight by 40 per cent. Available in three combinations of

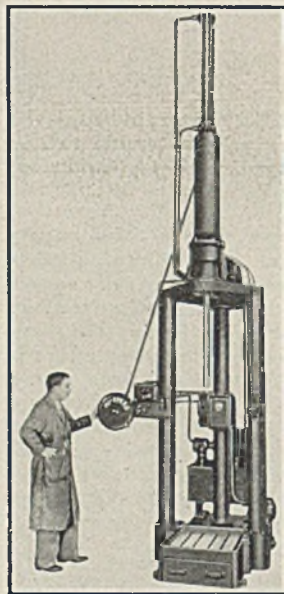


bows, drop bows, and pens, the instruments are of steel, satin-chrome plated. Each bow has a center-screw adjustment which articulates

with the legs by cylindrical nuts. The legs bear upon a double-grooved hinge pin of broad base, assuring strength and perfect alignment. The sets are packed in velvet-lined leather cases.

## Honing Machine

Automotive Maintenance Machinery Co., North Chicago, Ill., announces a Hi-Speed honing and lapping machine capable of honing internal cylindrical surfaces with bores up to 24 inches in diameter with any stroke from 20 to 72 inches. Its design provides ample space for large cylinders to be placed on its standard base. Variations in stroke or height under the spindle nose are easily controlled. All controls are located at the front of the machine at the operator's station. A positive stop and dwell system

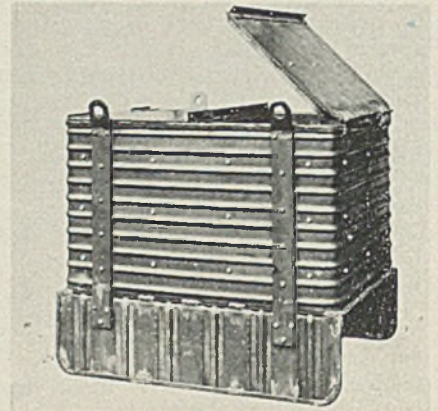


makes it possible to stop the spindle at the bottom of each stroke or at any point within the stroke range without any shock to the machine or work being honed. Machines are offered in four sizes.

## Insulated Skid Box

Union Metal Mfg. Co., Canton, O., has developed a new insulated skid box for storing and cooling hot forgings. It features a 7-gage skid, a 9-gage outer casing and 12-gage inner casing with a  $\frac{1}{4}$ -inch asbestos lining in between. The lid also is reinforced and insulated. The box is designed so that it can be picked up by a crane or lift truck, together with its load, then stored

out of the way until the forgings have completely cooled. This method, according to the company, pro-



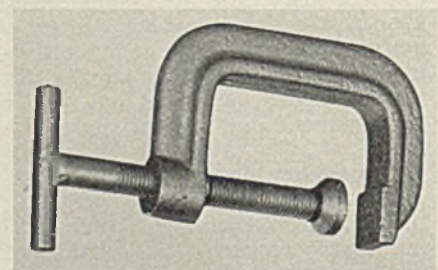
vides better insurance against flaking and saves time formerly spent in burying and uncovering forgings. The box can be supplied in sizes to meet requirements.

## Diameter Gage

Federal Products Corp., 1144 Eddy street, Providence, R. I., is offering a new model 167 P-75 inside diameter production gage for shallow holes and recesses. It checks a shallow recess 6.80 inches diameter. The indicator of the gage is set back away from contacts to clear obstructions on the machine. Motion of the sensitive contact is carried back to the indicator through a spring hinge, eliminating all lost motion. This construction also eliminates friction. The gage is sensitive and said to be accurate for tolerances in tenths of thousandths.

## C-Clamp

Patterson-Ballagh Corp., 1900 East Sixty-fifth street, Los Angeles, is offering a heavy-duty C clamp



which incorporates features that prevent skidding when tightening. The clamp tip is equipped with a bronze bushing in which the end of the screw rotates. The latter is



# Helpful Literature

## 1. Masking Compound

Turco Products, Inc.—1-page bulletin A-22 lists features of "Weldmask" compound. Product is creamy white liquid which is applied with brush to area most apt to be spattered with molten metal. After weld is completed, masking compound can be removed with hand wirebrush and water.

## 2. War Pledge

Surface Combustion—Illustrated lithographed bulletin describes war production pledge action of company. Reproduced are facsimiles of pledges; badges; advertisements used in Toledo Times, as well as publicity stories; telegrams from Hon. John W. Bricker, governor of Ohio, and from Senator Robert A. Taft of Ohio, and other material used.

## 3. Welding Electrodes

McKay Co.—28-page booklet E-16-C outlines features of "Shielded-Arc" electrodes. It also contains 1939 Joint Tentative Specifications for Iron and Steel Arc-Welding Electrodes of American Welding Society, American Society for Testing Materials. Tables show characteristics of various type electrodes.

## 4. Stove Checker

William M. Bailey Co.—8-page illustrated bulletin No. 8600 explains "Open Joint" checker which is designed to provide greater heating capacity at decreased cost in blast furnace stoves. Illustrations show individual brick design for different zones in stove, and point out salient features.

## 5. Tubes and Fittings

American Brass Co.—40-page illustrated bulletin No. 29-b-4 deals with "Anaconda" copper pipe, "85" red brass pipe, copper tubes and fittings. Some of subjects covered are need for non-rusting water pipe; scientific study of water pipe corrosion; physical properties of brass pipe; flared tube fittings; heat losses; applications of copper tubes; and physical properties and bursting pressures.

## 6. Rings and Flanges

King Fifth Wheel Co.—4-page folder gives complete specifications for standard bar shapes and ring sizes with minimum diameters. Specifications of flange type, band type, leg out, leg in, flange in flange out types; flats, angles and channels are given. Industrial uses include sheet metal works, copper works, tank and pump manufacturers, food manufacturers and engineering concerns.

## 7. Petroleum Products

Sun Oil Co.—16-page illustrated bulletin is entitled, "Helping Industry Help America." It contains case histories of how engineering service aids in applying petroleum products in metal working, general lubrication, processing, mining, textile manufacturing and other operations.

## 8. Electric Gage

Sheffield Corp.—4-page illustrated bulletin No. 41-17 describes "Multichek" precision gage for rapid inspection of mass production parts having several critical dimensions. Photographs show details of construction and design, as well as method of operation.

## 9. Marking Equipment

M. E. Cunningham Co.—4-page folder deals with equipment for marking ammunition, tanks, guns, gun carriages and other materiel. General descriptions are included for motor driven shell marking machines, special designs for safety type holders for hot or cold stamping, safety hand stamps for marking piece numbers for gun and gun carriages, and inspection hammers.

## 10. Automatic Turret Machine

Cleveland Automatic Machine Co.—6-page illustrated bulletin is descriptive of "Cleveland" 5½-inch, model A single spindle, full automatic turret machine. Details of individual features are explained and complete specifications of this machine are given.

## 11. Colloidal Graphite

Acheson Colloids Corp.—4-page bulletin is No. 230.8 of series of technical bulletins pertaining to application of colloidal graphite to industry. Entitled, "Colloidal Graphite Dispersions," bulletin contains latest information on standard dispersions of "dag" colloidal graphite in various carriers.

## 12. Centrifugal Castings

Ampco Metal Inc.—6-page folder "Centrifugal Castings" describes "Rotocasting" and fundamentals of tensile strength, physical properties, metal results, and special shapes and types. Complete diagram gives diameter ranges, maximum casting length, and standard length.

## 13. Index Mill

Blank & Buxton Machinery Co.—8-page illustrated bulletin describes 40-H index mill which can be used to drill, mill or bore jigs, dies, fixtures and gages. Also pictured and described are rotary tables, boring heads and indexing tables.

## 14. Abrasive Products

Sterling Grinding Wheel division, Cleveland Quarries Co.—80-page catalog contains information on processes and materials used to produce various types of abrasives; safety tips and hints on how to minimize wheel breakage; sketches of standard grinding wheel shapes and types; and other data. Complete specifications and prices are listed for company's line of abrasive products.

## 15. Industrial Products

E. F. Houghton & Co.—32-page illustrated booklet, "Houghton Products for the Metal Industries," describes heat treating, metal cleaning, industrial lubricants, belting, packings and other materials for use by metal working industries. Materials for specific application in arms production are covered in detail.

## 16. Magnetic Valves

General Controls Co.—8-page illustrated bulletin No. S-304 presents details of line of portable electric magnetic valves which resist vibration and change of motion, as well as operate in any position. Designed for use on trucks, buses, airplanes and portable machinery, these valves handle all liquids, gases and vapors at pressures up to 1500 pounds per square inch.

## 17. Metal Blackening

Alrose Chemical Co.—6-page bulletin describes "Jetal" process and its characteristics as protective coating. Data illustrates effect of treatment time, bath temperature, bath composition and surface hardness upon protective value, penetration and wear resistance of oxide coatings.

## 18. Synchronous Motor

Westinghouse Electric & Manufacturing Co.—4-page booklet L-20653 describes "HG" synchronous motor for coupled, belted and geared service. Listed are operating characteristics, distinctive features and construction and operation features. Seven illustrations show various parts of motor and each is described in detail.

## 19. Foundry Equipment

American Foundry Equipment Co.—12-page general reference catalog No. 40 presents complete summary of each of following products: "Wheelabrator" airless blast cleaning equipment; "Dustube" cloth bag type dust collectors; "High Efficiency Cyclone" dust collectors; wet disposal unit; sandcutters, sand blast equipment; rod straighteners; and "American-Heanium Long-Lyfe" blast nozzles.

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## 20. Induction Heating

Induction Heating Corp.—Single sheet No. 1 titled, "Elemental Theory," gives complete and concise information and definitions of induction heating, current, frequency, magnetic fields, and heat producing losses. Included is diagram showing eddy current losses as function of frequency.

## 21. Metal Parts Cleaning

N. Ransohoff, Inc.—28-page illustrated catalog, "Cleaning Machinery for Metal Parts," gives complete information for cleaning before assembly or between manufacturing processes. Included in descriptions are drum-type washers, combination washing machine and special power loader, rinse and dry unit, cleaning equipment for carburetor and fuel pump parts, drying machines and saw dust drying equipment.

## 22. Acceleration Contactors

Electric Controller & Manufacturing Co.—12-page illustrated catalog, "Neo-Time-Current," gives complete information for push button operation of alternating current wound rotor motors. Included are complete diagrams of starting equipment and application connections. Specifications and requirements are included.

## 23. Centrifugal Pumps

Pennsylvania Pump & Compressor Co.—18-page illustrated catalog, "Thrust-free Centrifugal Pumps," describes heavy-duty multi-stage centrifugal pumps and method of effecting dynamic hydraulic balance. Descriptions of general design, impeller arrangement, passage of fluid, balance, leakage and wear are included. Specification discussions include casing, stuffing boxes, shaft, shaft sleeves, wearing rings, coupling, base plate, testing and reservation.

## 24. Conveyor Equipment

Link-Belt Co.—32-page illustrated catalog No. 2075 includes complete descriptions of two new sizes of "Bulk-Flo" elevator-conveyor equipment. Book contains diagrams showing paths of operation, gives list of materials that can be handled and contains illustrated case studies with tables of sizes, capacities and dimensions.

## 25. Insulating Cement

Quigley Co., Inc.—94-page illustrated catalog, "Quigley Products," describes plastic air-setting, high temperature cement for bonding, refractory brick and shapes. Suggestions for use include steam power plants, iron and steel works, non-ferrous foundries, smelters and refineries, gas works, by-product coke plants, retort ovens, oil refineries, domestic oil burners, ceramic plants, glass works, sugar centrals and incinerators.

## 26. Circuit Arrangements

General Electric Co.—8-page illustrated catalog GEA-3759 gives information to help in selection of proper arrangement of load-center distribution system to fit individual requirements of industrial plants, shipyards, naval and military projects and commercial buildings. Described in bulletin are characteristics of four load center system and basic circuit arrangements.

## 27. Lubricating System

Trabon Engineering Corp.—4-page illustrated bulletin No. 423 explains features, operation and applications of reversing lubricating system. Line drawings show how system can be used to lubricate bearings of moving machine member, machine gib and way, two sleeve bearings, two points along long sleeve bearing, anti-friction pillow block, and other friction points.

## 28. Ball Bearings

New Departure—24-page illustrated catalog, "Details of Design," includes descriptions of proportions and finish, threads and corner fillets, assembly and disassembly, bearing clamping and adapter sleeves. Included also are housing proportions, shock loads, housing bore finish, bearing corner radii, recommended housing shoulders, snap ring bearings and housing covers.

## 29. Dust Collector

American Air Filter Co.—8-page illustrated bulletin No. 280 describes "Airmat Dust Arrester" which is used for collection of lumpy, fibrous and fine granular dust. Cutaway photographs show design and construction details, and installation views depict representative applications. Tables list capacities and dimensions.

## 30. Pipe Threading

Republic Steel Corp.—Illustrated folder is entitled "How to Get Better Threading Results on Pipe." Included are notes on grinding dies; diagram of cutting angles on various types of chasers; recommended cutting angles and cutting speeds for various pipe materials and terms applying to threading dies and their functions, such as lip, cutting angle, clearance, lead or throat angle and chip space.

## 31. Temperature Controllers

Foxboro Co.—28-page illustrated bulletin No. 202-4 gives complete diagram and explanation of control system. Complete control system consists of thermocouple, control instrument and electrically operated valve and contactor or other control device to regulate flow of required amount of heat. Potentiometer controllers with mercury-switch contacts, parts, positions, hook-ups, specifications, manual reset, table of ranges and mountings are included.

## 32. Colloidal Graphite

National Graphite Co.—4-page folder describes colloidal graphite as an additive for lubrication oils and greases. "Konag," 10 per cent light fuel suspension is said to decrease wear and heating. Specifications and prices are included. Chart illustrating reduction in friction and wear through use of additive is given.

## 33. Balls

Strom Steel Ball Co.—Folder and price list No. 10, July 1, 1937, contains dimensions and prices as well as tolerances for balls of chrome steel, stainless steel, "Monel," brass and bronze. Trade customs and table of decimal equivalents are included.

## 34. Gas Burners

Peabody Engineering Corp.—8-page illustrated bulletin No. 203 and No. 108 describes types of burners, burners for gas and oil and air registers. Included are specifications for gas burner ring and oil atomizers. Included in discussions are details of burner throat tile and component parts.

## 35. Centrifugal Pumps

Worthington Pump & Machinery Corp.—Two illustrated bulletins, W-312-B2C and L-640-S2, cover single-stage volute, type L, Nos. 3 and 6 centrifugal pumps, and single horizontal, single stage, types HB and HS compressors, respectively. Cutaway photographs show details of construction and operation.

## 36. Blast Cleaning

Pangborn Corp.—8-page illustrated bulletin No. 211A contains specifications, capacities, dimensions and diagrams of "Rotoblast" cleaning equipment. Included are sizes, installations, applications and descriptions. Special engineering service is also discussed. Each size and piece of equipment is described and all specifications are included.

## 37. Low Temperature Brazing

Handy & Harman—2-page illustrated bulletin is No. 17 of "Low Temperature Brazing News." It relates how small manufacturer is helping to win war by using "Easy-Flo" low-temperature silver brazing alloy to step of production of tank gun parts. Step-by-step photographs show sequence of operations.

## 38. Thermit Welding

Metal and Thermit Corp.—30-page illustrated booklet No. 18d gives history of thermit welding, its procedure, physical properties, fabrication of heavy parts and miscellaneous repairs. Included too are welding in steel mills, rail welding, marine repairs and new construction, foundry applications, metals and alloys and arc welding electrodes.

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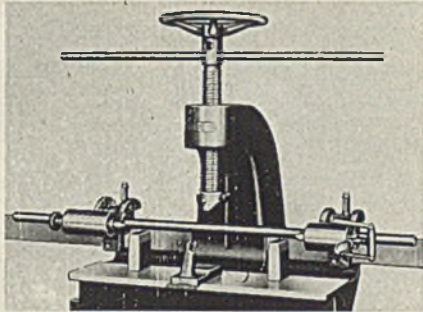
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of heat-treated steel. The bushing prevents galling and provides a free movement so that slippage on the work is prevented. A welded T-shaped wrench handle provides the firm grip.

### Straightening Press

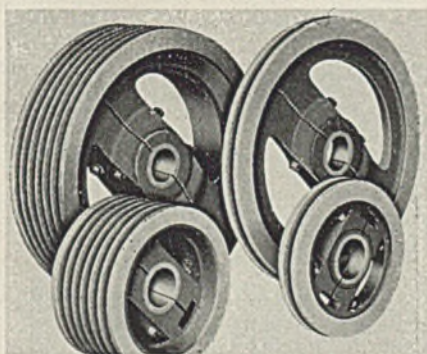
General Mfg. Co., 6430 Farnsworth, Detroit, announces a new No. 5 manual screw straightening press for straightening a variety of parts. It is said to be ideal for



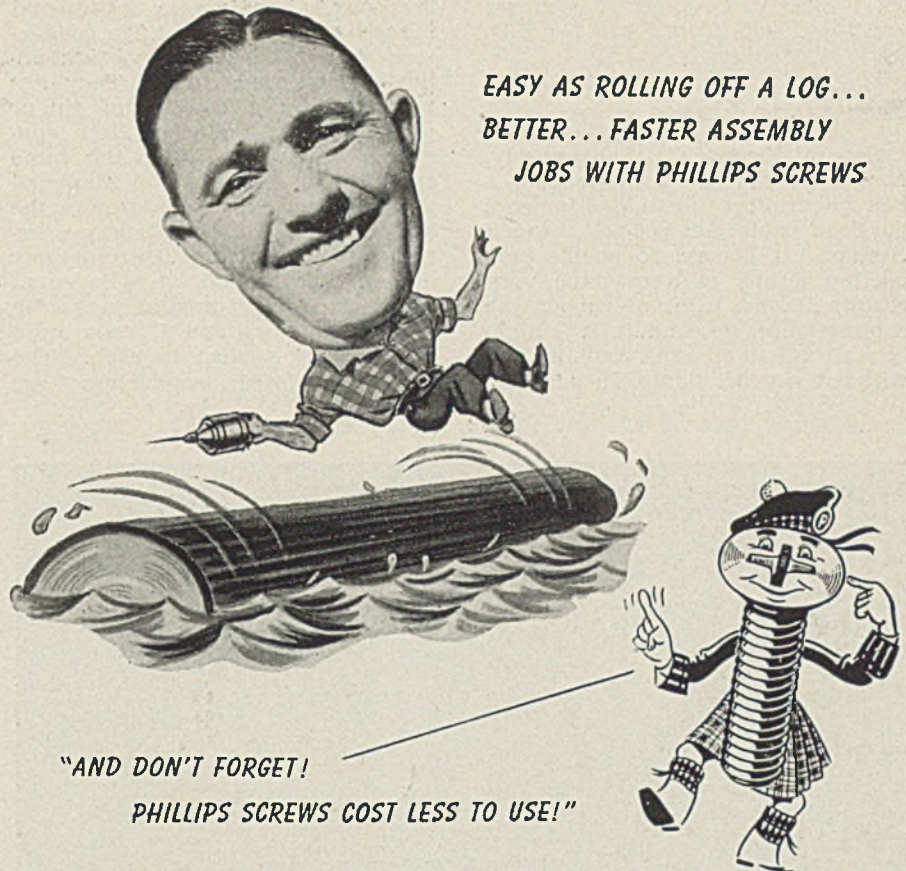
a heat treating shop or tool room. The press features a 12-inch opening, 5-inch throat and 9-inch stroke. Its table is 8 inches wide, and it extends 5½ inches in front of the centerline of the screw.

### Wood Sheaves

Dodge Mfg. Corp., Mishawaka, Ind., is offering a new Victory wood sheave for V-belt drives as an alternate for metal sheaves. It is said to equal in every way the efficiency of metal sheaves, except where fly-wheel effect is essential. Of laminated construction, the sheave consists of segments of selected straight-grain kiln dried hard maple. Wood bushings also



are provided and provision is made for firm fastening to the shaft. According to the company, the sheave makes it possible for V-belt drive users to aid in the conservation of much-needed metals. It also will release equipment formerly required for the manufacture of metal sheaves, for other war production. The wooden sheaves are offered in composite groove types for A and B section belts in a full range of sizes and for B belts in sizes from



EASY AS ROLLING OFF A LOG...  
BETTER... FASTER ASSEMBLY  
JOBS WITH PHILLIPS SCREWS

"AND DON'T FORGET!

PHILLIPS SCREWS COST LESS TO USE!"

## One Hand Driving • Power Tools • Tighter Assembly = 50% Less Assembly Time with Phillips Screws

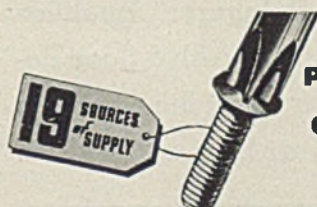
**B. P.** (Before Phillips). Slow-driving slotted screws required two hands to aim the screw and steady the work — and still accidents happened, causing plenty of mangled fingers or scars in the work. Always something going wrong — crooked screws — heads splitting — burrs to remove — loose assemblies. Thank goodness those days are gone forever!

**A. P.** (After Phillips). Faster-driving Phillips Recessed Head Screws need only one hand... the other hand is free for support. No fumbled screws — straight, effort-

less driving. Even when assembling parts already finished — like enameled, painted or other easily-scratched surfaces — power driving is safe, because there's no danger of driver slippage. And screws can be set up tight without heads splitting or raising burrs.

Your assembly crew will find it "easy as rolling off a log" to produce better work... in half the time... at a 50% cost saving with Phillips Screws.

For facts and screws write any firm listed below.



**PHILLIPS RECESSED HEAD SCREWS**

**GIVE YOU 2 for 1** (SPEED AT LOWER COST)

WOOD SCREWS • MACHINE SCREWS • SHEET METAL SCREWS • STOVE BOLTS • SPECIAL THREAD-CUTTING SCREWS  
• SCREWS WITH LOCK WASHERS

American Screw Co., Providence, R. I.  
The Bristol Co., Waterbury, Conn.  
Central Screw Co., Chicago, Ill.  
Chandler Products Corp., Cleveland, Ohio  
Continental Screw Co., New Bedford, Mass.  
The Corbin Screw Corp., New Britain, Conn.  
International Screw Co., Detroit, Mich.  
The Lamson & Sessions Co., Cleveland, Ohio  
The National Screw & Mfg. Co., Cleveland, Ohio

Whitney Screw Corp., Nashua, N.H.

