STEEL

The Magazine of Metalworking and Metalproducing

VOL. 118, NO. 13 APRIL 1, 1946

NEWS

TECHNICAL

FEATURES

MARKETS

NEXT WEEK...

Mass Production of Precision Castings

Bar-Stock Records Simplify Inventory Control

Oscillating-Trough Conveyor Has Moving Parts

"Atmosphere" Heating in Forging Thin Parts

Labor Saving Devices in the Open-Hearth Shop

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As the EDITOR VIEWS the NEWS

Weaning Time

In spite of the divergent views expressed by spokesmen for government, industry, agriculture, labor and the public on current economic problems, there is encouraging unanimity among majorities in these groups as to the proper role of government in the affairs of private enterprise in peacetime. All but a small minority agree that the government should withdraw from its wartime restrictions on private affairs as rapidly as possible.

President Truman and other high-ranking government officials have advocated orderly withdrawal on numerous occasions. In spite of the fact many recent administration acts belie this stated policy, there are good reasons for believing that if the administration could enjoy even a brief respite from acute national emergencies President Truman and his associates would act promptly to drop unnecessary controls.

While industry spokesmen are at odds as to whether price controls be dropped immediately or tapered off gradually, there is full agreement that the government should get out of business as rapidly as progress in reconversion permits. Spokesmen for agriculture, labor and the public repeatedly have argued for such withdrawal. Only a small number of surviving new dealers, who would like to see a peacetime bureaucracy larger than that of wartime, oppose the idea of retrenchment.

In view of the overwhelming sentiment for the principle of taking the government out of private affairs, the lack of progress in carrying out this principle in practice is discouraging. In fact, the nation is losing ground in this respect. Right now it is in danger of seeing its government penetrating into private matters more deeply than during the war.

This alarming trend can be reversed if all factions will realize the danger and act to avert it. The administration and Congress can help tremendously by encouraging the solution of national problems at local or regional levels instead of at the national level. Veterans' housing, for instance, could have been handled much more effectively by state or regional effort than it will be by the elaborate Washington organization now being created.

Another important step would be for individuals and groups identified with industry, agriculture, labor and the public to quit running to Mother Washington for help on every problem that arises. More often than not, the solution can be worked out independently of Washington and at about one-tenth of the cost.

A bit more patience and much more self-reliance all along the line will help set the stage for a reduction in government interference in private affairs.

STEEL
April 1, 1946

MORE $64 QUESTIONS: Brig. Gen. Albert J. Browning, Secretary of Commerce Wallace's appointee as director of the Office of Domestic Commerce and former merchandising manager for Montgomery Ward, has a fascinating assignment. He is to find answers to these questions:

1. What are the production ceilings per man-hour in various industries and what are the causes of these limitations? 2. What is the effect on production of incentive pay systems—affecting executives, salesmen, supervisors and workers? 3. How much is the cost of home construction increased by feather-bedding? 4. What is the effect of state trade barriers?

These are excellent questions. They point to conditions which affect the national economy vitally. The real question is not whether General Browning can find the right answers. He will. The $64 question is whether or not the government administration will do anything to correct bad situations after the general has exposed them.

Another $64 question is whether or not Secretary Wallace can go all the way with the general's find-

(OVER)

ings. In a press conference Mr. Wallace gagged visibly when the general voiced his ideas on incentives. Wallace is openly courting the favor of businessmen at the same time he is playing ball with the most radical elements in the nation. Can he stomach the answers General Browning inevitably must deliver? —p. 119

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THE ROAD TO RUIN: Annual pamphlet report of United States Steel Corp. for 1945 provides eloquent testimony as to the unfortunate consequences of the government's present wage-price-profits policies. Although the corporation's volume of business last year was higher than in any peacetime year, net income was $2 million short of the sum required for normal dividends.

In view of this showing, the prospect for 1946 is disquieting. U. S. Steel, in common with most other industrial corporations, faces additional arbitrary increases in costs with only scant relief on prices. The only thing that can save them from serious deficits is unprecedented volume coupled with a sharp increase in efficiency.

The present plight of industry follows a long chain of developments which have steadily reduced profits. The "financial story" of U. S. Steel since 1902 reflects this trend clearly. One wonders what kind of evidence will be shocking enough to awaken Congress to a realization that this trend is dangerous to the nation's economy. —p. 120

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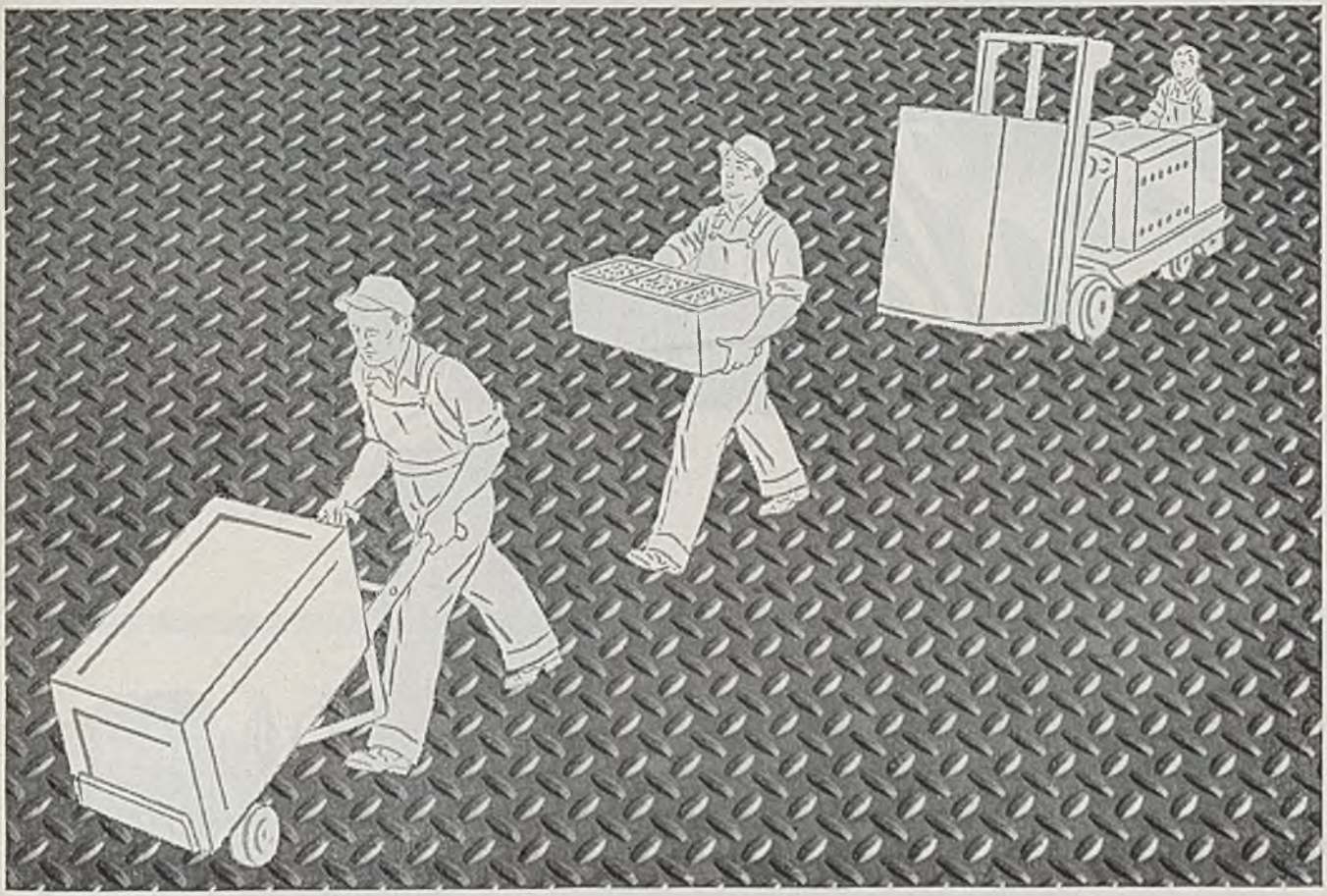
ANTI-CONFUSION TONIC: Industrialists in need of a tonic to buoy them up during the present depressing period of economic confusion will find it in Cleveland Public Auditorium from April 8 to 12, where the New Era Exposition will be staged by the American Society of Tool Engineers in connection with its 1946 annual convention.

The reason this show and accompanying technical sessions will act as a wholesome tonic is that here in one place and at one time the visitor will be able to see and hear discussed notable achievements in instruments, tools, machines, materials and methods for mass production—achievements which possess potentials for combatting inflation that can be far more effective than all the laws Congress can pass and all the executive orders the President can issue. At the Cleveland show and convention one will see reflected the current contributions of tool engineering to increased efficiency in production which is so vital to progress at this critical stage of reconversion. —p. 149

SIGNS OF THE TIMES: Members of Congress hope that recess can start late in June and continue until after the elections in November. Legislation calling for attention before recess include (p. 116) extension of OPA beyond June 30, ratification of British loan agreement, establishment of a minimum wage, enactment of a strike control law, formulation of a national housing policy, determination of a policy on control of atomic energy, extension of selective service and appropriation bills. . . . Automobile Manufacturers Association has drawn up 18 recommendations for expanding foreign trade in motor vehicles (p. 123), based upon the reciprocal trade agreement program. . . . Employees at the Hamilton, O., plant of American Rolling Mill Co. have rejected CIO as bargaining agent (p. 127) in an NLRB election. This is the second turn-down of CIO by these employees in two years. . . . Volta Redonda, new steel plant in Brazil, is swinging into production. Steel output in 1946 is expected to reach 300,000 tons (p. 129) and plans call for an eventual annual capacity of more than a million tons. . . . Bernard Baruch's testimony before the House Banking and Currency Committee (p. 110) was appropriately severe in condemnation of the government's action in the steel strike and constructively sound in persistent emphasis on the importance of encouraging production as the most potent weapon against inflation. . . . A New Hampshire company has developed a divisible race or split ball bearing (p. 137) which has obvious advantages on installations where replacement of an orthodox ball bearing would entail complete disassembly and excessive "down" time. A novel feature in the manufacture of these bearings is that the races are actually fractured without loss of metal. The uneven surfaces of the fracture are advantageous; they match up and serve as an infinite number of tiny locating dowels when the two segments of the race are fitted together. . . . Continental Motors Corp. is starting production on a new line of industrial and transportation diesel engines (p. 124) ranging in capacity from 25 to 150 horsepower. . . . Secretary Wallace of the Department of Commerce is going far out on a limb in his promises as to the extensive aid (p. 118) the department is planning to render to so-called small business. . . . Without exception, every conference, convention, committee meeting or other session of businessmen reported in this issue (pp. 110, 111, 112, 113, 120) protested vigorously against OPA practices which retard production.

E. C. Shane

EDITOR-IN-CHIEF



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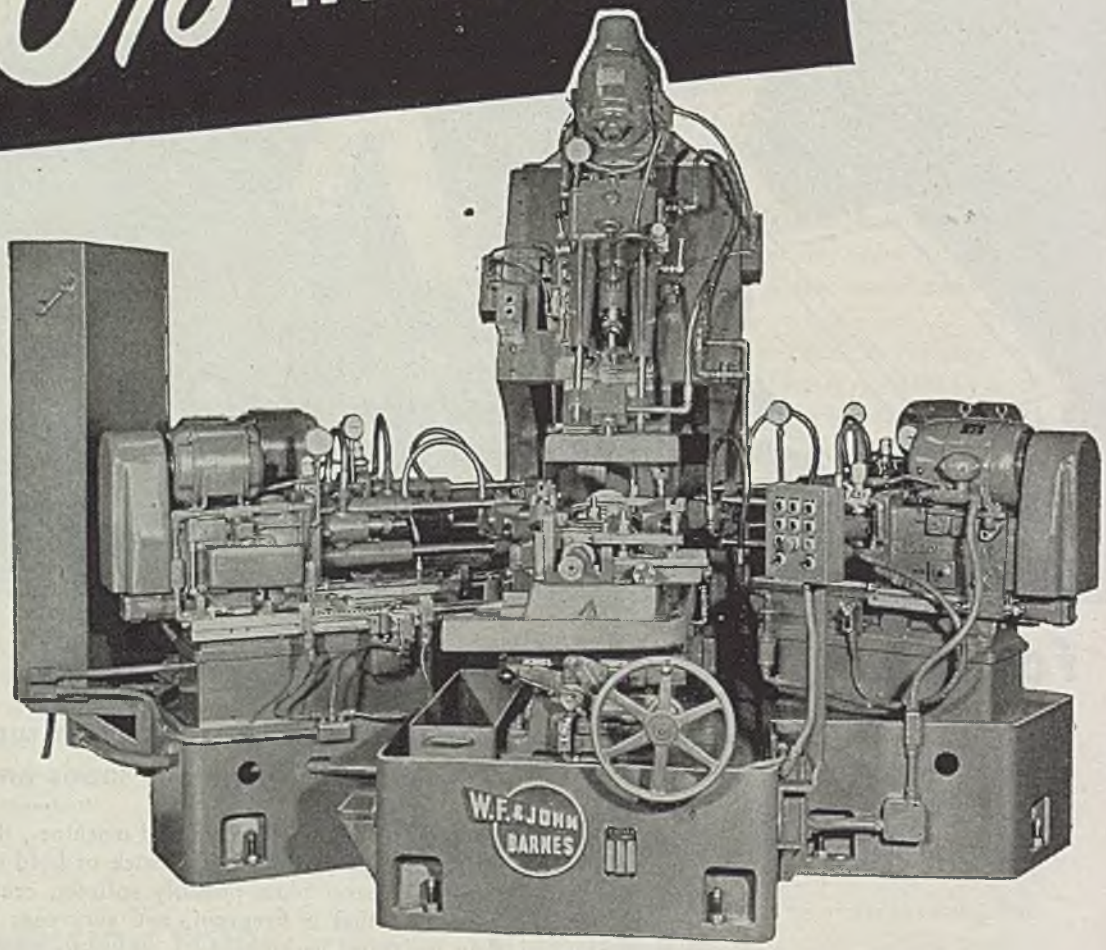

IN their instruction book for this remarkable deep-hole drilling machine, W. F. and John Barnes Company of Rockford, Ill. recommend the use of *Texaco Transultex Cutting Oils A and B.* They do this because their own experience showed that *Transultex* increased tool life from 25% to 30%. They say —

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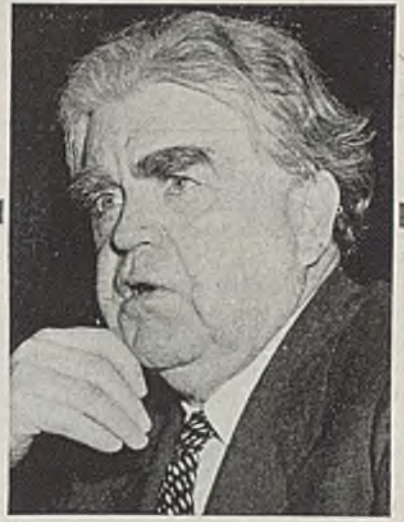
STEEL
April 1, 1946

Prolonged Coal Strike Would Paralyze Steel

Some producers plan to taper operations immediately, if fuel shipments stop. Others to continue at capacity for week or 10 days in hope of early settlement. Mills' stocks range from one week to eight weeks' supply of coal



JOHN L. LEWIS

"The mine workers will not trespass on the property of the operators. That would be a violation of the law, and the miners are law-abiding."

CHARLES O'NEILL

"We have not determined one single thing the UMW want from us. We don't know how to reach an agreement when we don't know what they want."

PRIMARY steel production, coke oven and blast furnace operations in many plants will be curtailed almost immediately on cessation of work in bituminous coal mines. Other plants, with a more favorable coal supply, indicated late last week they will continue capacity operations for a week or 10 days in the hope of an early settlement of the dispute between the miners and the operators.

Negotiations between the operators and John L. Lewis' United Mine Workers reached an impasse last week and Mr. Lewis said the miners' contract would be allowed to expire Apr. 1 and that no coal would be mined this week. Negotiations with the operators, he indicated, will continue.

Coming two weeks after the steel industry had struggled back to its pre-steel strike operating rate, which currently is 89½ per cent, a prolonged stoppage of coal mining would deal a paralyzing blow to recently revived programs for large-scale production. Fuel stocks generally are below normal, as industry has not had opportunity to recover fully from the effects of the strikes last autumn. Inventories range from less than one week to more than eight weeks' supply.

In the important Pittsburgh district, steel interests have an average of about 20 days' supply on hand or in transit. The Clairton Works of Carnegie-Illinois Steel Corp., which uses 30,000 tons daily, has about 13 days' supply based on capacity operation. Stocks at the plants of Jones & Laughlin Steel Corp., Pittsburgh Steel Co., Crucible Steel Co. of America and Heppenstall Co. range between 20 and 30 days. Lockhart Iron & Steel Co. has only 5 days' supply.

Clairton Works officials said they planned to cut operations by 50 per cent immediately on start of the strike and would shut down all of its 1500 beehive ovens active in the Pittsburgh district.

Finishing departments in steel mills soon would be affected as stocks of slabs, wire rods and billets are well below normal. A limited supply of coke oven gas for reheating furnaces and soaking pits also would be a factor in forcing curtailments.

Metalworking companies in the Pittsburgh district generally have about 30 days' supply of coal. Essential public services, such as utilities and railroads, are in better supply, with the carriers having stocks sufficient for four to six weeks and the utilities for as long as three months.

Stocks in the Chicago steel plants average about 30 days at current rate of consumption. Some mills have less than this figure and a few have more. Operators plan to taper steelmaking to conserve supplies.

Coking coal, which comes from Kentucky and West Virginia fields, is the grade of greatest concern. Since last fall's mine stoppage, which reduced inventories to a low level, Chicago steel plants have been unable to make appreciable headway in restoring supplies. With one exception, coal mined during the steel strike was diverted to other consumers because it could not be delivered and unloaded at plants.

Two steel plants in the Chicago area supply domestic gas to municipalities and coke ovens must be continued in operation.

Coal stocks in the Detroit district are much lower than usual for this season, but the ultimate effect of a coal strike will depend on its duration. A stoppage of a week or two would not be felt too greatly.

It is the practice of large users in the Detroit area to bring in sufficient supplies during the lake shipping season to tide over the winter. Because of the coal tieup last October, it was not possible to build up stockpiles to the usual size, and steady operations, except during the steel strike, have bitten in reserves deeply.

Great Lakes Steel Corp. reports that while its aggregate coal reserve amounts to 80 to 90 days' supply, its "mix" is unbalanced.

In Buffalo district, steel mills supplies of coal run around two weeks, while the leading coke producer has about 30 days' supply at present operations. Iron and steelmaking would be curtailed after the first week of mine idleness.

In the Birmingham district, coal supplies generally are sufficient for about three weeks' operations. Fabricators of

steel are running on a day-to-day basis and any curtailment in steel mill operations would be reflected immediately in their plants.

In eastern Pennsylvania, stocks are good for only two weeks and some steel mills and iron and steelmaking curtailment would follow the first week of mine idleness.

After Mr. Lewis served notice on the country that the mines would be idle April 1, the Solid Fuels Administration began making plans to take possession of some 2 to 4 million tons of coal in railroad cars, retailers' yards and commercial docks. This would be held as a reserve for emergency distribution.

The issue precipitating the stalemate in negotiations between the miners and operators was the UMW demands for a welfare fund supported by a per ton royalty, understood to be 10 cents. This was rejected by the operators.

Operators complained that Mr. Lewis' demands were only general and that after 15 days of negotiations "we have not determined one single thing the United Mine Workers want from us."

"We have offered to shorten the working day, improve working conditions and increase wages in accordance with the government's wage-price policy. But we don't know how to reach an agreement when we don't know what they want," said Charles O'Neill, spokesman for the operators.

Proposals Made by Operators

During the negotiations, the operators made the following proposals to the union:

1—To increase the day and tonnage rates of miners to meet the requirements of the government's wage-price policy and the generally accepted wage increase patterns already worked out in other large national industries such as steel, oil and automotive.

2—To create a joint exploration and consideration of a plan to create by joint contribution a reasonable fund to be used to mitigate unusual hardships arising directly from accidents occurring in the course of employment in the mines, such a fund to be administered by some independent agency (such as the Red Cross) with the advice of the mine workers and the operators.

3—To turn over to designated agents of the mine workers union all funds collected from mine workers for payment of doctors, hospitals, "burial funds," "benefit funds" and for any similar purposes, where the union's locals are dissatisfied with existing arrangements.

4—To provide that all operators parties to the contract will accept the provisions of the workmen's compensation laws of any states wherein such acceptance is optional.

5—The creation of a committee in each coal producing state, composed of three miners and three operators, to study the mining laws of the state and to suggest to the operators and mine workers such amendments to existing statutes as they consider necessary to further safety, to the end that by their united effort the highest degree of safety that is possible may be attained. In addition that a committee composed in equal numbers of operators and miners be established in each of the operating groups represented in the conference to serve in an advisory capacity to the several state committees.

6—To further guarantee of contract compliances, that in addition to the penalties imposed on individual mine workers under existing district agreements, liquidated damages at the rate of $1 a man per day shall be paid by the union to the operators affected for each day of strike in violation of contract. In addition to penalties imposed on the operator under existing district agreements, liquidated damages at the rate of $1 a man per day shall be paid by the operator to the union affected for each day a lockout continues.

Present, Past and Pending

■ JACK & HEINTZ-EISEMANN CORP. MERGER PROPOSED

CLEVELAND—Stockholders of Jack & Heintz Precision Industries Inc., this city, and Eisemann Corp., Brooklyn, N. Y., will vote April 17, on a proposal to merge the two firms. The Eisemann firm is a magneto manufacturer.

■ MANUFACTURERS' JANUARY SHIPMENTS DECLINE

WASHINGTON—Manufacturers' shipments in January equalled the monthly average of 1941, the best peacetime year, although work stoppages caused a $100 million drop from December, 1945, shipments, Department of Commerce reports.

■ PIG IRON PRODUCTION DROPS IN JANUARY AND FEBRUARY

NEW YORK—Pig iron production in January and February dropped to unusually low levels as a result of the steel strike, American Iron & Steel Institute said last week. Total output was 2,644,552 tons in January and 1,147,564 tons in February.

■ BRAZIL PLANS TO BUILD NEW STEEL PLANT

WASHINGTON—Brazil plans to build a new steel plant in Minas Geraes with an annual capacity of 54,000 metric tons of finished steel products, according to government officials here. Equipment will be purchased in this country. The plant is expected to produce railroad car and locomotive axles and wheel tires, round and square shapes, special steel forgings, special high-speed tool steel, castings, steel for drills and bits, frames for railroad cars, flat and coiled spring steel.

■ WHEELING STEEL EXPECTED TO BUY MINGO WORKS

WHEELING, W. VA.—Wheeling Steel Corp. is expected to exercise its option to purchase the Carnegie-Illinois Steel Corp.'s Mingo Works for $2.5 million. Facilities will include three blast furnaces and two 10-ton bessemer converters. Located near the corporation's Steubenville, O., plant, it will provide necessary land and facilities for future expansion purposes.

■ IRON CASTINGS PRODUCERS GRANTED PRICE RELIEF

WASHINGTON—When a producer of malleable or gray iron castings seeks price relief higher than the minimum otherwise applicable, Office of Price Administration may grant such an adjustment on the condition that the applicant make a reduction in his prices for other castings equal to the dollar amount of the adjustment in excess of the minimum otherwise required.

■ FIRST KAISER AUTOMOBILE SCHEDULED FOR MID-SUMMER

DETROIT—First assembly line for the Kaiser automobile at the Willow Run plant of Kaiser-Frazer Corp., this city, was 75 per cent completed on March 10 and the company expects the first automobiles to be ready for shipment to dealers for display purposes by mid-summer.

■ TEXAS IRON ORE MINE LEASED TO P. M. CHAMBERLAIN

JACKSONVILLE, TEX.—P. M. Chamberlain, a local business man, is leasing the iron ore mining and milling facilities operated by American Rolling Mill Co., near Linden, Tex. The lease is for six months with option to renew for five years. Mr. Chamberlain plans to furnish iron ore to cement manufacturers and blast furnaces in Houston and Birmingham.

■ TIME LIMIT ON STEEL PLANT BIDS EXTENDED TO MAY 1

WASHINGTON—Time limit for bids on the government-owned steel plant at Chicago, formerly operated by Republic Steel Corp., has been extended by the War Assets Administration to May 1. The plant has a rated capacity of 750,000 tons a year.

Industrial Building Hit by CPA Curb

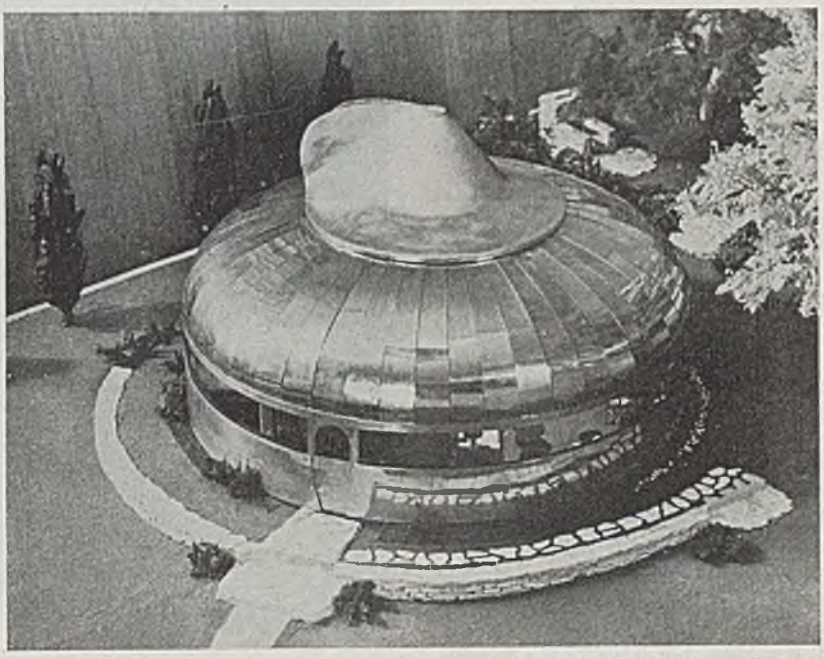
Restrictions on construction seen seriously retarding vital industry programs. Full import of new order yet to be determined

DRASTIC restrictions on building or repair of practically all structures other than small homes, imposed last week by the Civilian Production Administration in a move to channel available building supplies into home building, have been received with alarm in industrial circles.