New England Screw Co., Keene, N.H.  
The Charles Parker Co., Meriden, Conn.  
Parker-Kalon Corp., New York, N.Y.  
Pawtucket Screw Co., Pawtucket, R.I.  
Pheoll Manufacturing Co., Chicago, Ill.  
Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N.Y.  
Scovill Manufacturing Co., Waterbury, Conn.  
Shakeproof Inc., Chicago, Ill.  
The Southington Hardware Mfg. Co., Southington, Conn.



5.4 to 38.0 P. D. up to 10 grooves, and for C belts from 5.4 to 44.0 P.D. up to 12 grooves.

### Bus-Drop Cable

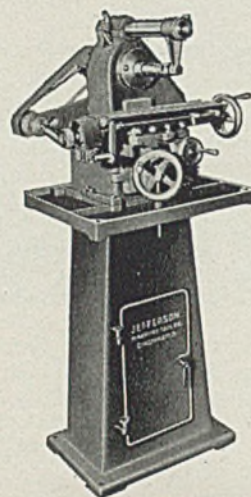
General Electric Co., Schenectady, N. Y., has placed on the market a new nonrubber flexible Flamenol bus-drop cable for 600-volt branch circuits. It is said to enable connecting a bus to a machine very readily. Besides using no rubber, the cable requires no conduit. It is highly resistant to oils and coolants and will not support flame. In addition,

it is easy to handle, easy to bend and is resistant to abrasion. The conductors are soft-drawn, dry-bright-annealed, stranded copper. They are protected by a coating of tin or other suitable material. Each conductor is insulated with the same synthetic as that used on Flamenol wire. Ground wires conform to the same electrical and physical properties as the conductors. The aggregate area of the ground wires is equal to the circular-mil area of one of the main conductors, and a green braid of cotton is applied to each. The three insulated conductors are

twisted together with the ground wires, in combination with dry jute in each interstice, to provide a hard, compact core. Over this core is applied a tape and a jacket over-all of type insulation used on conductors.

### Milling Machine

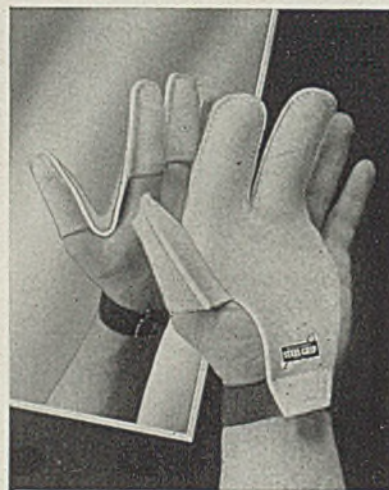
Jefferson Machine Tool Co., Fourth, Cutter and Sweeney streets, Cincinnati, has introduced a newer model milling machine which features a larger pan and base. A motor-driven unit, it performs such op-



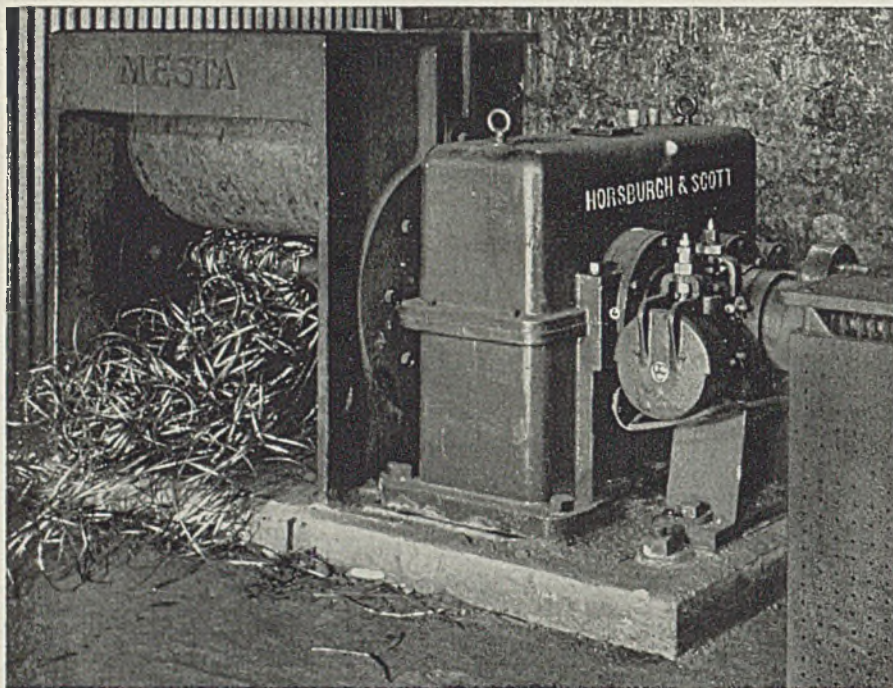
erations as die sinking, contour profiling, angular milling, jig boring, routing of ferrous and nonferrous metals, and other essential milling operations. The machine has four spindle speeds—200, 400, 700, 1000 revolutions per minute. A quick adjustment lever maintains constant maximum pulling power of V belts—it automatically releases itself in case of overload.

### Finger Guard

Industrial Gloves Co., Danville, Ill., announces a new Steel-Grip guard which protects the thumb and



first two fingers of the hand by embracing them in a single unit as shown in the accompanying view. The guard is designed for punch



## IT'S BEING BALLED UP

» » » but this time it's for a good purpose. Here a Horsburgh & Scott Double Reduction Herringbone Speed Reducer is driving a metal scrap baller and doing a fine job. Smooth, powerful, quiet transmission of power with design for large starting and momentary overloads are all inherent qualities of Horsburgh & Scott Reducers. There's a Horsburgh & Scott Reducer for every purpose in industry . . . learn about the complete line of Herringbone, Helical and Worm Gear Speed Reducers.

Send note on Company Letterhead for Speed Reducer Catalog 39

## THE HORSBURGH & SCOTT CO.

### GEARS AND SPEED REDUCERS

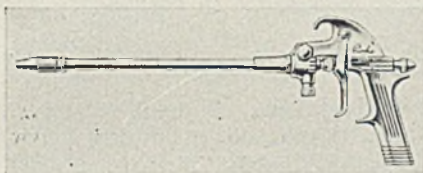
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press work, buffing, grinding, sorting, assembly, inspection etc. In the illustration the guard is of wool felt—material suited for handling greasy or oily parts, or as protection against heat in the handling of hot dies, molds, parts etc. The guard also is offered in chrome leather. In both types, the back is of elastic webbing which assures the wearer comfortable fit. Like all other gloves, the guard can be purchased as pairs, all rights, all lefts or any combination of rights and lefts.

## Cleaning Gun

Binks Mfg. Co., 3114 Carroll avenue, Chicago, has placed on the market a new No. R3-EC cleaning gun for spraying various kerosine type cleaning fluids. Equipped with pistol grip, adjustable material control, adjustable nozzle, and ¼-inch standard pipe thread air connection,



it uses approximately 4 cubic feet per minute of material at 40 to 50 pounds pressure. The gun can be used in conjunction with a quart syphon cup or with a suction hose running into an open container.

## Weld-Cooling Controller

Automatic Temperature Control Co. Inc., 34 East Logan street, Philadelphia, has introduced a weld cooling time-temperature controller which includes a newly developed principle that simplifies complying with government specifications for



controlled cooling rate of welds. It is for use with any type of automatic temperature control system. The unit has only two knob settings. One provides the desired rate of cool and the other the time that rate is to be maintained. An interrupter which provides for periodic readings or recordings through-

out entire program without disrupting accuracy of cool rate also is included. The unit is embodied in a sheet steel surface-mounted case measuring 14 x 14 x 5 inches. Units are being offered in any number of standard and special types for controlling all phases of heating, soaking and cooling periods for any time-temperature program.

## Shell Painting Unit

Paasche Airbrush Co., 1909 Diversey Parkway, Chicago, has introduced a new automatic airpainting unit for coating interiors and ex-

teriors of 40 millimeter shell. It is said to have a high production rate with 2¼ minutes drying time. Variable speed drives permit increasing or decreasing the production or drying time. Shell are conveyed to coating stations on revolving spindle assemblies mounted on steel roller chain, and are held by combination holding and shielding fixtures. Interior of each shell is coated first by airbrush which is automatically oscillated, following the shell as it moves along. Work continues to exterior coating station and then through infra-red drying section. A water wash exhaust

# ARE YOU LOOKING FOR A SUBCONTRACTOR FOR ANY OF THESE ITEMS?

Due to curtailed production of automobiles and trucks, the facilities of the American Metal Products Company are available, for immediate volume production, on a sub-contract or co-contract basis, on any or all of the items listed at the right.

American Metal Products Company has been producing these and similar items for the automobile, truck and allied industries for the last 24 years. During this period we have grown and expanded to the point where we now occupy nearly 5 acres in an ultra-modern, up-to-date plant.

Our force of engineers, production men and craftsmen totals 800—all men who have been trained for years in meeting the most exacting demands and volume requirements.

For further details as to how our facilities and manpower may best fit into your future production requirements write, wire or phone.

**AMERICAN METAL PRODUCTS COMPANY**  
5959 Linsdale Avenue • DETROIT, MICHIGAN  
TYler 6-3200

★ WELDED STEEL TUBES AND TUBING in diameters from ¾" to 5" and in gauges up to 1¼".

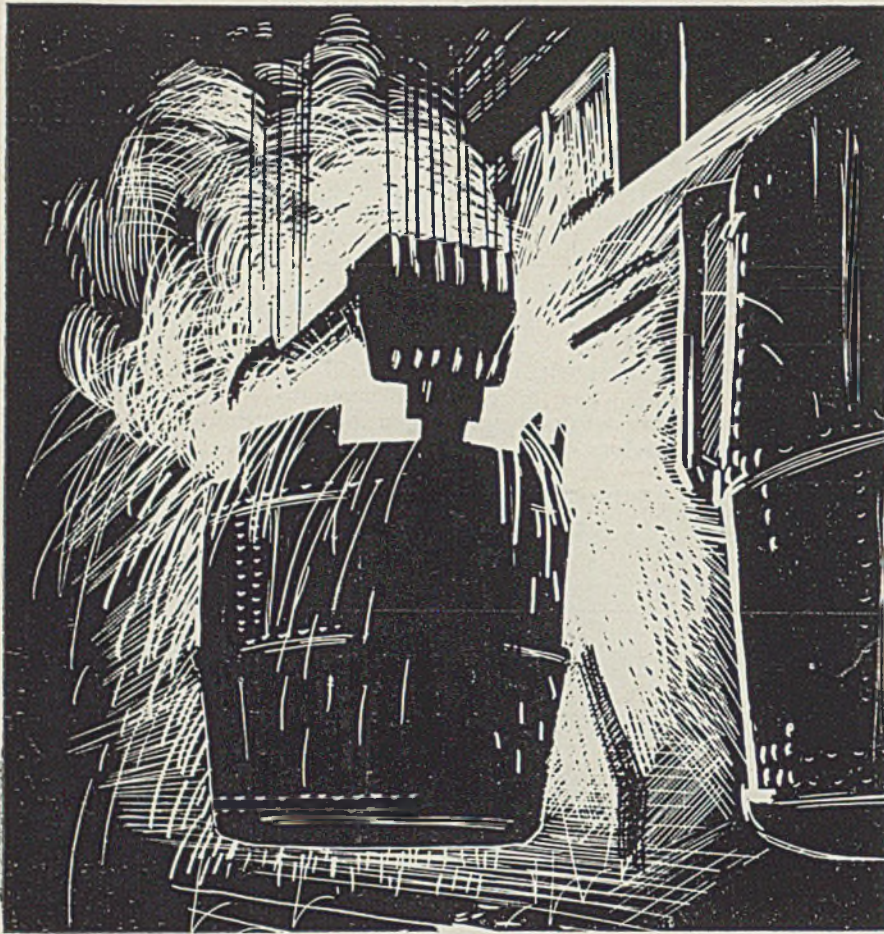
★ FABRICATED STEEL TUBULAR PARTS AND WELDED ASSEMBLIES.

★ LARGE AND SMALL STEEL STAMPINGS.

★ FORGED AND UP-SET PARTS FROM 2", 3", 4", 5" upsetters.







### *Rigid control*

*from open hearth to finished product puts the*

## QUALITY IN STANDARD FORGINGS



At each step in the manufacturing process—from acid open hearth to finished forging—Standard exercises the most rigid, painstaking control. The materials used in Standard products are carefully analyzed by especially trained metallurgists and chemists, using the most modern approved testing equipment. Their job is to safeguard the quality built into every forging delivered to a Standard customer.

The Standard Steel Works Division of The Baldwin Locomotive Works traces its origin to the Freedom Forge, which was established in 1795. From those early days through the

present Standard has kept pace with modern developments in the manufacture of steel products.

Thus, today, in the 119-acre Standard plant, quality is kept at peak, unaffected by tremendous war-time demands.

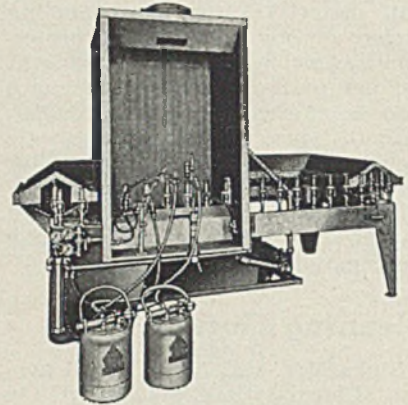
FORGINGS • CASTINGS • WELDLESS RINGS • STEEL WHEELS

## STANDARD STEEL WORKS



DIVISION OF  
THE BALDWIN LOCOMOTIVE WORKS  
PHILADELPHIA

booth accommodates both spraying operations and assures a maximum degree of safety. Features of this



booth also eliminate the usual manual cleaning. The holding fixtures are interchangeable so shell of different sizes and types can be accommodated. Frame of the air-painting unit is of heavy pressed steel, modernized in design.

## Chemical Proportioner

Graver Tank & Mfg. Co. Inc., East Chicago, Ind., is offering a new chemical proportioner which is said to provide accurate control of the feed of chemicals into the water treating plant in proportion to the volume of water. It is readily adapted to any make of solution type chemical feeder where swing pipe or skimmer can be installed in the chemical feeder. The equipment is said to insure uniform treatment at all times regardless of volume of water entering the treatment plant. It also permits instant increase or reduction of chemical charge over a wide range should water require change of treatment.

## Motorizing Unit

Drive-All Mfg. Co., 3407 Conner avenue, Detroit, has introduced an individual motorizing installation for older belt-driven Cleveland automatics, calling for only one electric motor to drive all the units on the machine. Gear box and motor are attached to the machine using standard brackets. This same supporting standard mounts the jack-shaft that drives both pump and feed.

A 1½-inch square bar running full length of the machine provides a backbone for the installation, as well as a base on which to mount the various brackets. Since this square bar is used in connection with all Drive-All installations, brackets taken from stock can be used, therefore prompt delivery is available.

This unit furnishes positive transfer of power to spindle, allows speed change to compensate for differences in diameters and of materials.



# MARKET SUMMARY

## DEMAND

Pressure at top priorities causes cancellations of low ratings.

## PRODUCTION

Declined  $\frac{1}{2}$ -point to 98  $\frac{1}{2}$  per cent of capacity.

## PRICES

Ceiling quotations hold steady at established levels.

## Shipbuilding Largest User of War Steel

**Large shape tonnage added to heavy ship plate requirements . . .**

**Winter scrap shortage expected to repeat . . . Warehouse situation**

**hampers war production . . . Lend-lease shipments heavy**

SHIPBUILDING has assumed first place in the war program and is taking more steel than any other one industry. For some time the destination of the greater part of the record plate output, it now is assuming a similar position with regard to shapes.

Producers of structural shapes find their field changing rapidly from material for land installations to sections used in ship construction. Private construction has been halted and plants for war purposes are not taking as much steel as formerly, though some are still under way or planned.

Better distribution to shipyards is being achieved and inventories are being held to a minimum consistent with capacity production. In addition to plates and shapes for hull construction, a large aggregate tonnage is being consumed by manufacturers of deck equipment and other special assemblies. Numerous converted plants are engaged in this class of fabrication, with the same priorities as for ships.

\* \* \*

Cancellations continue on orders for which priority is so low that delivery is unlikely within many months. Some of this tonnage bears ratings that until a short time ago were considered high. The heavy flood of A-1-a orders has pushed lower ratings back so far that there seems no probability of their being reached for rolling. Congestion in the higher ranges of priority is so great that it is said more ratings of AA may be issued, to rank above the present A priorities. Such ratings have been used infrequently in the past, applied to special small lots for emergency purposes.

Office of Price Administration has announced three amendments to schedule 6, prices on iron and steel products, designed to keep prices at a low level. Producers of iron and steel products are directed to file data covering conversion and processing charges; uniform rules for application of extras on cold-finished bars were issued; conditions under which producers of reinforcing bars are required to give discounts are defined and buyers entitled to the discount of 25 cents per hundred pounds are listed.

Steelworks operations last week declined  $\frac{1}{2}$ -point to 98  $\frac{1}{2}$  per cent, after maintaining 99 per cent or

higher since the first of May. Cleveland advanced 2 points to 94 per cent and Buffalo 2  $\frac{1}{2}$  points to 93. Chicago yielded another  $\frac{1}{2}$ -point to 103, Cincinnati declined 6 points to 89, Detroit 3 points to 92 and Wheeling 2 points to 79  $\frac{1}{2}$ . Unchanged rates prevailed at the following: St. Louis 95  $\frac{1}{2}$ , Eastern Pennsylvania 96, Birmingham 95, Pittsburgh 95  $\frac{1}{2}$ , Youngstown 95 and New England 100.

Serious interruption of war production may result from depletion of steel warehouse stocks. Contractors and subcontractors find it increasingly difficult to obtain from this source many items needed for essential purposes. Unless warehouses are placed in a better position to replenish their stocks they will be unable to perform their function and steel users depending on their stocks will be left without adequate source of supply.

\* \* \*

Most observers of the scrap market foresee a repetition of last winter's shortage, in spite of the present supply meeting steelmaking needs. Intensive pressure to bring out material from every source possible is keeping up the flow and in some instances progress is being made in a small way in building some reserves. Success in the latter respect is not marked. Much of present supply is non-recurrent, capable of quick exhaustion, with nothing to take its place.

With an already tight situation in semifinished steel, imposition of allocations for lend-lease, involving an unusually heavy tonnage, promises to increase difficulties of finishing mills. With priority applying to ingot supply, steel goes to most needed products, plates and shapes for shipbuilding. This results in limited supply to makers of sheets, wire and other products and in some cases finishing equipment is operated much below capacity or is shut down. Requirements for export semifinished will be heavy through third quarter, much going to Great Britain and a smaller quantity to Russia.

With ceiling prices on steel and iron materials unchanged, composite prices are steady, finished steel at \$56.73, semifinished steel at \$36, steelmaking pig iron at \$23.05 and steelmaking scrap at \$19.17.



## COMPOSITE MARKET AVERAGES

	June 27	June 20	June 13	One Month Ago May, 1942	Three Months Ago Mar., 1942	One Year Ago June, 1941	Five Years Ago June, 1937
Finished Steel .....	\$56.73	\$56.73	\$56.73	\$56.73	\$56.73	\$56.73	\$62.18
Semifinished Steel....	36.00	36.00	36.00	36.00	36.00	36.00	40.00
Steelmaking Pig Iron	23.05	23.05	23.05	23.05	23.05	23.05	22.84
Steelmaking Scrap ...	19.17	19.17	19.17	19.17	19.17	19.17	17.05

Finished Steel Composite:—Average of industry-wide prices on sheets, strip, bars, plates, shapes, wire, nails, tin plate, standard and line pipe. Semifinished Steel Composite:—Average of industry-wide prices on billets, slabs, sheet bars, skelp and wire rods. Steelmaking Pig Iron Composite:—Average of basic pig iron prices at Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Neville Island, Granite City and Youngstown. Steelworks Scrap Composite:—Average of No. 1 heavy melting steel prices at Pittsburgh, Chicago and eastern Pennsylvania.