While the full import of the order is yet to be determined, observers generally see it not only affecting the construction and supply industries, but as also bringing to a halt many vitally needed plant expansion projects in virtually every industry. However, many questions remain to be answered before a clear picture of the situation will be possible.

CPA Administrator John Small said that non-residential construction must be curbed by $2 billion to $2.5 billion in the next 12 months. Last fall it was figured materials and supplies would be available to support a $12.5 billion building program, but indications now are supplies will not be sufficient.

The new restrictions apply to such buildings as stores, office buildings, theaters, roadhouses, and factories.



CIRCULAR HOUSE: Production of 50,000 of these Fuller houses, circular structures built largely of aluminum alloy, stainless steel and plexiglas and other plastics, is planned by the end of 1947 by Fuller Houses Inc., Wichita, Kans. Herman Wolf, president of the concern, says the dwellings can be sold for $6500 each, including heating, air conditioning, and electrical kitchen equipment. Initial production will be undertaken by Beech Aircraft Corp., Wichita, under a subcontracting arrangement

Construction Under Way Allowed

The order, announced by Wilson W. Wyatt, National Housing Expediter, and John D. Small, CPA head, permits completion of any construction already begun, provided "any of the materials which are to be an integral part of the structure have been incorporated in it on the site" and if work is being carried on at present.

The order does not apply to construction, repair or installation jobs on which the cost does not exceed these allowances:

1. $400 for a house or other structure on a residential property intended for occupancy by five families or less.

2. $1000 for a hotel, resort, apartment house or other residential building designed for occupancy by more than five families.

3. $1000 for a building used primarily for one or more commercial service establishments such as offices, banks, stores, laundries, garages, restaurants, night clubs, theaters, repair shops, warehouses, frozen food locker plants and radio stations.

4. $1000 for a farm, excluding farm houses.

5. $1000 for a church, hospital, school, college or a publicly owned building used exclusively for charitable purposes.

6. $15,000 for a factory plant or other industrial structure which is used for manufacturing, processing or assembling or any goods or materials, for a logging or lumber camp, for a pier (other than one used for amusement or entertainment), for a structure used for or in connection with a railroad or street railway or a commercial airport, for a bus terminal, for a truck terminal operated by a common or contract carrier, or for a research laboratory or pilot plant or for a motion picture set. This allowance is applicable to structures used for oil, gas or petroleum producing, refining or distributing (except service stations and garages).

7. $200 for other structures.

Some of the questions to be answered include: What is to be done with steel already produced to desired specifications and held in stock for many construction jobs which were not started because of the steel strike?

What about structural items for specific projects which are in process of production? Many contractors have tied up much time and money in preparation work, and purchased considerable equipment and materials, but are now forbidden to carry out their specific projects "unless some of the materials which are to be an integral part of the structure have been incorporated in it on the site."

What about important steel industry and consumer goods plant expansion programs in various stages of development? The steel industry has a $327 million program underway for this year.

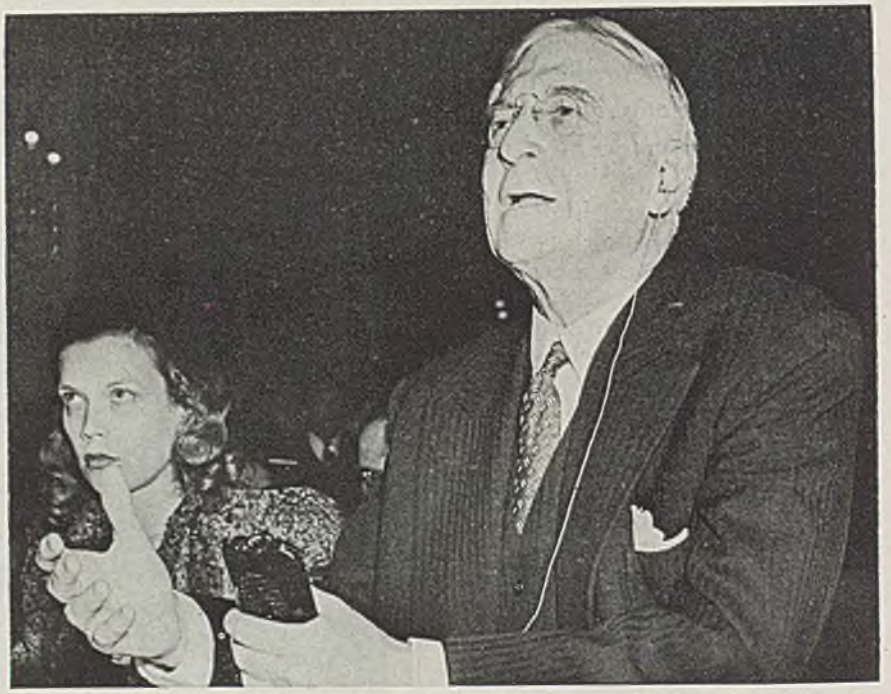
Considerable doubt is expressed over the ability of members of the contemplated 71 regional construction offices under FHA authority to determine the essentiality of a specific expansion program. Immediate effect of the government's order will depend largely on interpretation of the provisions by local CPA construction offices.

Contractors who have been awarded

(*Please turn to Page* 228)

"We Must Have Production"—Baruch

Advises congressional committee to extend OPA for one year, but calls for strict wage controls. Brands administration's wage-price policy as inflationary



Although advising continuation of price control for one year, Bernard M. Baruch told the House Banking and Currency Committee last week that this was only one step in combating inflation and getting back on a sound economic basis. First need is production, he said. He advocated a one-year ban on strikes, deferment of foreign loans, reduction in money supply, and no further reduction in taxes. NEA photo

STRESSING the necessity of obtaining high production to combat inflation, Bernard M. Baruch last week advised the House Banking & Currency Committee to extend the Office of Price Administration for another year. At the same time he strongly urged implementing the law with strict wage controls, reduction of money supply and deferment of foreign loans.

Mr. Baruch branded the administration's latest wage-price policy as inflationary. "This will be followed by increases all along the line, no matter what anybody thinks to the contrary. Call it a bulge but it really is a break—and a grave one."

The $6 billion reduction in taxes also was regretted by Mr. Baruch, who advised no further reduction in taxes be made until the budget is balanced.

The elder statesman also suggested the creation of a "High Court of Commerce" or sort of "Supreme Economic Council" to decide questions involved in getting the country back on a sound basis.

"Let us now face the facts," Mr. Baruch told the committee. "We must have full production. Without it we cannot keep any semblance of modern, civilized economy or even government. We risk inflation. We mute the voice with which we speak for peace in the world. With full production we can escape inflation and have our people reassume their leadership."

Advises OPA Control for a Year

The price structure has been thrown out of gear, Mr. Baruch stated. Although expressing disfavor with subsidies, he said he advised retaining those in effect but would grant no more.

"For one year I would extend the present war powers, price fixing, and include wages, with the provision that no raise in prices be made without approval of OPA, and no increase in wage scales without approval of the Office of Economic Stabilization.

Mr. Baruch summarized his views on price control in "capsule form" as follows:

"Increase production. This is the Law and Prophets—without it the rest of my suggestions are meaningless. So I say it again: Increase production.

"Stop increasing money supply.

"Stop decreasing taxes until the budget is balanced.

"Stop bunking the public by saying wage increases can be granted without increase in price levels.

"Do not fear to increase prices or wages where necessary to get and stimulate production.

"Continue price controls, subject to indicated modifications, for a year. Allow profit but no profiteering.

"Avoid favoritism to any particular group.

"Take care of those between the millstones—clerks, government employees, pensioners, et al.

"Make surpluses of goods in military hands available to compensate for shortages.

"Stimulate founding and financing small business.

"Take stocks before blindly lending—make inventories of our goods, our cash, our credit before we increase the pressure on these.

"Cut government costs, including federal, state, county and city. In time of deflation we should spend; in time of inflation we should save.

"Eliminate all strikes or lockouts for a year but arrange that hardships are guarded against.

"Set up a High Court of Commerce—a sort of Supreme Economic Council—which can decide questions involved in the above points and related subjects.

"Remember that a sore or rotten spot anywhere in our system spreads and causes illness everywhere.

"Avoid an economic dictatorship. We are still a free society based on the enterprise system. Let us abolish neither without the consent of the people.

"And, above all, we should keep in mind that the humanities come before the dollars. It may be trite to say it, but it should be said again and again—that our first duty runs to Man before Business, but we must not forget that sometimes the two are interchangeable."

U.S. Chamber of Commerce Urges Price Control End

Chamber of Commerce of the United States last week recommended final elimination of all price controls by Oct.

31, this year, except on rents. It also recommended that wartime subsidies be discontinued as of the same date. The chamber would continue rent controls until Mar. 31, 1947.

It also recommended that prior to final elimination of government controls there should be progressive elimination of such price controls as circumstances will permit.

Reuther Plans To Effect His Policies Immediately

By the narrowest of margins Walter P. Reuther squeaked through as new president of the United Automobile Workers-CIO in balloting at the union convention in Atlantic City, N. J. last week.

A swing of 63 votes out of 8764 cast would have re-elected incumbent R. J. Thomas, who now has accepted nomination for one of two vice presidents to be chosen. Sixty-three eligible votes were not cast because of delegates being absent.

The 38-year old new president announced immediate institution of his own policies which include drives for industry-wide bargaining, guaranteed annual wage, organization of "white collar" workers in the automotive industry, a stronger and more responsible union and enforcement of the union's constitutional requirements for membership.

Despite his earlier statement to the effect the "ability to pay" issue was injected into negotiations with General Motors purely as a publicity stunt, Reuther still is intent on forcing higher wages without increasing prices.

Some Price Relief Granted On Ferrous Forgings

Manufacturers of ferrous forgings have been given an interim increase of 16.25 per cent over their 1941 prices, the Office of Price Administration announced last week.

The increase, effective Mar. 21, applies to all sales of ferrous forgings and takes the place of the 8 per cent increase provided on Sept. 19, 1945, which was applicable only to list and established prices. Before the former increase, all ferrous forging prices were frozen at the 1941 level.

Cast Steel Roll Makers Granted Price Increase

Manufacturers of cast steel rolls have been given an interim price increase of 9 per cent, effective as of March 22, the Office of Price Administration has announced.

Machinery, Parts, Industrial Equipment Ceiling Prices Upped 4 Per Cent by OPA

INCREASE of 4 per cent in ceiling prices for all machinery, parts and industrial equipment, where the percentage of steel costs in selling prices is over 40 per cent, was announced by the Office of Price Administration last week.

The increase is at levels of sale and became effective March 25.

On Feb. 15 steel prices were increased an average of $5 per ton. Increases in costs of alloy steels, which go into the finished steels used in machinery and parts, averaged 4 per cent of price of the products.

OPA said producers of machines, parts and industrial equipment where the cost of steel was over 40 per cent of the selling price were not in a position to absorb this increase along with wage increases many producers have recently put into effect.

OPA said the percentage of cost of steel to price of product was fixed at 40 per cent because among such products the cost effects of the steel price increases "are most likely to create financial hardship.

"OPA recognizes that most of the affected industries have either already established new wage levels or anticipate the necessity of establishing wage increases which have not yet been given consideration in their maximum prices

"Industry-wide or individual adjustments in this area which may hereafter be made will give consideration to all cost increases in conformity with the standards of OPA established by Executive Order 9697."

To compensate for higher steel costs, OPA also announced: An increase to $23.80 each from $21.80 in the ceiling price for class 33-C one-wear wrought steel freight car wheels, and to $25.80 from $23.60 for class 33-D wheels, both prices fob Pittsburgh or Chicago before treatment and extras; an increase to $3.85 per 100 pounds from $3.50 per 100 pounds in the ceiling prices for forged steel railway axles, fob Pittsburgh, Chicago or Birmingham, before treatment, machine operations, switching charges or extras.

More than 400 steel fabricating companies, employing about 110,000 persons, remain strike-bound. Many fabricators, however, have entered into wage contracts with the steelworkers' union on the basis of 18.5 cents an hour increase but in many instances plan to curtail those departmental operations which will be operated at a loss under the present wage-price status.

The price relief granted the fabricators is considered inadequate. In some cases these price advances affected only one phase of company operations, while without exception the increase granted by OPA is well below that considered essential by the manufacturers.

Plumbing Valves, Fittings Prices Upped 10 Per Cent

The maximum prices of sizes of valves and fittings required in plumbing and heating work on new housing were increased an average of 10 per cent last week by the Office of Price Administration. The action, effective Mar. 26, was taken so that pricing would not be an impediment in the program of the Civilian Production Administration calling for an increase of 50 per cent over the 1945 production rate of these items needed in the housing program.

Prices Increased on 40 Plumbing Drainage Staples

Maximum prices on about 40 cast iron plumbing drainage staples were raised an average of 11 per cent last week by the Office of Price Administration.

Current production is only about 20 per cent of normal peacetime volume, since many producers have discontinued entirely the production of these items while others have diverted their facilities to more profitable castings, OPA said.

Steam Generating Machine Makers Get Price Increase

Manufacturers of steam generating equipment have been given an interim price increase of 12 per cent, the Office of Price Administration has announced. The increase, effective as of March 21, is necessary to cover the increase in the industry's costs since 1941, including the recent increase in steel prices. A survey of the industry is being made by OPA to determine if an additional increase will be required as a result of wage increases.

Steel Shipping Container Prices Raised 10 Per Cent

Maximum prices for steel shipping containers such as steel drums and pails were increased 10 per cent, effective Mar. 26, by the Office of Price Administration. These containers are used for the shipment of such products as oil, greases, fats and chemicals.

Conference Board Speakers Urge Restrictions on Price Control

Hold stern measures must be taken now if government controls are not to continue indefinitely with further serious repercussions on production of consumer goods and the nation's standard of living

EARLY restrictions on price control were urged by speakers at the general session of the 277th meeting of the National Industrial Conference Board in New York recently.

If stern measures are not taken now price control will likely continue indefinitely, with further serious repercussions on the production of consumer goods and the country's standard of living in general, it was declared.

Virgil Jordan, president of the Conference Board and chairman of the meeting, said that "OPA is the old NRA upside down—in which you are stuck to the ceiling instead of lying flat on the floor." He believes that if the country doesn't take stern action now in dealing with the price control problem it never will.

He pointed out that government has long since gotten out of hand, with its various regulations of "unsound" economic concept and that this country will never be able to control inflation until it first can control its government's actions.

Danger of Inflation Continues

Alan H. Temple, vice president, National City Bank of New York, declared the country is faced with the menace of further inflation and pointed out that inasmuch as "we are about to extend in some degree or manner the Price Control Act, it ought to be extended in little degree for a short time and not in full degree nor for a long time."

He thought that if controls are liberally administered they may gain for the country a little time. "But," he said, "let us not deceive ourselves by thinking that the battle against inflation is inherently a battle to control prices. Rather it is a battle to increase production, and to do it without increasing the money supply further."

He said that the increase in liquid assets from $65 billion at the end of 1939 to $225 billion at the end of 1945 was the original and primary source of inflationary pressure. Certainly, he pointed out, price control does not operate in a way to reduce the supply of money, although it does contribute to inflation, as now exercised, through restriction of production. The speaker also pointed out that recent increases in wages "have done more to activate the latent inflationary danger, and to put difficulties in the way of price controls, than any other development."

He believed that repressive OPA ceilings are one reason why the country is not producing more heavily and that manufacturers, with proper relief, could in a very short time turn out 15 to 20 per cent more goods than they are now doing.

Robert A. Seidel, vice president and controller, W. T. Grant Co., New York, retailer, spoke in place of James F. Lincoln, president, Lincoln Electric Co., Cleveland, who at the last minute was unable to attend. His position with respect to the extension of the Stabilization Act in its present form was that "we cannot immediately remove all controls. Certain of them may be necessary. The acid test of whether or not pricing is adequate is production. I repeat, OPA is a wartime emergency agency and has no place in peacetime civilian economy . . . plans must be made for progressive de-control now and for complete discontinuance of practically all controls by June 30."

He warned against "such high sounding but meaningless phrases as 'lifting controls as soon as possible' or 'as soon as supply equals demand'. These sound good, but they are steel traps."

Dr. F. A. Harper, professor of marketing, Cornell University, Ithaca, N. Y., said with particular respect to wage and price controls that "the government cannot successfully guide these detailed phases of our intricate economic system any more than it can steer everyone's car from Washington."

With passing reference to the housing shortage, he said that "it will disappear only when rents are no longer a bargain." A controlled market with too low rents, he said, allows the protected to use too much space and crowd out the unprotected.

Chicago Production Conference Presented Program for Restoring Economic Reason

FACED with the most fantastic debt ever created in the world's history and now caught in inflation, the United States must pay for the war by choosing between lowered living standards or immensely increased productivity.

This was the outlook which Louis Ruthenburg, president, Servel Inc., Evansville, Ind., painted in an address before 1000 engineers and technical men attending a luncheon of the Chicago Production Conference and Show at the Stevens Hotel, Chicago, March 20-22. The address was read by Harry Newcomb, vice president of Servel Inc.

Increasing prices are merely a symptom of inflation, Mr. Ruthenburg declared. To attack the disease, the remedy must consist of the following five-point program—reduce cost of government, balance the budget, reduce the national debt, revise the tax system and keep taxes at a high level, and increase productive effort.

As immediate steps toward what he termed the resumption of reason and democratic processes, Mr. Ruthenburg advocated revision of the Wagner Act "preserving all of labor's equitable rights of organizing for collective bargaining but balancing every unfair labor practice for which the employer is held responsible by an equally weighted practice for which organized labor must assume responsibility."

Speaking at the luncheon on the opening day of the three-day conference, Maj. Gen. Leslie R. Groves, who supervised development of the atomic bomb, asserted scientists believe commercial electric power can be produced from atomic energy in competition with coal in about ten years if the present pace of experiments is continued.

Most City Building Codes Outmoded, Says Engineer

Building codes in most American cities are outmoded and should be changed to permit more realistic dealing with fire hazards, B. L. Wood, consulting engineer, American Iron & Steel Institute, told the Western Society of Engineers at its meeting in Chicago Thursday. These outmoded codes fail to take advantage of economy and safety factors provided by new techniques, he said.

Labor-Government Policies Held Bar to Postwar Business Upswing

Speaker at meeting of American Machine Tool Distributors' Association says present difficulties are due to organized labor's efforts to force an unsound economic doctrine on public, plus the government's policy of labor appeasement

FAILURE of the country to achieve the postwar objectives of high-level employment and fair prices to the consumers was due to the fact that industry has been stymied by a combination of organized labor and government, it was charged last week by William P. Kirk, president, the National Machine Tool Builders' Association, and vice president, Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford, Conn., in an address before the American Machine Tool Distributors' Association at the Edgewater Beach Hotel, Chicago.

"It is time," Mr. Kirk said, "that the people realized our present difficulties are due largely to an effort upon the part of certain leaders of organized labor to force an unsound economic philosophy upon the American public—plus a labor appeasement policy on the part of our government, under which government has dodged the real issue under the camouflage of price control."

Hits Government and Labor Policies

As to the objective of high-level employment and employment continuity so frequently put forward by leaders of organized labor and certain government officials, Mr. Kirk said: "Their approach to this subject appears to be that since there is only so much work to be done, the work must be shared by the largest possible number of people, with each one doing less work. That may sound plausible on the surface but it is really a defeatist point of view—it is completely contrary to the industrial history of the United States.

"Costs are brought down by the use of improved productive equipment, such as machine tools, which enable the worker to multiply his own output."

"When costs go down, volume of sales goes up—and when volume of sales goes up, employment goes up, and job security becomes attainable."

Mr. Kirk recommended a program of government encouragement of full-scale production, utilization of productive equipment to its fullest extent, men and machines working together on behalf of maximum output, and discouragement of strikes and slow-downs.

Under the leadership of Alvin B. Einig, general manager, Motch & Merryweather Machinery Co., Cleveland, who is serving his second term as president of the association, there was a lively discussion of members' experience in connection with the disposal of government surplus machine tools.

While all are willing and anxious to co-operate in every way possible, experience to date indicates that an unconscionable amount of time and effort has to be spent in "tracking down" the equipment which customers desire. This is due in part to incomplete cataloging and in part to lack of order and lack of guides in government warehouses and storage areas.

Speaker at the banquet was Mason Britton, who recently assumed his new duties as president, Metal Cutting Tool Institute, Hartford, Conn. Mr. Britton gave an interesting account of his government mission to Germany to study the existing condition and allowable future of German industry—machine tool building in particular. He confirmed rumors of the tremendous number of existing machine tools in Germany, but indicated that leaking roofs plus wholesale removal of equipment from the Russian zone now are doing what the war itself failed to do in wiping out a lot of Germany's potential metalworking capacity.

At the close of the convention it was announced that the annual meeting will be held at The Homestead, Hot Springs, Va., Sept. 17-19.

Machine Tool Forum Planned In Pittsburgh, Apr. 9-10

Tenth annual Machine Tool Electrification Forum, sponsored by Westinghouse Electric Corp., Pittsburgh, which will be held at Hotel William Penn in Pittsburgh, April 9-10, will include topics of interest to machine tool builders, and everyone in industries using electric power.

Calendar of Meetings . . .

Apr. 1, Packaging Machinery Manufacturers Institute: Semi-annual meeting, Hotel Dennis, Atlantic City, N. J. Association headquarters are at 342 Madison Ave., New York 17.

Apr. 1-3, American Society of Mechanical Engineers: Spring meeting, Chattanooga, Tenn. C. E. Davies, 29 West 39th St., New York 18, is secretary.

Apr. 3-5, Society of Automotive Engineers: Aeronautical meeting, Hotel New Yorker, New York. John A. C. Warner, 29 W. 39th St., New York, secretary.

Apr. 8-12, American Society of Tool Engineers: Annual meeting and exposition, Public Auditorium, Cleveland. H. E. Conrad, Penobscot Bldg., Detroit, is executive secretary.

Apr. 10-13, Electrochemical Society Inc.: Spring congress, Tutwiler Hotel, Birmingham. Colin G. Fink, 3000 Broadway, New York 27, secretary.

Apr. 15-18, National Warm Air Heating & Air Conditioning Association: Warm air heating conference, College of Applied Science of Syracuse University, Syracuse, N. Y. George Boeddener, 145 Public Square, Cleveland, is managing director.

Apr. 17-19, American Society of Civil Engineers: Annual spring meeting, Bellevue Stratford Hotel, Philadelphia. Association headquarters are at 33 West 39th St., New York 18.

Apr. 22-24, American Management Association: Conference, Hotel Pennsylvania, New York. Association headquarters are at 330 West 42nd St., New York 18.

Apr. 22-27, Society of the Plastics Industry: National Plastics Exposition, Grand Central Palace, New York. Association headquarters are at 295 Madison Ave., New York 17.

Apr. 25-26, American Institute of Mining & Metallurgical Engineers: Twenty-ninth annual open-hearth steel and blast furnace and raw materials conferences, Chicago. A. B. Parsons, 29 W. 39 St., New York 18, secretary.

Apr. 26-30, International Lighting Expositon, Stevens Hotel, Chicago.

Apr. 28-May 1, American Ceramic Society Inc.: Forty-eighth annual meeting, Hotel Statler, Buffalo. Ross C. Purdy, 2525 North High St., Columbus 2, O., general secretary.

Apr. 30-May 2, U. S. Chamber of Commerce: Annual meeting, Atlantic City.

May 23-June 2, Mid-America Exposition: Industrial exhibit of postwar home and commercial products, Public Hall, Cleveland. Headquarters are at 226 Public Hall, Cleveland.

Shipyards Jammed with Repair Work

Boom in ship conversion and repair activities seen by San Francisco Bay area yards. Drive launched to bring new industries to district

ENDING of the long machinists' strike has brought resumption of activity in San Francisco Bay area shipyards, which now are preparing for a lengthy boom in ship conversion and vessel repair operations.

During the last five months, the bay has become jammed with several hundred ships at anchorage awaiting reopening of the yards. In addition, a number of vessels which had been diverted to other West Coast ports will be returned to San Francisco.

A survey of San Francisco area yards shows that with one exception all now have many months of contracts in hand, running into millions of dollars. Marinship Corp., which virtually is shut down, is the only facility which will not be used for repair or conversion work.

For example, Bethlehem Steel Co.'s Alameda yard will resume work on two luxury liners for American President Lines, while the company's San Francisco yard has a Navy contract for nine destroyers and another for seven Navy garbage lighters. Bethlehem in addition is preparing bids for other conversion and repair jobs.

President Lines Places Large Orders

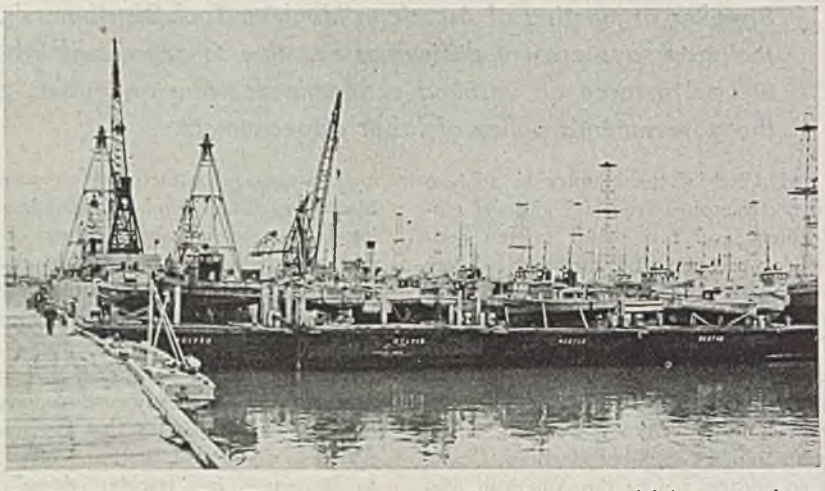
Moore Dry Dock Co. in Oakland soon will receive two government transports, each of 23,000 tons, for conversion into liners for American President Lines. The contract for this work will amount to approximately $1 million.

Western Pipe & Steel Co., at its South San Francisco yard, will complete three C-3 general cargo and refrigerated cargoships for American President Lines, for delivery in about five months. Meantime the company is planning to place bids for new contracts.

United Engineering Co. in addition to general repair and conversion work will concentrate on conversion of Matson Navigation Co.'s four luxury liners when government releases the ships.

Pacific Coast Engineering Co. and General Engineering & Dry Dock Co. also have prepared a number of bids for conversion and repair work.

A concentrated drive to bring new industries to the 12 countries of the San Francisco Bay area has been started by the San Francisco Chamber of Commerce.



SURPLUS SMALL CRAFT: Many a person is keeping a watchful eye on these small craft stored by the Army on barges in the Los Angeles harbor. They are part of $10 million Army boats now in the harbor as surplus material. They have not yet been offered for sale. NEA photo

This campaign, which has been inaugurated with publication of a 38-page industrial survey, will be followed by an advertising effort and development program designed to influence some 1,200 potential industrial immigrants to bring their plants to this region.

This project is also designed to follow up the growth of this area in wartime and convert its possibilities into peacetime expansion.

According to Chamber of Commerce spokesmen, San Francisco has five sources of new industrial growth: They are:

1—Expansion of existing plants.

2—Conversion of war plants to new products.

3—Attraction of branch plants of national manufacturers.

4—New development in processing of local raw materials.

5—New inventions.

For the immediate future, the expansion program will be concentrated in development of six major industries, and committees have been appointed by the chamber to make plans for increasing growth opportunities for those industrial divisions.

One major aim is to increase the volume and diversification of the iron and steel fabrication industry. In addition the steel committee intends to foster in every way possible the maintenance of a permanent, basic western steel industry founded on the Geneva plant in Utah and the Fontana plant in California.

Another committee will be in charge of increasing mineral processing in the bay area, and will give particular support to the gold mining industry. This group also will seek further development of natural gas reserves near San Francisco.

A nonferrous metals committee will promote increased fabrication of products made from aluminum, copper, magnesium and other metals produced in the West.

Other groups will seek expansion of the apparel and textile industries, electronics and plastics.

In its announcement of the program, the Chamber of Commerce points out that "since 1940 the six-county metropolitan area of the San Francisco Bay region has had a population growth of 40%, the greatest increase of any corresponding area in the United States. In addition, the western states represent about 15% of the nation's market."

Boeing Aircraft Planning For Enlarged Production

Following a period of uncertainty, Boeing Aircraft Co. is preparing for an active future. Announcement was made last week that eight Stratocruisers had been ordered by American Airlines which brings Boeing's backlog to $126 million in orders and will increase the payroll to 14,000 within a few months. Negotiations are under way with T W A

and British Overseas Airways for additional Stratocruiser contracts.

Contracts signed by Boeing within the last few months call for delivery of 42 Stratocruisers, exclusive of Army commitments.

Shortage of housing, lack of construction materials, much of it due to the steel strike, governmental restrictions including price ceilings and the hoarding of essential materials by the armed services were some of the factors uncovered by a party of newsmen who have been touring the state under auspices of the National Association of Manufacturers.

At Everett only 1500 are now employed in local shipyards compared with 6700 on war construction. The harbor is cluttered with various Navy craft reported here for repairs but Everett people are wondering if they are intended for permanent internment. At Tacoma a committee has been named to determine whether deepwater facilities are to be made available for private shippers or to be left cluttered with dead shipping in that area.

Officials of the Washington Advisory Commission announce an Ohio manufacturing company is contemplating investing $100,000 in an experimental development of 18-8 stainless steel ingots from laterite ores discovered in the Cascades east of Seattle. A member of the commission and a representative of Bonneville power have gone east to confer with those interested. If successful it is said this would be the first production of alloy steel by direct smelting.

German Steel Output Seen Close To Allowable Limit

German steel production this year will probably amount to about 75 per cent of the 5,800,000-ton limitation imposed by the Allies, in the opinion of Clifford S. Strike, who has been chief of the Building Materials, Construction & Forestry office of the Military Government for Germany (U. S.) since July, 1945, and who has only recently returned to this country to resume his duties as president of F. H. McGraw & Co., Hartford, Conn., engineers and constructors.

Difficulty in building steel production up to the relatively modest limitation of 5,800,000 tons, he said, is due primarily to shortage of coal and certain other essential supplies and transportation.

Mr. Strike regarded the outlook for complete rehabilitation of Germany as far from encouraging, declaring it might take 20 years to rebuild industries, provide adequate housing and restore transportation facilities.

Steel Allocations Ruled Out in Favor of Voluntary Quota Plan

RESUMPTION of government allocation of steel is out for the present at least.

This appeared certain last week following a meeting of the Steel Industry Advisory Committee with the Civilian Production Administration at which it was decided to give the present voluntary quota steel distribution plan, under which the steel industry has been operating for months, further trial.

Discussion of allocations, it was understood, resulted from pressure in congressional circles for action directed toward aiding small business to obtain adequate steel supplies.

At the Civilian Production Administration meeting some thought was given to establishment of a steel pool upon which new business and emergency type demands could draw. However, it was finally decided that instead of establishing a pool an attempt would be made to meet acute demands for steel through an arrangement by the CPA, Steel Division, whereby orders will be passed to steel companies able to fill them if original suppliers cannot do so. Also it is planned to suggest substitute steels where specific type steels cannot be obtained.

It is understood the undermanned Steel Division of CPA will be reinforced with the addition of eight or ten steel industry men who are familiar with the steel industry's problems and who will be in position to allocate steel or suggest alternative steels that might be available to consumers. Four former Steel Division members have been named as a committee to recruit the industry men for the Steel Division. They are: Norman Foy, Republic Steel Corp., Cleveland, former director of the Steel Division in the old War Production Board; C. L. Longfield, Youngstown Sheet & Tube Co., Youngstown, O.; J. L. Block, Inland Steel Co., Chicago; Jesse Honeycutt, Bethlehem Steel Co.

The action of the Steel Committee last week is expected to answer the demand in Congress for restoration of steel priorities by April 1 to meet the steel requirements of small businesses. The plan, steel men believe, will meet the practical aspects of the situation.

With respect to allocation of steel for export no action is expected in the near future. Further export directives are unlikely at least until the labor situation in the soft coal industry is clarified. Experience with the last export allocation effort is recalled, at which time allocations for 850,000 tons of finished and semifinished steel were set up to meet emergency rehabilitation and food requirements abroad only to be cancelled because of the steel strike.

Prize Winning Papers Presented at Meeting Of Blast Furnace & Coke Association

ANNOUNCEMENT and presentation in abstract of papers winning awards in its fifth annual technical papers contest featured the second regular 1945-46 meeting of the Blast Furnace & Coke Association of the Chicago District, Del Prado hotel, Chicago, March 26. An attendance of over 190 at the meeting set an all-time record.

Blast Furnace Division

First Prize: "Production of Low-Silicon Basic Iron in the Blast Furnace Using High-Magnesia Slags" by M. E. Nickel, blast furnace department, Wisconsin Steel Works, International Harvester Co., Chicago.

Second Prize: "Use of Scrap in the Blast Furnace" by Kurt Neustaetter, blast furnace engineer, Inland Steel Co., Indiana Harbor, Ind.

Third Prize: "Suppressing Gas Leaks on Blast Furnace Tops" by E. A. Anderson, assistant to superintendent, Nos. 5-10 blast furnaces, South Works, Carnegie-Illinois Steel Corp., Chicago.

Fourth Prize: "Safety in the Blast Furnace Department" by A. DuFresne, blast furnace department, Wisconsin Steel Works, International Harvester Co., Chicago.

Coke Oven Division

First Prize: "Fuel Cost Economy at the Blast Furnace and Its Relation to Coal Selection and/or Preparation" by W. M. Bertholf, efficiency engineer, Colorado Fuel & Iron Corp., Pueblo, Colo.

At luncheon Dr. F. H. Reed, Illinois State Geological Survey, spoke on "Coal Carbonization in Germany."

Dr. J. S. Machin, Illinois State Geological Survey, Champaign, Ill., addressed the afternoon blast furnace technical session on "Viscosity Studies of Lime-Magnesia-Silica-Alumina Slag."

At the coke oven technical session, Dr. P. J. Wilson Jr., senior fellow, Mellon Institute of Industrial Research, Pittsburgh, presented a paper "Trends in Coal Chemical Research."

H. V. Lauer, assistant division superintendent, coke plants, Gary Works, Carnegie-Illnois Steel Corp., and president of the association, presided at the luncheon and dinner meetings.

Peace Brings Revival of Heavy Tourist Travel to National Capital

Restrictions on conventions to be lifted entirely July 1 and many are scheduled in Washington. Agencies which were forced to vacate during war moving back. Army and Navy traffic still high. Congress expected to take long recess this summer.

CHERRY blossom season this spring —the single blossoms passed their prime about ten days ago and the double-blossom variety will be at peak all this week—brought the biggest volume of tourist traffic that Washington has seen since 1941. Hotel managers, who were looking forward to some easement in pressure, again were forced to refuse reservations on a wholesale scale. At the same time, plans took form to revive many normal activities which had to be suspended during the war. All indications point to continued heavy congestion in the capital city during the remainder of 1946.

For one thing, the Greater National Capital Committee has decided to throw off the convention lid entirely starting July 1, and a host of these gatherings have been scheduled. They include mostly conventions that will bring attendance of 300 to 500—such as those of the Pen Women's Association, the American Association of Museums, the American Federation of Arts, the Screw Machine Products Association, etc.

In the meantime, the spotlight already is beginning to focus on the National Highway Safety Conference called by the President for May 8-11, inclusive. This will bring an attendance of several thousands who will fill every vacant room in Washington. Hotels now generally are sold up through April, and from the way the reservations continue to come in they will be sold through May. For June an extra heavy pressure is promised for the reason that graduating classes of many nearby schools are resuming the prewar custom of spending a few days in Washington.

Congress is expected to do its part to ease the situation by taking its first long vacation since Pearl Harbor. Pressing matters before Congress include extension of OPA beyond June 30, ratification of the British loan agreement, establishment of a minimum wage, enactment of some sort of a strike control law, enactment of a national housing policy, formulation of a national policy in regard to atomic energy, extension of selective service, and approval of the usual appropriations bills. Because much of this legislation has been prepared and because this year's elections are regarded by both Republicans and Democrats as exceedingly important—current hopes of congressional leaders are that the recess this year can start late in June and stretch out until after the elections in November.

Two other reasons why congestion will be the rule at Washington is the unusual amount of travel by Army and Navy officers of all echelons to and from Washington and the rapidity with which government agencies which had to clear out of Washington during the war are preparing to return. These include numerous offices located at Philadelphia, Chicago, St. Louis, Richmond, Baltimore and many other points. This influx counterbalances the withdrawal from Washington of large numbers of war workers.

In another sense, also, Washington is due to be a busy place in the months ahead. Various administration agencies have ambitious plans to improve their usefulness to the country. In many instances they want to institute new programs suggested by experience during the war period. In others they are anxious to revive programs interrupted by the war. In still others they are eager to get ahead with war liquidation jobs assigned to them by Congress and thus escape critical examination by Congress during the coming winter; this is particularly the case with the Surplus Property Administration and the agencies named as the surplus property disposal units.

Substantially all the government agencies have plans for doing new things, or for doing old things in new ways, and many of these programs are of great potential interest to business and industry. One of these programs is a complete overhauling of some 9500 existing government purchasing specifications,

A slow drizzling rain fails to halt these visitors from viewing the cherry blossoms in full bloom around the tidal basin. In background is the Jefferson Memorial. NEA photo

READY FOR UNO SESSION: Edward R. Stettinius, chairman of the United States delegation to the United Nations Organization, left, greets Secretary of State James F. Byrnes on his arrival from Washington to attend the opening session of the Security Council. NEA photo

and the writing of many new ones. The United States government today is the biggest single buyer in the world, both in dollar volume and in diversity of commodities purchased. Hence news about this program, as it crystallizes over the coming months, will be of prime importance, not only because of its value to the large number of manufacturers doing business with the government, but also because the government specifications can be expected to have an influence on purchasing habits of private industry. This specifications work, incidentally, is being approached in contacts with representative men of industry.

Another important source of news in coming months should be the Commerce Department. While Mr. Wallace's appointment as secretary was unpopular in many quarters both in and outside of the department, and while he still is regarded widely as a better friend of labor than of industry, the fact remains that he has stirred things up in Commerce as they have not been stirred for years. One of the facts that analysis of his record at Commerce so far reveals is that he is willing to grapple with labor over such factors as "featherbedding" practices which hurt production and enterprise. In the coming months there should be a lot of news which should enhance the reputation of Mr. Wallace as a friend of business and industry; a good many new developments aimed to help industry are under way in his department—either through his own initiative or that of his key assistants.

One of Mr. Wallace's pet concerns at this time is to help small business; he hails small business as "a necessity upon which the life of the free enterprise system depends," and points out that "from the seedlings of small business our mightiest industrial giants have developed." He does not like the idea of government help for small business since, as he views the matter, "the need for a government program on behalf of small business is in a sense a symptom of weakness in our free enterprise system."

But, continues Mr. Wallace, "there is no more effective means of combating the evils of monopoly than the promotion of new, small enterprises whose primary interest is to innovate, compete, and expand, rather than to restrict production and protect a vested interest."

Then, having sold himself on the necessity of providing government assistance for small business—so as to enable the small company to enjoy the advantages which the big corporations can afford, Mr. Wallace goes the whole hog.

"We plan," he declares, "to have the Commerce Department the best business information and consulting service in the world." He outlines a grand program under which the small businessman will be able to obtain, free of charge, and from the Commerce field office nearest to him, substantially any service he requires. This will include technological services, market and distribution information, information about the availability of patent rights, help on tax and financial problems, defense against unfair competition. In addition, Mr. Wallace plans to set Commerce up as an intermediary to help small business to deal with the government or any of its agencies on any matter whatever.

"Without trying to minimize the difficulties of the task, I am prepared to state unequivocally that given the necessary backing and co-operation, it can be done," says Mr. Wallace. He refers to his experience as Secretary of Agriculture. In the field of agriculture, he says, government assistance has helped the farmer and has brought about an enormous increase in productivity; he thinks similar good results will ensue from a thoroughgoing plan to help small business.

It is of interest to note in this connection, that RFC, which recently took over the financial responsibilities of the liquidated Smaller War Plants Corp., now is prodding its field office managers to give positive and aggressive assistance on loan applications from small business. The field men were instructed in a circular letter on March 11 to go personally with small businessmen to banks, when necessary, and assist them properly in presenting facts to support their loan applications. RFC has notified the House Small Business Committee that it has instituted a follow-up system. "The agency," the message read, "maintains a list of every person interviewed, and systematically follows up by phone, preferably, or by letter, to ascertain definitely whether the applicant's problems have been satisfactorily worked out."

Business Men in the Department

Mr. Wallace's appointees at Commerce almost without exception are men of experience in industry. Alfred Schindler, his undersecretary, was sales manager of the Ralston Purina Co. and had much other experience. His new director of the National Bureau of Standards is Dr. Edward U. Condon, eminent physicist who, among other connections, was identified with the Westinghouse Research Laboratories. His patent commissioner is Casper W. Ooms, long a practicing patent attorney, and a man with a practical view about patent matters in general. Head of his Office of International Trade is Arthur Paul, from the textile industry. The whole depart-

ment is studded with men from business and industry.

The sort of thing that is going on throughout Commerce is well illustrated by an expression by Mr. Ooms a couple of weeks ago. "Patent documents should be simplified, more concise, written in easily understandable language, and stripped of much of the legal and technical verbiage that now makes many of them all but unintelligible even to the trained examiners who read them.

"All that the law requires," says Mr. Ooms, "is that a patent application shall carry a written description of the invention and the manner of its use in such full, clear, concise and exact terms as to enable any person skilled in the art to use it, and that the inventor shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery."

Just how Mr. Ooms proposes to proceed in bringing about this reform is not yet entirely clear, but he hopes to get patent attorneys in the course of time to use plain, simple language in lieu of the present stereotyped legalistic phraseology.

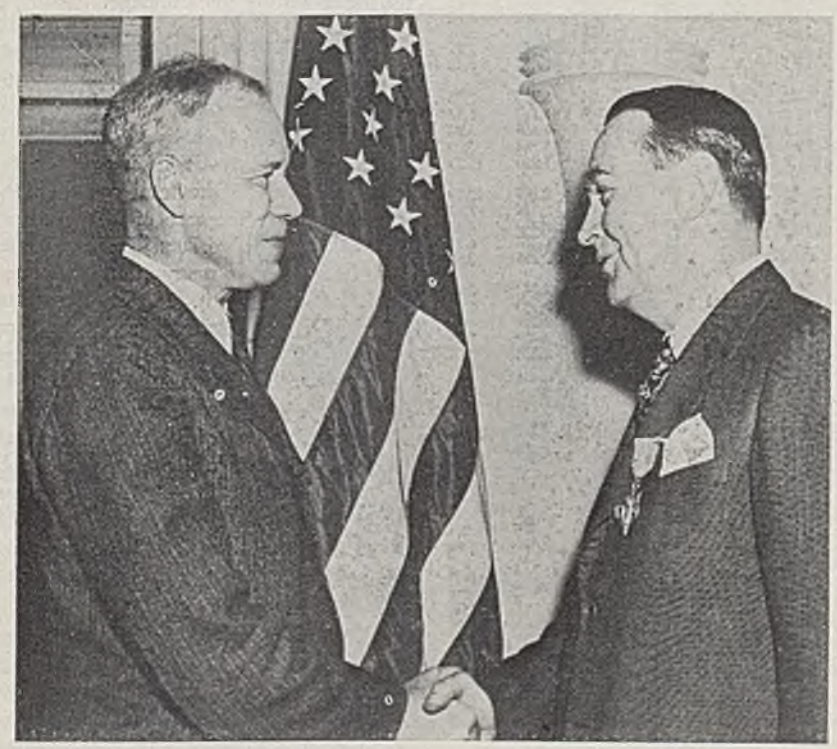
Of special interest in Commerce is Mr. Wallace's appointment of Brig. Gen. Albert J. Browning as director of the Office of Domestic Commerce. Formerly merchandising manager for Montgomery Ward & Co., then president of United Wall Paper Factories Inc., Chicago, and later a key official in the Office of Production Management and Supply, Priorities & Allocations Board, he was commissioned in the Army to become assistant director of materiel for Army Service Forces. Later he was moved up to director of purchases in the War Department. For his work in setting up and administering the Army's vast purchasing program he was awarded the Distinguished Service Medal.

General Browning, who agreed to take the Domestic Commerce portfolio on a temporary basis, has set up, with full approval of Mr. Wallace, what is easily the most intriguing program ever undertaken in Commerce. General Browning has launched a series of investigations to find the answers to the following questions:

What are the production ceilings per man-hour in various industries and individual plants, and what are the causes of production limitations? What is the effect on production of incentive pay systems—including incentive pay to executives, sales executives and salesmen, production managers, supervisors, and workers? To what extent are training and organizational programs in operation to build up sales organizations which can be depended on to create business some years in the future when the present sellers' market is succeeded by a buyers' market? How much is the cost of home construction increased by featherbedding and make-work practices in the building trades? What is the effect of thousands of trade barriers now in existence in the United States—as the California law which specifies 13-ounce beer bottles so as to keep 12-ounce bottles from being shipped in from other states?

These are only a few of the questions to which General Browning seeks the answers. After he gets them, the next step will be to plan courses of action to bring remedial steps where they are indicated. A good deal of this action, it now is felt, can be suggested from Washington but will have to be exerted at the state and community levels. For instance, elimination of union make-work practices would have to result from local action; after the cost of these practices to home purchasers has been ascertained, the logical step would be to put the problem up to local committees in each city, to comprise some representative citizens, one or two representatives of veterans' organizations, one or two representatives of the building industry, and one or more representatives of the local building trades unions.

The purpose of General Browning's whole effort is to locate and cut out bad spots in the economy—"to reduce costs and increase standards of living."



AWARDED MEDAL OF MERIT: Secretary of War Robert P. Patterson shakes hands with Percival C. Keith, who recently was awarded the Medal of Merit for his contribution to the war effort as technical director of the atomic bomb gaseous diffusion plant at Oak Ridge, Tenn. Mr. Keith is president of Hydrocarbon Research Inc. and recently developed a process for making gasoline from natural gas

Incentives for Executives Asked

Mr. Wallace's ideas about compensation of production executives are liberal, and the weight of his recommendations to the Treasury Department, following completion of certain phases of General Browning's current studies, will be toward a lightening of the income-tax load on such men.

"The income-tax rate has become so high in the upper brackets—and that goes from $10,000 a year upwards — that there is little incentive for a man to take on more work, to employ more people," asserted General Browning.

"Yes," agreed Secretary Wallace, "we know that the extremely high taxes are destroying incentive of the men who can produce full employment. Because of this reason a lot of the men who could help increase our production and our consumption are now down in Florida."

Olds Sees Need for Further Price Rise

Recent $5 a ton advance believed inadequate to compensate for past heavy increases in costs, U. S. Steel chairman says. Corporation, with heavy production year in 1945, showed continuation of downward trend in earnings

RECENT $5 per ton average increase on steel products is believed inadequate to compensate for heavy advances in costs absorbed during the war and unless productivity and efficiency rise sharply further increases in steel products may be necessary.

This warning is sounded in the annual pamphlet report of United States Steel Corp., submitted last week by Chairman Irving S. Olds.

Although U. S. Steel had one of the largest production years in history in 1945, financial results showed a continuation of the downward trend evidenced since 1941. This was largely the consequence of increased labor and other costs combined with rigid price ceilings, which often were lower than costs.

Revenue from sale of products and services in 1945 was $1,747,338,661, or 16.1 per cent less than the $2,082,186,895 realized in sales in 1944. The lower volume reflects the drop in operations which followed end of the war. Income of the corporation and its subsidiaries was $58,015,056 in 1945, a decrease of $2,776,225, or 4.6 per cent, from 1944. Receipts from customers in 1945 fell more than $2 million short of being adequate to pay the usual preferred and common dividends and the deficiency was made good out of sums set aside for future needs.

Included in the corporation's pamphlet report are tables showing U. S. Steel's financial and operating stories since 1902 (tables are reproduced on these pages). The financial history shows that the corporation's return on investment dropped steadily throughout the war period, from 7.05 per cent in 1941 to 3.64 per cent in 1945. New production and employment records were established in virtually every department during these five war years.

Chairman Olds presents a thorough review of events leading to the recent steel strike and its settlement with a general wage increase of 18½ cents an hour and price increase of $5 a ton on steel products. He revealed that U. S. Steel suffered a production loss of 2.9 million tons of ingots during the stoppage.

Further Price Increases Needed

The corporation believes the price increase of $5 a ton will be inadequate to compensate for past heavy increases in its costs and also to take care of what it estimates will be the total cost resulting from the wage increase of 18½ cents an hour to its steelworkers. Increases must also be granted to many salaried workers, Mr. Olds points out. Higher labor rates in such a basic industry as steel almost immediately flow to other industries, and soon are reflected in higher prices for purchased goods and services. "When the consequences of all the various cost factors have been realized, it seems probable that there will be occasion for further steel price increases, unless U.S. Steel has the benefit of a marked increase in productivity, and with it higher efficiency and lower production costs.