## COMPARISON OF PRICES

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

Finished Material	June 27, 1942	May 1942	Mar. 1942	June 1941	Pig Iron	June 27, May 1942 1942	Mar. 1942	June 1941
Steel bars, Pittsburgh.....	2.15c	2.15c	2.15c	2.15c	Bessemer, del. Pittsburgh.....	\$25.34	\$25.34	\$25.34
Steel bars, Chicago.....	2.15	2.15	2.15	2.15	Basic, Valley.....	23.50	23.50	23.50
Steel bars, Philadelphia.....	2.47	2.49	2.48	2.47	Basic, eastern, del. Philadelphia.	25.34	25.39	25.365
Shapes, Pittsburgh.....	2.10	2.10	2.10	2.10	No. 2 fdry., del. Pgh., N.&S. Sides	24.69	24.69	24.69
Shapes, Philadelphia.....	2.215	2.22	2.2175	2.215	No. 2 foundry, Chicago.....	24.00	24.00	24.00
Shapes, Chicago.....	2.10	2.10	2.10	2.10	Southern No. 2, Birmingham...	20.38	20.38	20.38
Plates, Pittsburgh.....	2.10	2.10	2.10	2.10	Southern No. 2, del. Cincinnati...	24.06	24.06	24.06
Plates, Philadelphia.....	2.15	2.15	2.15	2.15	No. 2X, del. Phila. (differ. av.)...	26.215	26.265	26.24
Plates, Chicago.....	2.10	2.10	2.10	2.10	Malleable, Valley.....	24.00	24.00	24.00
Sheets, hot-rolled, Pittsburgh...	2.10	2.10	2.10	2.10	Malleable, Chicago.....	24.00	24.00	24.00
Sheets, cold-rolled, Pittsburgh...	3.05	3.05	3.05	3.05	Lake Sup., charcoal, del. Chicago	31.54	31.54	31.34
Sheets, No. 24 galv., Pittsburgh...	3.50	3.50	3.50	3.50	Gray forge, del. Pittsburgh...	24.19	24.19	24.19
Sheets, hot-rolled, Gary.....	2.10	2.10	2.10	2.10	Ferromanganese, del. Pittsburgh	140.65	140.65	125.39
Sheets, cold-rolled, Gary.....	3.05	3.05	3.05	3.05				
Sheets, No. 24 galv., Gary.....	3.50	3.50	3.50	3.50				
Bright bess., basic wire, Pitts...	2.60	2.60	2.60	2.60				
Tin plate, per base box, Pitts...	\$5.00	\$5.00	\$5.00	\$5.00				
Wire nails, Pittsburgh.....	2.55	2.55	2.55	2.55				

## Semifinished Material

Sheet bars, Pittsburgh, Chicago.	\$34.00	\$34.00	\$34.00	\$34.00
Slabs, Pittsburgh, Chicago.....	34.00	34.00	34.00	34.00
Rerolling billets, Pittsburgh...	34.00	34.00	34.00	34.00
Wire rods No. 5 to 3/4-inch, Pitts.	2.00	2.00	2.00	2.00

## Scrap

Heavy melting steel, Pitts. ....	\$20.00	\$20.00	\$20.00	\$20.00
Heavy melt. steel, No. 2, E. Pa..	18.75	18.75	18.75	17.75
Heavy melting steel, Chicago...	18.75	18.85	18.75	18.75
Rails for rolling, Chicago.....	22.25	22.25	22.25	22.25
No. 1 cast, Chicago.....	20.00	20.00	20.00	21.50

## Coke

Connellsville, furnace, ovens ...	\$6.00	\$6.00	\$6.00	\$6.25
Connellsville, foundry, ovens ...	7.25	7.25	7.25	7.25
Chicago, by-product fdry., del..	12.25	12.25	12.25	12.25

## STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Following are maximum prices established by OPA Schedule No. 6 issued April 16, 1941, revised June 20, 1941 and Feb. 4, 1942. The schedule covers all iron or steel ingots, all semifinished iron or steel products, all finished hot-rolled, cold-rolled iron or steel products and any iron or steel product which is further finished by galvanizing, plating, coating, drawing, extruding, etc., although only principal established basing points for selected products are named specifically. All seconds and off-grade products also are covered. Exceptions applying to individual companies are noted in the table.

## Semifinished Steel

Gross ton basis except wire rods, skelp.  
Carbon Steel Ingots: F.o.b. mill base, rerolling qual., stand. analysis, \$31.00.  
(Empire Sheet & Tin Plate Co., Mansfield, O., may quote carbon steel ingots at \$33 gross ton, f.o.b. mill.)

Alloy Steel Ingots: Pittsburgh base, uncropped, \$45.00.

Rerolling Billets, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Sparrows Point, Birmingham, Youngstown, \$34.00; Detroit, del. \$36.25; Duluth (bil.) \$36.00.

(Wheeling Steel Corp. allocated 21,000 tons 2" square, base grade rerolling billets under leasehold during first quarter 1942 at \$37, f.o.b. Portsmouth, O.; Andrews Steel Co. may quote carbon steel slabs \$41 gross ton at established basing points.)

Forging Quality Billets: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, Youngstown, \$40.00; Detroit, del. \$42.25; Duluth, \$42.00.

(Andrews Steel Co. may quote carbon forging billets \$50 gross ton at established basing points.)

Open Hearth Shell Steel: Pittsburgh, Chicago, base 1000 tons one size and section: 3-12 in., \$52.00; 12-18 in., \$54.00; 18 in. and over, \$56.00.

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, \$54.00.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Sparrows Point, Youngstown, \$34.00.

(Empire Sheet & Tin Plate Co., Mansfield, O., may quote carbon steel sheet bars at \$39 gross ton, f.o.b. mill.)

Skelp: Pittsburgh, Chicago, Sparrows Pt., Youngstown, Coatesville, lb., \$1.90.

Wire Rods: Pittsburgh, Chicago, Cleveland, Birmingham, No. 5—9/32 in., inclusive, per 100 lbs., \$2.00.

Do., over 9/32—47/64-in., incl., \$2.15. Wor-

cester add \$0.10 Galveston, \$0.27. Pacific Coast \$0.50 on water shipment.

## Bars

Hot-Rolled Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, base 20 tons one size, 2.15c; Duluth, base 2.25c; Detroit, del. 2.27c; New York del. 2.51c; Phila. del. 2.49c; Gulf Ports, dock 2.52c, all-rail 2.59c Pac. ports, dock 2.50c; all rail 3.25c. (Phoenix Iron Co., Phoenixville, Pa., may quote 2.35c at established basing points.) Joslyn Mfg. Co. may quote 2.35c, Chicago base.)

Rail Steel Bars: Same prices as for hot-rolled carbon bars except base is 5 tons.

(Sweet's Steel Co., Williamsport, Pa., may quote rail steel merchant bars 2.33c f.o.b. mill.)

Hot-Rolled Alloy Bars: Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem, base 20 tons one size, 2.70c Detroit, del. 2.82c.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000.....	0.35	5100 Spr. flats...	0.15
2100.....	0.75	5100 80-110 Cr...	0.15
2300.....	1.70	6100 Bars.....	1.20
2500.....	2.55	6100 Spr. flats...	0.85
3100.....	0.70	Carb., Van.....	0.85
3200.....	1.35	9200 Spr. flats...	0.15
3300.....	3.80	9200 Spr. rounds,	
3400.....	3.20	squares.....	0.40
4100 15-25 Mo.	0.55	T 1300, Mn, mean	
46.00 20-30 Mo.		1.51-2.00.....	0.10
1.50-2.00; Ni...	1.20	Do., carbon under	
		0.20 max.....	0.35

Cold-Finished Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base 20,000-39,999 lbs., 2.65c; Detroit 2.70.

Cold-Finished Alloy Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base 3.35c; Detroit, del. 3.47c.

Turned, Ground Shafting: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base (not including turning, grinding, polishing extras) 2.65c; Detroit 2.72c.

Reinforcing Bars (New Billet): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Sparrows Point, Buffalo, Youngstown, base 2.15c; Detroit del. 2.27c; Gulf ports, dock 2.52c, all-rail 2.61c; Pacific ports, dock 2.80c, all-rail 3.27c.

Reinforcing Bars (Rail Steel): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, base 2.15c; Detroit, del. 2.27c; Gulf ports, dock 2.52c, all-rail 2.61c; Pacific ports, dock 2.80c, all-rail 3.25c.

(Sweet's Steel Co., Williamsport, Pa., may quote rail steel reinforcing bars 2.33c, f.o.b. mill.)

Iron Bars: Single refined, Pitts. 4.40c, double refined 5.40c; Pittsburgh, staybolt, 5.75c; Terre Haute, common, 2.15c.

## Sheets, Strip

Hot-Rolled Sheets: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown, Sparrows Pt., Middletown, base 2.10c; Granite City, base 2.20c; Detroit del. 2.22c; Phila. del. 2.28c; New York del., 2.35c Pacific ports 2.65c.

(Andrews Steel Co. may quote hot-rolled sheets for shipment to Detroit and the Detroit area on the Middletown, O. base.)

Cold-Rolled Sheets: Pittsburgh, Chicago, Cleveland, Gary, Buffalo, Youngstown, Middletown, base, 3.05c; Granite City, base 3.15c; Detroit del. 3.17c; New York del. 3.41c; Phila. del. 3.39c; Pacific ports, 3.70c.

Galvanized Sheets, No. 24: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Youngstown, Sparrows Point, Middletown, base 3.50c; Granite City, base 3.60c; New York del. 3.74c; Phila. del. 3.68c; Pacific ports 4.05c.

(Andrews Steel Co. may quote galvanized sheets 3.75c at established basing points.)

Corrugated Galv. Sheets: Pittsburgh, Chicago, Gary, Birmingham, 29 gage, per square 3.31c.

Culvert Sheets: Pittsburgh, Chicago, Gary, Birmingham, 16 gage, not corrugated, copper alloy 3.60c; copper iron 3.90c, pure iron 3.95c; zinc-coated, hot-dipped, heat-treated, No. 24, Pittsburgh 4.25c.

Enamelling Sheets: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, 10 gage,



base 2.75c; Granite City, base 2.85c; Pacific ports 3.40c.

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, 20 gage, base 3.35c; Granite City, base 3.45c; Pacific ports 4.00c.

#### Electrical Sheets, No. 24:

	Pittsburgh	Pacific	Granite
	Base	Ports	City
Field grade	3.20c	3.95c	3.30c
Armature	3.55c	4.30c	3.65c
Electrical	4.05c	4.80c	4.15c
Motor	4.95c	5.70c	5.05c
Dynamo	5.65c	6.40c	5.75c
Transformer			

72	6.15c	6.90c	
65	7.15c	7.90c	
58	7.65c	8.40c	
52	8.45c	9.20c	

**Hot-Rolled Strip:** Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Middletown, base, 1 ton and over, 12 inches wide and less 2.10c; Detroit del. 2.22c; Pacific ports 2.75c. (Joslyn Mfg. Co. may quote 2.30c, Chicago base.)

**Cold Rolled Strip:** Pittsburgh, Cleveland, Youngstown, 0.25 carbon and less 2.80c; Chicago, base 2.90c; Detroit, del. 2.92c; Worcester base 3.00c.

**Commodity C. R. Strip:** Pittsburgh, Cleveland, Youngstown, base 3 tons and over, 2.95c; Worcester base 3.35c.

**Cold-Finished Spring Steel:** Pittsburgh, Cleveland bases, add 20c for Worcester; 26-50 Carb., 2.80c; 51-75 Carb., 4.90c; 76-100 Carb., 6.15c; over 1.00 Carb., 8.35c.

## Tin, Terne Plate

**Tin Plate:** Pittsburgh, Chicago, Gary, 100-lb. base box, \$5.00; Granite City \$5.10.

**Tin Mill Black Plate:** Pittsburgh, Chicago, Gary, base 29 gage and lighter, 3.05c; Granite City, 3.15c; Pacific ports, boxed 4.05c. Long Ternes: Pittsburgh, Chicago, Gary, No. 24 unassorted 3.80c.

**Manufacturing Ternes:** Pittsburgh, Chicago, Gary, 100-base box \$4.30; Granite City \$4.40.

**Roofing Ternes:** Pittsburgh base per package 112 sheets, 20 x 28 in., coating I.C., 8-lb. \$12.00; 15-lb. \$14.00; 20-lb. \$15.00; 25-lb. \$16.00; 30-lb. \$17.25; 40-lb. \$19.50.

## Plates

**Carbon Steel Plates:** Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Sparrows Point, Coatesville, Claymont, 2.10c; New York, del. 2.30-2.55c; Phila., del. 2.15c; St. Louis, 2.34c; Boston, del. 2.42-67c; Pacific ports, 2.65c; Gulf Ports, 2.47c. (Granite City Steel Co. may quote carbon plates 2.35c, f.o.b. mill. Central Iron & Steel Co. may quote plates at 2.20c, f.o.b. basing points.)

**Floor Plates:** Pittsburgh, Chicago, 3.35c; Gulf ports, 3.72c; Pacific ports, 4.00c.

**Open-Hearth Alloy Plates:** Pittsburgh, Chicago, Coatesville, 3.50c.

**Wrought Iron Plates:** Pittsburgh, 3.80c.

## Shapes

**Structural shapes:** Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Bethlehem, 2.10c; New York, del. 2.28c; Phila., del. 2.22c; Gulf ports, 2.47c; Pacific ports, 2.75c. (Phoenix Iron Co., Phoenixville, Pa. may quote carbon steel shapes at 2.30c at established basing points.)

**Steel Sheet Piling:** Pittsburgh, Chicago, Buffalo, 2.40c.

## Wire Products, Nails

**Wire:** Pittsburgh, Chicago, Cleveland, Birmingham (except spring wire) to manufacturers in carloads (add \$2 for Worcester): Bright basic, bessemer wire, 2.60c; Galvanized wire, 2.60c; Spring wire, 3.20c.

#### Wire Products to the Trade:

Standard and cement-coated wire nails, polished and staples, 100-lb. keg, \$2.55; Annealed fence wire, 100 lb., 3.05; Galvanized fence wire, 100 lb., 3.40; Woven fence, 12½ gage and lighter, per base column, 67; Do., 11 gage and heavier, 70; Barbed wire, 80-rod spool, col., 70; Twisted barless wire, col., 70; Single loop bale ties, col., 59; Fence posts, carloads, col., 69; Cut nails, Pittsburgh, carloads, \$3.85.

## Pipe, Tubes

**Welded Pipe:** Base price in carloads to consumers about \$200 per net ton. Base discounts on steel pipe Pittsburgh and Lorain, O.; Gary, Ind. 2 points less on lap weld, 1 point less on butt weld. Pittsburgh base only on wrought iron pipe.

Steel			Iron		
In.	Blk.	Galv.	In.	Blk.	Galv.
¼	56	33	¼	24	3½
½ & ¾	59	40 ½	¾	30	10
¾	63½	51	1-1¼	34	16
1	66½	55	1½	38	18½
1-3	68½	57½	2	37½	18

Lap Weld					
Steel			Iron		
In.	Blk.	Galv.	In.	Blk.	Galv.
2	61	49½	1¼	23	3½
2½-3	64	52½	1½	28½	10
3½-6	66	54½	2	30½	12
7-8	65	52½	2½	31½	14½
9-10	64½	52	4	33½	18
11-12	63½	51	4½-8	32½	17
			9-12	28½	12

**Boiler Tubes:** Net base prices per 100 feet, f.o.b. Pittsburgh in carload lots, minimum wall, cut lengths 4 to 24 feet, inclusive.

—Seamless—		—Lap Weld—	
O. D.	Hot Rolled	Hot Drawn	Charcoal Steel
Sizes	B.W.G.		
1".....	13	\$ 7.82	\$ 9.01
1¼".....	13	9.26	10.67
1½".....	13	10.23	11.72
1¾".....	13	11.64	13.42
2".....	13	13.04	15.03
2½".....	13	14.54	16.76
2¾".....	12	16.01	18.45
3".....	12	17.54	20.21
3½".....	12	18.59	21.42
4".....	12	19.50	22.48
4½".....	11	24.63	28.37
5".....	10	30.54	35.20
5½".....	10	37.35	43.04
6".....	9	46.87	54.01
	7	71.96	82.93

## Rails, Supplies

Standard rails, over 60-lb., f.o.b. mill, gross ton, \$40.00.

Light rails (billet), Pittsburgh, Chicago, Birmingham, gross ton, \$40.00.

\*Relaying rails, 35 lbs. and over, f.o.b. railroad and basing points, \$28-\$30. Supplies: Angle bars, 2.70c; tie plates, 2.15c; track spikes, 3.00c; track bolts, 4.75c; do. heat treated, 5.00c.

\*Fixed by OPA Schedule No. 46, Dec. 15, 1941.

## Tool Steels

**Tool Steels:** Pittsburgh, Bethlehem, Syracuse, base, cents per lb.: Reg. carbon 14.00c; extra carbon 18.00c; special carbon 22.00c; oil-hardening 24.00c; high car.-chr. 43.00c.

#### High Speed Tool Steels:

	Tung.	Chr.	Van.	Moly.	Pitts. base, per lb.
18.00	4	1			67.00c
18.00	4	2	1		77.00c
18.00	4	3	1		87.00c
1.5	4	1	8.5		54.00c
	4	2	8		54.00c
5.50	4	1.50	4		57.50c
5.50	4.50	4	4.50		70.00c

## Stainless Steels

Base, Cents per lb.—f.o.b. Pittsburgh  
**CHROMIUM NICKEL STEEL**

Type	Bars	Plates	Sheets	H. R. Strip	C. R. Strip
302	24.00c	27.00c	34.00c	21.50c	28.00c
303	26.00	29.00	36.00	27.00	33.00
304	25.00	29.00	36.00	23.50	30.00
308	29.00	34.00	41.00	28.50	35.00
309	36.00	40.00	47.00	37.00	47.00
310	49.00	52.00	53.00	48.75	56.00
311	49.00	52.00	53.00	48.75	56.00
312	36.00	40.00	49.00		
*316	40.00	44.00	48.00	40.00	48.00
*317	50.00	54.00	58.00	50.00	58.00
†321	29.00	34.00	41.00	29.25	38.00
†347	33.00	38.00	45.00	33.00	42.00
431	19.00	22.00	29.00	17.50	22.50

#### STRAIGHT CHROMIUM STEEL

403	21.50	24.50	29.50	21.25	27.00
*410	18.50	21.50	26.50	17.00	22.00
416	19.00	22.00	27.00	18.25	23.50
†420	24.00	28.50	33.50	23.75	36.50
430	19.00	22.00	29.00	17.50	22.50
†430F	19.50	22.50	29.50	18.75	24.50
442	22.50	25.50	32.50	24.00	32.00
446	27.50	30.50	36.50	35.00	52.00
501	8.00	12.00	15.75	12.00	17.00
502	9.00	13.00	16.75	13.00	18.00

#### STAINLESS CLAD STEEL (20%)

304	\$118.00	19.00			
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\*With 2-3% moly. †With titanium. ‡With columbium. \*\*Plus machining agent. ††High carbon. †††Free machining. †††Includes annealing and pickling.

**Basing Point Prices** are (1) those announced by U. S. Steel Corp. subsidiaries for first quarter of 1941 or in effect April 16, 1941 at designated basing points or (2) those prices announced or customarily quoted by other producers at the same designated points. Base prices under (2) cannot exceed those under (1) except to the extent prevailing in third quarter of 1940.

Extras mean additions or deductions from base prices in effect April 16, 1941.

Delivered prices applying to Detroit, Eastern Michigan, Gulf and Pacific Coast points are deemed basing points except in the case of

the latter two areas when water transportation is not available, in which case nearest basing point price plus all-rail freight may be charged.

**Domestic Ceiling prices** are the aggregate of (1) governing basing point price, (2) extras and (3) transportation charges to the point of delivery as customarily computed. **Governing basing point** is basing point nearest the consumer providing the lowest delivered price. **Emergency basing point** is the basing point at or near the place of production or origin of shipment.

**Dislocated tonnage:** Producers shipping material outside their usual marketing areas because of the war emergency may charge the basing point price nearest place of production plus actual cost of transportation to destination.

**Seconds or off-grade iron or steel products** cannot be sold at delivered prices exceeding those applying to material of prime quality.

**Export ceiling prices** may be either the aggregate of (1) governing basing point or emergency basing point (2) export extras (3) export transportation charges provided they are the f.a.s. seaboard quotations of the U. S. Steel Export Co. on April 16, 1941. Domestic or export extras may be used in case of Lease-Lend tonnage.

## Bolts, Nuts

F.o.b. Pittsburgh, Cleveland, Birmingham, Chicago. Discounts for carloads additional 5%, full containers, add 10%.

#### Carriage and Machine

¼ x 6 and smaller	65½ off
Do., ½ and ¾ x 6-in. and shorter 63½ off	
Do., ¾ to 1 x 6-in. and shorter	61 off
1½ and larger, all lengths	59 off
All diameters, over 6-in. long	59 off
Tire bolts	50 off
Step bolts	56 off
Plow bolts	65 off

#### Stove Bolts

In packages with nuts separate 71-10 off; with nuts attached 71 off; bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.

	Nuts	U.S.S.	S.A.E.
Semifinished hex.			
¾-inch and less	62	64	
¾-1-inch	59	60	
1½-1½-inch	57	58	
1½ and larger	56		

Hexagon Cap Screws			
Upset 1-in., smaller	64 off		
Milled 1-in., smaller	60 off		

Square Head Set Screws			
Upset, 1-in., smaller	71 off		
Headless, ¼-in., larger	60 off		
No. 10, smaller	70 off		

## Piling

Pittsburgh, Chicago, Buffalo 2.40c

## Rivets, Washers

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham

Structural	3.75c
¾-inch and under	65-5 off
Wrought washers, Pittsburgh, Chicago, Philadelphia, to jobbers and large nut, bolt manufacturers i.e.l.	\$2.75-3.00 off

## Metallurgical Coke

Price Per Net Ton

Beehive Ovens	
Connellsville, furnace	\$6.00
Connellsville, foundry	7.00-7.50
Connellsville prem. fdy.	7.25-7.60
New River, foundry	8.00-8.25
Wise county, foundry	7.50
Wise county, furnace	6.50
By-Product Foundry	
Kearny, N. J., ovens	12.15
Chicago, outside delivered	11.50
Chicago, delivered	12.25
Terre Haute, delivered	12.00
Milwaukee, ovens	12.25
New England, delivered	13.75
St. Louis, delivered	12.25
Birmingham, ovens	8.50
Indianapolis, delivered	12.00
Cincinnati, delivered	11.75
Cleveland, delivered	12.30
Buffalo, delivered	12.50
Detroit, delivered	12.25
Philadelphia, delivered	12.38

## Coke By-Products

Spot, gal., freight allowed east of Omaha	
Pure and 90% benzol	15.00c
Toluol, two degree	28.00c
Solvent naphtha	27.00c
Industrial xylol	27.00c
Per lb. f.o.b. works	
Phenol (car lots, returnable drums)	12.50c
Do. less than car lots	13.25c
Do. tank cars	11.50c
Eastern Plants, per lb.	
Naphthalene flakes, balls, bbls. to jobbers	8.00c
Per ton, bulk, f.o.b. port	
Sulphate of ammonia	\$29.00



## Pig Iron

Prices (in gross tons) are maximums fixed by OPA Price Schedule No. 10, effective June 10, 1941. Exceptions indicated in footnotes. Allocation regulations from WPB Order M-17, expiring Dec. 31, 1942. Base prices bold face, delivered light face.