"The 1946 steel price directive, associated by the government with wage increases, differs wholly from a price rise in a free economy where prices and costs are continuously controlled by customers spurring competitive efforts," the report points out. "U. S. Steel does not know how much steel, or for how long, can be produced and sold at such costs and prices, but it does know that the higher prices will force thousands of adjustments in cost-price ratios in countless

UNITED STATES STEEL'S FINANCIAL STORY SINCE 1902

(In Millions of Dollars)

Year of Oper.	Products & Services Sold	Employment Costs	Yearly Taxes Accrued	Products & Services Bought	Wear and Exhaustion	Interest Paid on Debt	Income or Loss	Preferred Stock Dividend	Common Stock Dividend	Reinvested in the Business	Total Investment	% Income of Investment
1902	423.1	120.5	2.4	160.8	27.8	21.3	90.3	35.7	20.3	34.3	1,462	7.63
1903	398.2	120.8	3.0	164.1	29.3	25.6	55.4	30.4	12.7	12.3	1,505	5.39
1904	324.9	101.0	3.1	142.3	18.2	30.1	30.2	25.2		5.0	1,505	4.01
1905	409.2	128.1	3.6	151.1	28.0	29.8	68.6	25.2	.....	43.4	1,532	6.42
1906	484.0	147.8	4.4	168.7	35.6	29.4	98.1	25.2	10.2	62.7	1,556	8.20
1907	504.4	160.8	5.4	169.1	35.1	29.4	104.6	25.2	10.2	69.2	1,612	8.31
1908	331.6	120.5	5.4	104.9	23.8	31.3	45.7	25.2	10.2	10.3	1,594	4.83
1909	441.1	151.7	8.7	138.4	31.8	31.5	79.0	25.2	20.3	33.5	1,631	6.78
1910	491.8	175.0	9.2	157.1	32.5	30.6	87.4	25.2	25.4	36.8	1,659	7.11
1911	431.7	161.6	9.6	146.3	27.8	31.1	55.3	25.2	25.4	4.7	1,688	5.12
1912	533.9	189.6	9.8	214.3	33.4	32.6	54.2	25.2	25.4	3.6	1,715	5.06
1913	560.8	207.5	13.2	191.6	34.0	33.3	81.2	25.2	25.4	30.6	1,742	6.57
1914	412.2	162.7	12.6	153.7	26.6	33.2	23.4	25.2	15.2	17.0d	1,750	3.24
1915	523.7	177.3	13.6	189.8	34.3	32.8	75.9	25.2	6.4	44.3	1,784	6.09
1916	902.3	263.9	26.6	265.3	43.0	32.0	271.5	25.2	44.5	201.8	1,990	15.25
1917	1,284.6	347.9	252.3	345.9	83.3	31.0	224.2	25.2	91.5	107.5	2,109	12.10
1918	1,344.6	453.0	297.6	339.2	98.8	30.7	125.3	25.2	71.2	28.9	2,174	7.18
1919	1,122.6	479.7	81.6	364.5	89.9	30.1	76.8	25.2	25.4	26.2	2,209	4.84
1920	1,290.6	581.8	76.2	413.6	80.0	29.3	109.7	25.2	25.4	59.1	2,274	6.12
1921	726.0	333.2	37.7	249.9	40.1	28.5	36.6	25.2	25.4	14.0d	2,255	2.89
1922	809.0	323.4	35.8	334.7	47.1	28.4	39.6	25.2	25.4	11.0d	2,242	3.03
1923	1,096.5	470.4	55.1	377.4	56.9	28.0	108.7	25.2	29.2	54.3	2,283	5.99
1924	921.4	443.6	45.3	266.9	53.2	27.3	85.1	25.2	35.6	24.3	2,291	4.90
1925	1,022.0	458.2	50.9	333.6	61.6	27.1	90.6	25.2	35.6	29.8	2,329	5.05
1926	1,082.3	469.3	52.4	346.7	70.4	26.8	116.7	25.2	35.6	55.9	2,333	6.15
1927	960.5	412.7	46.3	323.1	64.4	26.1	87.9	25.2	49.8	12.9	2,325	4.90
1928	1,005.3	402.9	51.0	338.4	73.2	25.7	114.1	25.2	49.8	39.1	2,330	6.01
1929	1,097.4	410.2	55.0	350.0	69.8	14.9	197.5	25.2	63.8	108.5	2,157	9.85
1930	828.4	371.7	48.1	234.8	63.8	5.6	104.4	25.2	60.4	18.8	2,278	4.83
1931	548.7	258.4	34.2	187.2	50.4	5.5	13.0	25.2	37.0	49.2d	2,214	.84
1932	287.7	138.5	31.7	141.8	41.6	5.3	71.2d	20.7	.....	91.9d	2,110	3.12d
1933	375.0	167.9	31.7	161.4	45.3	5.2	36.5d	7.2	.....	43.7d	2,048	1.53d
1934	420.9	214.8	35.8	140.5	46.4	5.1	21.7d	7.2	.....	28.9d	2,028	.82d
1935	539.4	253.9	38.4	191.2	49.8	5.0	1.1	7.2	.....	6.1d	1,753	.35
1936	790.5	339.0	49.6	287.5	59.0	4.9	50.5	50.4	.....	.1	1,760	3.15
1937	1,028.4	447.1	74.6	342.6	64.1	5.1	94.9	58.5	8.7	27.7	1,801	5.56
1938	611.1	294.4	37.5	228.3	50.3	8.3	7.7d	25.2	.....	32.9d	1,632	.03
1939	855.9	386.5	52.2	303.4	63.4	9.3	41.1	25.2	.....	15.9	1,651	3.05
1940	1,079.1	464.3	68.1	358.3	72.6	13.6	102.2	25.2	34.8	42.2	1,653	7.01
1941	1,622.3	628.3	168.6	604.6	98.6	6.0	116.2	25.2	34.8	56.2	1,733	7.05
1942	1,863.0	782.7	301.3	673.4	128.2	6.2	71.2	25.2	34.8	11.2	1,735	4.46
1943	1,972.3	912.9	125.9	730.6	134.0	6.3	62.6	25.2	34.8	2.6	1,750	3.94
1944	2,082.2	957.2	105.8	814.4	139.0	5.0	60.8	25.2	34.8	.8	1,734	3.79
1945	1,747.3	825.5	66.8	670.1	123.4	3.5	58.0	25.2	34.8	2.0d	1,688	3.64

The data are in some respects necessarily approximate, and are based on the yearly earnings reported annually to stockholders without adjustment for surplus charges and credits except that the years 1942 and 1943 reflect renegotiation settlements made in the succeeding years. For example, taxes are as accrued before adjustments. Estimated additional costs arising out of war in the amount of $25 million in the years 1941 to 1944, inclusive, have been included in products and services bought. The item "Employment Costs" includes, in addition to wages and salaries, Social Security taxes after 1935, and pensions after 1910. The item "Wear and Exhaustion" includes amortization of emergency facilities and net loss on sales of plant and equipment, in addition to depletion and depreciation. Income before interest, but after all other charges, was used to determine the per cent income of investment. Certain previously published figures have been revised. (d denotes deficit.)

industries and this in itself will seriously disturb the transition to a peacetime economy."

Summing up the results of the strike to the steelworkers, Mr. Olds said:

"The steelworker finally gained a wage increase of 3½ cents an hour over what he could have obtained, without a strike, through acceptance of U. S. Steel's offer of a wage increase of 15 cents an hour. On the basis of a 40-hour week, the average steelworker lost for the four weeks' duration of the strike approximately $207 in straight-time wages, which he could have had without striking. This loss of wages will require work for 147 weeks, or two years and ten months, at the 3½ cents increased pay resulting from a wage increase of 18½ cents an hour in order to make up what the worker lost in wages during these four weeks of idleness."

Mr. Olds revealed the corporation authorized the expenditure of approximately $200 million during 1945 for improvements and replacements of properties. A total of $36.9 million was spent for these purposes during the year. To complete projects authorized during 1945, and previously, $218.6 million remained to be spent at the end of the year. In line with the corporation's modernization program, obsolete or marginal facilities are being eliminated, he said, with the result that U. S. Steel's annual capacity of steel ingots and castings already has been decreased by approximately 3.7 million tons from its high point of 32.5 million tons in 1944. Some of this capacity may eventually be located elsewhere, he stated, adding that the current capacity of 28.8 million tons represents about 31 per cent of the nation's steelmaking capacity.

UNITED STATES STEEL'S OPERATING STORY SINCE 1902

(In Thousands of Net Tons)

Year of Oper.	Total Ores Mined	Total Fluxes Produced	Total Coal Mined	Total Coke Produced	Total Iron Produced	Ingots & Castings Total Production	Ingots & Castings % Capacity Operated	Finished Steel Shipped	Average No. of Employes
1902	17,991	1,471	13,813	9,522	8,933	10,920	97.2	8,913	168,127
1903	17,207	1,421	12,660	8,658	8,153	10,275	81.8	8,129	167,709
1904	11,763	1,560	13,718	8,652	8,254	9,422	72.8	7,325	147,343
1905	20,705	2,203	17,228	12,243	11,393	13,447	93.2	10,142	180,158
1906	23,123	2,495	18,533	13,295	12,619	15,153	100.6	11,254	202,457
1907	26,858	3,585	24,279	13,545	12,794	14,944	88.6	11,511	210,180
1908	18,662	2,448	15,799	8,170	7,767	8,779	50.3	6,820	165,211
1909	26,243	3,916	23,790	13,590	13,013	14,958	77.8	10,612	195,500
1910	28,275	5,606	26,365	13,650	13,251	15,881	79.5	11,777	218,435
1911	22,326	5,416	24,326	12,120	12,034	14,284	70.5	10,340	196,888
1912	29,600	6,859	30,639	16,719	15,889	18,929	89.8	13,771	221,025
1913	32,187	7,099	30,787	16,663	15,770	18,655	90.1	13,387	228,906
1914	19,079	5,238	21,162	11,174	11,259	13,246	62.3	9,935	179,353
1915	26,510	6,491	26,628	14,501	15,278	18,342	85.2	12,826	191,126
1916	37,358	7,866	32,768	18,902	19,721	23,420	100.6	17,105	252,668
1917	35,596	7,274	31,497	17,462	17,531	22,719	91.9	16,919	268,058
1918	31,733	5,758	31,748	17,758	17,854	21,934	88.2	15,570	268,710
1919	28,474	6,536	28,893	15,464	15,274	19,264	77.0	13,470	252,106
1920	30,264	6,699	30,828	16,208	16,277	21,591	86.2	15,534	268,004
1921	18,646	5,160	21,628	9,825	9,720	12,282	48.3	8,758	191,700
1922	24,392	6,309	23,293	13,237	13,470	18,012	70.9	13,127	214,931
1923	34,737	7,365	35,290	18,838	18,737	22,770	89.1	15,870	260,786
1924	27,747	5,638	27,738	14,408	14,206	18,456	72.2	12,705	246,753
1925	31,357	5,986	31,476	16,301	16,575	21,167	81.7	14,753	249,833
1926	32,778	6,175	34,295	17,336	17,590	22,743	89.1	15,771	253,199
1927	28,725	5,215	27,430	14,507	15,438	20,705	79.8	14,310	231,549
1928	29,834	16,352	28,691	15,993	17,066	22,518	84.6	15,400	221,702
1929	34,214	16,535	31,827	17,355	18,463	24,493	90.4	16,813	254,495
1930	27,211	16,365	25,388	13,113	14,289	18,762	67.2	12,798	252,902
1931	15,233	8,595	15,575	7,041	7,864	11,292	37.5	8,399	215,750
1932	4,050	3,587	7,047	2,966	3,498	5,521	17.7	4,324	164,348
1933	9,347	6,060	10,227	4,880	5,629	9,013	29.4	6,354	172,577
1934	11,283	6,769	11,724	5,382	6,174	9,700	31.7	6,501	189,881
1935	12,810	7,842	15,095	7,328	8,307	12,467	40.7	8,086	194,820
1936	21,306	12,031	23,581	12,034	13,501	18,937	63.4	11,905	222,372
1937	34,080	14,696	24,504	14,190	16,171	20,756	71.9	14,098	261,293
1938	12,303	7,818	13,842	7,006	7,632	10,525	36.4	7,316	202,108
1939	24,225	12,852	21,624	12,092	13,656	17,626	61.0	11,707	223,844
1940	34,047	15,730	29,528	16,144	18,367	22,934	82.5	15,014	254,393
1941	43,318	19,176	29,076	18,563	22,321	28,963	96.8	20,417	304,248
1942	52,012	20,864	32,317	19,275	23,496	30,030	98.1	20,615	335,866
1943	51,649	19,478	29,046	19,028	23,660	30,540	97.8	20,148	340,498
1944	49,842	19,208	30,709	20,503	23,445	30,815	94.7	21,052	314,888
1945	47,655	19,030	27,622	18,341	19,648	26,479	82.0	18,410	279,274

Production and shipment data are for all operating subsidiaries and are grouped in broad product classifications. The production data include all production of the materials by the operating subsidiaries and exclude all materials purchased. The item "Total Ores Mined" includes iron, zinc and manganese ores. In addition to limestone, dolomite and fluorspar, "Total Fluxes Produced" includes cement rock and other similar materials. In addition to pig iron, "Total Iron Produced" includes production of ferroalloys. Although Tennessee Coal, Iron & Railroad Co. was acquired Nov. 1, 1907, its production and shipments for the entire year are included. Prior to 1929, the full time equivalent rather than the actual number of employees is shown. Certain previously published figures have been revised.

American Rolling Mill Co. Issues Report on Earnings

The American Rolling Mill Co., Middletown, O., had a net consolidated income in 1945 of $9,414,647 after taxes but before extraordinary and nonrecurring adjustments, Charles R. Hook, president, reported.

Extraordinary and nonrecurring adjustments of $3,977,549 increased net income to surplus to $13,392,196. Nonrecurring items which had come into existence during the war and on which adjustments were taken in 1945 included the reversal of reserve for contingencies, federal tax credit resulting from accelerated amortization of emergency facilities for prior years and a write-off of unamortized appreciation of property. None of these items represented earnings on 1945 operations.

Earnings in 1944 before deduction for contingency reserves were $7,307,991.

Increase in net profits was mainly the result of including earnings of $1,302,503 on the company's share of Rustless Iron & Steel Corp.'s 1945 net profits, and reducing taxes and correspondingly increasing income by $2,525,000 through deducting in 1945 for tax purposes adjusted amortization of emergency facilities.

With the merger of Rustless Iron & Steel Corp., Baltimore, into the American Rolling Mill Co., the latter assumed a bank loan of $3½ million, making the company's total outstanding indebtedness $15½ million.

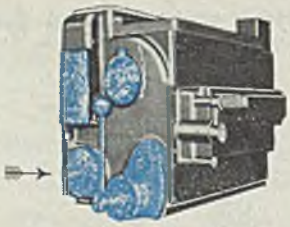
Earnings Report Announced By Sharon Steel Corp.

Net profit of Sharon Steel Corp., Sharon, Pa., in 1945 was $1,029,074, of which $112,371 represented earnings attributable to subsidiary companies and $916,703 earned by the company.

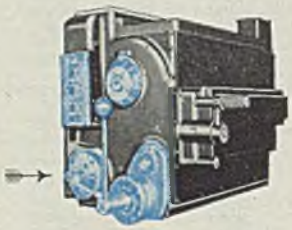
Earnings of the company in 1944 (after revision) amounted to $1,000,886, before considering $33,750 in dividends from a subsidiary firm now consolidated.

An important development within the Sharon company during 1945 was the acquisition in December of the Farrell Works of the Carnegie-Illinois Steel Corp. located immediately adjacent to the Sharon finishing mills. The acquired property consisted of two 800-ton blast furnaces with ore handling equipment and all other facilities necessary to the production of approximately 500,000 tons of pig iron a year, 15 open-hearth furnaces with an annual ingot capacity of approximately 900,000 net tons of steel, a 36-inch blooming mill, a 24-inch bar mill, an 18-inch bar mill and all necessary auxiliary equipment required for production of semifinished steel to fulfill requirements of the company and its subsidiaries.

Only a BULLARD MAN-AU-TROL V.T.L. PROVIDES TWO DISTINCT MANUFACTURING METHODS



1. MANUAL OPERATION — When you have only a few pieces to machine, you put the MAN-AU-TROL control lever in manual position . . . and machine them even faster than on a regular Bullard Vertical Turret Lathe.

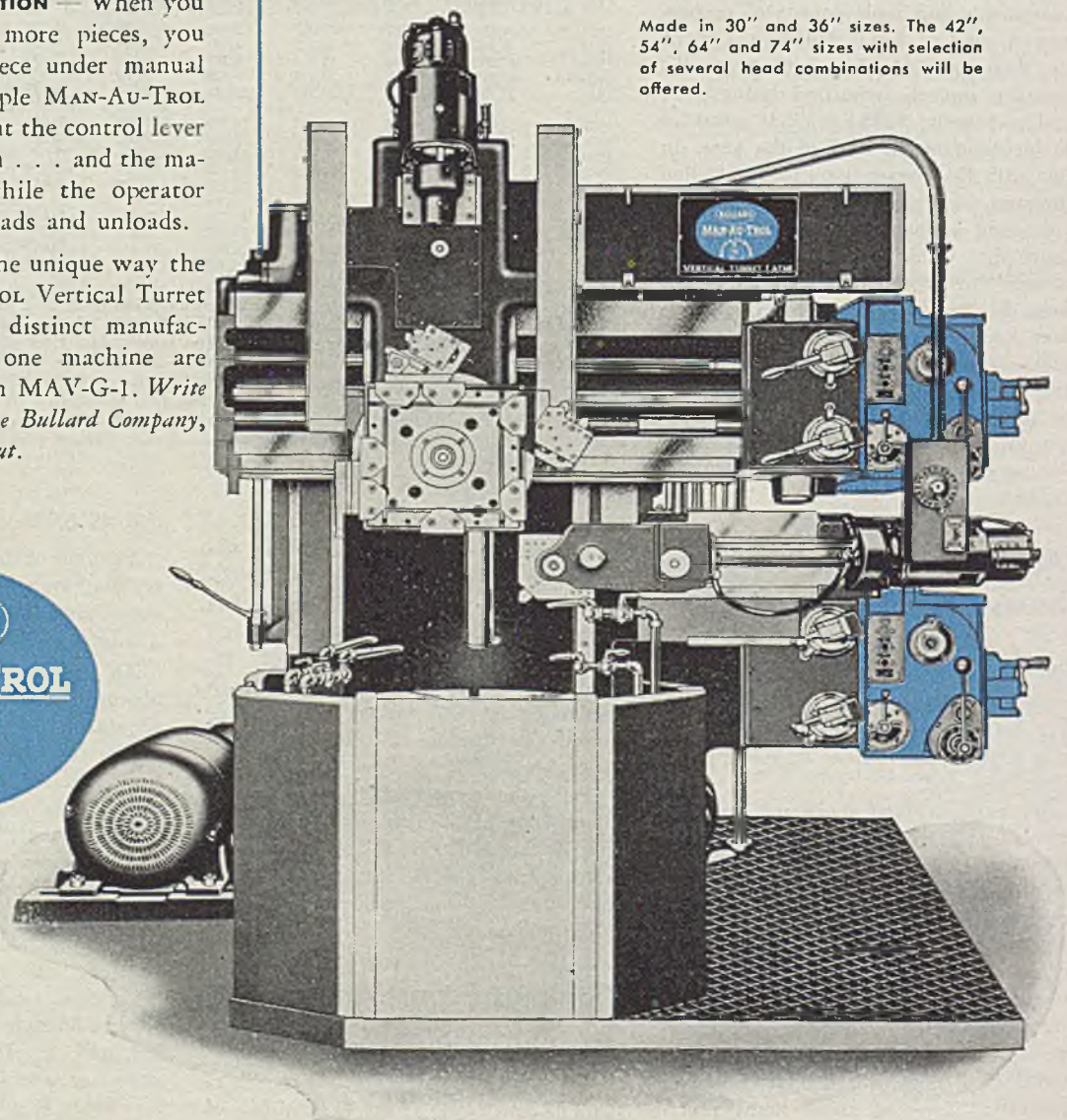


2. AUTOMATIC OPERATION — When you have about ten or more pieces, you machine the first piece under manual control, making simple MAN-AU-TROL settings. Then you put the control lever in automatic position . . . and the machine takes over while the operator merely supervises, loads and unloads.

All the facts about the unique way the Bullard MAN-AU-TROL Vertical Turret Lathe combines two distinct manufacturing methods in one machine are developed in Bulletin MAV-G-1. *Write for free copy today. The Bullard Company, Bridgeport 2, Connecticut.*

. . . Because only MAN-AU-TROL is the automatic control that is as versatile as manual control

Made in 30" and 36" sizes. The 42", 54", 64" and 74" sizes with selection of several head combinations will be offered.



BULLARD MAN-AU-TROL
MASTER OF THE MACHINE

BULLARD CREATES *NEW METHODS* TO MAKE MACHINES DO MORE

mirrors of MOTORDOM

By A. H. ALLEN *Detroit Editor, STEEL*

Automobile manufacturers study expansion of foreign markets. AMA offers 18 recommendations for increased exports based on the reciprocal trade program. One-tenth of prewar car and truck output shipped overseas

DETROIT

FOREIGN markets for automobiles have long been cultivated assiduously by manufacturers in this country and they are now looking forward to a full-scale resumption of this business, even though many of the former markets are near-destitute. In normal years the automobile industry is the principal exporter and importer among manufacturing industries in this country. In 1937, for example, one out of every ten American motor vehicles was sold abroad, amounting to a total of 272,503 passenger cars, and 203,411 trucks valued at $383,874,000.

About 300 products, all relatively important, from 56 countries were imported before the war for manufacture of motor vehicles. They include such items as rubber from the Straits settlements and the Dutch East Indies, tin from Malaya and Bolivia, chrome ore from South Africa, asbestos and nickel from Canada, and kapok from Sumatra.

From the start of the war to Oct. 1, 1945, approximately 1,100,000 military vehicles with a valuation of nearly 2½ billion dollars were shipped as lend-lease or sold to Great Britain, Russia, France, China and other allied countries, the result being that the character of U. S. automotive equipment is more widely known than ever before and leading to the logical assumption the eventually potential market for peacetime equipment will be enormous.

AMA Proposes Trade Expansion

Following this line of thought, the Automobile Manufacturers Association has drawn up 18 recommendations for the expansion of foreign trade, based on the reciprocal trade agreement program. This "declaration of principles" is as follows:

1. Believing an increased volume of both exports and imports, if kept within reasonable relation, will contribute to an improved internal economy, the association urges the expansion of foreign trade and asks the government to seek this objective by means consistent with benefits to the country as a whole.

2. The association repeats its previous endorsement of the reciprocal trade agreement program, and urges the fullest use of its powers, in the revision of existing treaties and in extending the agreements to additional countries, to exclude discriminatory and restrictive tariffs, quotas, exchange blocs and other artificial barriers to the free movement of trade.

3. Systems of applying customs duties to automotive vehicles on a weight basis, or on a sliding scale, according to stipulated price classifications, result in an unfair assessment on one type of vehicle as compared to another. The association therefore recommends the government strongly promote an international acceptance of the ad valorem basis for duty assessment on motor vehicles, as being both simple and equitable.

"STRIP-TEASE"

Delegates to the United Automobile Workers' future conventions must be able to show three union labels on their garments before they can get their names on the convention ballot. This so-called "strip-tease" regulation was incorporated in the union's constitution at the union's convention in Atlantic City, N. J. last week.

4. The association urges prompt action by the Department of State to secure treaties of friendship and commerce, so drawn as to give basic protection to American foreign traders and investors, including specifically the right to travel, sojourn, trade and work within foreign countries.

5. The association calls for the abolition of government controls on export shipments of automotive products from this country at the earliest date, consistent with the purpose of American foreign policy. The association further asks for the elimination of import quotas wherever this is possible through negotiation.

6. Horsepower and gasoline taxes in certain countries have hampered a healthy growth in motor transportation. The association therefore renews its recommendation of many years past, that the government, in the interest of a higher standard of living as developed through the greater use of motor vehicles everywhere, seek to secure an understanding and acceptance on the part of other nations of the uneconomic and inimical nature of the handicaps such arbitfary taxation imposes.

7. The association goes on record that the extension of loans or credits to foreign governments should not, and cannot consistently, be made by any American automotive manufacturer.

8. The present system of automotive import licenses in use by many foreign countries is highly unsatisfactory. The association recommends in the negotiation of trade agreements this system be eliminated wherever possible and where licenses must through necessity remain, consideration be given to the time required for ordering, fabrication, and shipping to destination, so as to eliminate undue expirations and renegotiation for a second issuance. Where shipment has been effected and the license expires before arrival of goods at destination, serious difficulties have arisen.

9. The association recommends that the disposal of surplus government war stocks of American automotive products, both at home and abroad, be carried out with due consideration of the interests of American manufacturers and exporters, both at home and abroad.

10. The association recognizes the advisability of increased technical education in the automotive industry of individuals from abroad. It is important, however, that distinction should be made between the education and training of young, qualified students who will serve the interests of an increased distribution and use of automotive products upon their return to their native lands, and the unwarranted disclosure to representatives of foreign interests of America's automotive industrial techniques, the possession of which is a valuable American asset.

11. The association recognizes that certain countries may find it desirable to maintain in this country agencies or missions for the purchase of their automotive requirements. Nevertheless, the association calls attention to the fact

that American automotive manufacturers have developed abroad and over a period of years, large and efficient organizations capable of ordering and handling the automotive products desired by any country. These organizations can, to advantage, give proper maintenance to the vehicles once they have arrived overseas, through availability of spare parts and adequate service facilities. The association recommends that orders for automotive products be placed, wherever possible, with the overseas organizations representing the American automotive manufacturers.

12. The association sounds a cautionary note with respect to the danger of increased ocean freight rates.

13. The association recommends the Maritime Commission use its good offices to have all American shipping companies adopt a uniform ocean bill of lading.

14. The association recommends that the Departments of Commerce and Treasury simplify the existing complicated regulations covering export declarations of automotive spare parts and accessories.

15. The association pledges itself to seek equality of treatment for all manufacturers of motor vehicles in any and all overseas markets.

16. The association further pledges its constant endeavor to reduce the ultimate cost of motor vehicles to the purchaser, first through efficiency of operations, to obtain the lowest manufacturing costs both at home and abroad, and second, to seek through proper channels to keep at a minimum all incidental charges, such as freight, taxes, surcharges, consular and port fees, insurance, etc., consistent with proper handling and protection and fair payment for work done.

17. The association desires to advocate and promote the building and maintenance of adequate systems of highways, roads or streets in all overseas markets, to extend the economic advantages of motor transport.

18. In the promotion of an improved economy, the association urges the extension of government foreign trade services throughout the world and to this end recommends a standard of remuneration adequate to attract experienced personnel competent to fulfill this objective.

Continental Producing Diesels

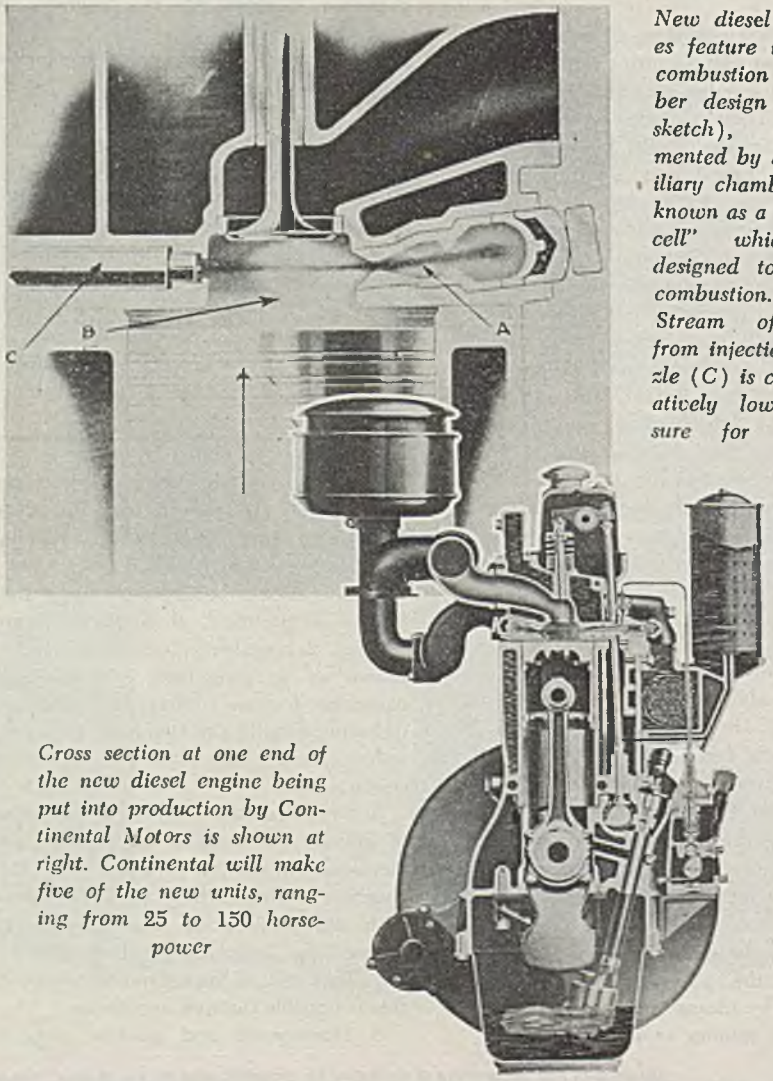
Continental Motors Corp. is starting production this month on a new line of industrial and transportation diesel engines ranging from 25 to 150 horsepower, with additional models planned for later in the year. The five now launched include two 4-cylinder and three 6-cylinder models. Unusual design feature is what the company calls a "cushioned power" combustion chamber which causes delayed burning of the fuel and makes possible low working pressures on the cylinder. This in turn has enabled the company to build a line of diesels having a high degree of interchangeability of parts with its regular gasoline engines, making for manufacturing economies and simplified field service.

The combustion chamber itself is of the open type, and is relatively small, being confined to the area under the exhaust valve. This is claimed to facilitate starting in cold weather, for the reason that the valve and chamber reach near-normal operating temperatures after only a few revolutions.

Directly off the combustion chamber and opposite the low-pressure injection nozzle is a double air cell known as "dyna-cell." Its functioning is as follows: The stream of fuel sprayed by the injection nozzle is relatively coarse—something more than 1/16-in. diameter at its core and fringing off into a spray at the sides. The spray immediately ignites in the open chamber, while the coarse portion of the stream is directed into the air cell. As the burning occurs within the main combustion chamber, the pressure rises and naturally tends to flow into the air cell. While this is occurring the engine crankshaft is rotating and is moving the piston through the top of the compression stroke.

The fuel, having entered the delaying air cell and having air pushed in with it from the start of the explosion in the main cylinder, starts to burn and a portion of the fuel in the first air cell blows back into the main chamber while another portion of it blows through an orifice into the rear chamber of the air cell. Thus the second phase of combustion occurs in the forward portion of the air cell, while the third and last phase occurs after the piston has had time to move downward appreciably in its stroke. At this point the fuel in the rear section of the cell burns and the remainder of the charge is forced out into the main combustion chamber. Pressures in the air cell rises to around 1200 pounds per square inch and sometimes higher.

This delayed burning of the fuel is designed to bring about low working pressures on the cylinder with a simple type of nozzle.

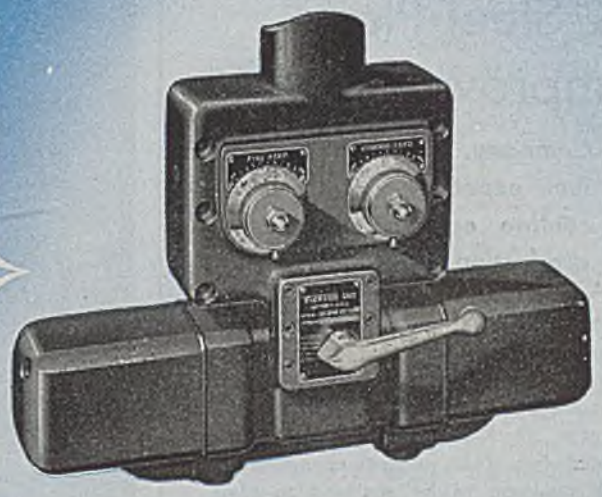


New diesel engines feature unusual combustion chamber design (B in sketch), supplemented by an auxiliary chamber (A) known as a "Dyna-cell" which is designed to delay combustion..... Stream of fuel from injection nozzle (C) is comparatively low pressure for diesels

Cross section at one end of the new diesel engine being put into production by Continental Motors is shown at right. Continental will make five of the new units, ranging from 25 to 150 horsepower

SMOOTH and CONSTANT FEED RATE

regardless of fluctuations in work resistance or hydraulic operating pressure



Double Solenoid Type Push-button Operation

VICKERS "Traverse and Feed Cycle" CONTROL PANELS

These panels provide self-contained, compact control units for automatic machine applications where the cycle is a combination of rapid advance, one or two feeds, and rapid return motions. The two feed rates are infinitely variable within their ranges, and adjustments can be made during feed. Applications include drilling, reaming, boring, turning, milling and swaging machinery.

The hydraulic circuit in the panel employs the well-known Vickers Flow Control Valve in a "metering-out" circuit which means a smooth and constantly maintained feed rate for any given adjustment regardless of fluctuations in cutting tool resistance or changes in hydraulic operating pressure.

Simplicity is evident from the fact that there are only two working parts that move. Many standard modifications are available; feeds can be in either direction or both directions; operation is by single or double solenoids integral with panel, separate solenoids or pilot pressure. Practically any cycle sequence can be obtained. See Bulletin 41-10 for complete information.

Vickers Application Engineers will gladly discuss with you how "hydraulics" can be used to your advantage.

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CONSTANT DELIVERY PUMPS | FLUID MOTORS | DIRECTIONAL CONTROLS | VOLUME CONTROLS | PRESSURE CONTROLS | CONTROL ASSEMBLIES | VARIABLE DELIVERY PUMPS

Central Iron & Steel Plans Improvements

Company, acquired by Barium, expected to continue to confine operations to plate production and fabrication

NUMEROUS improvements are planned for Central Iron & Steel Co., Harrisburg, Pa., control of which recently was acquired by the Barium Steel Corp., Canton, O. Plans have not been completed but it is understood operations will continue to be confined to plate production and fabrication.

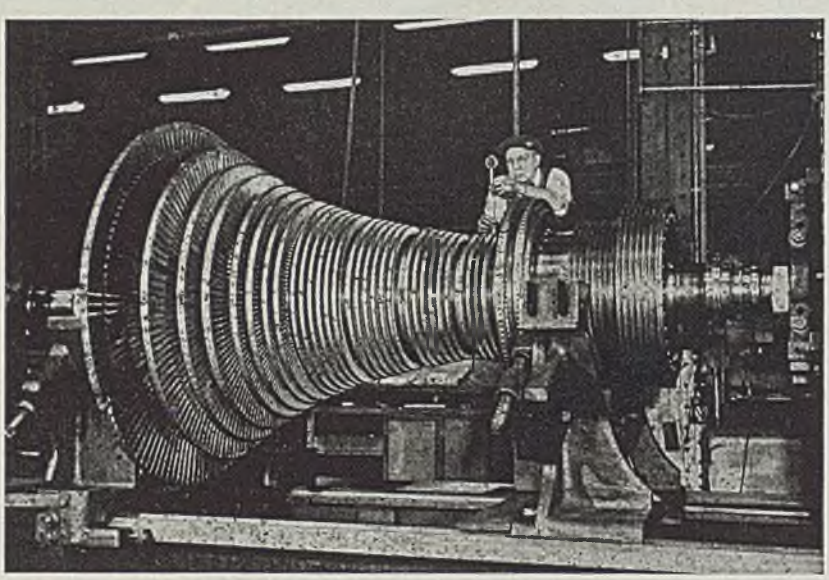
While Central's newly affiliated companies which compose the Barium family will draw upon Central's production to a certain extent, the company will continue to have ample capacity to take care of its regular customers. Central has an annual rated capacity of 336,000 tons of ingots and over 275,000 tons of finished plate. In addition it has a fabricating division and its plant occupies 80 acres.

The new directorate of Central Iron & Steel will include A. J. Sisto, Rudolph Eberstadt, Jules Breuchaud, Robert C. Hardy and Nelson Gammans, all of the Barium corporation; Basil M. Graham, president of Central, and William S. Bailey, also of the latter company. Douglass D. Storey, Harrisburg, is expected to be elected to the directorate. The executive committee will be comprised of Messrs. Sisto as chairman, Eberstadt and Graham. Mr. Sisto is chairman and Mr. Eberstadt, president and treasurer of the Barium corporation.

Other Acquisitions Listed

In addition to Central Iron & Steel Co., production and manufacturing units of Barium Steel Corp. include Barium Steel & Forge Inc., Canton, O., Clyde Iron Works, Duluth, Erie Bolt & Nut Co., Erie, Pa., Globe Forge Inc., Syracuse, N. Y., and through Republic Industries Inc., control of which was acquired by Barium a month ago, the Jacobs Aircraft Engine Division, Pottstown, Pa., Kermath Mfg. Co., Detroit, Geometric Stamping Co., Cleveland, Porcelain Steels Division, Cleveland, and Kermath Mfg. Ltd., Ontario, Canada.

Central Iron & Steel was organized in 1897 by the consolidation of Central Iron Works, which had been formed in 1853, and the Paxton Rolling Mills which had been established in 1869.



CHECKING FOR SIZE: Mounted in a huge lathe in the Westinghouse Electric Corp.'s South Philadelphia plant, this 20,000 kilowatt steam turbine spindle is being checked for size to prevent steam leakage. The unit is destined for the Staten Island Edison Corp. where it will provide power for shipyards, railroad shops, an oil refinery and manufacturing plants

BRIEFS . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

General Electric Corp., Schenectady, N. Y., has acquired a turbo supercharger plant at Ft. Wayne, Ind., for $5 million from the War Assets Corp. The plant is expected to employ 3400 workers and will produce fractional horsepower motors and magnet wire.

—o—

Sylvania Electric Products Inc., New York, has announced a new company, Electronic Valves Ltd., England, formed by A. C. Cossor Ltd., London, to manufacture Sylvania-type radio tubes.

—o—

Whiting Corp., Harvey, Ill., manufacturer of cranes, foundry equipment and chemical process equipment, has opened enlarged sales offices at Pitt Bank Bldg., Pittsburgh 22.

—o—

Amsler-Morton Co., Pittsburgh division of Union Industries Inc., will move to new quarters in the Chamber of Commerce building, Pittsburgh, on Apr. 15.

—o—

Metal Goods Corp., St. Louis, distributor of ferrous and nonferrous metals, has begun construction of a $200,000 building in Dallas, Tex., which will double its facilities there.

—o—

SKF Industries Inc., Philadelphia, has announced that on Apr. 1 it closed its books on all war contracts for ball and roller bearings. Approximately 75,000 contracts were completed and 5000 terminated. The company actually began war production in 1929 when it became the only company manufacturing ball bearings for Norden bombsights.

—o—

Production Products Co., Baltimore, plans to move from 913 Cathedral St. to 415 East Oliver St., Baltimore, where in addition to engaging in production engineering, it will operate a machine shop.

—o—

Western Electric Co. plans a $6 million expansion program for its Point Breeze, Md., plant. Its switchboard department will be transferred from Kearney, N. J., to Point Breeze.

—o—

Brown Instrument Co., division of Minneapolis-Honeywell Regulator Co., Minneapolis, has opened a sales and service office at 16 State St., Rochester, N. Y.

—o—

Inland Steel Co., Chicago, has licensed Joslyn Mfg. & Supply Co. to produce stainless Ledloy steel at its Ft. Wayne, Ind., plant.

—o—

Ceco Steel Products Corp., Chicago, has moved its general offices from

Omaha, Neb., to its manufacturing division headquarters in Chicago.

—o—

Gerity-Adrian Mfg. Corp., Adrian, Mich., and Michigan Die Casting Co., Detroit, have merged and have changed their names to Gerity Michigan Die Casting Co.

Company Formed in Dallas To Sell Plane Engine Parts

A distribution center for government stocks of transport-type aircraft engine parts has been organized by a group of Dallas, Tex., business men who have formed Aviation Activities Inc. to sell government-owned new engine parts. The company has leased 150,000 square feet of space in the former North American Aviation plant at Dallas where these stocks will be concentrated. The new company is headed by Robert J. Smith, former vice president of Braniff Airways.

Brown Instrument Produces New Electronic Controls

Hundreds of industrial processes in the chemical, metal, food, petroleum and other fields have been affected favorably by the introduction of a series of new developments in industrial electronic control instruments, according to L. Morton Morley, vice president in charge of sales, Brown Instrument Co., Philadelphia.

The developments include a front-set mercury switch type control for circular chart electronic potentiometers, back-set mercury type auxiliary switch for both circular and strip chart electronic potentiometers, thermocouple and component failure protection for both electronic models, and external chart drive switches.

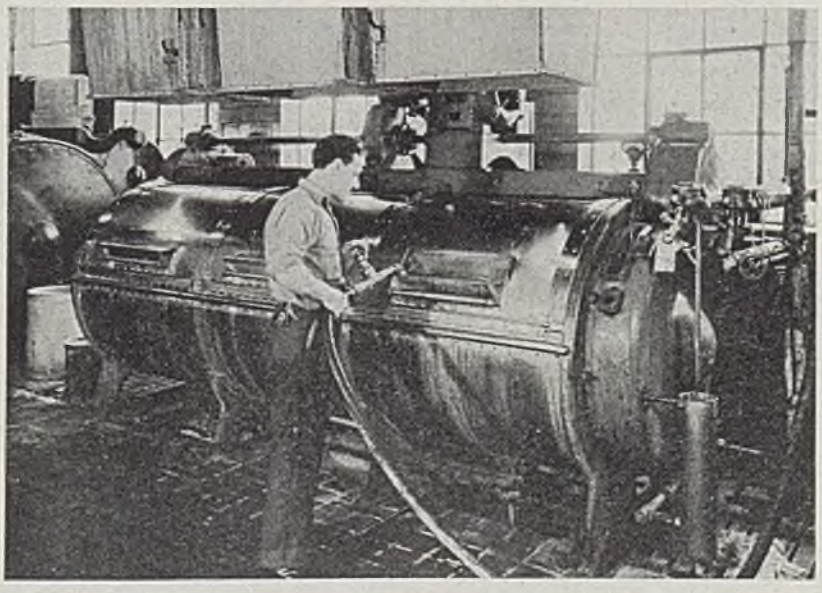
Joshua Hendy Iron Works Buys Sunnyvale Facilities

Joshua Hendy Iron Works has purchased the government-owned facilities at its Sunnyvale, Calif., plant, subject to approval of the War Assets Administration. The United States Maritime Commission will accept the Hendy offer of $565,500 cash for the government-owned assets and the company will assume all of the commission's liabilities at the Sunnyvale plant. Joshua Hendy also will pay a $2,925,000 mortgage held by the commission. Certain installations made at the plant by the Defense Plant Corp. are the subject of further negotiations by that agency.

Facilities at the Hendy plant cost the government some $5,571,172, a final figure reached after a reduction of $34,595 made during the renegotiation of the Hendy contract. The Hendy company built power equipment for merchant vessels, including turbines and gears for which there is a very limited demand.

Edge Moor Iron Acquired By Condenser Service

Control of the Edge Moor Iron Works, Edge Moor, Del., recently was acquired by the Condenser Service & Engineering Corp., Hoboken, N. J. The Edge Moor company is a fabricator of boilers and mechanical equipment while Condenser Service manufactures condensers, heat exchangers and similar equipment. William M. Kennedy, president of Condenser Service, will head Edge Moor Iron, succeeding G. D. Beamish. H.C. Evans, vice president of Condenser Service, will become treasurer. No other changes in personnel are contemplated.



SHINY AFTER 20 YEARS: This stainless steel washer in a Pittsburgh hospital laundry is "almost like new" after 20 years' service. It was one of the first washers to be made of 18-8 Allegheny metal

Acheson Colloids Receives Navy Achievement Award

Award of the United States Navy's Certificate of Achievement has been made to Acheson Colloids Corp., Port Huron, Mich., in recognition of the company's development and production accomplishment in the field of special lubrication.

New Aluminum Semi-Trailer Built by Texas Company

A new semi-trailer, manufactured chiefly of aluminum, will be produced in Dallas, Tex., by Mustang Trailer Co. The trailer will be made on a conveyer-type assembly line, and monthly production is to be 300 units. The chassis and frame are of structural aluminum with a sheet aluminum nose. Axles are of steel, and wheels are equipped with vacuum-controlled hydraulic brakes. The first pilot model, just completed, is for half-ton trucks.

Armco Employees Reject CIO by Large Majority

Employees of the Hamilton, O., plant of American Rolling Mill Co., Middletown, O., recently rejected the CIO as bargaining agent in a National Labor Relations Board election by a majority of 130 votes. Some 466 employees were eligible to vote. This is the second time in two years that the CIO has failed to win the approval of Hamilton Armco employees.

English Firm To Produce Alco Products Equipment

Daniel Adamson & Co. Ltd., Dukinfield, Cheshire, England, will manufacture the complete heat transfer equipment line of Alco Products Division, American Locomotive Co., New York, it was announced last week by Robert B. McColl, president.

The English company will establish a division to produce Alco Products equipment. The American company will do all the engineering and designing.

WAA Licenses Additional Dealers To Sell Surplus Machine Tools

War Assets Administration has licensed 1386 "approved dealers" to negotiate sales of government-owned surplus machine tools and production equipment under the agency-dealer plan for such property.

In addition, another 144 dealer appointments have been made by regional offices, but these approvals have not as yet been forwarded to the WAA Washington headquarters. Besides dealers approved, the WAA field offices had on hand as of March 15 a total of 386 applications in process of screening and approval.

The following have been licensed and are in addition to those listed in previous issues of STEEL (March 18, p. 87; March 11, p. 81; Feb. 25, p. 67; Feb. 4, p. 101):

Alabama

N. Birmingham: Joe H. Brady & Associates Inc., 1918 First Ave.; Mobile: Turner Supply Co., Box 149.

California

Oakland: Slaten Machinery Co., 1011 Cypress St.; Grass Valley: Clinch Mercantile Co., Box 1114; Daly City: Ace Mfg. & Supply Co., 2 Hillside Blvd.

San Francisco: Miller & Bixby, 2037 Baker St.; Russell M. Gilwee, 320 Market St.; Osborne Machinery Co., 398 Fifth St.; DoAll San Francisco Co., 651 Folsom St.; Daniel R. Buckley & Sons, 449 Tenth St.; George M. Philpott Co., 1160 Bryant St.

Colorado

Denver: Borwick-Golstein Co., 704 Equitable Bldg.; Materials & Equipment Co., Empire Bldg.; DoAll Mountain States Co., 2081 Broadway.

Connecticut

New Haven: United Salvaging Co., 511 Orchard St.; East Haven: Abraham Shulman & Co., 37 Coe Ave.; Unionville: LaPointe Plascomold Corp., 37 Mill St.; Meriden: J. Gossman & Son Inc., 45 N. George St.; New Britain: New Britain-Gridley Machine Division, New Britain Machine Co., South St.; Plainville: Ideal Machinery Co.

Delaware

Wilmington: Lester R. Gorman, 222 W. Eighth St.

District of Columbia

Washington: Refco Co., 1619 Montague St. NW; American Marketing Co., 2500 Q St. NW; American Machinery & Supply Co., 2743 McKinley St. NW; M. J. Byrns, 502 Carry Bldg.; Federal Sales Co., 1 Scott Circle; Stephenson, Fitzgerald & Dunlap Inc., 1703 K St. NW; Randall Construction Supply Co., 635 Earle Bldg.; Crosbie Co., 2039 K St. NW.

Florida

Miami: Atlantic Machinery & Equipment Co., 211 NE 59th St.; Miami Beach: Kimmel Sales Corp. Inc., 441 Washington Ave.; Tampa: Tampa Armature Works Inc., 401 S. Morgan St.; Dave Gordon & Co., 1800 Second Ave.

Jacksonville: M. B. Ogden, 2342 Edwards Ave.; Edward P. Wells, 2016 Perry St.; N. L. Abernathy, 2425 Pearl St.

Georgia

Atlanta: John Rogers Co., 500 W. Peachtree St. NW; Carlton-Hennessy & Co., 179 Peters St. SW; Southern Purchasing & Sales Co., 1027 N. Boulevard NE.

Thomson: Knox Corp.

Illinois

Oak Park: J. E. Berkshire, 20 Lake St.

Chicago: A. L. White Machinery Co., 108 N. Jefferson St.; Craftsman Wood Service Co., 2727 S. Mary St.; Tool Engineering Co., 4737 N. Broadway; Dinnen, Glos & Associates Inc., 100 W. Monroe St.; Burton Machinery Co., 801 S. Western Ave.; A. Roy Karr, 6449 N. Fairfield Ave.; Siegman Machinery Co., 28 N. Clinton; D. I. Buchanan & Co., 2749 W. Chicago Ave.; Aircraft Engineering Co., 20 E. Jackson Blvd.; John W. LeDuc & Associates, 1418 Times Bldg., 211 W. Wacker Drive; O'Leary & Flynn, 666 Lake Shore Drive.

Indiana

Auburn: Robert W. Widdicombe, 504 S. Main St.; Muncie: Max Zeigler & Bros., Sixth and Liberty Sts.; Wabash: Wabash Machinery & Tool Works, 592 S. Wabash St.; Portland: Miller Machine Works, 123 Depot St.; Indianapolis: M. Present Co., 607 Security Trust Bldg.; G. A. Richey & Sons, Box 1696.

Iowa

Clinton: Iowa Machine Works, 106 Eighth Ave. S.; Des Moines: Electrical Engineering & Equipment Co., 1201 Walnut St.; Davenport: Harry Alter & Sons, 514 Howell St.

Kansas

Wichita: White Store Machinery & Supply Co., 301 N. St. Francis; Pittsburg: General Machinery & Supply Co., 202 N. Broadway.

Maine

Portland: Portland Welding Supply Co., 984 Forest Ave.

Maryland

Cambridge: James A. Slacum, 109 Academy St.

Baltimore: DoAll Baltimore Co., 138 N. Mount Royal Ave.; Eugene B. Skarie, 707 N. Howard St.; Kemp Machinery Co., 211 President St.; Best Machinery Co., 814 Ridgely St.; Equipment & Supplies Inc., 1444 Wicomico St.

Massachusetts

Springfield: Arthur H. MacBriar, 233 Forest Park Station; Worcester: Reed-Prentice Corp., 677 Cambridge St.; Worcester Industrial Supply Co., 17 Thomas St.; Norton Co., 1 New Bond St.; Foley's Motor Tire Service Inc., 805 Main St.; Melrose: Warren M. Pike, 36 Briggs St.; Quincy: Yule Industries Inc., 681 Artery; East Boston: Boston Machinery & Electric Co., 719 Bennington St.

Boston: Factory & Mill Supply Co. Inc., 176 Federal St.; Colster Co., 44 Farnsworth St.; A. Lee Ellis Co., 140 Federal St.

Michigan

Royal Oak: Jacob L. Durling, 513 E. Lincoln; Edward A. Smith Jr., 1017 N. Altadena; Highland Park: Victor T. Bryant, 334 Eason Ave.; Dearborn: U. S. Surplus Tool Sales Co., 7336 Hartwell Ave.; United Enterprises, 22700 Ford Rd.; Benton Harbor: Industrial Equipment & Supply Co., 211 W. Main St.; Prudenville: International Machinery Co.; Pontiac: Martin J. Moran, 1935 Woodland; Grosse Pointe: Genpareo Engineering Co., 622 Lincoln Rd.; Admiral Machine Co., 1281 Oxford Rd.; Grosse Pointe Farms: Howard E. Cregar, 325 McKinley Rd.; Wyandotte: Zamboanga Distributing Co., 2316 Electric.

Detroit: A. W. Bachman, 5100 Whitfield; Dubois-Webb Co., 2832 E. Grand Blvd.; All-American Tool & Supply Co., 2911 W. Grand Blvd.; James W. Carter Co., 307 Boulevard Bldg.; William H. Gibbs, 8430 LaSalle Blvd.; William N. Patterson, 570 Maccabees Bldg.; James E. Clogher, 1130 Parker Ave.; Terminal Steel & Machinery Corp., 2311 Book Bldg.; John J. Parker, 13625 Dean; General Equipment Co., 4854 Cass Ave.; Power Service Corp. of America, 1042 Buhl Bldg.; South Paw Machine Sales, 18000 St. Marys; Saul S. Grossman, 700 Prentis Ave.; William Newton, 412 New Center Bldg.; Kean L. Cronin, 8430 LaSalle Blvd.; R. B. Hassett Co. Inc., 600 Griswold St.; Detroit Production Service, 403 Ford Bldg.; Efficient Engineering Co., 1040 W. Ford St.; Far Machinery Co., 7878 Van Dyke Place; Charles A. Strelinger Co., 149 E. Larned St.; Bailey Saw & Machinery Co., 14 Smith St.; George G. Gallenberger, 3830 Bristow; Champion Screw Machinery Eng. Co., 2832 E. Grand Blvd.; J. A. Van Nuck, 4610 E. Nevada; H. & E. Box & Processing Co., 3220 Bellevue Ave.; Roy Smith Co., 5257 Trumbull Ave.; Wilford H. Rohlfs, 512 Charlevoix Bldg.; Alco Sales & Engineering Co., 3510 Woodward Ave.; John E. Livingstone Co., 2921 E. Grand Blvd.; Carl M. Merecki, 20315 Bloom; Joseph F. Hoffman & Associates, 1796 W. Grand Blvd.; Ed-Le Equipment Co., 19395 Sherwood; Ronald D. Spicer, 11537 Hamilton Ave.; Michigan Tool Co., 7171 E. McNichols Road; Bayview Production Equipment Co., 535 E. Woodridge St.; Ashley Aircraft & Automotive Supply Co., 11761 Grand River; Robert Lee Knowles, 405 Navahoe; Gerald F. DeSormier, 97 W. Savannah Ave.; Progo Machinery Sales, 8770 Linwood Ave.; Phillips & Marchesani, 5015 Townsend Ave.; Hugh M. Waterston, 28 E. Larned St.; W. K. Vaughan, 905 Merton Road; H. Neil Palmer Co., 1318½ S. Washington Ave.