	No. 2 Foundry	Basic	Bessemer	Malleable
Bethlehem, Pa., base	\$25.00	\$24.50	\$26.00	\$25.50
Newark, N. J., del.	26.62	26.12	27.62	27.12
Brooklyn, N. Y., del.	27.65			28.15
Birdsboro, Pa., del.	25.00	24.50	26.00	25.50
Birmingham, base	†20.38	†19.00		
Baltimore, del.	25.67			
Boston, del.	25.12			
Chicago, del.	†24.47			
Cincinnati, del.	24.30	22.92		
Cleveland, del.	24.12	23.24		
Newark, N. J., del.	26.24			
Philadelphia, del.	25.51	25.01		
St. Louis, del.	†24.12	23.24		
Buffalo, base	24.00	23.00	25.00	24.50
Boston, del.	25.50	25.00	26.50	26.00
Rochester, del.	25.53		26.53	26.04
Syracuse, del.	26.08		27.08	26.58
Chicago, base	24.00	23.50	24.50	24.00
Milwaukee, del.	25.17	24.67	25.67	25.17
Muskegon, Mich., del.	27.38			27.38
Cleveland, base	24.00	23.50	24.50	24.00
Akron, Canton, O., del.	25.47	24.97	25.97	25.47
Detroit, base	24.00	23.50	24.50	24.00
Saginaw, Mich., del.	26.45	25.95	26.95	26.45
Duluth, base	24.50		25.00	24.50
St. Paul, del.	26.76		27.26	26.76
Erie, Pa., base	24.00	23.50	25.00	24.50
Everett, Mass., base	25.00	24.50	26.00	25.50
Boston	25.50	25.00	26.50	26.00
Granite City, Ill., base	24.00	23.50	24.50	24.00
St. Louis, del.	24.50	24.00		24.50
Hamilton, O., base	24.00	23.50		24.00
Cincinnati, del.	24.68	24.68		25.35
Neville Island, Pa., base	24.00	23.50	24.50	24.00
†Pittsburgh, del.				
No. & So. sides	24.69	24.19	25.19	24.69
Provo, Utah, base	22.00			
Sharpsville, Pa., base	24.00	23.50	24.50	24.00
Sparrows Point, Md., base	25.00	24.50		
Baltimore, del.	26.05			
Steelton, Pa., base		24.50		25.50
Swedeland, Pa., base	25.00	24.50	26.00	25.50
Philadelphia, del.	25.89	25.39		26.39
Toledo, O., base	24.00	23.50	24.50	24.00
Mansfield, O., del.	26.06	25.56	26.56	26.06
Youngstown, O., base	24.00	23.50	24.50	24.00

\*Basic silicon grade (1.75-2.25%), add 50c for each 0.25%. †For phosphorus 0.70 and over deduct 38c. ‡Over 0.70 phos. §For McKees Rocks, Pa., add 55 to Neville Island base; Lawrenceville, Homestead, McKeesport, Ambridge, Monaca, Allquippa, 84; Monessen, Monongahela City .97 (water); Oakmont, Verona 1.11; Brackenridge 1.24.

## High Silicon, Silvery

6.00-6.50 per cent (base)	\$29.50
6.51-7.00	\$30.50
7.01-7.50	31.50
7.51-8.00	32.50
8.01-8.50	33.50
8.51-9.00	34.50
F.o.b. Jackson county, O., per gross ton, Buffalo base prices are \$1.25 higher. Prices subject to additional charge of 50 cents a ton for each 0.50% manganese in excess of 1.00%.	

## Bessemer Ferrosilicon

Prices same as for high silicon silvery iron, plus \$1 per gross ton. (For higher silicon irons a differential over and above the price of base grades is charged as well as for the hard chilling irons, Nos. 5 and 6.)

## Charcoal Pig Iron

Northern	
Lake Superior Furn.	\$28.00
Chicago, del.	31.54

## Southern

Semi-cold blast, high phos., f.o.b. furnace, Lyles, Tenn.	\$28.50
Semi-cold blast, low phos., f.o.b. furnace, Lyles, Tenn.	33.00

## Gray Forge

Neville Island, Pa.	\$23.50
Valley, base	23.50

## Low Phosphorus

Basing points: Birdsboro and Steelton, Pa., and Buffalo, N. Y., \$29.50 base; \$30.81, delivered, Philadelphia.

**Switching Charges:** Basing point prices are subject to an additional charge for delivery within the switching limits of the respective districts.

**Silicon Differentials:** Basing point prices are subject to an additional charge not to exceed 50 cents a ton for each 0.25 silicon in excess of base grade (1.75 to 2.25%).

**Phosphorus Differential:** Basing point prices are subject to a reduction of 38 cents a ton for phosphorus content of 0.70% and over.

**Manganese Differentials:** Basing point prices subject to an additional charge not to exceed 50 cents a ton for each 0.50% manganese content in excess of 1.0%.

**Celling prices** are the aggregate of (1) governing basing point (2) differentials (3) transportation charges from governing basing point to point of delivery as customarily computed. Governing basing point is the one resulting in the lowest delivered price for the consumer.

**Exceptions to Celling Prices:** Pitts-burgh Coke & Iron Co. (Sharpsville, Pa. furnace only) and Struthers Iron & Steel Co. may charge 50 cents a ton in excess of basing point prices for No. 2 Foundry, Basic, Bessemer and Malleable. Mystic Iron Works, Everett, Mass., may exceed basing point prices by \$1 per ton, effective April 20, 1942.

**Export Prices:** In case of exports only, the governing basing point nearest point of production may be used, plus differentials and export transportation charges.

## Refractories

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

<b>Fire Clay Brick</b> Super Quality	
Pa., Mo., Ky.	\$64.00
First Quality	

Pa., Ill., Md., Mo., Ky.	51.30
Alabama, Georgia	51.30
New Jersey	56.00
Ohio	43.00

## Second Quality

Pa., Ill., Md., Mo., Ky.	46.55
Alabama, Georgia	38.00
New Jersey	49.00
Ohio	36.00

## Malleable Bung Brick

All bases	\$59.85
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## Silica Brick

Pennsylvania	\$51.30
Joliet, E. Chicago	58.90
Birmingham, Ala.	51.30

## Ladle Brick

(Pa., O., W. Va., Mo.)	
Dry press	\$31.00
Wire cut	29.00

## Magnetite

Domestic dead-burned grains, net ton f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00

## Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.	
Chrome brick	\$54.00
Chem. bonded chrome	54.00
Magnetite brick	76.00
Chem. bonded magnetite	65.00

## Fluorspar

Washed gravel, f.o.b. Ill.	
Ky. net ton, carloads, all rail	\$23.00-25.00
Do, barge	23.00-25.00
No. 2 lump	23.00-25.00
(OPA May 11 established maximum at Jan. 2, 1942, level.)	

## Ferroalloy Prices

**Ferromanganese:** 78-82%, carlots, gross ton, duty paid. Atlantic ports, \$135; Del. Pittsburgh \$140.65; f.o.b. Southern furnaces \$135; Add \$6 per gross ton for packed carloads \$18 for ton, \$13.50 for less-ton and \$10 for less than 200-lb. lots, packed.

**Spiegeleisen:** 19-21%, carlots per gross ton, Palmerton, Pa. \$36.

**Manganese Briquets:** Contract basis in carloads per pound, bulk freight allowed 5.50c; packed 5.75c; ton lots 6.00c; less-ton lots 6.25c; less 200-lb. lots 6.50c. Spot prices ¼-cent higher.

**Electrolytic manganese:** 99.9% plus, less carlots, per lb. 42.00c.

**Chromium Metal:** Per lb. contained chromium in gross ton lots, contract basis, freight allowed, 98% 80.00c, 88% 79.00c. Spot prices 5 cents per lb. higher.

**Ferrocolumbium:** 50-60%, per lb. contained columbium in gross ton lots, contract basis, f.o.b. Niagara Falls, N. Y. \$2.25; less-ton lots \$2.30. Spot prices 10 cents per lb. higher.

**Ferrochrome:** 66-70%; per lb. contained chromium in carloads, freight allowed, 4-6% carbon 13.00c; ton lots 13.75c; less-ton lots 14.00c; less than 200-lb. lots 14.25c. 66-72%, low carbon grades:

	Car	Ton	Less	200
	loads	lots	ton	lbs.
2% C.	19.50c	20.25c	20.75c	21.00c
1% C.	20.50c	21.25c	21.75c	22.00c
0.20% C.	21.50c	22.25c	22.75c	23.00c
0.10% C.	22.50c	23.25c	23.75c	24.00c
Spot is ¼c higher				

**Chromium briquets:** Contract basis

in carloads per lb., freight allowed 8.25c; packed 8.50c; gross ton lots 8.75c; less-ton lots 9.00c; less 200-lb. lots 9.25c. Spot prices ¼-cent higher.

**Ferrromolybdenum:** 55-75%, per lb. contained molybdenum, f.o.b. Langloeth and Washington, Pa., furnace, any quantity 95.00c.

**Calcium Molybdate (Molyte):** 40-45%, per lb. contained molybdenum, contract basis, f.o.b. Langloeth and Washington, Pa., any quantity, 80.00c.

**Molybde Oxide Briquets:** 48-52%, per lb. contained molybdenum, f.o.b. Langloeth, Pa., any quantity 80.00c.

**Molybdenum Oxide:** 53-63%, per lb. contained molybdenum in 5 and 20 lb. molybdenum contained cans, f.o.b. Langloeth and Washington, Pa., any quantity 80.00c.

**Molybdenum Powder:** 99% per lb. in 200-lb. kegs, f.o.b. York, Pa. \$2.60; 100-200 lb. lots \$2.75; under 100-lb. lots \$3.00.

**Ferrophosphorus:** 17-19%, based on 18% phosphorus content, with unitage of \$3 for each 1% of phosphorus above or below the base; gross tons per carload f.o.b. sellers' works, with freight equalized with Rockdale, Tenn.; contract price \$58.50, spot \$62.25.

**Ferrophosphorus:** 23-26%, based on 24% phosphorus content, with unitage of \$3 for each 1% of phosphorus above or below the base; gross tons per carload f.o.b. sellers' works, with freight equalized with Mt. Pleasant, Tenn.; contract price \$75, spot \$80.

**Ferrosilicon:** Contract basis in gross

tons per carload, bulk, freight allowed; unitage applies to each 1% silicon above or below base.

	Carloads	Ton lots
50% .....	\$ 74.50	\$ 87.00
Unitage .....	1.50	1.75
75% .....	135.00	151.00
Unitage .....	1.80	2.00
85% .....	170.00	188.00
Unitage .....	2.00	2.20
90-95% .....	10.25c	11.25c
Spot prices ¼-cent higher,		

**Silicon Metal:** Contract basis per lb., f.o.b. producers' plants, freight allowed; 1% iron; carlots 14.50c, ton lots 15.00c, less-ton lots 15.25c, less 200 lbs. 15.50c.

**Silicon Metal:** Contract basis per lb.; 2% iron; carlots 13.00c, ton lots 13.50c, less-ton lots 13.75c, less 200 lbs. 14.00c. Spot prices ¼-cent higher.

**Silicon Briquets:** Contract basis; in carloads, bulk freight allowed, per ton \$74.50; packed \$80.50; ton lots \$84.50; less-ton lots per lb. 4.00c; less 200-lb. lots per lb. 4.25c. Spot ¼-cent per lb. higher on less-ton lots; \$5 per ton higher on ton lots and over.

**Silicomanganese:** Contract basis freight allowed, 1½% carbon; in carloads per gross ton \$128; ton lots \$140.50. Spot \$5 per ton higher.

**Ferrotungsten:** Carlots, per lb. contained tungsten, \$1.90.

**Tungsten Metal Powder:** 98-99%, per lb. any quantity \$2.55-2.65.

**Ferrotitanium:** 40-45%, f.o.b. Niagara Falls, N. Y., per lb. contained titanium; ton lots \$1.23; less-ton

lots \$1.25. Spot 5 cents per lb. higher.

**Ferrotitanium:** 20-25%, 0.10 maximum carbon; per lb. contained titanium; ton lots \$1.35; less-ton lots \$1.40. Spot 5 cents per lb. higher.

**High-Carbon Ferrotitanium:** 15-20%. Contract basis, per gross ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and North of Baltimore and St. Louis, 6-8% carbon \$142.50; 3-5% carbon \$157.50.

**Ferrovandium:** 35-40%, contract basis, per lb. contained vanadium, f.o.b. producer's plant with usual freight allowances; open-hearth grade \$2.70; special grade \$2.80; highly-special grade \$2.90.

**Vanadium Pentoxide:** Technical grade, 88-92 per cent V<sub>2</sub>O<sub>5</sub>; contracts, any quantity, \$1.10 per pound V<sub>2</sub>O<sub>5</sub> contained; spot 5 cents per pound higher.

**Zirconium Alloys:** 12-15%, contract basis, carloads bulk, per gross ton \$102.50; packed \$107.50; ton lots \$108; less-ton lots \$112.50. Spot \$5 per ton higher.

**Zirconium alloy:** 35-40%, contract basis, carloads in bulk or package, per lb. of alloy 14.00c; gross ton lots 15.00c; less-ton lots 16.00c. Spot ¼-cent higher.

**Alsilfer:** (Approx. 20% aluminum, 40% silicon, 40% iron) Contract basis, f.o.b. Niagara Falls, N. Y., per lb. 7.50c; ton lots 8.00c. Spot ¼-cent higher.

**Simanal:** (Approx. 20% each silicon, manganese, aluminum) Contract basis, freight allowed, per lb. of alloy; carlots 10.50c; ton lots



## WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials. As of April 16, 1941

	Soft Bars	Hot-rolled Bands	Strip Hoops	Plates ½-In. & Over	Structural Shapes	Floor Plates	Sheets			Cold Rolled Strip	Cold Drawn Bars		
							Hot Rolled	Cold Rolled	Galv. No. 24		Carbon	S.A.E. 2300	S.A.E. 3100
Boston	3.98	4.06	5.06	3.85	3.85	5.66	3.71	4.68	5.11	3.46	4.13	8.88	7.23
New York (Met.)	3.84	3.96	3.96	3.76	3.75	5.56	3.58	4.60	5.00	3.51	4.09	8.84	7.19
Philadelphia	3.85	3.95	4.45	3.55	3.55	5.25	3.55	4.05	4.65	3.31	4.06	8.56	7.16
Baltimore	3.85	4.00	4.35	3.70	3.70	5.25	2.50	....	5.05	....	4.04	....	....
Norfolk, Va.	4.00	4.10	....	4.05	4.05	5.45	3.85	....	5.40	....	4.15	....	....
Buffalo	3.35	3.82	3.82	3.62	3.40	5.25	3.25	4.30	4.75	3.52	3.75	8.40	6.75
Pittsburgh	3.35	3.60	3.60	3.40	3.40	5.00	3.35	....	4.65	....	3.65	8.40	6.75
Cleveland	3.25	3.50	3.50	3.40	3.58	5.18	3.35	4.05	4.62	3.20	3.75	8.40	6.75
Detroit	3.43	3.43	3.68	3.60	3.65	5.27	3.43	4.30	4.84	3.40	3.80	8.70	7.05
Omaha	4.10	4.20	4.20	4.15	4.15	5.75	3.85	5.32	5.50	....	4.42	....	....
Cincinnati	3.60	3.67	3.67	3.65	3.68	5.28	3.42	4.37	4.92	3.45	4.00	8.75	7.10
Chicago	3.50	3.60	3.60	3.55	3.55	5.15	3.25	4.10	4.85	3.50	3.75	8.40	6.75
Twin Cities	3.75	3.85	3.85	3.80	3.80	5.40	3.50	4.35	5.00	3.83	4.34	9.09	7.44
Milwaukee	3.63	3.53	3.53	3.68	3.68	5.28	3.38	4.23	4.98	3.54	3.88	8.38	6.98
St. Louis	3.64	3.74	3.74	3.69	3.69	5.29	3.39	4.24	4.99	3.61	4.02	8.77	7.12
Indianapolis	3.60	3.75	3.75	3.70	3.70	5.30	3.45	....	5.01	....	3.97	....	....
Chattanooga*	3.80	4.00	4.00	3.85	3.85	5.80	3.75	....	4.50	....	4.39	....	....
Memphis	3.90	4.10	4.10	3.95	3.95	5.71	3.85	....	5.25	....	4.31	....	....
Birmingham	3.50	3.70	3.70	3.55	3.55	5.93	3.45	....	4.75	....	4.43	....	....
New Orleans	4.00	4.10	4.10	3.80	3.80	5.75	3.85	....	5.25	5.00	4.60	....	....
Houston, Tex.	3.75	4.30	4.30	4.05	4.05	5.50	4.00	....	5.25	....	6.90	....	....
Seattle	4.20	4.25	5.45	4.75	4.45	6.50	4.65	7.60	5.70	....	5.75	....	....
Los Angeles	4.50	4.95	6.80	4.50	4.50	6.75	4.65	6.50	5.85	....	6.10	10.55	9.55
San Francisco	3.95	4.50	6.25	4.65	4.35	6.35	4.55	6.40	6.10	....	6.80	10.80	9.80

\*Not named in OPA price order.

## BASE QUANTITIES

Soft Bars, Bands, Hoops, Plates, Shapes, Floor Plates, Hot Rolled Sheets and SAE 1035-1050 Bars: Base, 400-1999 pounds; 300-1999 pounds in Los Angeles; 400-39,999 (hoops, 0-299) in San Francisco; 300-4999 pounds in Portland; 300-9999 Seattle; 400-14,999 pounds in Twin Cities; 400-3999 pounds in B'ham., Memphis. Cold Rolled Sheets: Base, 400-1499 pounds in Chicago, Cincinnati, Cleveland, Detroit, New York, Omaha, Kansas City, St. Louis; 450-3749 in Boston; 500-1499 in Buffalo; 1000-1999 in Philadelphia, Baltimore; 750-4999 in San Francisco; 300-4999 in Portland, Seattle; any quantity in Twin Cities, New Orleans; 300-1999 Los Angeles.

Galvanized Sheets: Base, 150-1499 pounds, New York; 150-1499 in Cleveland, Pittsburgh, Baltimore, Norfolk; 150-1048 in Los Angeles; 300-10,000 in Portland, Seattle; 450-3749 in Boston; 500-1499 in Birmingham, Buffalo, Chicago, Cincinnati, Detroit, Indianapolis, Milwaukee, Omaha, St. Louis, Tulsa; 3500 and over in Chattanooga; any quantity in Twin Cities; 750-1500 in Kansas City; 150 and over in Memphis; 25 to 49 bundles in Philadelphia; 750-4999 in San Francisco.

Cold Rolled Strip: No base quantity; extras apply on lots of all size.

Cold Finished Bars: Base, 1500 pounds and over on carbon, except 0-299 in San Francisco, 500-999, Los Angeles, 1000 and over in Portland, Seattle; 1000 pounds and over on alloy, except 0-4999 in San Francisco.

SAE Hot Rolled Alloy Bars: Base, 1000 pounds and over, except 0-4999, San Francisco; 0-1999, Portland, Seattle.

## S.A.E. Hot-rolled Bars (Unannealed)

	1035-1050 Series	2300 Series	3100 Series	4100 Series	6100 Series
Boston	4.28	7.75	6.05	5.80	7.90
New York (Met.)	4.04	7.60	5.90	5.65	....
Philadelphia	4.10	7.56	5.86	5.61	8.56
Baltimore	4.45	....	....	....	....
Norfolk, Va.	....	....	....	....	....
Buffalo	3.55	7.35	5.65	5.40	7.50
Pittsburgh	3.40	7.45	5.75	5.50	7.60
Cleveland	3.30	7.55	5.85	5.85	7.70
Detroit	3.48	7.67	5.97	5.72	7.19
Cincinnati	3.65	7.69	5.99	5.74	7.84
Chicago	3.70	7.35	5.65	5.40	7.50
Twin Cities	3.95	7.70	6.00	6.09	8.19
Milwaukee	3.83	7.33	5.88	5.63	7.73
St. Louis	3.84	7.72	6.02	5.77	7.87
Seattle	6.25	....	8.00	7.85	8.65
Los Angeles	4.80	9.55	8.55	8.40	8.80
San Francisco	5.45	9.80	8.80	8.65	9.05

## EUROPEAN IRON, STEEL PRICES

Dollars at \$4.02½ per Pound Sterling

## Export Prices f.o.b. Port of Dispatch—

By Cable or Radio

	BRITISH Gross Tons f.o.b. U.K. Ports	L s d
Merchant bars, 3-inch and over	\$66.50	16 10 0
Merchant bars, small, under 3-inch, re-rolled	3.60c	20 0 0
Structural shapes	2.95c	15 10 0
Ship plates	2.90c	16 2 6
Boiler plates	3.17c	17 12 6
Sheets, black, 24 gage	4.00c	22 5 0
Sheets, galvanized, corrugated, 24 gage	4.61c	25 12 6
Tin plate, base box, 20 x 14, 108 pounds	\$ 6.20	1 10 9
British ferromanganese \$120.00 delivered Atlantic seaboard duty-paid.		

## Domestic Prices Delivered at Works or Furnace—

	L s d
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	\$25.79 6 8 0 (a)
Basic pig iron	24.28 6 0 6 (a)
Furnace coke, f.o.t. ovens	7.56 1 17 6
Billets, basic soft, 100-ton lots and over	49.37 12 5 0
Standard rails, 60 lbs. per yard, 500-ton lots & over	2.61c 14 10 6
Merchant bars, rounds and squares, under 3-inch	3.17c 17 12 0††
Shapes	2.77c 15 8 0††
Ship plates	2.91c 16 3 0††
Boiler plates	3.06c 17 0 6††
Sheets, black, 24 gage, 4-ton lots and over	4.10c 22 15 0
Sheets, galvanized 24 gage, corrugated, 4-ton lots & over	4.70c 26 2 6
Plain wire, mild drawn, catch weight coils, 2-ton lots and over	4.28c 23 15 0
Bands and strips, hot-rolled	3.30c 18 7 0
(a) del. Middlesbrough. 5s rebate to approved customers.	††Rebate 15s on certain conditions.