Missouri

Kansas City: Fred A. Ellfeldt Co., 1648 Baltimore Ave.; Frank P. Slater, 225 W. Eighth St.

New Mexico

Albuquerque: Kohlhaas Tank & Equipment Co., 1624 N. First St.

New York

Jamaica: Jesse H. Rosenbaum, 145 Jamaica Ave.; Queens: Liberty Products Co., 107 120th St.; White Plains: Westchester Mfg. & Sales Corp., 415 Grasslands Road; Yonkers: Dreisbach Engineering Corp., 83 Warburton Ave.; Buffalo: Don F. Johnson & Co. Inc., 50 Pearl St.; Don Rosen, 392 Voorhees Ave.; Watervliet: Mill Supply Co., 500 Second St.; Rochester: W. W. Wentz, 121 Powers Hotel; Mahlon H. Gregg, 336 Berkeley St.

Brooklyn: Hefner Electric Co. Inc., 6 Lafayette Ave.; A. & A. Millwright Machinery Exchange, 1267 Flushing Ave.; Aaron Katz, 2011 61st St.; James F. Matthews, 307 Washington St.; Morton Machinery Co., 45 Broadway.

New York: McCabe & Sheeran Mchy. Corp., 712 Third Ave.; Long Island Equipment Co. Inc., 80 Broad St.; Earle Display Fixture Co., 229 W. 36th St.; Kenig Electric & Machinery Co., 55 W. 42nd St.; Lanigan & Cross Inc., 432 W. Broadway; Machinery Sales Co., 1265 Broadway; Henry Silverman, 274 Madison Ave.; American Machinery Co., 22 Howard St.; Joseph Weisner & Co., 122 E. 42nd St.; Herman Machine & Tool Co., 712 Third Ave.; Meyer & Brown Corp., 347 Madison Ave.; J. G. White Engineering Corp., 80 Broad St.; Henri Benedictus, 55 W. 42nd St.; Glenn D. Loucks, 170 Broadway; Edward Franklin Schill, 39 Courtlandt St.; Triplex Machine Tool Corp., 125 Barclay St.; Breg Bros., 216 Lafayette St.; Dunn Machinery Co., 158 Grand St.; Morris E. Lipsett, 80 Wall St.; Minerva Machinery Co., 401 Broadway; International Materials Co., 150 Nassau St.; William R. Magrill, 74 W. 38th St.; Tri-Machine & Tool Co. Inc., 248 Lafayette St.; Keystone Specialty Co. Inc., 6 Maiden Lane.

North Carolina

Gastonia: Gastonia Mill Supply Co., 613 E. Franklin Ave.; Elizabeth City: Miles Jennings; Greenville: Carolina Supply Co.; Charlotte: Vaughan & Redmond, Box 383.

Ohio

Lakewood: Charles L. Hills, 1229 Hird Ave.

Columbus: John Gordon Lambert, 73 Brighton Rd.; F. E. Worch Machinery Co., 2049 Westover Rd.; Warren: McLain & Sherran, 1485 Atlantic Ave. NE; Toledo: L. J. Hoy Machinery, 122 Nebraska Ave.; Dayton: Breen & Ahlers Sales Co., 927 Brookview Ave.; Norwalk: Norwalk Chemical Co., 191 Woodlawn Ave.

Cleveland: Cleveland Planer, 3148 Superior Ave.; G. W. Leers, 1307 St. Clair Ave.; Louis E. Allo, 60 Climax Bldg.; George Whalley Co., 5005 Euclid Ave.; Lytle Engineering Co., 4500 Euclid Ave.; Brandes Machinery Co., 6408 Euclid Ave.; Wheeling Engineering & Equipment Corp., 5307 Grant Ave.; C. P. Lieblein, 1437 Lincoln Ave.; Sherrod S. MacIntosh, 3303 Superior Ave.; Cyril Bath Co., E. 70th & Machinery Sts.

Brazilian Steel Plant Starts Production

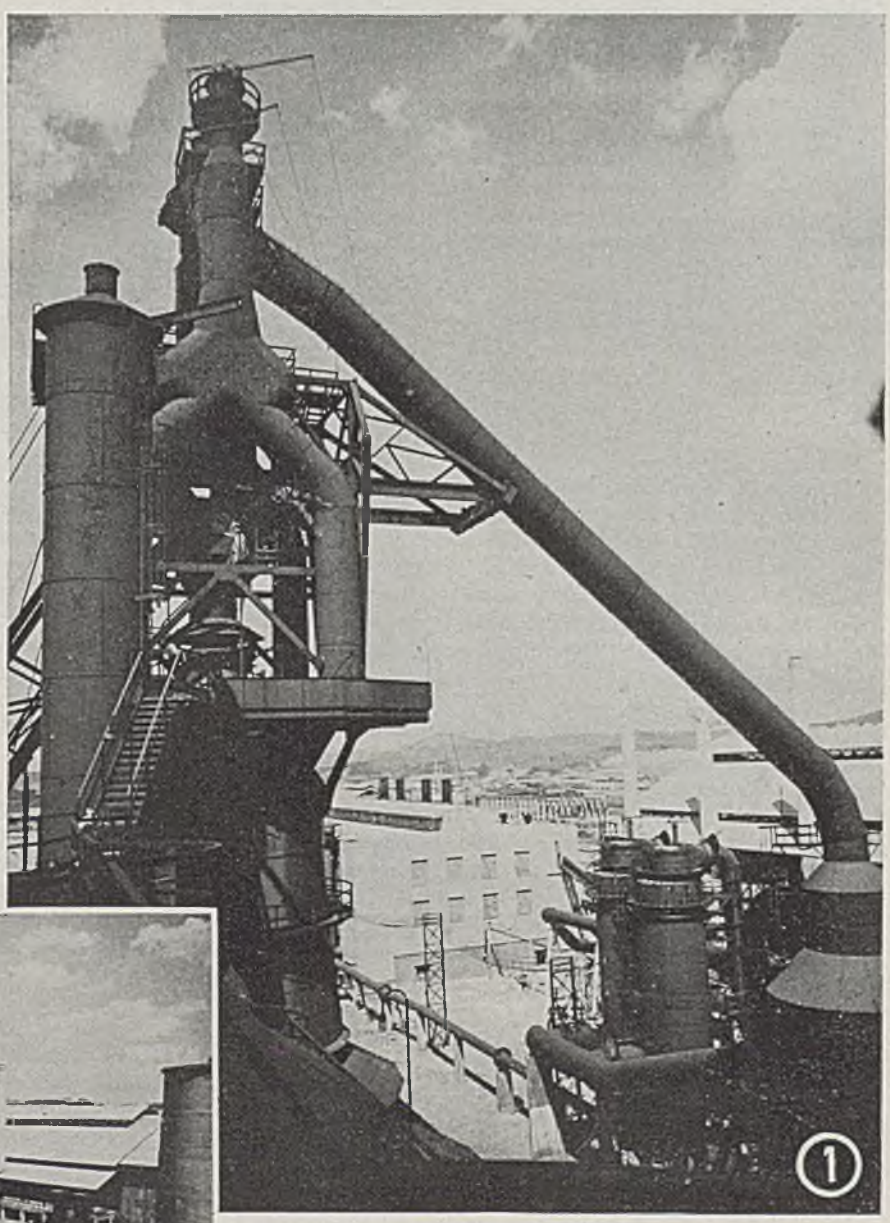
VOLTA REDONDA, largest steel plant in South America and symbol of Brazil's transition from an agrarian to an industrial economy, is starting production.

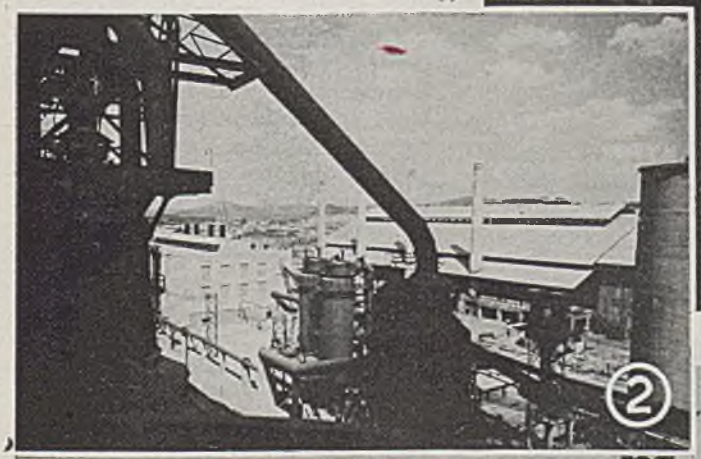
A coke oven battery consisting of 55 ovens, a blast furnace, three open-hearth furnaces and a blooming mill are completely finished.

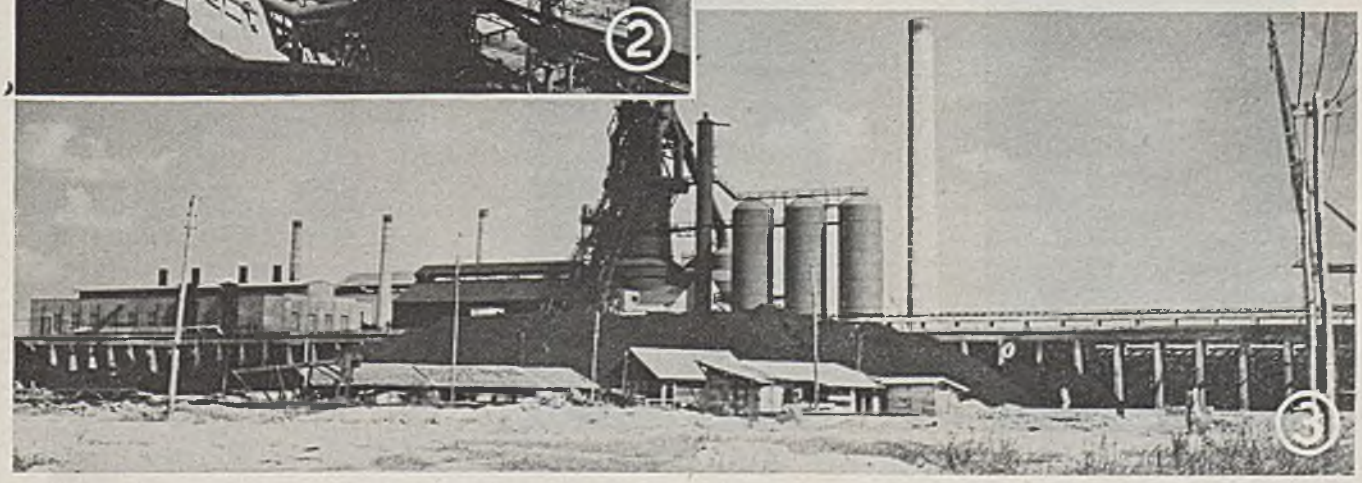
Steel output of Volta Redonda in 1946 is expected to reach 300,000 tons, although eventual capacity will be in excess of 1,000,000 tons annually.

Most of the equipment and engineering "know-how" for the Brazilian plant were purchased in the United States. This country also aided in financing the $100 million undertaking. Started in 1940, the plant's construction was handicapped by the necessity of shipping equipment through submarine-infested waters and also by the shortage of equipment brought on by the war.

Fig. 1 shows the uptake of the blast furnace top for escaping gas and the downcomer running from the top to the dust catcher. Fig. 2 shows open-hearth furnaces in the background. Fig. 3 is a general view of the plant with combined power house and boiler house at left, open hearths in center and blast furnace and gas works at right. Press Association photos.







MEN of industry

Gen. Brehon B. Somervell, commander of the Army Service Forces, has been elected president, Koppers Co. Inc., Pittsburgh, and will assume his duties about May 1. **J. P. Williams Jr.,** who has been serving as chairman and president, will continue as chairman.

—o—

R. A. Williams, vice president in charge of sales since December, 1943, American Car & Foundry Co., New York, has been elected a director to succeed **W. L. Stancliffe,** resigned.

—o—

Clarence A. Norris has been appointed chief chemist, Stamping Division, Eaton Mfg. Co., Cleveland. Mr. Norris will be in charge of the plating department. Before joining the Eaton company, Mr. Norris was connected with the development laboratory in Detroit of the United States Rubber Co.

—o—

C. L. Miller has been appointed purchasing agent, American Welding & Mfg. Co., Warren, O.

—o—

Ralph H. Lightner has been named general sales manager, Titan Metal Mfg. Co., Bellefonte, Pa. He succeeds **J. B. Craig,** vice president, who has been appointed controller. Mr. Lightner joined the organization in January, 1944.

—o—

Nels G. Johnson, with the Simonds Worden White Co., Dayton, O., since 1931, serving as assistant sales manager, has been promoted to general sales manager. **John H. Allison** has been promoted from salesman to sales manager of the company's Grinding Wheel Division. **Howard D. Blackburn** continues as the company's advertising manager, and will also serve as sales manager of the Machine-Knife Division.

—o—

C. Rider Brandau, associated with the sales department of Lukens Steel Co., Coatesville, Pa., since 1924, has been named manager of sales of the Lukens company and its subsidiaries, By-Products Steel Corp., and Lukenweld Inc., for the Baltimore district. Mr. Brandau succeeds **Adolph Rider Jr.,** resigned.

—o—

Lt. Col. S. C. Massari, now a member of the national office staff, American Foundrymen's Association, Chicago, has been awarded the Legion of Merit for outstanding service during the war while associated with the Chicago Ordnance District. Prior to entering service in 1942, Lt. Col. Massari was metallurgist, Association of Manufacturers of Chilled Car Wheels, Chicago.

—o—

O. J. Richardson has been appointed industrial manager at Detroit and **George W. Brown,** industrial manager at Cincinnati for the Brown Instrument Co., Philadelphia, a division of Minneapolis-Honeywell Regulator Co.

—o—

Robert N. Harwood has resigned as assistant manager of the Cleveland plant, Edgar T. Ward's Sons Co., to become general manager, Ohio Stainless & Commercial Steel Co., Cleveland. **Paul Keller** is president of Ohio Stainless & Commercial Steel Co., which has announced the establishment of a new warehouse at 2966 E. 55th St., Cleveland.

—o—

Theodore G. Hughes has been appointed factory manager, Norma-Hoffmann Bearings Corp., Stamford, Conn. He succeeds **P. Butchard** who has been filling that position temporarily. Mr. Hughes formerly was superintendent at the Gwynedd, Pa., plant, SKF Industries Inc.

—o—

William C. Foster, vice president, Pressed & Welded Steel Products Co., Long Island City, N. Y., who served during the war as director, Purchases Division, and as assistant director of materiel, Army Service Forces, recently was presented the medal for merit, the government's highest civilian award.

—o—

R. J. Wean Jr. has returned from service with the Navy to his position as vice president, Wean Engineering Co. Inc., Warren, O. Mr. Wean also has been elected assistant to the president, Broden Construction Co., Cleveland, subsidiary of the Wean company. **I. W. Spraitzar** has returned from service with the Army to resume his duties as sales engineer for Wean Engineering, and **N. J. Ranney,** formerly assistant to the chief engineer of the Wean company, has been appointed chief engineer of the Broden Construction Co., following service with the Navy.

—o—

A. E. Grapp, founder of the Despatch Oven Co., Minneapolis, 44 years ago, recently was elected chairman of the board. Since the company was incorporated in 1913, Mr. Grapp has served as president and treasurer. **H. L. Grapp** has been elected president and general manager. **F. H. Faber,** who started as a stenographer in 1928, has been elected executive vice president and general sales manager. Formerly secretary, **G. M. Lund** has been named vice president and secretary. **C. P. Doherty,** who has served as factory superintendent, now is factory manager, and **Lloyd Johnson** succeeds Mr. Doherty as superintendent.

—o—

H. A. Berg has been re-elected president, Woodward Iron Co., Birmingham, and **A. H. Woodward** as chairman of the board.

—o—

John F. Seifried, who joined the company in 1920, has been appointed Chicago district manager, Ceco Steel Products Corp., Chicago. **Edson O. Walker,** vice president, continues general supervision of the Chicago district, including

NELS G. JOHNSON

ROBERT N. HARWOOD

PROBLEM: Manufacturer of hydraulic pressure system pumps for 3000-psi service sought a hydraulic oil that (1) would resist oxidation at the 135° F. pump-operating temperature; (2) could be safely used for run-in test purposes; and (3) would have inherent rust-preventive qualities so it could be used as a "shipping" oil.

SOLUTION: When the Shell Lubrication Engineer studied the problem, he recommended a Shell Tellus Oil. The specifications of this oil satisfied the pump maker on points (1) and (2), but he was skeptical of the rust-preventive qualities. A "storage" test was made, and, when Tellus-filled pumps were inspected, no sign of rusting was found. Convinced, the pump maker now uses Shell Tellus Oil exclusively.

CONCLUSION: It pays to consult the Shell Lubrication Engineer, regardless of the nature or size of your lubricating problem. Write for informative literature on Shell Hydraulic Oils. Shell Oil Company, Incorporated, 50 West 50th Street, New York 20, New York; or 100 Bush Street, San Francisco 6, California.

SHELL HYDRAULIC OILS

SHELL

H. PARKER SHARP

DR. GEORGE V. SLOTTMAN

ROBERT S. GREEN

the Milwaukee, Detroit and Indianapolis offices.

—o—

H. Parker Sharp has been elected a director of Jones & Laughlin Steel Corp., Pittsburgh, succeeding the late **George M. Laughlin Jr.** Mr. Sharp is also general counsel of the corporation, joining the organization in June, 1942.

—o—

Frank Weir has been appointed district sales manager of the St. Louis district office, and **Karl W. Sieling,** district sales manager, Houston, Tex., district office, Harbison-Walker Refractories Co., Pittsburgh.

—o—

James Gerity Jr., chairman; **Louis W. Blauman,** president; **E. Martin Tallberg, William N. Schnell** and **Charles Shanks,** vice presidents; **James T. Bolan,** secretary; and **M. K. Layer,** treasurer, are the officers of Gerity-Michigan Die Casting Co., which company was formed recently by the merger of Michigan Die Casting Co., Detroit, and Gerity-Adrian Mfg. Corp., Adrian, Mich. Offices and plants are being maintained in both Detroit and Adrian.

—o—

Hugh Gallaher has been elected vice president and director, Penn Metal Co. Inc., Boston, Mass., and will be in charge of eastern sales, and director of foreign sales. Mr. Gallaher represented the company for many years in Europe, and much of its war business was under his direction.

—o—

W. K. Lomason has been elected vice president and treasurer, Douglas & Lomason Co., Detroit. **T. S. Hough** has been named vice president. Officers re-elected are: **H. A. Lomason,** president; **W. M. Chapman,** secretary; and **C. J. Beck,** assistant secretary.

—o—

Arthur E. DesNoyers has been named director of procurement, Aireon Mfg. Corp., Kansas City, Kans. **Russell J. Cole** continues as chief purchasing agent. Mr. DesNoyers, who served as a major, was released from active duty with the Army Air Forces in January.

—o—

Dr. George V. Slottman, with the Air Reduction Co., New York, for 10 years, recently was named to head the Technical Sales Division, which replaced the company's applied engineering department. Dr. Slottman holds degrees from Massachusetts Institute of Technology and the University of Berlin, and is a former professor of chemical engineering at the Massachusetts institute. **S. D. Baumer** and **E. V. David,** who have served as assistant managers of the applied engineering department, now are assistant managers to Dr. Slottman.

—o—

C. R. Sare, formerly associated with American Steel & Wire Co., Cleveland, as products supervisor, has become vice president and general manager, Morrison Engineering Corp., Cleveland.

—o—

J. A. Wagner, formerly vice president of engineering and sales, Advance Tool & Die Co., Detroit, was elected vice president and manager, Sommer & Adams Co., Cleveland, subsidiary of the Federal Machine & Welder Co. For a portion of the war period, he was production supervisor with Sommer & Adams.

—o—

Gordon Spice, until recently supervisor of estimating and routing at the Dodge Chicago plant, Chrysler Corp., has been named executive secretary, Internal Combustion Engine Institute which has been reactivated after being disbanded temporarily during the war. The institute is composed of commercial engine builders of gasoline and diesel engines, and its offices have been established at 201 North Wells Bldg., Chicago. **H. A. Todd,** president and general manager, Wisconsin Motor Corp., Milwaukee, is president; **J. E. DeLong,** president and general manager, Waukesha Motor Co., Waukesha, Wis., vice president; **Richard Meloy,** assistant to the president, Novo Engine Co., Lansing, Mich., secretary; and **H. W. Smith,** manager, engine sales, Caterpillar Tractor Co., Peoria, Ill., treasurer. These officers together with **E. V. Oehler,** vice president in charge of sales, Briggs & Stratton Corp., Milwaukee; **Waine Thomas,** executive engineer, Continental Motors Corp., Muskegon, Mich.; and **William Parrish,** assistant manager of industrial sales, International Harvester Co., Chicago, comprise the executive committee.

—o—

Lt. Comdr. Robert S. Green, now on terminal leave following service with the Navy, on May 1 will become president, A. P. Green Fire Brick Co., Mexico, Mo., succeeding his father, **Allen P. Green,** founder of the company, who will become chairman of the board. In that position, the elder Mr. Green continues as chief executive of the company. An executive committee of the board of directors has been formed and includes: **H. B. Plunkett, Lester J. Miller, A. D. Bond, Walter G. Staley** and **Allen P. Green Jr.** Members of the management committee in charge of operations are: **J. Harrison Brown, D. H. Kreutzer, Neal S. Wood** and **Robert S. Green,** chairman.

—o—

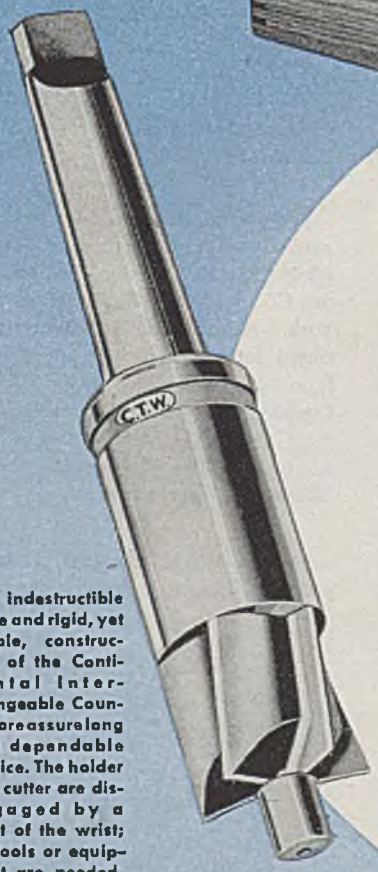
Paul Abel, formerly assistant chief engineer, Yoder Co., Cleveland, has been appointed chief engineer. He succeeds **G. E. Kentis,** resigned.

—o—

Lee Coulter and **William R. Mills** have rejoined the Allied Products Corp., Detroit, after service with the Army Air Forces for the past 4 years. Mr. Coulter will represent the company in

Continental COUNTERBORE SETS

A Size For Every Purpose



The indestructible drive and rigid, yet simple, construction of the Continental Interchangeable Counterbore assure long and dependable service. The holder and cutter are disengaged by a twist of the wrist; no tools or equipment are needed, no matter how severe the operation has been.

Continental Interchangeable Counterbores are now available in a choice of three sets, each providing a wide variety of useful, dependable tools. In complete yet compact form, you will find a selection designed to fill the needs of the large or small toolroom. Set No. 1 (illustrated), for the small shop, includes cutters up to 1 1/16" diameter, with two holders. Set No. 2, also with two holders, has cutters up to 1 1/2" diameter. Set No. 3 provides cutters up to 2" diameter and has four holders. Whichever you choose, you will be sure to get fine, precision-made cutting tools.

CONTINENTAL TOOL WORKS

Division of Ex-Cell-O Corporation

DETROIT 6, MICHIGAN

CONTINENTAL TOOL WORKS
CTW
EX-CELL-O CORPORATION

Continental
CUTTING TOOLS

- Boring Bars and Tools
- Broaches
  Broach Pullers
  Broaching Fixtures
- Core Drills
- Counterbores and Countersinks
- CTW Drive Holders
- Counterbores (Tool Room Sets)
- Counterbore Pilots
- Inserted Blade Cutters
- Carbide Tipped Cutters
- Form Relieved Cutters
- Milling Cutters
- Thread Milling Cutters
- End Mills
- Side Mills
- High Speed Steel Reamers
- Carbide Tipped Reamers
- Shell Reamers
- Inverted Spotfacers
- High Speed Steel Tool Bits
- Carbide Tipped Tool Bits
- Circular Form Tools
- Cut-off Tools
- Flat Form Tools
- Dovetail Form Tools

46—45

the sale of its hardened and precision ground parts and Mr. Mills will sell hex head cap screws and special cold forged parts.

—o—

Malcolm Wolcott, recently discharged from the Army, has joined the sales staff, Formica Insulation Co., Cincinnati, and will work in the Rochester, N. Y., territory under the direction of his father, **E. M. Wolcott**, who has been the company's representative in that area for the past 30 years.

—o—

Joseph F. Libsch has been named consulting metallurgist for the Lepel High Frequency Laboratories Inc., New York, manufacturer of induction heating equipment. Dr. Libsch is a member of the faculty of the metallurgical engineering department, Lehigh University, Bethlehem, Pa.

—o—

George M. Douma has been appointed district sales manager for 11 western states, National Enameling & Stamping Co., Milwaukee, and will maintain offices in San Francisco.

—o—

Oscar W. Nelson has been appointed vice president and general manager. Peoria, Ill., plant, R. G. LeTourneau Inc.

—o—

Gordon Rieley, vice president, Bryant Heater Co., Cleveland, has been granted a leave of absence to serve as director of the newly established Building & Construction Price Division, Office of Price Administration.