## Ores

Lake Superior Iron Ore		Chrome Ore	
Gross ton, 51½%		Gross ton c.i.f. Baltimore; dry basis; subject to penalties for guarantees	
Lower Lake Ports		Indian and African	
Old range bessemer	\$4.75	2.8:1 lump, 48%....	\$39.00
nonbessemer	4.45	South African (excluding war risk)	
High phosphorus	4.35	No ratio lump, 44%..	28.00
Mesabi bessemer	4.60	Do. ....45%....	29.00
Old range nonbessemer	4.60	Do. ....48%....	34.00
		Do. concentrates, 48%	33.00
		Do. ....50%....	34.00
Eastern Local Ore		Brazilian (nominal)	
Cents, unit, del. E. Pa.		2.5:1 lump, 44%.....	31.00
Foundry and basic 56-63%, contract.....	12.00	2.8:1 lump, 44%.....	32.50
		3:1 lump, 48%.....	41.00
		No ratio lump, 48%..	35.00-35.50
		Do. concentrate, 48%.	33.00-33.50
Foreign Ore		Manganese Ore	
Cents per unit, c.i.f. Atlantic ports		Including war risk but not duty, cents per unit cargo lots	
Manganiferous ore, 45-55% Fe., 6-10% Mang.	Nom.	Caucasian, 50-52% .....	70.00-75.00
N. African low phos....	Nom.	S. African, 48%.....	75.00
Spanish, No. African basic, 50 to 60%....	Nom.	Indian, 50%.....	75.00
Brazil iron ore, 68-69% f.o.b. Rio de Janeiro.	8.00c	Brazilian, 48% .....	75.00
		Chilean, 48% .....	75.00
		Cuban, 51%, duty free.	85.00
Tungsten Ore		Molybdenum	
Chinese wolframite, per short ton unit, duty paid	\$24.00	Sulphide conc., lb., Mo. cont., mines .....	\$4.75



# MAXIMUM PRICES FIXED BY OPA ON IRON AND STEEL SCRAP

Other than railroad grades quoted on the basis of basing point prices from which shipping point prices and consumers' delivered prices are to be computed. Scrap originating from railroads quoted delivered to consumers' plants located on the line of the railroad from which the material originated. All prices in gross tons. A basing point includes its switching district.

## PRICES FOR OTHER THAN RAILROAD SCRAP

	Low Phos. Grades				ELECTRIC FURNACE AND FOUNDRY GRADES				First Cut	
	Bar				Alloy-Free				Heavy	
	Machine Shop Turnings	BLAST FURNACE GRADES*	Open Hearth Grades*	Heavy Structural, Plate and less	3 ft. and less	2 ft. and less	1 ft. and less	3 ft. and less	2 ft. and less	1 ft. and less
Pittsburgh, Brackenridge, Butler, Johnstown, Midland, Monessen, Sharon, Steubenville, Weirton, Canton, Youngstown, Warren	\$16.00	\$16.00	\$20.00	\$22.50	\$21.00	\$21.50	\$22.00	\$20.00	\$20.50	\$21.00
Claymont, Coatesville, Harrisburg, Conshohocken, Phoenixville	14.75	14.75	18.75	21.25	19.75	20.25	20.75	18.75	19.25	19.75
Bethlehem	14.25	14.25	18.25	20.75	19.25	19.75	20.25	18.25	18.75	19.25
Buffalo	15.25	15.25	19.25	21.75	20.25	20.75	21.25	19.25	19.75	20.25
Cleveland, Middletown, Cincinnati, Portsmouth, Ashland	15.50	15.50	19.50	22.00	20.50	21.00	21.50	19.50	20.00	20.50
Detroit	13.85	13.85	17.85	20.35	18.85	19.35	19.85	17.85	18.35	18.85
Toledo	13.85	13.85	17.85	20.35	18.85	19.35	19.85	17.85	18.35	18.85
Chicago	14.75	14.75	18.75	21.25	19.75	20.25	20.75	18.75	19.25	19.75
Kokomo	14.25	14.25	18.25	20.75	19.25	19.75	20.25	18.25	18.75	19.25
Duluth	14.00	14.00	18.00	20.50	19.00	19.50	20.00	18.00	18.50	19.00
St. Louis	13.50	13.50	17.50	20.00	18.50	19.00	19.50	17.50	18.00	18.50
Birmingham, Atlanta, Alabama City, Los Angeles, San Francisco, Pittsburg, Calif.	13.00	13.00	17.00	19.50	18.00	18.50	19.00	17.00	17.50	18.00
Minneapolis, Colo.	12.50	12.50	16.50	19.00	17.50	18.00	18.50	16.50	17.00	17.50
Seattle	10.50	10.50	14.50	17.00	15.50	16.00	16.50	14.50	15.00	15.50

## RAILROAD SCRAP

	Heavy Melting Steel	Scrap Rails	Rails for Rolling	3 ft. and under	2 ft. and under	18 in. and under
Pittsburgh, Wheeling, Steubenville, Sharon, Youngstown, Canton, Philadelphia, Wilmington, Sparrows Point	21.00	22.00	23.50	24.00	24.25	24.50
Cleveland, Cincinnati, Middletown, Ashland, Portsmouth	19.75	20.75	22.25	22.75	23.00	23.25
Chicago	20.50	21.50	23.00	23.50	23.75	24.00
Buffalo	20.25	21.25	22.75	23.25	23.50	23.75
Detroit	18.85	19.85	21.35	21.85	22.10	22.35
Kokomo	19.25	20.25	21.75	22.25	22.50	22.75
Duluth	19.00	20.00	21.50	22.00	22.25	22.50
Kansas City, Mo.	17.00	18.00	19.50	20.00	20.25	20.50
St. Louis	18.50	19.50	21.00	21.50	21.75	22.00
Birmingham	18.00	19.00	20.50	21.00	21.25	21.50
Los Angeles, San Francisco	18.00	19.00	20.50	21.00	21.25	21.50
Seattle	15.50	16.50	18.00	18.50	18.75	19.00

## CAST IRON SCRAP OTHER THAN RAILROAD

(Shipping point prices in gross tons)

	Group A	Group B	Group C
No. 1 Cupola Cast	\$18.00	\$19.00	\$20.00
No. 1 Machinery Cast, Drop Broken, 150 lbs. & Under	18.00	19.00	20.00
Clean Auto Cast	18.00	19.00	20.00
Stove Plate	17.00	18.00	19.00
Unstripped Motor Blocks	17.50	18.50	19.50
Heavy Breakable Cast	15.50	16.50	17.50
Charging Box Size Cast	17.00	18.00	19.00
Miscellaneous Malleable	20.00	21.00	22.00

Group A includes the states of Montana, Idaho, Wyoming, Nevada, Utah, Arizona and New Mexico.  
Group B includes the states of North Dakota, South Dakota, Nebraska, Colorado, Kansas, Oklahoma, Texas and Florida.

Group C includes states not named in groups A and B, plus Kansas City, Kans.-Mo. scrap. No. 2 heavy melting steel, dealers' No. 1 heavy melting steel, No. 1 hydraulic compressed black sheet No. 1 chem. borings, 1 per cent. oil, \$1 under, No. 2, 1.5 per cent. oil, \$2 under, heavy melting steel, No. 3 bundles, \$2 under, No. 1 heavy melting; cast steel, \$2.50 over, tube scrap \$3 over, auto springs, crank shafts, \$1 over, No. 1 heavy melting; Blast Furnace Grades refer to mixed borings and turnings, shoveling turnings, No. 2 bushing and cast iron borings.

A basing point includes the switching district of the city named. The Pittsburgh basing point includes the switching districts of Bessemer, Homestead, Duquesne, Munhall and McKeesport, Pa. Cincinnati basing point includes the switching district of Newport, Ky. St. Louis basing point includes

## MARKET PRICES

the switching districts of Granite City, East St. Louis and Madison, Ill. San Francisco basing point includes the switching districts of South San Francisco, Niles and Oakland, Calif.

Inferior Grades: Maximum prices of inferior grades shall continue to bear the same differential below the corresponding listed grades as existed from Sept. 1, 1940, to Jan. 31, 1941. No premium allowed on grades considered superior, unless approved by OPA. Addition of special preparation charges prohibited. Purchase of electric furnace or foundry grades for open hearth or blast furnace use permitted only at no more than price for corresponding open hearth grade. Exceptions: Low phos. billet, bloom and forge crops and electric furnace bundles may exceed open hearth price, and electric furnace bundles may exceed blast furnace price, if material is delivered to the consumer direct from the original industrial producer.

Commissions: No commission is payable except by a consumer to a broker for services rendered. The commission not to exceed 50 cents per gross ton. No commission is payable unless: The broker guarantees the quality and delivery of an agreed tonnage the scrap is purchased at a price no higher than the maximum allowed; the broker sells the scrap to the consumer at the same price at which he purchased it; or the broker does not split the commission with the seller of the scrap, with another broker or sub-broker, or with the consumer. Commissions must be shown as separate item on invoice.

Maximum Shipping Point Price: Where shipment to consumer is by rail, vessel or combination of both, scrap is at its shipping point when it has been placed on a railroad car or a.s. vessel. In such cases, maximum shipping point prices are: (1) For shipping points located within a basing point, the price listed in the above table for scrap at the basing point in which the shipping point is located, minus the lowest established switching charge for scrap within the basing point; and (2) for shipping points located outside a basing point, the price in the above table for scrap at the most favorable basing point, minus the lowest transportation charge by rail, water or combination thereof. When vessel movement is involved, dock charges shall be 50 cents at Memphis, \$1 at Great Lakes ports, \$1.25 at New England ports, 75 cents elsewhere. New England shipping point prices computed on most favorable basing point prices; maximum transportation charge on scrap from New England, \$6.65 per ton. Scrap shipped by motor vehicle is at its shipping point when loaded. For shipping points within basing points, maximum is price listed in table minus lowest switching charge. When outside basing point, maximum is price at most favorable basing point minus lowest established charge when hauled by common carrier. When hauled by seller charges are based on railroad rate for rail shipment, minimum \$1.00 per ton.

Maximum Delivered Prices: Determined by adding established transportation charges to shipping point price, not to exceed by more than \$1 (plus freight rate increase March 18, 1942) the prices listed in the table for the nearest basing point. Certain exceptions specified in Revised Price Schedule No. 4 (Amendment 1) apply to St. Louis district consumers, to WPB allocations, to water shipments from Duluth or Superior, Wis., to shipments of billets, blooms and forge crops from Pittsburgh and to shipments of electric and foundry grades from Michigan; to shipments of turnings to ferroalloy producers and of borings to chemical users. Delivered prices of scrap shipped under WPB allocations may exceed prices at nearest basing point by more than \$1, provided most economical transportation is used.

Unprepared Scrap: Above prices are for prepared scrap. Maximum prices for unprepared scrap are \$2.50 less (railroad grades \$3.50 less) than for the corresponding grades of prepared scrap, except for heavy breakable cast. In no case shall electric furnace and foundry grades be used as the "corresponding grade of prepared scrap." Graveyard autos not considered unprepared scrap.

Remote Scrap: Consists of all grades, except railroad scrap, in Florida, Montana, Idaho, Wyoming, Nevada, Arizona, New Mexico, Texas, Oklahoma, Oregon, Washington, Louisiana, Utah, Delaware, price may exceed by not more than \$5 the price at the basing point nearest consumer's plant, provided sworn details furnished OPA. Permission required to exceed by more than \$5 the nearest basing point price. Colorado scrap is remote scrap for Colorado consumers only.



## Sheets, Strip

Sheet & Strip Prices, Page 92

Sheet sellers generally are able to consider only A-1-a priorities and definite delivery promise can be made in few instances. Most producers are in receipt of more A-1-a tonnage than they are able to schedule, although some producers estimate they can handle such business in about eight weeks.

Production is suffering from curtailment in supply of semifinished steel, due to diversion to lend-lease requirements and to domestic production of material regarded as more essential. As a result some sheet mills are operating only part time, while some are entirely idle. Tonnage on mill books is mainly covered by allocations, taking precedence over regular ratings. Steel sellers are busy applying the new end-use regulations.

## Plates

Plate Prices, Page 93

Part of the steel plates in June allotments will not be delivered by the end of the month, shipment being delayed into July. Mills experience difficulty clearing all allocated tonnage at the end of each month, in spite of the high rate of production, but the lag is being diminished. July allocations, recently approved, reflect increasing emphasis on ship work, high octane gasoline refineries and synthetic rubber plants.

Requests for August delivery will be heavy under PD-298, due July 1 but these schedules will be subject to considerable revision, based on end use.

Fabricating shops converted to war work are consuming plates at a higher rate than normal on their regular products, most material being directly linked with shipbuilding.

An eastern mill is rolling large tonnages of armor plate from billets furnished by another, the latter further processing the plates. Converted plants have made wide divergence from normal output. A builder of snowplows and shovels and another usually building trawler equipment are now fabricating deck equipment for ships, in New England. Builders of small tanks and boilers have contracts for ship equipment and gun mounts. Priorities for these products are as high as those given shipyards. Diesel engine frames and turbine cases are taking much plate material.

Most mill flanging departments could take on additional volume if plates could be obtained. Railroads are buying a minimum of plates and sometimes need directives to obtain them for urgent repairs. Car builders will fare somewhat better in order that they may manufacture the 18,000 freight cars recently released for production by the War Production Board. Warehouses will be allotted less tonnage than heretofore.

In the South, Maritime Commission shipbuilding absorbs practically all plate production and some plates for freight car building are

being shipped in from other steel-making centers.

## Bars

Bar Prices, Page 92

Increasing stringency in supply of semifinished steel, attributed to heavy lend-lease shipments, is a factor in production of steel bars. Deliveries on hot-rolled carbon bars average about ten weeks, with some mills able to do slightly better, depending on specifications.

Some bar mills are forced to close down for a day or two at a time until further supply of steel has been received. This further complicates the delivery problem and

definite promises now are the exception. Only on allocations and directives are real assurances possible and even these schedules do not always hold.

## Pipe

Pipe Prices, Page 93

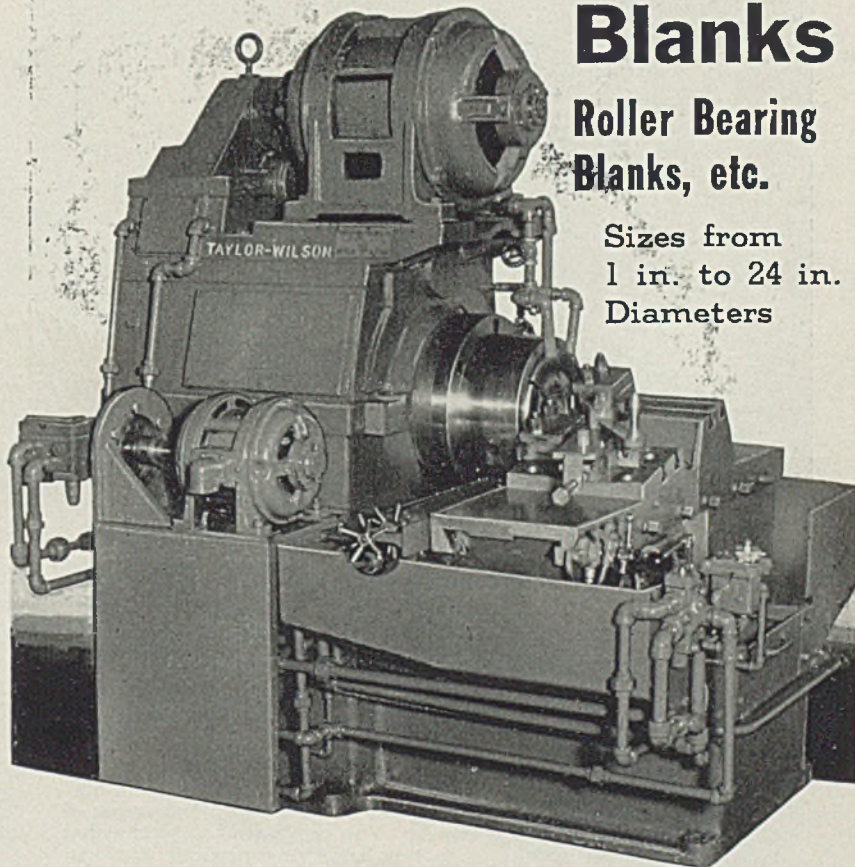
Municipal buying of cast iron pipe has been held to the lowest possible point, little beyond replacement tonnage being booked. Loss of this business is more than balanced by large orders for airfields, camps, depots and other government requirements. Most shipments are confined to orders in the A-1 series, with pig iron allocations to pipe

# TAYLOR-WILSON MACHINES

## For Cutting Off Bomb Blanks

Roller Bearing Blanks, etc.

Sizes from  
1 in. to 24 in.  
Diameters



Designed for maximum speed and close tolerance in cutting set lengths. Especially valuable for cutting Bomb Blanks, also Roller Bearing Blanks, Coupling Stock, etc. Will take all grades of steel including N-80 seamless tube.

These Cutting-Off Machines when operated with the Taylor-Wilson Pipe Handling and Feeding Devices greatly reduce operating labor. The operator manipulates the entire process of feeding, cutting-off and disposal of the pipe from one position. This eliminates much labor and time and accelerates production.

**TAYLOR-WILSON MFG. CO.**  
15 THOMSON AVE. (Pittsburgh District) McKees Rocks, PA.



foundries mainly on A-1-k or higher.

Purchases include a large tonnage for a government depot in New England, divided between two makers, and a 20-mile line in Massachusetts.

## Rails, Cars

Track Material Prices, Page 93

More than 35 railroads will share in the 18,000 freight cars authorized for construction this year. It is estimated about 40,000 other cars are on order with builders, construction of which has been frozen indefinitely.

Railroads participating include the Atlantic Coast Line, for which

300 gondolas will be built by Bethlehem Steel Co., Bethlehem, Pa.; and 100 flat cars by Greenville Steel Car Co., Greenville, Pa.; Bessemer & Lake Erie, 93 hopper cars, Pullman-Standard Car Mfg. Co., Chicago; 150 gondolas, Greenville Steel Car, and 20 gondolas, Pressed Steel Car Co., Pittsburgh; Birmingham Southern, 86 gondolas, Pullman-Standard; Central of New Jersey, 246 hoppers, company shops, and 500 gondolas, Bethlehem Steel Co.; Chesapeake & Ohio, 130 hoppers, American Car & Foundry Co.; Chicago & North-Western, 250 flat cars, Pullman-Standard, and 25 flat cars to company shops.

Chicago, Burlington & Quincy,

250 hoppers and 400 flat cars, company shops; Chicago & Milwaukee, St. Paul & Pacific, two flat cars, company shops; Chicago, Rock Island & Pacific, 300 flat cars, company shops; Delaware & Hudson, 800 hoppers, company shops; Detroit, Toledo & Ironton, 50 flat cars, Greenville Steel Car; Duluth, Missabe & Iron Range, 500 ore cars, Pullman-Standard, 500 ore, General American Transportation Corp., Chicago, and 500 ore, American Car & Foundry; Elgin, Joliet & Eastern, 500 gondolas, American Car & Foundry, 200 gondolas, General American, and 200 flat cars, Ralston Steel Car Co., Columbus, O.; Great Northern, 500 ore, Bethlehem.

Louisville & Nashville, 100 flat cars, Mt. Vernon Car & Mfg. Co., Mt. Vernon, Ill.; Lehigh Valley, 960 hoppers, Bethlehem; Missouri Pacific, 570 gondolas, Pressed Steel Car; New York Central, 100 gondolas and 303 flat cars, Despatch Shops Inc., East Rochester, N. Y.; New York, Chicago & St. Louis, 50 flat cars, Pullman-Standard; New York, New Haven & Hartford, 13 flat cars, company shops; Norfolk & Western, 200 hoppers, Virginia Bridge Co., Roanoke, Va.; Northern Pacific, 489 hoppers, American Car & Foundry; Pennsylvania, 797 hoppers, 1000 gondolas and 22 flat cars, company shops; Pere Marquette, 500 flat cars, Greenville Steel Car.

Reading Co., 300 hoppers and 300 flats, company shops; St. Louis Southwestern, 50 flat cars, company shops; Shippers Car Line, 3 flat cars, American Car & Foundry; Southern Pacific, 90 gondolas and 10 flat cars, company shops; Virginian, 536 hoppers and 200 gondolas, company shops; Western Pacific, 300 flat cars, Mt. Vernon Car.

Included in the 18,000 cars are 2050 hoppers, 500 covered hoppers and 1925 tank and special type cars, including some for the armed services, which have not been definitely allocated.

Class I railroads during the first five months this year put into service 44,456 new freight cars, according to the Association of American Railroads. New freight cars on order June 1 numbered 49,548, compared with 65,047 on the same date a year ago.

St. Louis-San Francisco has sold \$2,120,000 worth of equipment trust certificates to cover 80 per cent of the cost of 15 freight locomotives, three coal and 12 oil-burning, to be built by Baldwin Locomotive Works.



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## Structural Shapes

Structural Shape Prices, Page 93

While considerable structural steel now being shipped is for war construction production is being changed rapidly to ship sections. In some instances mills will be engaged to mid-July exclusively on ship tonnage, directive setting aside deliveries on considerable A-1-a tonnage.

Fabricators in some areas are reaching the end of their backlogs and meet difficulty in getting plain material for some ratings. Revision of plans for use of wood construction continues and new inquiry is



light as few projects are coming out with priority making them feasible. For a project in the East a substantial tonnage of structural steel has been fabricated ready for shipment, with delivery held up by lack of priority.

Until directives centered much of current rolling on shipbuilding some mills could ship in six to eight weeks on A-1-a rating.

Among the few new projects before the trade is a wind tunnel in New York state for the Curtiss-Wright Corp., requiring 5000 tons, and a foundry for Otis Elevator Co., at Buffalo, 500 tons.

## Reinforcing Bars

Reinforcing Bar Prices, Page 93

Demand for reinforcing bars has reached a low point and little is coming out except for war requirements. Because of shortage of steel for this purpose only the highest ratings can be considered. An award of 1000 tons for an ordnance plant in Illinois is the first important letting in that section in several weeks. Small additional tonnages are being shipped to war plants on which previous contracts had been let.

An amendment to the steel price schedule lists consumers of reinforcing bars who are entitled to the 25 cents per hundred pounds discount. The list includes Tennessee Valley Authority and the Bureau of Reclamation.

## Pig Iron

Pig Iron Prices, Page 94

Pig iron allocations for July show relatively more basic than foundry iron. This trend follows reduced foundry operation, an easier situation in foundry grades of scrap and the tighter supply in steel mill scrap. Curtailment in foundry work is due to difficulty in obtaining war work. Some foundries are closing down indefinitely, sometimes transferring the small residue of rated work to another plant.