—o—

Charles Gross has joined Aeronautical Products Inc., Washington Court House, O., manufacturer of industrial parts and assemblies, as vice president in charge of sales. Mr. Gross has served as general manager, Auto Railer Division, Evans Products Co., Detroit, and more recently was general sales and advertising manager, Murchey Machine & Tool Co., Detroit. **Edw. Jonke** has been appointed assistant to the president, **Charles C. Layman.**

—o—

C. W. Link has been appointed sales manager, Coldwell-Philadelphia Lawn Mower Division, Newburgh, N. Y., Portable Products Corp. Mr. Link, formerly was president, Link & Hemrick Inc., manufacturer of storage batteries, and until recently was divisional and export sales manager, National Battery Co.

—o—

Dunbar L. Shanklin has been named to the newly-created post of assistant director of the research laboratories, in charge of container sealing research, Dewey & Almy Chemical Co., Cambridge, Mass. **George W. Blackwood** succeeds Mr. Shanklin as manager of the Container Division.

—o—

J. B. Dannenbaum, Houston, Tex., has been appointed agent by S. P. Kinney Engineers Inc., Pittsburgh, to handle the Brassert automatic, self-cleaning water strainer, in the southern Texas district.

—o—

Hugo A. Puls has been appointed director of purchases and traffic. Ingalls Iron Works Co. and Ingalls Shipbuilding Corp., with headquarters at Birmingham.

—o—

B. D. Williams has joined James M. Lockhart & Associates, Chicago, management engineers, and will serve as district sales manager for the Ohio and western Pennsylvania district.

—o—

S. Inglis Leslie, president, Leslie Co., Lyndhurst, N. J., since 1926, has been elected chairman of the board and **John S. Leslie**, vice president and general manager since 1943, has been elected president. **J. M. Naab** was re-elected vice president and treasurer. The new board chairman joined the Leslie company in 1900 and was elected secretary and treasurer in 1905. John S. Leslie, a graduate of Cornell University and Babson Institute in Business Administration, joined the firm in 1936 and in 1940 was elected vice president of the company.

—o—

William M. Hillborn, formerly mail order operations manager, Sears, Roebuck & Co., Chicago, has been appointed executive vice president and director, Cribben & Sexton Co., Chicago, to succeed **F. J. Hoenigmann**, resigned.

—o—

Lloyd F. Loftus, who joined the engineering staff of National Tube Co. in January, has been transferred from the Pittsburgh district to Lorain, O., as assistant to **Clark Wales**, chief project engineer of the extensive expansion program now under way there. Mr. Loftus formerly was associated with Continental Foundry & Machine Co., Pittsburgh, as designer.

—o—

W. P. Snyder III has been elected vice president, Shenango-Penn Mold Co., Pittsburgh.

—o—

Charles E. Hanson has been named eastern seabord representative for the Plastic Metals Division, National Radiator Co., and will have offices in New York. Mr. Hanson formerly was associated for 11 years with the Metals Refining Division, Glidden Co. **J. Eugene Lindsay** has rejoined the research department of Plastic Metals after more than 4 years' active duty with the Army Chemical Warfare Service.

—o—

Comdr. W. H. Spowers, USNR, who recently was cited by the Secretary of

CHARLES GROSS

S. INGLIS LESLIE

COMDR. W. H. SPOWERS

OTTO F. SEIDENBECKER

Who has been elected president, Stefco Steel Co., Michigan City, Ind., and noted in STEEL, March 25 issue, p. 88.

the Navy for outstanding performance while serving as head of the Quality Control Conservation and Operational Analysis Section, Bureau of Ships, from August, 1941, to September, 1945, is on protracted leave after very active service. Commander Spowers, who is a consulting engineer specializing in galvanizing, maintains an office at 551 Fifth Ave., New York City.

—o—

Earl R. Pierce, formerly a director and general superintendent, Iron and Steel Division, National Roll & Foundry Co., Avonmore, Pa., has become associated with **Peter Soffel**, president, Pittsburgh Metals Purifying Co., Pittsburgh, in the development and marketing of a new exothermically reactive material for use in the casting of metals, known as "thermotomic."

—o—

R. H. Porterfield has been appointed manager of a new branch office of the Allis-Chalmers Mfg. Co., Milwaukee, in the New England district, located in Providence, R. I. **R. E. Scudder**, who joined Allis-Chalmers in August, 1945, upon release from the Navy, has been assigned to the Providence branch as a salesman.

—o—

Walter L. Longnecker has been appointed division superintendent of rod mills in the Cuyahoga works, American Steel & Wire Co., Cleveland. Since June, 1945, Mr. Longnecker has been serving as division metallurgist, rod mills, with offices in Cleveland.

—o—

E. S. Goodwin has been named purchasing agent for the new Buffalo plant of the Westinghouse Electric Corp., to which the Motor Division is being transferred from East Pittsburgh.

—o—

William E. Thomas has been appointed division sales manager in charge of valve sales in the southeastern states, Homestead Valve Mfg. Co., Coraopolis, Pa. Mr. Thomas, formerly division manager in that section for the Chicago Metal Hose Co., will make his headquarters in Atlanta.

CLINTON E. STRYKER

Newly elected president and general manager, Adel Precision Products Corp., Burbank, Calif., noted in STEEL, March 25 issue, p. 84.

—o—

George T. Walne, who joined the General Box Co., 19 years ago, has been named manager of that company's central district sales territory.

OBITUARIES . . .

Andrew B. Rote, 74, founder and president, A. B. Rote & Co., Lancaster, Pa., manufacturer of structural steel, died recently in that city. Mr. Rote founded his business when he was 20 years of age.

—o—

Stanley H. McKee, a consulting engineer, died at his home in Youngstown recently. For the past 8 years Mr. McKee has been associated with the Youngstown Welding & Engineering Co. Mr. McKee at one time was chief engineer, Republic Steel Corp.

—o—

Gordon G. Nickle, supervisor of marine transportation, Republic Steel Corp., Cleveland, died recently at his home in that city.

—o—

Walter Everett Stevenson, 78, who retired in 1925 after serving 34 years as a salesman for the Westinghouse Electric Corp., Pittsburgh, died March 18 in New Canaan, Conn.

—o—

Maurice Falk, 79, Pittsburgh industrialist and philanthropist, died March 18 in Miami Beach, Fla. Mr. Falk in 1893 established the Duquesne Reduction Co., and later organized the Crown Chemical Co., and Federated Metals Corp. He was a director of the National Steel Corp., and the Weirton Steel Co. Mr. Falk established the $10 million Maurice and Laura Falk Foundation in December, 1929.

—o—

Vice-Admiral H. L. Vickery, 53, who recently resigned as vice chairman of the United States Maritime Commission, died March 21 at Palm Springs, Calif. Credit has been accorded him for the design of the commission's standard type cargo and passenger vessels.

—o—

Donn E. Grone, 32, structural research engineer, Lockheed Aircraft Co., Burbank, Calif., died March 17 at his home in Los Angeles.

—o—

Victor M. Witmer, 84, president, Milwaukee Structural Steel Co., Milwaukee, died March 23 in that city.

—o—

Frederick Post Jr., 52, president, Frederick Post Co., Chicago, founded here and in Germany by his father more than 50 years ago, died March 21 in Rochester, Minn.

—o—

G. Chauncey Smith, 53, a sales engineer associated with the Copperweld Steel Co., Glassport, Pa., died at his home in Cleveland March 24.

—o—

Charles H. Bromley, for 40 years sales manager, United States Coal Co., Cleveland, died March 24 in that city. Mr. Bromley retired in 1943. He was instrumental in the founding of the National Coal Credit Corp., Cincinnati, of which he was elected president.

—o—

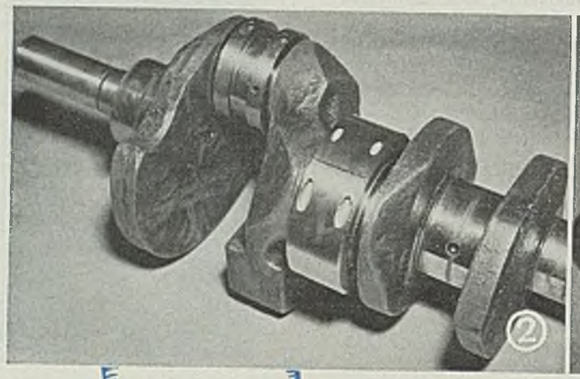
Abraham Dubrinsky, founder, United Metals Refining Co., Detroit, died March 25.

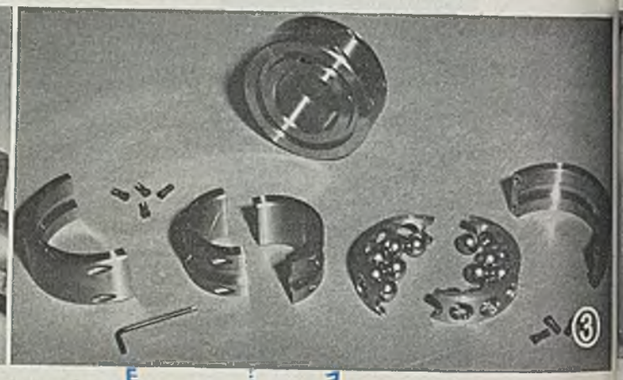
—o—

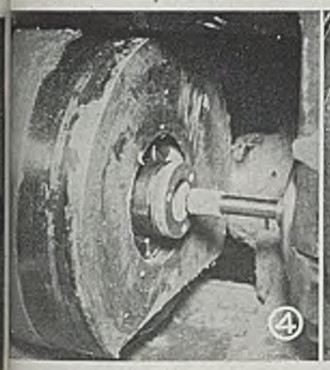
Karl E. Barton, 58, manager of the mechanical goods department, Goodyear Tire & Rubber Export Co., Akron, died March 21.

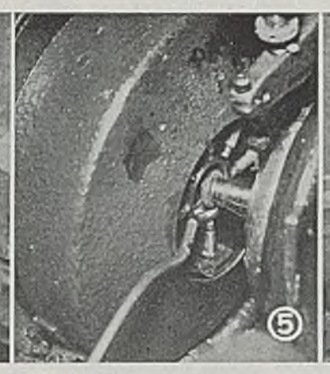
—o—

N. C. Hilton, executive manager of the abrasive wheel, diamond wheel and bowling ball departments, Raybestos-Manhattan Inc., Manhattan Rubber Division, Passaic, N. J., died recently in Glen Ridge, N. J.









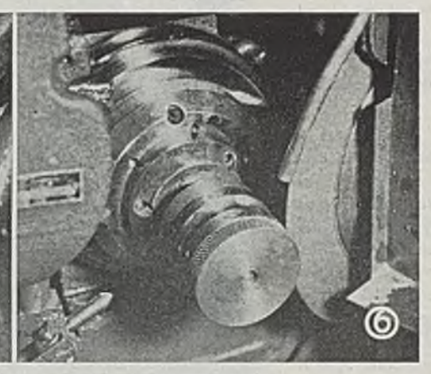


Fig. 1—Two halves of outer race, together with cage and balls, are easily assembled around inner race, previously placed in position on shaft or bearing

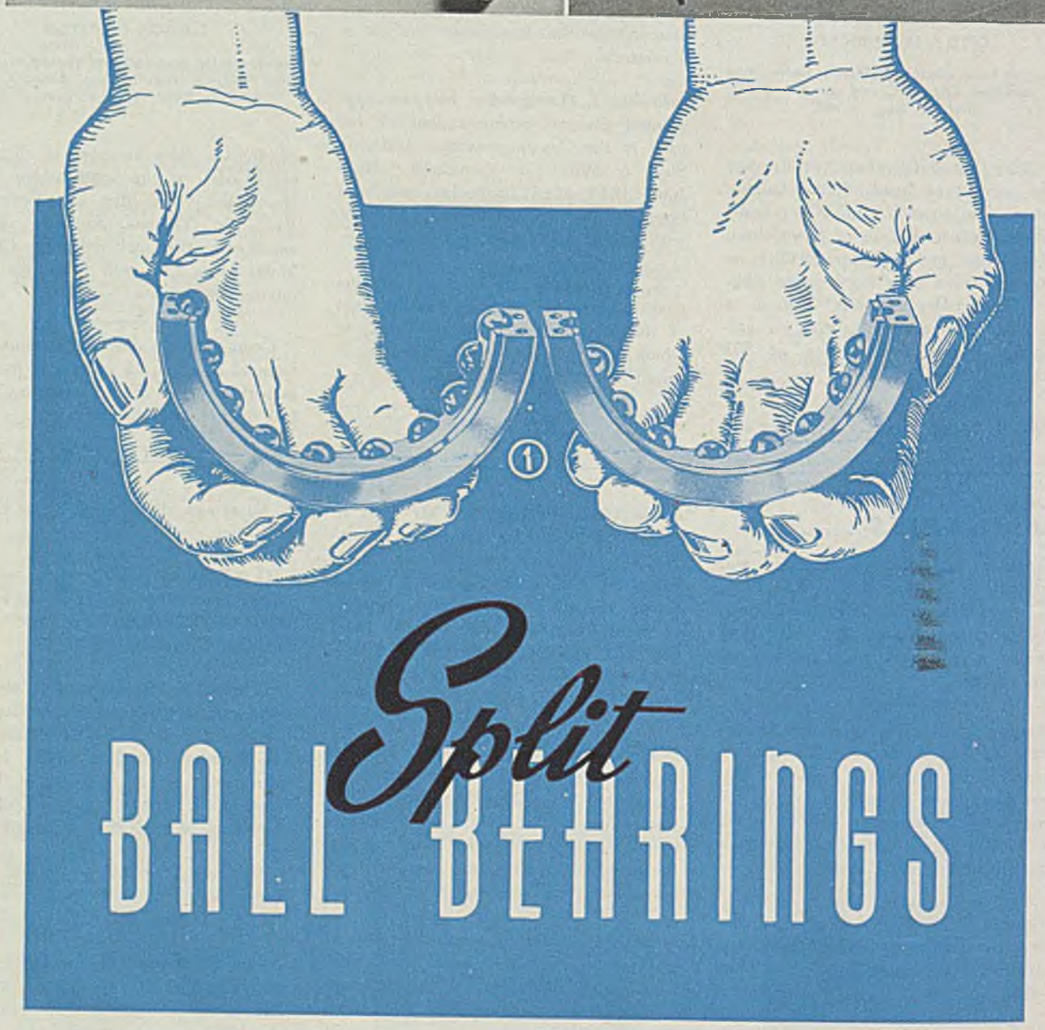
Fig. 2—Crankshaft showing split bearing mounted in "impossible" location

Fig. 3—Component parts and complete assembly of split ball bearing

Fig. 4—Bore grinding races on a Bryant grinder

Fig. 5—Grinding track of outer race on Landis No. 2 internal grinder with oscillating wheelhead

Fig. 6—A Van Norman No. 639 grinds track of inner race. Work holder oscillates while wheelhead remains stationary. Photos and data from Norton Co., Worcester, Mass.



Development of divisible-race of split bearing fills "vacancy" in anti-friction field. Makes for simplicity of replacement in units where down time is serious factor

TODAY, anti-friction bearings are essential for the operation of most all types of machinery, from the lowly wheelbarrow to the modern high-powered and precision-built aircraft engine. Gaining such advantages as greater longevity of operation without costly replacement, closer precision and power economy made worthwhile the high cost which attended the bearing's evolution and which at first limited its use to only a few of the very critical points on the best machines.

However, the expected success of this achievement was not immediately acquired, but has developed steadily through the years. Use of the conventional anti-friction bearing naturally was somewhat restricted by the physical shape of many parts such as crankshafts and camshafts. Full benefits could not be realized when these bearings were applied only at the ends, while other equally important bearings through the central parts continued to operate with the friction type.

This "vacancy" in the field of anti-friction ball and roller bearings of the solid type has been met by the development of the divisible-race or split bearing. (See Fig. 1). Production of these bearings is now in progress at Split Ballbearing Corp., Lebanon, N. H.

Applications: In addition to the feasibility of installations in so-called "impossible" locations, perhaps an equally if not more valuable feature of the split ball bearings is the simplicity of replacement in units where *down* time is a serious factor. Use on a crankshaft, as in Fig. 2, falls in this category.

As may readily be seen, a solid race anti-friction bearing on assembled mechanisms such as gear clusters, accessory drives, and shaft flanges can be installed only during assembly. If a breakdown occurs, a replacement on such mechanisms means the complete disassembly of the entire unit and, obviously, in integral mechanisms of the same variety, the intermediate locations previously could not be adapted to ball bearings in any case. Line shafts and drive shaft must be dismantled completely in order to replace one single bearing unit. Results of such maintenance means *down* time and production losses.

Manufacture

In the manufacture of these bearings the races are actually fractured without the loss of any metal. The resulting uneven surfaces show under microscopic examination a continuous series of minute saw teeth, hills and valleys, or indentations which positively match up and serve as an infinite number of tiny locating dowels.

From the moment of fracture, the mating halves—no one of which will ever match or fit the half of any other bearing race—must be kept constantly together. When the halves of a fractured bearing are fitted together and drawn into position by the holding screws (See Fig. 3), a perfect circular alignment is again formed as the irregular surfaces lock together without even a hair crack visible to the naked eye.

Assembly: An interesting fact also is that preassembly of each half of the bearing is done separately, and then the halves are closed together. Because of this method of assembly, one or more ball or roller than is used in the solid type of race is added, thus providing additional load-carrying capacity.

Precision grinding is a very important factor in the manufacturing process. The procedure followed is roughly the same as that for the solid type, but with important differences.

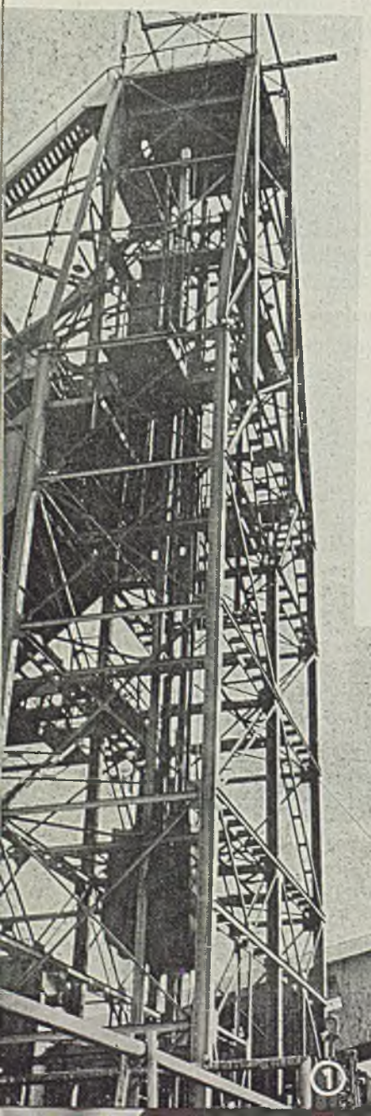
After being rough turned and scored for subsequent cleavage, the screw holes for assembly are drilled, tapped

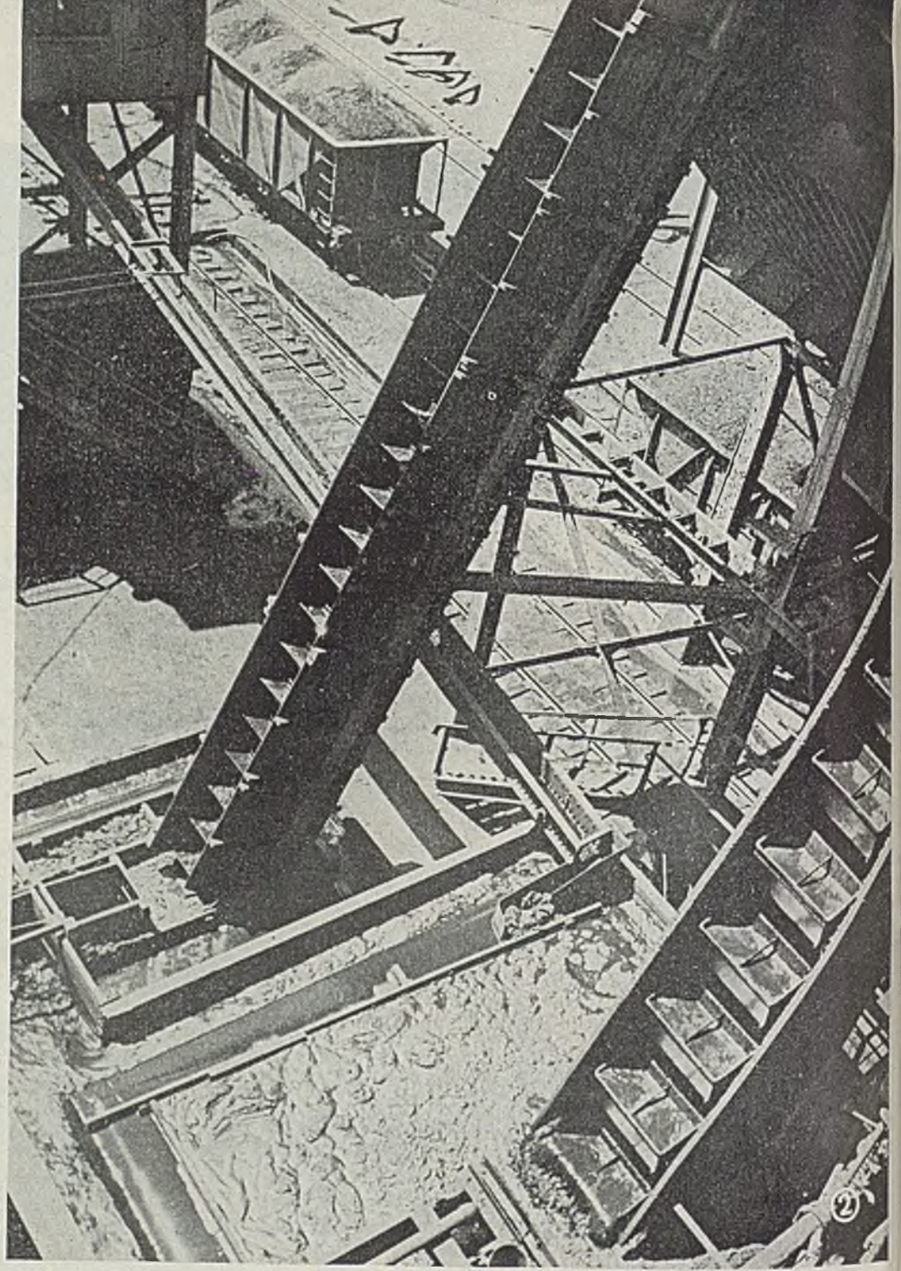
(*Please turn to Page* 178)

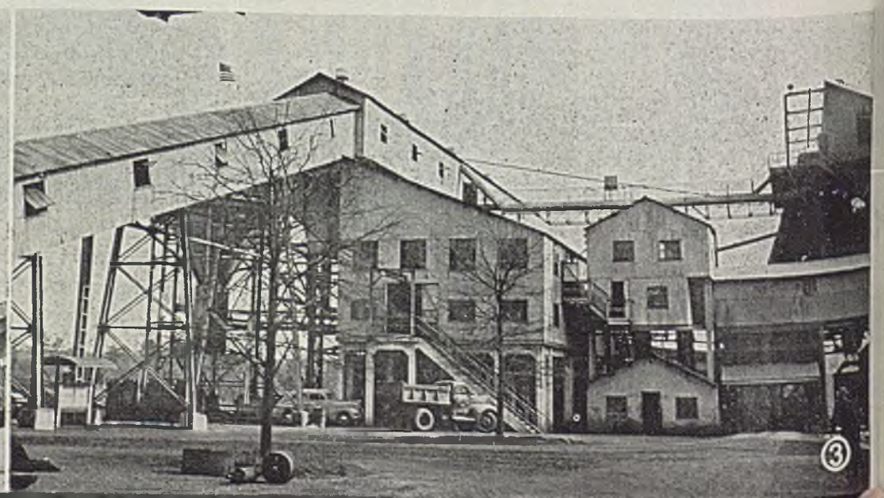
Fig. 1—Hamilton shaft head frame where coal is hauled from mine to surface and conveyed to crusher house

Fig. 2—Washed coal pits and elevators. Pit shown at bottom receives coal and water from washer jigs. Coal is de-watered and raised by elevators to washed coal storage bins for delivery into railroad cars. Overflow water from pits is pumped to settling tank to remove fine coal and then returned to washer water circulating system

Fig. 3—Washer plant. View shows crushed coal conveyor, washer building and washed coal bins







COAL WASHERS at southern plant handle 17,000 tons per day

By W. S. SPRINGER
Supt. Coal Washers, Mines
and
W. J. McROY
Operations Engineer, Washers
Tennessee Coal, Iron & Railroad Co.
Birmingham

Modern group of plants using different methods of operation prepare coal for coking purposes by reducing ash and sulphur contents. Automatic control of jigs affords uniform product. Large rocks no longer serious problem. Samples are taken every half hour

IN 53 years of coal washing this department of the Tennessee Coal, Iron & Railroad Co., Birmingham, has grown from a little plant at Pratt City, Tenn., that could wash 40 tons of coal an hour —if luck were with it—to a modern group of plants with a combined capacity of 1700 tons per hour. This growth is the result of combinations of circumstances and methods; i.e., necessity, convenience, ambition, foresight, hard knocks, good and bad experiences, and yes—good management and efficient engineering.