A blast furnace idle since 1930 in the East is scheduled to blow in on basic early in July, to change over to ferromanganese in about three months. Its daily capacity is 300 to 350 tons.

Considerable shifting of allocated tonnage is taking place, areas where machine tools and other essential goods require iron castings receiving larger allotments, while districts where civilian products have been curtailed receive less. Trend of ratings is steadily higher.

## Scrap

Scrap Prices, Page 96

While sufficient scrap iron and steel is being received by steelmakers to maintain production at the highest level in history and some accumulation of reserves is possible, the general opinion is that later months will bring a decided slump in tonnage, with resultant shortage. This belief is based on the fact that much of the tonnage now being gathered is non-recurrent and once exhausted there will be nothing to

take its place and maintain the rate of collection.

Wrecking of automobiles continues and some yards are well cleared, while others still contain considerable material not yet put in shape for use. Fewer cars are being abandoned to wreckers and the supply from this source will not be renewed. Close combing of household and farm scrap is exhausting these sources, though considerable tonnage probably will continue to come out from both for some time.

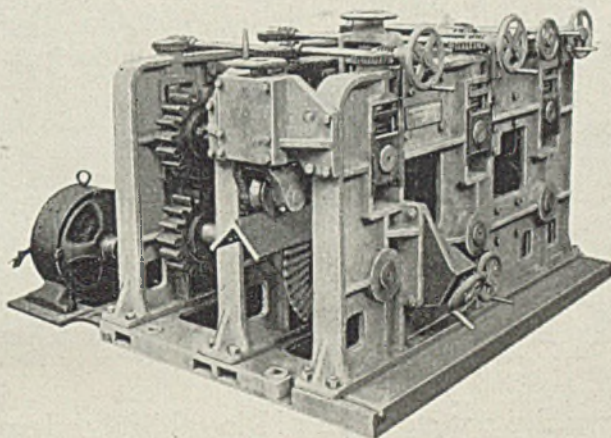
Scrap resulting from war production does not seem to be in as large proportion to the steel used as was normal in peacetime fabrication.

Much of this is in the form of borings and turnings, these grades being in much larger ratio than usual.

In various districts there has been a perceptible lessening of receipts over the past fortnight, which may be only a lull, due to local conditions. However, observers expecting a decline are watching closely to note how this condition eventuates.

Rains and floods in the Southwest have slowed down arrival of scrap in the St. Louis district and shipments from agricultural regions are lighter, as farmers are busy with wheat harvest. Additional allocations have been made in that district, including one of 5000 tons to

## Thomas Angle Planer .. for Shipyards



Capacity for angles up to 8" x 8"

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BY THOMAS

THIS Thomas motor-driven unit is designed for planing, either straight or to any angle desired . . . a vital help in today's urgent ship or barge construction. Easy to operate, speeds production, gives maximum service! Thomas builds equipment for any special metal-forming or fabricating need. Write!

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MACHINE MANUFACTURING COMPANY

PITTSBURGH, PA.

PRESSES • DIES • METAL-FORMING MACHINERY

BENDING AND STRAIGHTENING MACHINES • MULTIPLE DRILLS

FABRICATING MACHINERY



American Steel Foundries. Most melters have sufficient for high steel production but are unable to build reserves.

Indications of slowing in scrap collections are seen at Buffalo, attributed to exhaustion of household and other non-recurring scrap supplies. Tonnage is still heavy and some reserves have been laid down, though the aggregate is not large.

Intensive efforts are being made for recovery of abandoned steel rails, the salvage section of WPB handling expense of removal and repaving, taking the burden off the shoulders of municipalities. In a section of New Jersey 60,000 tons will be reclaimed and some entire

short railroads are being scrapped.

Scrap shipped from automobile wrecking yards in May totaled 383,253 tons, an increase of 10 per cent over April and double monthly movement from this source in 1941. Largest shipments were from the Texas, Oklahoma and Louisiana district, 81,888 tons. New York and New Jersey collections totaled 46,427 tons. The Wisconsin, Iowa and Illinois region was third with 44,687 tons.

### Warehouse

Warehouse Prices, Page 95

Warehouse sales continue to shrink as stock replenishment is

difficult under present ratings. Some relief has been obtained here and there as frozen stocks of fabricators have become available when normal manufacture was stopped. Much of this is of special size and does not fit readily the requirements of other fabricators.

The situation has grown acute and unless warehouses can be supplied larger and better assorted stocks many contractors, on war work believe they will be unable to continue production and meet delivery dates. Many of these find it impossible to obtain sizes and grades called for by their contracts and in some cases wasteful methods must be resorted to in the effort to substitute by machining down larger sizes.

### Pacific Coast

Seattle—Rolling mills, fabricators and machine and metalworking shops are in maximum operation in this area. The heavy shipbuilding program is distributing work to many small plants. Rolling mills have backlogs for the remainder of the year, government agencies and contractors adding almost daily to contracts in hand. No additional work is being figured and orders are practically all A-1-a. Machine shops in the interior are taking some of the burden of plants in the larger centers. Thirteen Washington state firms were granted \$538,786 last month by WPB for plant conversion.

Pacific Northwest lumber is being substituted in many instances where normally steel would be used. Difficulty is experienced with log and labor shortage but replacements under higher priorities are more easily obtainable. Oregon state has cancelled \$369,594 in highway contracts under agreement with the WPB. Seattle is having difficulty obtaining steel for the Spokane street viaduct, now under construction, and for ex-

# Extra PERFORMANCE with MOGUL (E-71) MOLYBDENUM TUNGSTEN HOT DIE STEEL

E-71 is a special composition of Mogul Molybdenum High Speed Steel which has been developed for use in hot dies for such operations as extruding and coining steel parts. It has excellent resistance to washing, heat checking, sinking and abrasive wear.

Mogul E-71 Hot Die Steel is hardened at a temperature of about 2240°F and has a Rockwell Hardness of C-56 when hardened at 1100°F.

Production tests proved its superiority over dies made of well-known high tungsten hot die steels. Our representatives will be glad to discuss your hot work problems with you.

JESSOP STEEL COMPANY

WASHINGTON, PENNA., U. S. A.



**JESSOP STEELS** FOR AMERICA AND HER ALLIES

CARBON • HIGH SPEED • SPECIAL ALLOY • STAINLESS • COMPOSITE STEELS

### Tool Steel Scrap

Cents per pound, to consumers  
f.o.b. shipping point

#### Tungsten Types

(For each 1% tungsten contained)	
Solid scrap containing over 12%...	1.80c
Sold scrap containing 5 to 12%...	1.60
Turnings, millings containing over 12% .....	1.60
Do., 5 to 12% .....	1.40
Turnings, millings, solids under 5% .....	1.25

#### Molybdenum Types

Solid scrap, not less than 7% molybdenum, 0.50 vanadium .....	12.50
Turnings, millings, same basis .....	10.50
Solid scrap, not less than 3% molybdenum, 4% tungsten, 1% vanadium .....	13.50
Turnings, millings, same basis .....	11.50

#### Mixed Scrap

(Molybdenum and Tungsten Types)	
Solid scrap, each 1% contained tungsten .....	1.60
Solid scrap, each 1% molybdenum ..	.80
Millings, turnings, each 1% tungsten .....	1.40
Millings, turnings, each 1% molybdenum .....	.70



pansion of Ross power dam, officials seeking higher priorities for these projects. Washington state will not fabricate steel automobile license plates for 1943 but will substitute paper stamps.

Salvage drives are producing results, local rolling mills receiving sufficient scrap to increase inventories notwithstanding maximum operations. High bid for salvage of the Narrows bridge to Washington Toll Bridge Authority was by Alaska Junk Co., Portland, Oreg., offering \$27,062 for 360 tons of steel girders and \$2063 for 26 tons of steel laterals. At Ketchikan, Alaska, long-shoremen are handling scrap aboard ships free, the proceeds to go to Red Cross and Salvation Army. The drive in Washington state under supervision of Washington Industrial Salvage Commission in ten weeks netted 5000 tons of steel, 6000 tons of iron and 450 tons of brass, bronze, copper and aluminum from industrial sources. Idaho state has called bids June 27 for the sale of 156 tons salvaged from state-owned plants.

United States engineers in Washington and Oregon are handling many major projects with others up for bids shortly. Morrison-Knudsen Co., Boise, Idaho, has a \$131,965 contract for the airport at Ontario, Oreg., and bids are also in for the Salem project. Bids were opened at Portland June 23 for construction of 20 additional buildings at an Oregon military base and 34 structures at a Washington base. Sound Construction & Engineering Co., Seattle, has a navy contract approximating \$7,500,000 for construction of a blimp base in Oregon, to cover more than 1000 acres. Wegman & Son, Portland, Oreg., will erect two additional buildings at the Swan Island shipyard of the Kaiser Co., near Portland, involving oil storage and other facilities. Several army and navy contracts of major size are under negotiation. Ross B. Hammond Co., Portland, has a contract to build 63 structures with 2000 living units on a 100-acre site at Portland, for the war department.

Cities and districts with high priorities are seeking cast iron pipe, several awards pending. Seattle will open bids July 2 for an improvement involving about 100 tons of 8 inch. About 500 tons will be required for King county district No. 20, alternate bids in. Port, Orchar, Wash., has opened bids for pumps and other equipment. Renton, Wash., is financing a \$400,000 bond issue, planning major expansion.

## Canada

Toronto, Ont.—War specifications for steel continue heavy and are responsible for further piling of backlogs with primary producers. At the same time there is a steady decline in orders from non-essential manufacturers. June 30 will mark the end of production of several hundred items, and a large number of others will be sharply curtailed as a result of restriction orders placed by the Department of Munitions and Supply. A couple of new lists were released during the past

week, further curtailing production of articles in which iron, steel and other metals are the principal components. The latest announcement cuts by 30 per cent the tonnage of corset steel to supply 60 tons of highly finished steel for manufacture of springs for airplane motors and army vehicles. All office supplies in which steel or rubber are components also are under strict priority. In addition to the non-essential group, further restrictions have been placed on the use of steel in the essential list, including 25 per cent reduction in manufacture of agricultural implements for 1943, and immediate curtailment in production of automobile parts.

Alloy and carbon steel are caus-

ing bottlenecks in some war plants, with efforts being made to speed shipments from the United States pending expansion of Canadian production. Practically all alloy steel is being directed to war industries with top priority ratings. Through government co-operation several new electric furnaces are being rushed to completion and other installations of this nature are proposed.

Structural steel letting in connection with war plant construction was around 10,000 tons for the week and government announcements indicate additional large tonnages for almost immediate closing. Steel mill representatives state that shape mills are operating at capacity with

# PERKINS MAN COOLERS

TRADE MARK REGISTERED UNITED STATES PATENT OFFICE



**SAVE VALUABLE WORK HOURS**

Perkins Man Coolers keep men cool. Comfortable workers produce more. Give them a steady re-circulation of air.

Perkins Man Coolers are made in stationary and oscillating types, both portable.

**B. F. PERKINS & SON, INC.**  
Engineers and Manufacturers  
HOLYOKE, MASS.

**B. F. PERKINS & SON, INC.**  
ENGINEERS AND MANUFACTURERS  
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backlogs that extend well into 1943. In addition to steel for war plants large tonnages are going into shipbuilding, and some larger fabricators state that most of their equipment has turned to this line of production.

Iron and steel scrap offerings continue heavy from war plants and country districts, but have slowed down from automobile wreckers. The latter have mostly cleaned out accumulations. The large supply that has been pouring into the markets recently is more than sufficient to meet current steelmaking demands and despite increased consumption mills and electric furnace operators have been successful in building substantial stocks. Scrap collection campaigns are being con-

tinued and are steadily cleaning out stocks that have been under accumulation for many years. Supply of iron scrap also has been more plentiful recently, chiefly due to betterment in offerings from rural districts and larger shipments of cast grades from western Canada. Local dealers now believe they will have no difficulty in meeting demands for the greater part of this year.

## Steel in Europe

Foreign Steel Prices, Page 95

London—(By Cable)—Satisfactory balance in supply and demand for raw materials is being maintained in Great Britain. Great activity is

continued in plates and thick sheets for shipbuilding and tank construction. Facilities for increasing output are being extended. Tin plate is quiet, due to restrictions on consumption. The situation in scrap is much easier.

## Semifinished Steel

Semifinished Prices, Page 92

Requirements for semifinished steel for lend-lease during third quarter, which may reach 2,000,000 tons for Great Britain and a large tonnage for Russia, will have profound effect on finished steel production for the domestic market. Already numerous products are restricted because of shortage of steel supply and diversion of this quantity for export will curtail domestic supply materially.

## Refractories

Refractories Prices, Page 94

Office of Price Administration has granted permission to Westvaco Chlorine Products Corp. to increase its price on dead burned grain magnesite to \$40.50 per ton, f.o.b. cars, Patterson, Calif., on sales to Vanadium Corp. of America and Mathieson Alkali Works. The established price has been \$22 per ton, f.o.b. cars, Chewelah, Wash., which later was increased to \$32 per ton to customers in California, in view of high-cost production undertaken under war stress.

The new price of \$40.50 applies to the two companies named but to no others. The return to Westvaco will be the same as realized on sales from Chewelah to California users, to whom most of the output was consigned. Other products of this company will not be affected.

## Fluorspar

Fluorspar Prices, Page 94

Office of Price Administration has given permission to the Fluorspar Processing Co., Colorado Springs, Colo., to sell its glass grade fluorspar at a maximum of \$27.40 per ton, f.o.b. Salida, Colo. This is the same maximum price previously authorized for the company's acid grade.

OPA has also granted permission to Western Feldspar Milling Co., Denver, to sell its 40-mesh fluorspar, 76 per cent calcium fluoride, at a maximum of \$14.50, f.o.b. Denver. These orders formalize prices approved previously.

## Equipment

Seattle—Used equipment is in strong demand, new machinery being taken almost entirely by government agencies and contractors handling defense work. Great difficulty is experienced in getting parts. Alaska operators are hard hit, due also to difficulties of transportation. Bonneville Power Administration reports General Electric Supply Co. low at \$12,884 for furnishing conduit couplings and accessories for Covington substation, Okonite Co., Seattle, low at \$13,506

**SPEED UP  
WAR WORK  
By Reducing  
Floor Repairs!**

## Install INLAND 4-WAY FLOOR PLATE—

the safe-traction, rolled steel floor plate that is long wearing and reduces repairs to the minimum.

WRITE FOR BULLETIN!

## INLAND STEEL CO.

38 S. Dearborn St., Chicago

Sales Offices:

Milwaukee • Detroit • St. Paul  
St. Louis • Kansas City



for furnishing 124,800 feet of wire and cable for Ampere and Cutler-Hammer Co. low at \$9522 for station panels for Ampere. Seattle has opened bids for 25 tons of solid copper wire and will open tenders July 2 for two sluice gates and hoists for Ross dam project. Tacoma has received bids for regulator valves for Alder and LaGrande dams, Nisqually power project. Milton, Wash., is considering tenders for three transformers. Alaska Road Commission has received bids at Seattle for furnishing jackhammers and wire rope.

## Oil Refinery Designers Asked To Conserve Steel

(Concluded from Page 33)

difficulty if they would first contact the various mills, familiarize themselves with the current situation, place their orders with the mills that can best handle them and then file their PD-298 forms accordingly.

"Because the industry has been obtaining an even flow of steel plate, it would appear that the impression has gotten about to the effect that the steel battle has been won.

"Such is not the case. Steel is still a problem. It is not merely a matter of rolling, shaping, and fabricating steel; it comes right down to ingot production. Curtailment in the use of steel is the best way of solving the problem.

"A survey of our material lists covering all war plants to be erected within refineries which are projected for completion prior to July 1, 1943, indicates a total requirement for steel which would appear to be excessive. The total tonnage requested for all projects may be listed as follows: Steel plate, sheared, universal and strip, 352,855 tons; structural steel shapes, 202,223 tons; sheet steel, black and galvanized, flat and corrugated, 14,249 tons.

"Much has been done by the petroleum industry in curtailing the use of steel plate. This has been particularly true in connection with those projects which are furthest along. Continued improvement, however, is expected. Much of the steel plate required is used for processing tanks and for storage. Shipment of tank steel should be scheduled so that it will not be delivered at the beginning of the job. Storage tanks are not needed until the job is complete. A review of existing tanks should be made. Wherever possible, old tanks should be used even if it is necessary to rebuild them. Second-hand tanks purchased from others should find a place in this program.

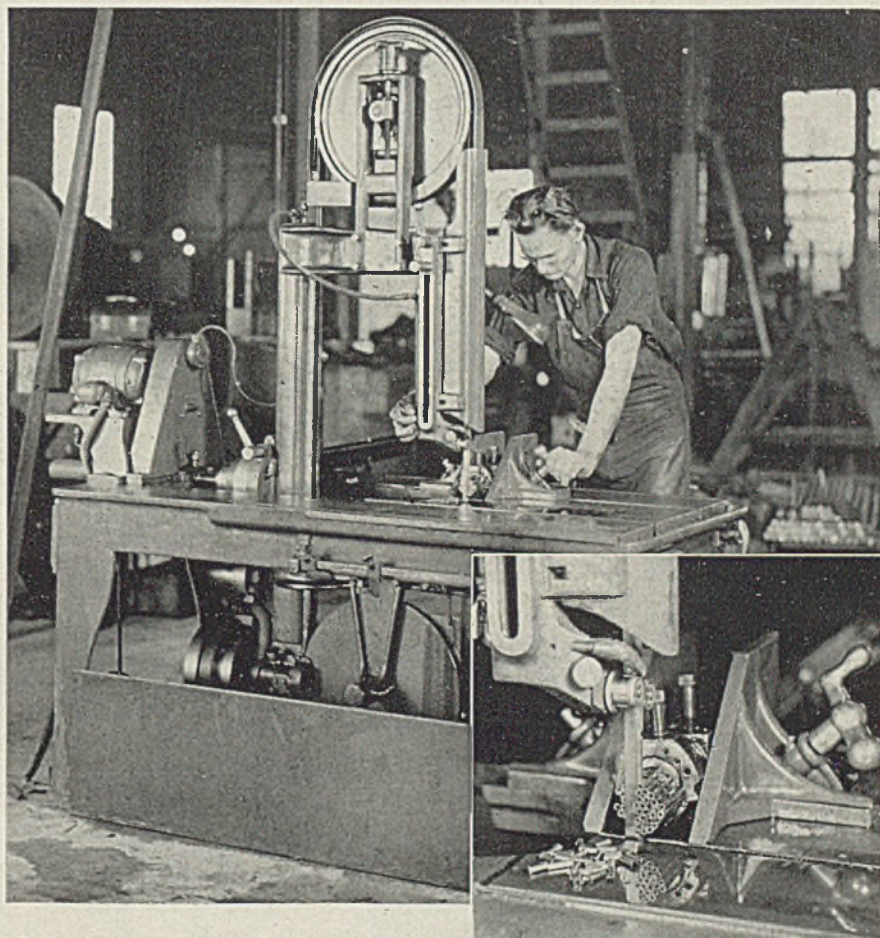
"Modern refinery construction calls for the installation of steel stairways and steel platforms which completely surround the operating equipment. Looking at some of

these installations, one thinks of the fellow who could not see the forest for trees. The operating equipment cannot be seen for steel.

"The practice, however, cannot be criticized in normal times. It makes for convenience in operation. It contributes to safety. But these are not normal times. Every pound of steel which can be saved by the petroleum industry will go into the making of shells or tanks or ships. When one compares the quantity of structural steel listed above with the steel plate which has been requested, it is not difficult to say that the structural steel requirements are

excessive. The matter should receive further study. Ladders can be substituted for stairways. Steel platforms are not in all cases necessary.

"The quantity of sheet steel listed is not very much. However, any sheet steel is more than is necessary. Sheet steel can be used only for roofing, for side walls, or for the weatherproofing of insulation. Transite or the equivalent can be had and should be used in the erection of buildings. There are any number of plasticized materials which are suitable for the weatherproofing of insulation."



**"It has increased production about 30%"  
at Independent Pneumatic Tool Co.**

Used to cut off a great variety of stock; cold drawn tubing (2335 S.A.E., 3115 S.A.E., and 3135 S.A.E.), angle iron, and round, hex and square bars in a wide range of sizes, this MARVEL No. 8 Metal-cutting Band Saw "has increased production about 30%" in the cutting-off department of the Independent Pneumatic Tool Co., Chicago.

The most versatile metal-cutting saw built, the MARVEL No. 8 a truly universal tool. It handles work up to 18" x 18" cross section; cuts at any angle from 45° right to 45° left; does mitering, notching; saves warehouse delays and "cutting extras" and saves hours of machining by roughing work to size and shape.

Cutting-off nested small diameter tubing—50 pieces per cut. On production jobs like this, the extreme accuracy and comparatively fine teeth of the blade produces smooth-edge, semi-finished pieces at every low cost.

### ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

5700 Elmhurst Ave., Chicago, U. S. A.

Eastern Sales Offices

225 Lafayette St., New York, N. Y.





## Nonferrous Metal Prices

Copper						Straits Tin.		Lead		Zinc		Alumi-	Anti-	Nickel
June	Electro. del.	Lake, del.	Casting, del.	New York Spot	Futures	Lead N. Y.	East St. L.	Lead N. Y.	East St. L.	St. L.	99%	num 99%	mony Amer. Spot, N. Y.	Cath. odes
1-26	12.00	12.12 1/2	11.75	52.00	52.00	6.50	6.35	8.25	15.00	14.50	35.00			

*F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 12.00c Conn. copper*

Sheets		
Yellow brass (high)	19.48	
Copper, hot rolled	20.87	
Lead, cut to jobbers	9.75	
Zinc, l.c.l.	13.15	

Tubes		
High yellow brass	22.23	
Seamless copper	21.37	

Rods		
High yellow brass	15.01	
Copper, hot rolled	17.37	

Anodes		
Copper, untrimmed	18.12	

Wire		
Yellow brass (high)	19.73	

**OLD METALS**

*Dealers' Buying Prices*  
(In cents per pound, carlots)

Copper		
No. 1 heavy	9.25-10.00	
Light	7.25-8.00	

Brass		
No. 1 composition	8.75-9.50	
Yellow brass castings	6.25-7.25	
Auto radiators	6.75-7.25	
Red Brass, borings & turnings	8.50-9.25	

Zinc		
Old	5.00-5.75	
New clippings	6.50-7.25	

Aluminum		
Clippings	10.00-11.00	
Cast	8.75-10.00	
Pistons	8.75-10.00	
Sheet	9.00-10.50	

Lead		
Heavy	5.00-5.50	
Mixed babbitt	4.50-6.75	
Electrotype shells	5.00-6.25	
Stereotype, Linotype	6.25-7.50	

Tin and Alloys		
Block tin pipe	44.00-46.00	
No. 1 pewter	32.00-38.00	
Solder joints	7.75-10.00	

## SECONDARY METALS

Brass ingot, 85-5-5-5, l.c.l.	13.25
Standard No. 12 aluminum	14.50

## Nonferrous Metals

New York—The unusual situation of explaining to war workers and to the public why all plants cannot be operated full blast seven days a week and why every able-bodied and willing person does not have a job, is before management and government at this time.

England and Germany long have had labor shortage; neither country appears to have as much raw material as the United States, yet production and labor capacity is strained each day.

Expansion of the copper consuming industry far beyond the copper producing capacity is holding back full scale operation in many plants, particularly in the eastern mills.

The raw material supply is being increased moderately by opening new mines, more efficient recovery and use, scrap collections, and by limitation of materials for consumers.

**Copper**—A drive is expected to be launched soon to gather in the estimated 1,000,000 tons of copper now serving useful but not indispensable purposes in civilian use. May consumption was only 125,000 tons, practically unchanged from the 124,000 tons in April and March. Consumption last August was 144,000 tons.

**Lead**—Capacity operations of lead consuming industries are well sustained by plentiful supplies. Government and private stocks are the best since the middle of 1939. On a tonnage basis the July lead pool was slightly below June.

**Zinc**—May domestic shipments of primary refiners increased to 66,736 short tons, compared with 63,819 in the preceding month. In January, the peak month this year, shipments totaled 67,252 tons. Tri-State zinc ore stocks rose further during the latest period.

You Get All

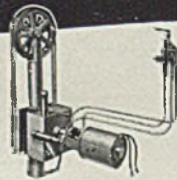
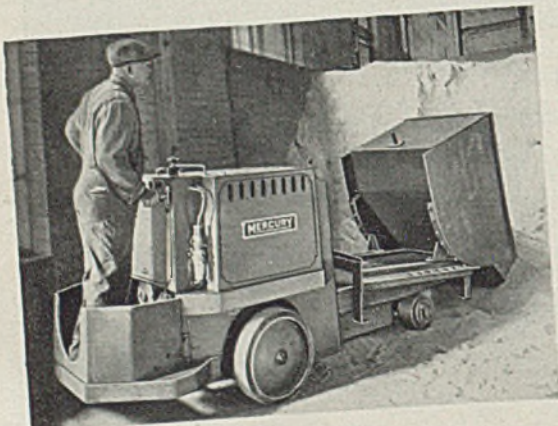
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## In MERCURY INDUSTRIAL LIFT TRUCKS

Illustrated on this page are five important features of industrial truck design — features that mean high operating efficiency, low operating cost and the minimum of maintenance. Each was pioneered and perfected by Mercury and all five are incorporated in Mercury Industrial Trucks.

It is this excellence in design that has won for Mercury equipment the preference of leading industrial and transportation organizations throughout the country. A reputation of designing equipment that delivers the greatest number of productive hours at the lowest cost.

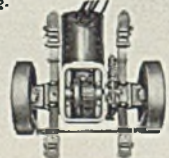
When the consideration of new industrial trucks arises in your plant it will pay you to have the complete story on Mercury equipment. Write for Bulletin 201-5.



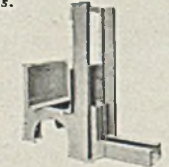
Hydraulic Hoist: Requires no power to lower load. Less than 50% of usual number of moving parts. Complete overload protection.



Snap Action Cam Operated Controller: Eliminates injurious arcing.



Single Unit Motor and Drive Assembly: Double reduction spiral bevel and spur gears transmit maximum power. Semi-elliptic springs. External contracting brakes.



All Welded Frame: No rivet holes to weaken section. Smooth attractive exterior.



Trail Axle: Sturdy simple construction, wheels and steering knuckles ball bearing mounted.

NOTE: Features may vary slightly with type of truck but basic principle is retained.

TRACTORS  
TRAILERS  
LIFT TRUCKS

**MERCURY**  
MANUFACTURING COMPANY  
4140 S. Halsted St., Chicago, Ill.



## Plant Expansion, Construction and Enterprise, Government Inquiries, Sub-Contract Opportunities, Contracts Placed and Pending

### SUB-CONTRACT OPPORTUNITIES . . .

Data on subcontract work are issued by local offices of the Contract Distribution Branch, WPB. Contact either the office issuing the data or your nearest district office. Data on prime contracts also are issued by Contract Distribution offices, which usually have drawings and specifications, but bids should be submitted directly to contracting officers as indicated.

**Detroit office, Contract Distribution Branch, Production Division, WPB, Boulevard building, is seeking contractors for the following:**

**No. 1039:** Steel grousers approximately 13 x 5 1/2 x 3 1/2-inch. Heavy duty drills, horizontal boring mills, horizontal mills and flame hardening capacity required. Part to be made of alloy cast steel, No. 4-402 or drop forging SAE 3140, which must be furnished by subcontractor; 5000 per week are required on 500,000 order with A-1-a priority.

**No. 1038:** SAE 1035 forged steel bearing spindles; 80,000 required at the rate of 300 to 1000 per day. Machines required, heavy-duty drill or No. 4 turret lathe, arbor press, 10-inch lathe, 10-inch external grinder, No. 3 miller and medium size drill. Materials furnished, priority A-1-c, delivery to start as soon as possible.

**No. 1040:** Bomb tail fin body, WD 1015 seamless steel tubing, 1 1/2-inch O.D. by 2.89-inch long. Multiple spindle automatics, threading and drilling required; 100,000 per month required to start as soon as possible on A-1-a priority.

**No. 1041:** Primer body, WDX 1314 steel, 1.29-inch diameter by 1.81-inch long. Multiple spindle screw machines required; second operations consist of internal threading, drilling and cadmium plating; 100,000 per month required at once on A-1-a priority. Material is furnished.

**No. 1042:** Stationary gear carrier, 1 1/2-inch O.D. by .340-inch long. Material, free machining stainless steel. Multiple spindle screw machine required, with drilling, tapping second operations; 100,000 per month at once on A-1-a priority with material furnished.

**Job No. 1053:** Shock strut sleeve, SAE 4130 steel, 1 1/2-inch diameter, 8 1/2 inches long. Drilling, turning, threading, undercutting and heat treating required; 4500 pieces on A-1-a priority.

**Job No. 1054:** Shock strut plunger, 3/4-inch diameter, 8 1/4-inch long. SAE 4130 steel tubing, drilling, turning, threading, milling and heat treating required; 4500 pieces on A-1-a priority.

**Job No. 1055:** Brass washer, turned from seamless brass tubing, 1.77-1.78-inch O.D. x 1 1/4-inch I.D. Single spindle automatic screw machine and sensitive drill required; 15,000 pieces as soon as possible on A-1-a priority. Material not furnished.

**Job No. 1056 and 1057:** Aluminum bronze worms, 9-inch O.D., single thread R.H. with spline hub. Castings and cutters are furnished; 500 per month each are required on A-1-a priority.

**Job No. 1059 to 1071:** Automatic screw

machine parts, steel, from 5/16-inch hex to 2 3/4-inch diameter, with second operations consisting of drilling, broaching, external, surface and centerless grinding. Quantities 15,000 to 240,000. Material not furnished. Delivery to start in January, 1943, on A-1-a priority.

**Job No. 1077:** Steel sleeve, AMS5610 stainless, 9/16-inch square hand screw machine, sensitive drill, milling, chrome plating and centerless grinding required. Order is for 2000 at 200 per month, A-1-a priority.

**Job No. 1078:** Needle valve, AMS 5610, stainless steel, 3/4-inch diameter hand screw, thread, mill, drill, grind, polish; 2000 required at 200 per month on A-1-a rating.

**Job No. 1079:** Poppet valve, 1 1/2-inch long, 1 1/2-inch diameter, AMS 5610 stainless steel. Hand screw, external grinder and polisher required; 2000 required at 200 per month on A-1-a priority.

**Job No. 1080:** Pilot valve, 1/2-inch diameter, 13/16-inch long. Modified X1340 steel. Automatic screw machine, mill, sensitive drill, hand screw machine and external grinder required; 30,000 pieces at 9000 per month on A-1-a priority.

**Job No. 1081:** Guide, SAE 4135 steel, 1 1/2 x 1 1/2-inch bar stock, hand screw machine, mill, surface grinder and sensitive drill required; 5000 pieces at 50 per day on A-1-a priority.

**Job No. 1088:** Ball bearings, approximately 5 1/2-inch O.D. by 3 1/2 bore and 3/4-inch wide. Subcontractor must procure forgings, turn, bore, face, harden and grind; 2100 required at 200 per month, starting in October, on A-1-a priority.

**Job No. 1164:** Indiana prime needs source for nitriding various machined parts, starting in September and reaching ten tons per day by December.

**No. 1156:** Thrust bearing after race, stub carbon tool (46-S-45) ch 5. Material is furnished; 2 1/2-inch hand screw machine, heat treat, surface grinder, internal grinder required. Quantity, 2000 sets at 250 per month on A-1-a priority.

**No. 1151:** Depth index pinion. Brass, Naval (43-B-6) type I half hard. Material is furnished. Machines needed, 3/4-inch hand screw machine, gear hobber. Quantity, 2000 sets at 250 per month, on A-1-a priority.

**No. 1152:** Fixed annular gear. Brass, Naval (43-B-6) type I half hard. Material is furnished. Machines required, 1 1/4-inch hand screw machine, gear shaper, milling, external grinder. Quantity, 2000 sets at 250 per month on A-1-a priority.

**No. 1154:** Depth index wheel. Brass,

Naval type I (46-B-6) half hard. Material is furnished. Machines required, 1 1/4-inch hand screw machine, sensitive drill, gear shaper, marking roll. Quantity, 2000 sets at 250 per month on A-1-a priority.

**No. 1155:** Adjusting body. Material furnished, corrosion-resistant steel (46-S-18) GR 3T. Machine required, 13/16-inch hand screw machine, gear hobber, thread hobber, NS-4. Quantity, 2000 sets at 250 per month on A-1-a priority.

**No. 1156:** Bearing holder. Steel, corrosion resistant, (46-S-18) GR 3T. Material is furnished. Machines required, 1 1/2-inch hand screw machine, sensitive drill, taper, gear hobber, internal grinder. Quantity, 2000 sets at 250 per month on A-1-a priority.

**Chicago office, Contract Distribution Branch of WPB, 20 North Wacker Drive, is seeking contractors for the following:**

**77-A-529:** Prime contractor manufacturing diecast tail fins requires 210,000 liners made from 31/32-inch free-cutting cold-drawn steel WDX 1335, to be delivered at rate of 30,000 to 40,000 per month. Automatic screw machines required for first operation; automatic chucking or hand screw machines for second operation. Both ends counter-bored, one threaded with internal, the other with external thread. Overall length of piece 6 inches. No hardening or grinding required. Blueprints at this office.

**80-AN-529:** Chicago manufacturer requires dies for forming small aluminum parts for aircraft work.

**46-AN-617:** Seven simple parts, liberal tolerances, 2500, 5000 and 10,000 pieces each for 1 1/2 and 2 1/4-inch capacity screw machines, automatic or hand operated. Material cold-rolled steel rounds. Subcontract to be awarded by an eastern firm. Blueprints at this office.

**49-AN-617:** Chicago manufacturer of large pile hammers requires 18 steel castings per month, weighing 2200 pounds each and 14 steel castings per month weighing 4200 pounds each. Manufacturer will supply patterns. No machining operations, castings to be rough.

**50-N-617:** Wanted steel fabricators to manufacture six complete sections as shown on blueprints available at this office.

**Milwaukee office, Contract Distribution Branch of WPB, 161 West Wisconsin avenue, Milwaukee, Wis., is seeking contractors for the following:**

**WS200:** Subcontractor needed, having either hand or automatic screw machine facilities, capacity 1.29 to 1.75 inches, to manufacture the following parts in quantities of 25,000 to 100,000 per month. Prime will furnish blueprint and material. Parts are as follows: Body, primer body, body cap, bearing cap and van hub for bomb tail fuzes.

**WP297X:** Subcontractor sought to supply booster holder of chromlum-





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molybdenum steel, WD4140 hot-rolled, rough turned or cold finished, or WD 4150. Automatic screw machine job with external thread, internal bore, internal thread and two drill holes in shoulder on outside. Piece is 1.81 inches long and 1.5 inches diameter. Also requires a body 2.33 inches long and 1.803 inches in diameter with several external diameters and external and internal threading.

**WP305:** Prime contractor will contract with single subcontractor for all machining and grinding of the following four parts making up diesel engine piston trunk. Prime will furnish all screw machine stock, production gages and some of the small tools required. Body is turned from WDX1314 cold-drawn steel, with internal and external threading and bored to three different internal diameters. Anvil is turned from WDX1314 cold-drawn steel, is .450-inch diameter and .560-inch long. Bored from one end. Primer holder is turned from commercial brass rod composition B half hard; is .30-inch diameter and .305-inch long, bored to several internal diameters. Closing is turned from aluminum alloy, condition T, has external thread. Body and anvil are cadmium plated both inside and outside to withstand 24-hour acid test.

Philadelphia Office, Contract Distribution Branch, Production Division, WPB, Broad Street Station Building, reports the following subcontract opportunities:

**Chase-33-1:** Michigan manufacturer urgently requires subcontracting for aviation motor components. Plain and stepped studs, square and hex head bolts, castle and sleeve nuts, taper and special pins, special screws and bushings, washers, plugs, caps, nipples, rocker shafts, cam shaft rocker tappets, etc. Quantities, varying, minimum 14,000 each of more than 100 items. Material mostly AMS 6310 and 5024 steel bar. Minimum tolerance .001. Following tools or equivalent required: Screw machines, light milling machines, drilling, facilities for precision grinding, heat treating, hardness testing, cadmium plating. Prints, specifications, exhibit samples and all information at Philadelphia office.

**Cruse-32-1:** Government requires subcontracting facilities for swivel elbows, gate valves and dragheads. Steel castings, patterns and machining to be furnished by contractor. Material is class 2 medium or class 3 hard cast steel. Facilities, lathe, drill press and milling machine. Prints and specifications at Philadelphia office.

**Keefer-15-1:** New York firm requires subcontracting facilities on small shafts and assembly for instruments. Shaft assembly consists of three parts, shaft, of 1/4-inch hex H.H. brass, 1.239-inch long, with finished diameters from .047 to .0725-inch. Short shaft pivot made from pinion steel, 1.89-inch long with diameters from .047 to .0135. Long shaft pivot made from pinion steel, .374-inch long, diameters .047 to .0165. Tolerances, plus or minus .0005. Concerns with watchmaking facilities of production type best qualified. Quantity, 20,000 pieces at rate of 2000 to 3000 per week, production to start as soon as possible. Prints, specifications and sample at Philadelphia office.

**Keefer-24-1:** Pennsylvania company needs subcontracting facilities on adaptor and striker nuts. Material is cold-rolled steel WC1115. Tolerances, minimum .005. Production 1500 per day, to start as soon as possible. Machines needed, 2 to 3-inch automatic screw machines or automatic turret lathes. Prints and specifications at Philadelphia office.

**Keefer-26-1:** Philadelphia and Chicago

**STEEL**



manufacturers each seeking subcontracting facilities on body for M-48 fuze. Materials, WDX 1314 cold-rolled steel. Tolerances, plus or minus .005. Quantity, 25,000 to 50,000 per week. Machine required, 2½-inch multi-spindle screw machine. Prints and specifications at Philadelphia office.

**Roystuart-31-1:** Government requires subcontracting facilities on aircraft components, streamlined tie rod assemblies from corrosion-resistant steel stock, fitted with clevis and lock nut at each end. Various lengths and sizes. Material, corrosion-resistant steel No. 49T9. Tolerances, medium. Quantity, 4126 pieces. Production to start shortly. Contract by negotiation. Prints and information at Philadelphia office.

Minneapolis office, Contract Distribution Branch of WPB, 326 Midland Bank building, is seeking contractors for the following:

**S.O. No. 213:** Sources required for manufacture of various milling cutters. Also two fixtures and one drilling jig. Drawings available.

**S.O. No. 214:** Minneapolis concern would like to sublet work on manufacture of end wrenches from 2¼-inch stock. Operations are: Cutoff, heavy drilling and hot forming, which can be done on punch press with 5 or 6-inch stroke. Heat treating facilities required. Quantities 500 per day. Sample part and drawings available.

**S.O. No. 215:** Sources are needed for manufacture of stampings in large quantities, involving automatic feed for punch press.

**S.O. No. 216:** Numerous screw machine parts, drawings and sample parts available in this office for inspection.

**S.O. No. 218:** Prime contractor needs multiple spindle screw machine capacity for a trunnion. Quantities 100,000 to 200,000, smaller units can be bid. Material, WDX1112 steel rod 1¼-inch diameter. Army specification 57-107. Material furnished, work to be completed by Aug. 1. Sample and blueprint available.

**S.O. No. 219:** Cutting taper on 5000 to 10,000 parts, 3120, 3140, and 4130 steel, eight sizes. Threaded and centered blanks furnished. Contractor will furnish drawing and shop routing. Work can be done on engine lathes.

**S.O. No. 220:** Capacity on No. 00 Brown & Sharpe screw machines or equal; two pieces, run of 52,000 each; reasonable tolerance, plus or minus .001. Contractor will furnish prints air mail.

**S.O. No. 221:** Capacity required for cutting teeth only on 100 to 200 sets per week of small beveled gears (1.367-inch largest diameter). Work carries A-1-a priority. Drawings available.

**S.O. No. 222:** Airplane engine spacer, 319,000 pieces. Prints available, material furnished. Equipment needed, four spindle, 2¼-inch capacity automatic screw machine.

**S.O. No. 223:** Automatic screw machine capacity needed for two pieces with diameters of 1.803 and .985. Steel 4140. Drawings at this office.

New York office, Contract Distribution Branch of WPB, 122 East Forty-Second street, New York, reports the following subcontract opportunities:

**D-31:** New York City manufacturer is seeking jeweler's lathe and gear hobbing facilities for cutting gear pinion and gear segment of an airplane instrument. Manufacturing facilities capable of making and assembling the entire instrument unit are particularly desired. All parts will be furnished. Quantity, 1000 to 5000 on a test run. If experimental order is acceptable,

continuous contract will be given.

**S-151:** Upstate New York firm is seeking subcontractors with facilities for producing fine precision parts of stainless steel type 416. Item is 1 1/3-inch long. Machines needed, automatic screw machines up to ¾-inch and centerless grinding facilities.

**S-152:** New Jersey concern offers work to subcontractors having boring mill equipment to turn large bronze rings, 63 inches in diameter, to close tolerances. Materials will be furnished by prime contractor. Blueprints at Newark, N. J., office, 20 Washington place.

**S-153:** Vermont manufacturer seeks subcontractors capable of making worm and worm-gear sets for winches, carrying A-a priority. Worm and worm gears are approximately 1¼-inch pitch. Gear is approximately 14-inch pitch diameter and the worm 6 threads in length by approximately 3½-inch pitch line diameter and the shaft is approximately 3 feet 10 inches overall length. Spiral bevel gear is approximately 7¼-inch pitch diameter with 42 teeth, while bevel gear pinion is approximately 2¼-inch pitch diameter, having 12 teeth.

## STRUCTURAL SHAPES.

### SHAPE CONTRACTS PLACED

13,000 tons, steel plant expansion, Republic Steel Corp., Chicago, to Wisconsin Bridge & Iron Co., Milwaukee; James Stewart Corp., Chicago, contractor.

2400 tons, magnesium plant, to Clinton Bridge Works, Clinton, Iowa (to be fabricated by Four V Structural Steel Companies, Chicago).

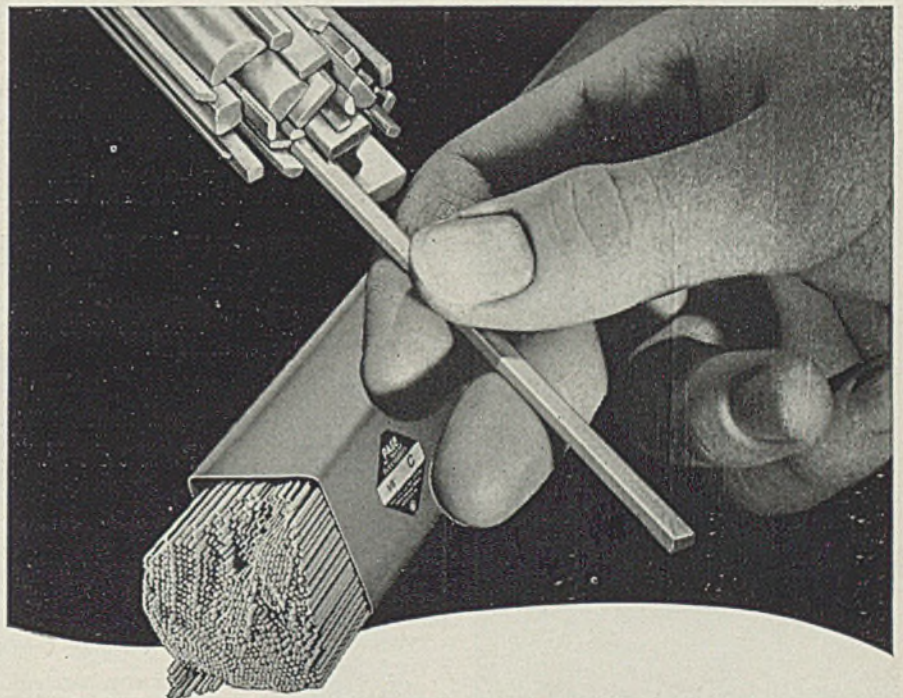
1000 tons, power plant, Keokuk Electro-Metals Co., Keokuk, Iowa, to Michelmann Steel Construction Co., Quincy, Ill.

500 tons, plant, Republic Aviation Corp., Evansville, Ind., to International Steel Co., Evansville, Ind.

275 tons, airplane hangar, Indianapolis, to George L. Mesker & Co., Evansville, Ind.

300 tons, various defense projects in Seattle area, to Standard Steel Fabricating Co., Seattle.

140 tons, bascule span, Rye-Newgate



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are correct in analysis and diameter. Insist that your men do not bend electrodes and that they use each one down to the holder.

**GENERAL WIRE.** Change in analysis, shape or diameter might improve your position. Check waste. The situation in such products as Spring Wire, Bond Wire, Telephone Wire, etc. is not subject to early improvement.

If PAGE experience can help work out changes, our cooperation is yours.

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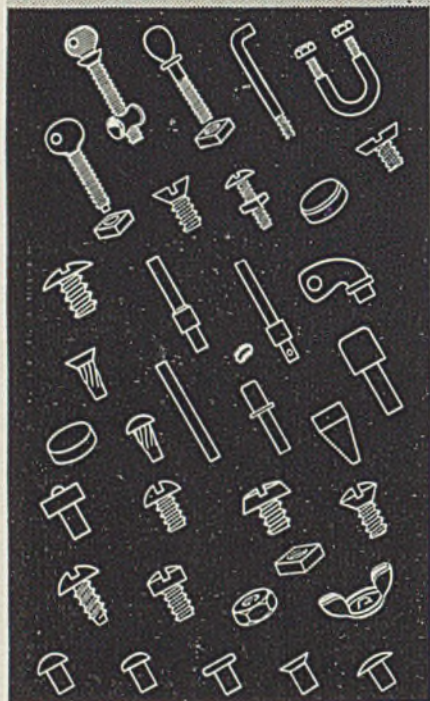
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## SHAPE AWARDS COMPARED

	Tons
Week ended June 27 .....	17,720
Week ended June 20 .....	19,625
Week ended June 13 .....	12,861
This week, 1941 .....	37,930
Weekly average, 1942 .....	26,902
Weekly average, 1941 .....	27,284
Weekly average, May, 1942 .....	15,336
Total to date, 1941 .....	793,563
Total to date, 1942 .....	672,548

Includes awards of 100 tons or more.

bridge, New Hampshire, to American Bridge Co., Pittsburgh.  
105 tons, bridge, Ayer, Mass., to Phoenix Bridge Co., Phoenixville, Pa.; O. A. Miller Co., Ludlow, Mass., contractor.

## SHAPES CONTRACTS PENDING

5000 tons, wind tunnel, Curtiss-Wright Corp., airplane division, New York state.  
500 tons, foundry building, Otis Elevator Co., Buffalo.

## REINFORCING BARS . .

## REINFORCING STEEL AWARDS

1000 tons, Sangamon ordnance plant, to Truscon Steel Co., Youngstown, O.; James Stewart Corp., Chicago, contractor; bids June 12.  
450 tons, addition, Ex-Cell-O Corp., Detroit, to Truscon Steel Co., Youngstown, O.  
189 tons, bridge SAP (1), Love City, Okla., to Capitol Steel & Iron Co., Oklahoma City, Okla.  
147 tons, expansion, Sundstrand Machine Tool Co., Rockford, Ill., to Ceco Steel Products Corp., Chicago.

## REINFORCING STEEL PENDING

750 tons, locks, Sault Ste. Marie, Mich., Great Lakes Dredge & Dock Co., low on general contract; bids June 15.

## RAILS, CARS . . .

## BUSES BOOKED

Twin Coach Co., Kent, O., five; Kenworth Motor Truck Corp., Seattle, two, and Novelties Carriage Co., Spokane, Wash., four passenger buses, for Auto Interurban Co., Spokane.

## PIPE . . .

## CAST PIPE PENDING

500 tons or more, King County, Washing-

## CONCRETE BARS COMPARED

	Tons
Week ended June 27 .....	1,786
Week ended June 20 .....	1,700
Week ended June 13 .....	16,392
This week, 1941 .....	8,861
Weekly average, 1942 .....	9,191
Weekly average, 1941 .....	13,609
Weekly average, May, 1942 .....	6,010
Total to date, 1941 .....	298,374
Total to date, 1942 .....	229,772

Includes awards of 100 tons or more.

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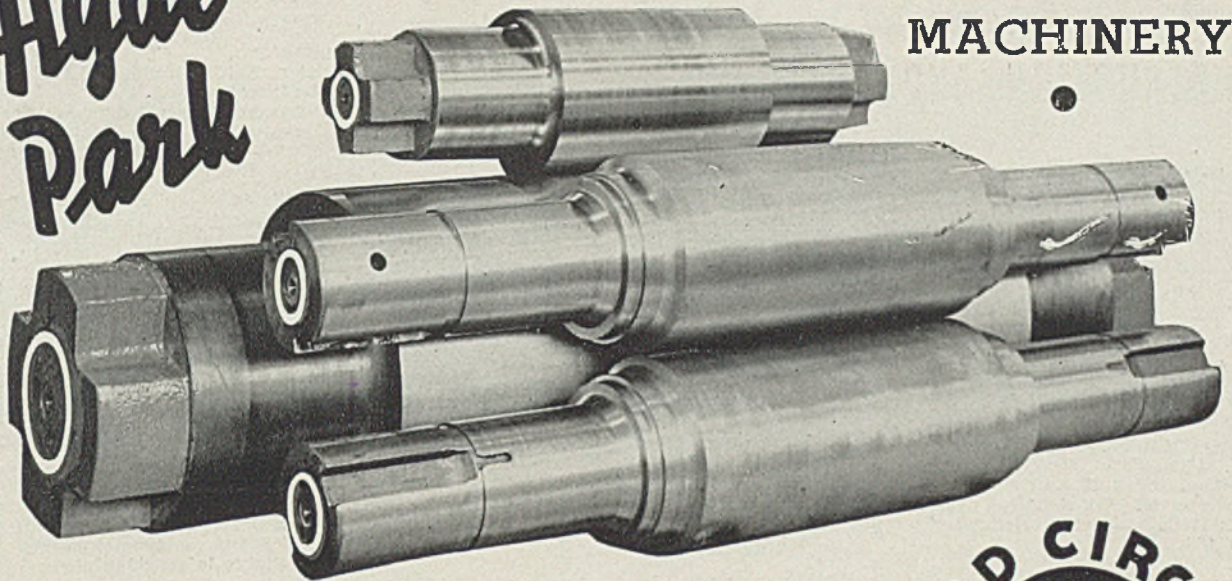
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ton, district No. 20; Valley Construction Co., Seattle, low; cast iron, \$106,324; transite, \$102,510; wood, \$89,707.

100 tons or more, 3450 feet, 8 inch, Class 150, Forty-sixth Avenue N. E. project, Seattle; bids July 2.

## CONSTRUCTION AND ENTERPRISE...

### Michigan

DETROIT—Warner Aircraft Corp., 20263 Hoover avenue, will install electric power equipment in one-story addition. Entire project to cost over \$100,000. H. D. Ilgenfritz, 468 Prentiss street, architect.

DETROIT—Albert Kahn & Associates, 345 New Center building, Detroit, have completed plans for industrial company for plant addition in Maryland. Cost estimated at \$350,000.

GRAND RAPIDS, MICH.—W. B. Jarvis Co., 1501 Paris street, has awarded contract for mill construction factory to Osterink Construction Co., 1502 Grandville street. Estimated cost \$100,000.

### Maine

PEAK ISLAND, ME.—Casco Bay Light & Water Co., 95 Exchange street, Portland, Me., will build diesel engine power plant. Estimated cost over \$40,000.

### Massachusetts

LAWRENCE, MASS.—Victory Steel Products Co. will take bids soon for one-story 80 x 265-foot plant addition costing over \$40,000. Ashton & Huntress,

414 Essex street, architects.

WORCESTER, MASS. — Massachusetts Steel Treating Corp., 118 Harding street, has awarded contract for one-story plant addition to Worcester Broken Stone Co. Inc., 21 Adams street. Estimated cost \$40,000. E. J. Chapin, 311 Main street, architect.

### Connecticut

NEW HAVEN, CONN.—National Tube Bending Co. Inc. has let contract for one-story 72 x 112-foot factory to Fusco-Amatruda Co., 59 Amity road. Estimated cost \$55,000. D. Orr, 96 Grove street, architect.

### Rhode Island

PROVIDENCE, R. I.—Nanskuck Co., 1117 Douglas avenue, has filed plans for addition to boiler plant at mill. Additional equipment will be installed. Estimated cost \$30,000.

### New York

BUFFALO—Otis Elevator Co., 775 Main street, plans factory addition and alterations costing about \$50,000. O. D. Conover, 1740 East Twelfth street, Cleveland, engineer.

### Ohio

AKRON, O.—Seely Instrument Co., 2249 Fourteenth street, will add 6600 square feet to plant.

BEDFORD, O.—C. B. Rowley & Associates, Keith building, Cleveland, architects are taking bids for construction of magnesium powder plant here, to be operated by Ferro Enamel Corp., 4150 East Fifty-sixth street, Cleveland. Defense Plant Corp. will finance.

CADIZ, O. — Wheeling Engineering & Equipment Inc. is being incorporated by Kenneth D. Carter, attorney, N.B.C. building, Cleveland.

CANTON, O.—Cascade Alloy Corp. is being formed to mine and mill ores. Attorney Kenneth B. Cope, 1110 First National Bank building, is handling legal details.

CLEVELAND—J. C. Ulmer Co., J. C. Ulmer, president, 1791 East Thirty-eighth street, will extend boiler room 1260 feet at cost of \$12,000.

CLEVELAND — Slabe Machine Products Co. Inc., 870 East 140th street, has been formed to manufacture aircraft and screw machine products. Edward E. Slabe, is president.

CLEVELAND—Mabeck Products Corp. will engage in manufacturing at undisclosed Cleveland plant. New corporation is being formed by Attorney A. J. Brideau, 618 Guardian building.

CLEVELAND—Advance Die & Tool Co., Richard Bredenbeck, manager, will soon start construction of \$40,000 addition to engineering and office building at 6800 Madison avenue.

DELAWARE, O.—A new company headed by George W. Way and including interests identified with Hughes-Keenan Co., 621 Newman street, Mansfield, O., and with Burkett Body Co., 102 South Clinton, Dayton, O., will operate a manufacturing plant here to be financed by Defense Plant Corp.

### Pennsylvania

ALLEGHENY COUNTY, PA.—Bids are in for substructures for manufacturing plant here for Continental Roll & Steel Foundry Co., East Chicago, Ind.

CRAWFORD COUNTY, PA.—Plans are being prepared for plant here to cost over \$5,000,000 for War Department. Fraser, Brace Engineering Co. Inc., 10 East Forty-ninth street, New York, engineer.

FRANKLIN, PA.—Joy Mfg. Co. will spend approximately \$40,000 for remodeling its First street plant and installing equipment.

### Illinois

CHICAGO—International Rolling Mill Products Co., 3136 West Fifty-first street, distributor of steel sheets and strip, has purchased 50,000 square feet adjoining its plant. A one-story pickling plant will be built as soon as priorities can be assured, it is understood.

SENECA, ILL.—Chicago Bridge & Iron Co., 332 South Michigan avenue, Chicago, has awarded contract for several factory and storehouse buildings to Charles B. Johnson & Son, 6 North Michigan avenue, Chicago, and the Schless Construction Co., 176 West Adams street, Chicago. J. L. McConnell, 53 West Jackson boulevard, Chicago, is engineer in charge of plans.

### Indiana

INDIANAPOLIS—Piel Bros. Starch Co., 1515 Drover street, is rebuilding plant at cost of \$100,000 with equipment.

TERRE HAUTE, IND.—Public Service Co. of Indiana, Indianapolis, has plans



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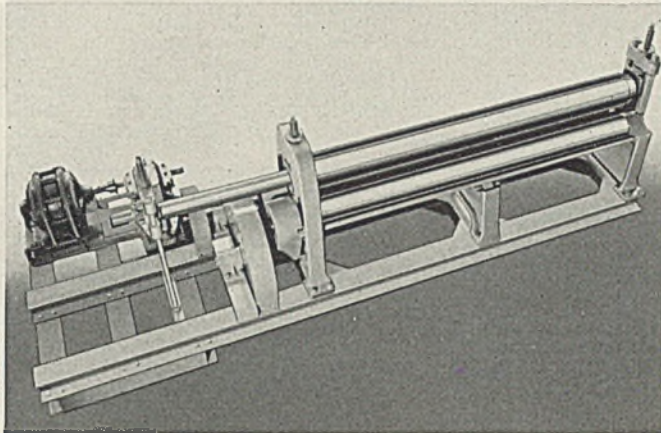
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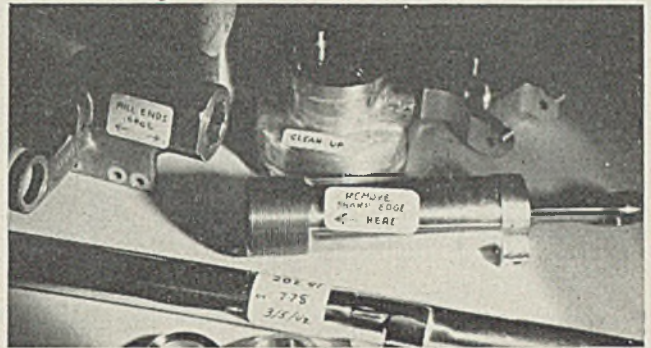
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maturing for addition to Dresser steam-electric generating station here. New steel stack will be built. Sargent & Lundy Inc., 140 South Dearborn street, Chicago, consulting engineer.

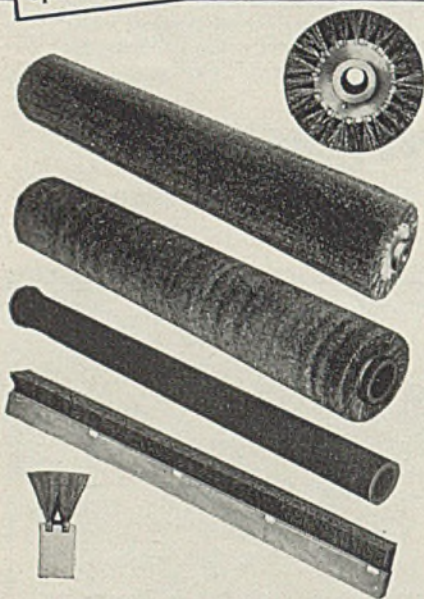
WABASH, IND.—Spencer Cardinal Cabinet Co. will spend approximately \$40,000 for reconstruction of plant and installation of equipment.

### Maryland

BALTIMORE — American Hammered Piston Ring Co. has let contract to Morrow Bros., 14 East Eager street, for \$12,500 addition to foundry at Bush and Hamburg streets.

BALTIMORE — Cummins Construction Co., 803 Cathedral street, has contract for shop addition costing about \$40,000.

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### Kentucky

LOUISVILLE, KY.—Tube Turns Inc., 224 East Broadway, will install electric power equipment in one-story addition. Estimated cost over \$100,000.

### Tennessee

MEMPHIS, TENN.—Caine Steel Co., 1820 North Central avenue, Chicago, will install electric power equipment in steel fabricating plant here. Power substation will be built. Estimated cost \$150,000. (Noted May 11).

### Missouri

NEOSHO, MO.—City voted \$50,000 bonds for water improvements.

SEDALIA, MO.—Universal Concrete Pipe Co., 297 South High street, Columbus, O., has let general contract for \$100,000 branch plant here to C. G. Schrader and W. C. Cramer, Sedalia, contractors.

### Wisconsin

MANITOWOC, WIS.—Eastman Mfg. Co. has awarded contract for one-story addition to plant. F. W. Raeuber, 926 South Eighth street, architect.

MILWAUKEE — Geuder, Paeschke & Frey Co. has awarded contract to Meredith Bros. Inc., 121 West Washington street, for three-story addition.

OSHKOSH, WIS.—Bell Machine Co. will erect one-story addition to its factory.

### Iowa

COUNCIL BLUFFS, IOWA—Orwald Railroad Service Co. is building \$45,000 plant here.

MUSCATINE, IOWA—Publicker Industrial Alcohol Corp., 1800 West Lehigh avenue, Philadelphia, plans large corn alcohol manufacturing plant here.

### Arizona

PHOENIX, ARIZ. — Contract has been awarded for two factory buildings and an office building at airport here for Airesearch Mfg. Co., 9851 Sepulveda boulevard, Los Angeles, estimated to cost \$500,000.

PHOENIX, ARIZ.—Phoenix-Buttress & McClellan, 621 Title and Trust building, has contract for factory and office building for an industrial company.

### California

LOS ANGELES—Aluminum Co. of America has awarded contract for warehouse 80 x 320 feet at 5151 Alcoa avenue, to cost \$150,000.

RICHMOND, CALIF.—Wilson & Bennett Mfg. Co., 6532 South Menard street, Chicago, will build steel plant here costing over \$40,000.

SAN DIEGO, CALIF.—A steel and concrete addition to plant of Consolidated Aircraft Corp. will be erected at 3302 Pacific highway at cost of \$65,000.

SANTA MONICA, CALIF.—Douglas Aircraft Co. will spend approximately \$112,000 for factory at 3001 Exposition boulevard, to cover an area 207 x 250 feet.

SAN PEDRO, CALIF.—Union Oil Co., 617 West Seventh street, Los Angeles, will build oil refinery on Wilmington-San Pedro road here at cost of \$4,000,000.

SAUSALITO, CALIF. — A three-story mould loft, tank and structural shop and sub-assembly building will be erected here for W. A. Bechtel Shipbuilding Co.

TORRANCE, CALIF. — General Petro-

leum Corp. will build \$6,000,000 gasoline refinery here, adjoining present plant.

### Washington

SEATTLE—Machinery Sales Co., 2253 First avenue South, is expanding machine shop and increasing facilities.

SPOKANE, WASH.—Washington Refinery Co. plans warehouse and other improvements at plant at Green and Riverside streets. Estimated cost \$250,000.

TACOMA, WASH.—Henry Mill & Timber Co. sustained damages to plant, including power plant, by fire.

### Canada

GUELPH, ONT.—Leland Electric, Canada, Ltd., 50 Crimea street, is having plans prepared for plant additions to cost about \$15,000, equipment extra.

HAMILTON, ONT. — General Smelting Co. of Canada Ltd., Wilcox street, has awarded contracts for plant addition to cost about \$60,000.

OTTAWA, ONT.—Laurentian Air Services Ltd., P. O. Box 71, A. B. MacLaren, general manager, is having plans prepared by A. J. Hazelgrove, 63 Sparks street, for aircraft repair plant and test room facilities to cost about \$35,000.

TORONTO, ONT.—Toronto Iron Works Ltd., 629 Eastern avenue, is calling bids through H. G. Duerr, 6 Adelaide street East, for plant addition to cost about \$30,000.

TORONTO, ONT.—Parker Fountain Pen Co. Ltd., 154 University avenue, has given general contract to R. G. Kirby & Sons Ltd., 539 Yonge street, for plant addition to cost about \$70,000 with equipment. Edgar A. Cross, 991 Bay street, is engineer.

TORONTO, ONT.—E. S. & A. Robinson (Canada) Ltd., Laird drive, is having plans prepared by Margison & Babcock, engineers, 210 Dundas street West, for plant addition to cost about \$70,000 with equipment.

TORONTO, ONT.—Dow Chemical Co. of Canada Ltd., 159 Bay street, George Hemmerick, treasurer, is taking bids for five plant buildings to cost about \$150,000 with equipment.

WALKERVILLE, ONT.—Larsen & Shaw Ltd., Peter and Scott streets, is having plans prepared for demolishing old building and erecting new plant costing about \$25,000 with equipment.

CAP DE LA MADELEINE, QUE.—Electric Steel Ltd., St. Laurent street, is considering plans for further addition in connection with steel alloy plant, estimated to cost about \$60,000.

GRANBY, QUE.—A company with which Department of Munitions and Supply, Ottawa, H. H. Turnbull, secretary, is associated, has given general contract to Ephraim Bernier, 120 Park street, for war industry plant to cost about \$150,000 with equipment.

MONTREAL, QUE.—Merck & Co. Ltd., 560 Decourcelles street, R. I. Hendershott, vice president, is having plans prepared by T. Pringle & Son Ltd., 485 McGill street, for plant addition, including boiler installations and other equipment to cost about \$25,000.

LACHINE, QUE.—Dominion Bridge Co. Ltd., First avenue, will proceed with further addition to plant to include electrical maintenance building, costing about \$35,000 with equipment.

ST. GEORGES, QUE.—Eastern Lumber Co. Ltd. is completing arrangements and will start work soon on veneer plant to cost about \$100,000 with equipment.



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The boy in the uniform doesn't call it *morale*. That's a cold potatoes word for something John American feels deep and warm inside.

Perhaps he can't give it a name. But he can tell you what it's made of.

It's made of the thrill he gets when his troop train steps at a junction point and fifty good-looking girls are at the station with cigarettes.

It's made of the appreciation he feels for a bright new USO clubhouse where he and his friends can go for a few hours' rest and relaxation.

It's made of laughter and music—when Bob Hope or Lana Turner visits his camp with a USO show.

It's even made of a cup of coffee and a Yankee smile—at some lone outpost in Alaska or the Caribbean

Maybe it's just a feeling of kinship with this land of a hundred million generous people. Maybe it's just the understanding that this whole country cares; that the soldier is bone of our bone; that he and we are one.

Name it if you can. But it's the secret weapon of a democratic army.

What can you do to sharpen this weapon? Give to the USO. This great national service organization has been entrusted by your government with responsibility for the service man's leisure needs.

The requirements of the USO have grown as enormously as our armed forces themselves. This Spring we must have \$32,000,000.

Give all you can—whether it's a lot or a little. Send your contribution to your local chairman or to USO, Empire State Building, New York City.

★ **USO**