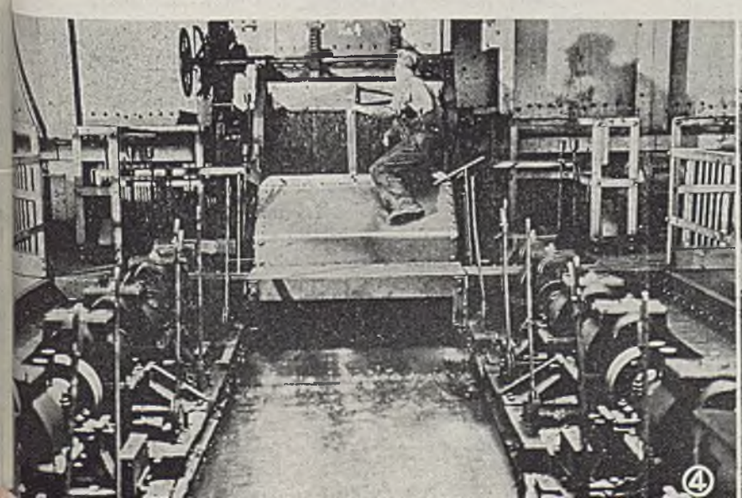
These present-day plants employ a variety of methods and equipment in their operations. In several cases, entirely different methods are used to attain the same results. At some of the plants, breakers are used in handling large rock, while at others picking tables are used; in some cases, Elmore jigs are used and in other cases, Baum and diaphragm jigs are used. Both screens and classifiers are employed in removing solids from the circulating systems, and in one instance muck is loaded directly into railroad cars. The differences cited here are the results of natural evolution stimulated by a desire to improve the operation. Much of the equipment has been so modified and improved that its capacity and efficiency have been considerably increased; for instance, the Elmore jigs, which at one time only washed 55 tons of coal per hour, now can wash over 200 tons of coal per hour and the breakers, which formerly handled only about 20 tons of rock per month, are now handling better than 3000 tons of rock in the same length of time.

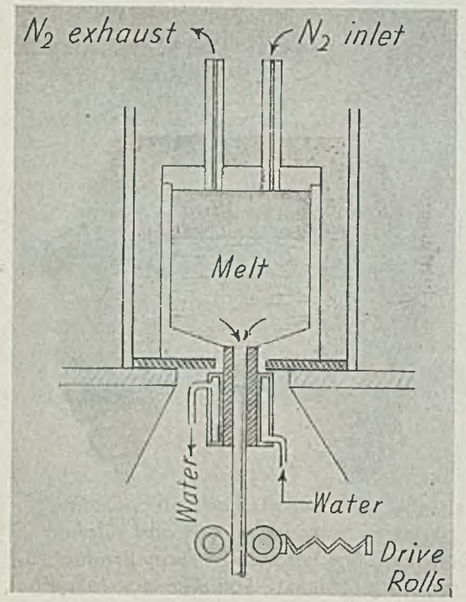
During the years of growth many

(*Please turn to Page* 180)

Fig. 4—Washer jigs. Run of mine coal as delivered to crusher on surface is not suitable for production of metallurgical coke because of impurities (shale, bone, sulphur, etc). Crushed coal conveyed to raw bins therefore is automatically fed into jigs, where it is washed and separated from impurities by a series of operations which utilize the difference in specific gravity of the various materials. Clean coal discharged with water is flumed to settling pits. Impurities sink and are automaticallu drawn off from bottom of jigs and flumed to separate refuse pits. Jigs of this type wash 100 tons of coal per hr and use 2000 gpm of water

Fig. 5—Washed coal ready for shipment. Coal is moved from mines to by-product coke department at Fairfield, Ala., by company's railroad system. Four mines operated by the company produce an average of more than 15,000 tons of washed coal daily.





Diagrammatic section of continuous casting apparatus

CONTINUOUS CASTING PROCESS

Bronze rod and tubing are being produced commercially in 10-ft lengths by continuous withdrawal of molten metal from overhead crucible through chilled die

BRONZE rod and tubing now are being produced commercially in 10-ft lengths by a continuous withdrawal of molten metal from an overhead crucible through a chilled die, by the American Smelting & Refining Co., Perth Amboy, N. J. The process for continuous casting has been in commercial operation since 1937, and has produced many thousand tons of copper billets. Its adaptation to the production of alloy rod and tubes is a more recent development which, in over a year's growth, has established its industrial position.

Rod or tube is produced by the continuous withdrawal of metal from the bottom of a casting crucible, through a suitably-cooled die which is an integral part of the crucible. Molten metal, supplied by an auxiliary melting furnace, is maintained at a proper temperature in the casting crucible. Solidification of the rod or tube takes place in the die, and driving rolls mounted directly beneath withdraw the solidified product at a controlled speed. A traveling saw mounted below the driving rolls engages at proper intervals to cut uniform lengths.

The casting crucible is totally enclosed and maintained under an inert atmosphere. The process, involving metal flow from the bottom only, eliminates the possibility of trapping incidental dirt and dross; dissolved gases if present, are liberated during cooling and escape upwards before solidification; and the molten bath maintains a regulated hydrostatic head preventing the formation of shrinkage cavities. The basic features of the process, except the flying cutoff, are depicted in the accompanying illustration.

The rate of solidification is such as to result in an extremely fine and uniform dispersion of lead and other secondary constituents.

Products, as cast, can be fabricated on automatic screw machines and present an opportunity for high-production rates at low cost. Custom sizes and lengths in rod or tube can be produced readily, to minimum finish allowance and end scrap. Common bronze casting alloys are made in rod stocks of standard sizes from ¾-in. to 3-in. diameter by ⅛-in. increments. The less common and special mixtures are cast on demand. In general, alloys within the following approximate limitations can be produced:

Element	Per Cent
Copper	65
Tin	13
Lead	25
Zinc	6

Lower production costs are claimed in fabricating the material in that there is practically no scrap due to metal faults, no preliminary machining operations, a minimum of end scrap due to long lengths, less labor and better tool life.

Ampco Metal Inc., Milwaukee, as sales agent, is marketing a series of the continuous cast bronzes under the trade name "Ampcoloy."

Uniformity of material, evenly fine dispersion of lead and other secondary constituents, freedom from porosity, hard spots and surface inclusions of sand all contribute to high machining speeds, excellent surface finish, and close control of machined dimensions and minimized rejections due to metal faults.

Other advantages of the continuous cast product include closely controlled dimensions, a high degree of soundness, improved machinability and high physical properties. Better tool life is reported and a minimum of end scrap because of the long lengths.

Iron Cores

By C. T. MARTOWICZ
Engineering Department
Henry L. Crowley & Co. Inc.

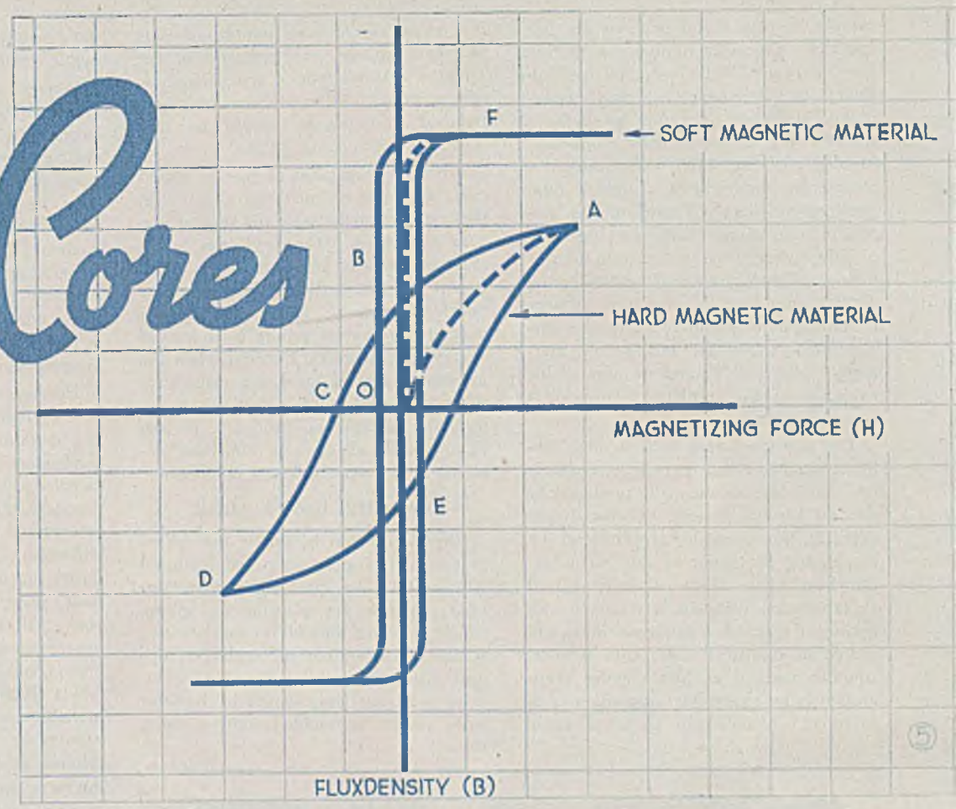


Fig. 5—Typical hysteresis loops

made with permeabilities as high as 70.[1] For comparison, the permeability of air is 1 while the permeability of solid iron, depending on its composition, may be in the thousands. The decreased permeability of powdered iron cores is attributed primarily to the discontinuities in the magnetic path in the form of air gaps between the iron particles which are caused by the bonding and insulating material present. It is evident therefore that in order to realize maximum effective permeability from a given iron powder the total nonferrous material addition is kept as low as possible but in sufficient quantity to prevent abnormal electrical core loss.

Iron core powders generally are prepared with organic binding materials, as for example phenol formaldehyde resins (Fig. 1), which perform the dual function of insulating and bonding the powdered iron particles. For certain applications where the bonding material is subjected to temperatures which would normally decompose resins, inorganic materials are resorted to for this purpose.

Synthetic resin binders used in the manufacture of powdered iron cores may be of either the thermosetting or the thermoplastic variety. The former, however, predominate because of their more desirable characteristics and ease of handling. Thermosetting resins such as phenol-formaldehyde, melamine formaldehyde, furfural formaldehyde, phenol-furfural, urea-formaldehyde, etc., will, upon the application of heat (usually about 350° F), set to a hard infusible, insoluble mass which does not resoften upon repeated heating. Thermoplastic resins, on the other hand, soften with the application of heat and harden upon cooling repeatedly. Polystyrene, cellulose derivatives, acrylic and vinyl resins are of this type.

Polystyrene has far more often been employed than any other material of this class, primarily because of its excellent electrical properties. It exhibits the lowest power loss of any plastic material with the possible exception of polyflouroethylene, a relatively recent addition to the plastic family, and in most forms the loss is equivalent to that of fused quartz. Core materials compounded with thermoplastic binders are normally fabricated by injection molding. Molded parts so made are usually of an intricate mechanical design which would be difficult to manufacture by other means, and are designed primarily for service at low temperatures to prevent mechanical distortion of the component under heat. This disadvantage of heat distortion is not found in molded cores bonded with thermosetting resins.

In addition to heat resistance, such components have excellent electrical properties, strength, dimensional stability in service, and are highly resistant to water and solvents.

Electrical grade iron powders compounded with thermosetting resins are fabricated by cold molding in the same

TYPICAL ANALYSIS OF COMMERCIAL GRADE POWDERS

Particle Shape	Carbonyl Smooth Sphere	Hydrogen reduced Smooth Ovoid
Mean particle diameter	5 microns	9 microns
Metallic iron	98.45%	98.90%
Combined iron	.35%	
Carbon	0.73%	0.005%
Sulphur	0.002%	0.009%
Oxygen, etc.	0.47%	1.090%

manner as pure metal powders are briquetted. Pressures normally employed vary between 40,000—80,000 psi although in the fabrication of high permeability materials pressures as high as 250,000 psi are sometimes employed[2]. Molded parts are then heat treated for a sufficient time and at a suitable temperature to effect a "cure" of the particular resin binder being employed, or in other words to set the resin permanently. Contrary to the usual sintering process employed in powder metallurgy no atmosphere is employed, as the curing temperatures are rather low (normally 300° - 350°F) and no appreciable oxidation of the insulated iron powder is encountered.

The powdered iron used in high frequency molded iron cores is exceedingly fine and is not commercially produced by any mechanical process. Carbonyl iron (Fig. 2), for example, is produced by condensing the vapor of iron penta-carbonyl-Fe $(CO)_5$. Iron sulphate as well as other iron compounds reduced with hydrogen (Fig. 3) also are an important source of electrical grade iron powder. Another method of iron powder preparation is by electrolytic deposition from solutions. Commercial electrical grade iron powders are high purity materials of small particle size generally in the range of 2-10 microns. A typical analysis of a carbonyl iron powder and hydrogen reduced iron powder would be that shown in accompanying table.

From the standpoint of ease of insulation and ease of molding, a spherical particle is most desirable for general iron core application. Carbonyl iron fulfills this requirement and exhibits in addition a low hysteresis loss because of its peculiar structure. The phenomenon of magnetic hysteresis results in a loss of energy in a magnetic material when the material is carried through a magnetization cycle, and is of importance in alternating current applications. The aim in practically all cases in iron core materials is to keep this loss a minimum.

Electrolytic Iron Ball-Milled

Electrolytic iron is usually ball-milled in commercial processing and annealed afterward. The finished powder exhibits then a flat plate-like structure, which is rather difficult to insulate and is highly susceptible to insulation rupture during the molding operation. Components having large length to diameter ratios cannot be molded endwise, from such materials but can be readily side-molded without difficulty.

It may be well to state at this point that annealing of iron powder tends to increase its absolute permeability. Annealing is often carried out on electrical grade iron powder and practically always on magnetic alloys of nickel-iron for this purpose. In this same connection it should be noted that the higher the briquetting pressure the higher the permeability of a given core material up to a given point, whereupon further increase in pressure does not result in an increase in permeability.

The increase in permeability of iron powder realized by annealing in hydrogen is due to a certain extent to the purification of the iron. It is common knowledge that the permeability of iron decreases rapidly with increase in carbon content and to a lesser degree with other impurities. Thus, during annealing ordinary amounts of carbon, nitrogen, sulphur, phosphorus, etc., are reduced to very small quantities, with a consequent improvement in permeability. It has been pointed out that the carbon present is eliminated as a hydrocarbon gas, probably methane; the oxygen as water vapor; the nitrogen as ammonia; the sulphur as hydrogen, sulphide, etc.[3] At the high temperatures employed the impurities continually diffuse to the surface where the reactions with hydrogen occur.

Magnetic cores are quite frequently produced from magnetite (magnetic iron oxide) powder. Swedish magnetite is shown in Fig. 4. The iron oxide may be a natural product or a synthetic material. Synthetic magnetite powder is now readily available from several sources in the United States. The material obviously has a low permeability and some undesirable characteristics due to electrical instability, but in spite of these drawbacks finds wide application because of its low cost. For magnetic applications within the broadcast band and relatively low frequencies, coarse mesh material is employed usually between 60 and 140 mesh, this screen size being desirable for optimum permeability. Where lower losses are desired, consistently finer particle sizes are employed. For frequencies above 100 megacycles an extremely fine particle size is necessary, and consequently only air floated material is employed. Magnetite like ordinary high purity iron powder is prepared in a similar manner with insulating agents and resinous binders for the molding operation.

In addition to the use of high purity iron for the manufacture of compressed magnetic cores, nickel iron and nickel-iron-molybdenum alloys have found

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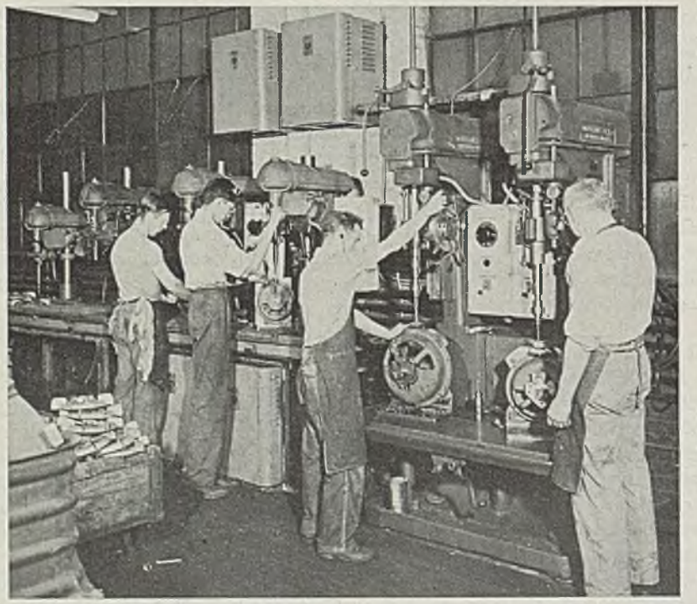

ADJUSTABLE SPEED DRIVE: Drilling, tapping of motor brackets at Reliance Electric & Engineering Co., Cleveland, is speeded by adaptation of company's own V-S drive, providing adjustable speeds for optimum operation. Replacing a conventional drive, though operating from the same ac circuit, control units provide instant selection of speeds from 40 to 2300 rpm. Added control provides "drill-tap" selector switch to make change from any preset drill speed to lower, preset tap speed; and limit switches which automatically reverse tap at high speed when tapping is completed, to permit quick withdrawal of tool from work-piece

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AMERICAN SOCIETY of TOOL ENGINEERS

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February 14, 1946

E. L. Shaner, Editor-in-Chief
STEEL
Penton Building
Cleveland, Ohio

Dear Sir:

It gives me great pleasure on the occasion of STEEL's preview of the 1946 ASTE Exposition and National Convention, to join you in extending greetings to Tool Engineers and others in mass production industries, and cordially inviting them to be with us in Cleveland, April 8th to 12th.

The Tool Engineer has a big task ahead of him. With rising labor and materials costs it is his problem to find ways and means of bringing manufacturing costs down to offset these increases, with the net result that better goods will be produced - at minimum costs.

It's a big job and we are hopeful that the Cleveland convention and Exposition will be of material help to him. Technical sessions are built around this basic theme. Exhibits will feature hundreds of war-time and post-war developments in the way of process and equipment which we hope will be of help to each individual Tool Engineer in the days to come.

It is by far the biggest exposition and convention ever held by the ASTE but its size is not out of keeping with the task ahead of us.

Very truly yours

AMERICAN SOCIETY OF TOOL ENGINEERS

C. V. Briner

C. V. Briner, President

"World's Most Modern Tool Room"

Is Unveiled at Cleveland Auditorium at Decisive Moment for Industry

By GUY HUBBARD
Machine Tool Editor, STEEL

America hesitates at an economic cross roads. In one direction lies confusion—in the other, prosperity. The same was true on the eve of the Columbian Exposition in 1893, of the National Machine Tool Show in 1935. Those "world's fairs" inspired confidence. America then forged ahead. Now comes the ASTE Exposition of 1946. It reveals America's supreme achievements in instruments, tools, machines, materials and methods for mass production. It points the way to a new era of prosperity

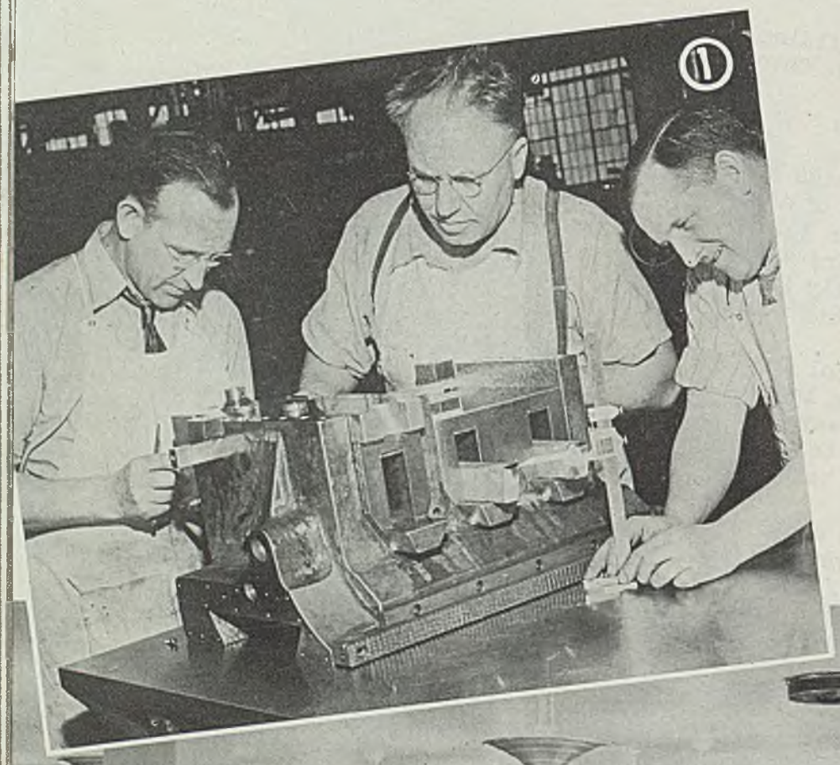
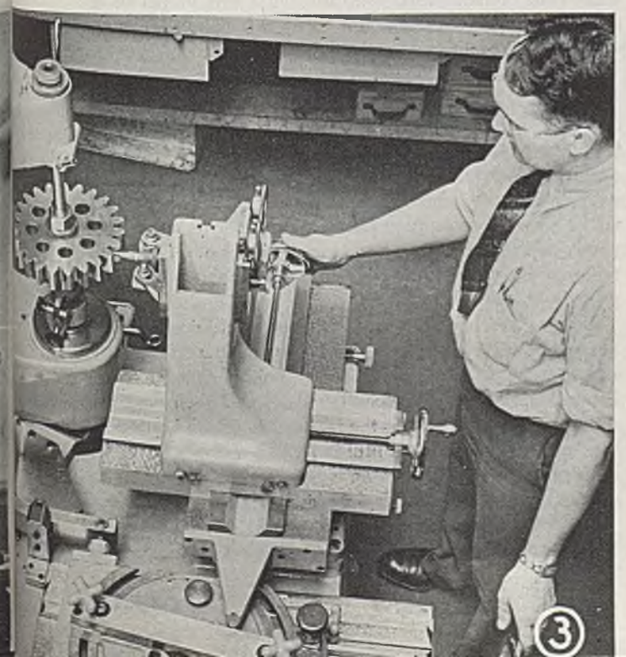


Fig. 1—The tool engineer "follows through" as his design takes form in the tool room—as in the case of this heavy duty carbide tooling setup at Frederick Coleman & Son

Fig. 2—Tool engineers, machine designers and hydraulic and electrical experts constitute closely-knit professional teams in the modern "machine tool game." Photo courtesy Monarch Machine Tool Co.

Fig. 3—A wide variety of sensitive, rugged, instruments are devised by tool engineers to enable inspection to keep pace with production. Photo, Caterpillar Tractor Co.



HERE in America we have on a number of occasions been particularly fortunate in the timing of great expositions. A few historic cases are brought out in the lead to this article. And now—through a happy combination of good luck, and courageous leadership on the part of The American Society of Tool Engineers—it happens again!

The educational system in this country was badly upset by the recent World War. One way in which it was thrown out of kilter was by wartime abolition of national conventions and expositions by governmental ukase. Considerable fun has been poked at Americans for their addiction to conventions and expositions. The propriety of a few of these affairs may be open to question. A great many of them, however, are as much a part of the American educational picture as are the proverbial "little red school house," the Land Grant college, the Chautauqua system, correspondence schools, apprenticeships, and active membership in organizations such as the American Society of Tool Engineers.

One of the surest signs that adult education in this country continues to be badly out-of-balance, is the current condition of industrial uncertainty and unrest at a time when a new era of prosperity unquestionably lies immediately ahead—if we take the right road beyond the economic cross roads at which we temporarily are stalled.

The main difficulty is that at the moment management, working people and the public in general are unfamiliar not only with the full extent of wartime progress in machines, tools, materials and manufacturing methods, but also with the tremendous benefits which will accrue to all if these mechanisms, materials, and methods are immediately and completely applied in peacetime industry.

Management now must be educated to install these things. Working people must be educated to appreciate them, to handle them properly and to make the most of their possibilities. The public in general must be educated to the realization that the higher the degree of mechanization, the more good things there will be for everybody and the more good jobs there will be in the manufacture and distribution of these good things.

American ingenuity in designing new products long has been widely recognized—even though our artistic taste sometimes has been questioned. American salesmanship likewise long has been famous—although there have been times when its flamboyance has irritated some people. Between these two lies America's ability to make the things which its inventors dream up and which its salesmen spread throughout the world.

Despite the fact that America has led in mass production methods since the days of Eli Whitney nearly a century and a half ago, this has been the least appreciated and least understood factor of the economic system in this country. In other words, people generally (and strange as it may be, that includes many industrial and financial leaders) haven't known much about tool engineers and their work. At least they didn't until 1932 when a few members of that profession in Detroit decided to do something about it and so established the American Society of Tool Engineers.

From that nucleus the influence of this Society has fanned out like a typical nuclear "chain reaction," until today it covers the industrial areas of the United States and Canada with its 72 chapters; its more than 18,000 members; its local and national professional sessions; its

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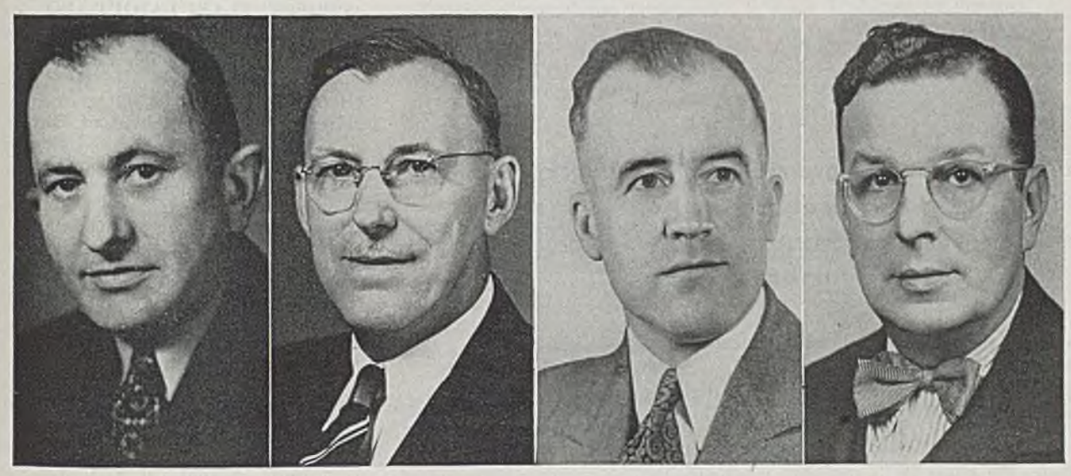

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publications; its standardization projects; and its effect on engineering education. The latest demonstration of its vigor is given by the staging of the New Era Exposition in Cleveland with more than 300 leading machinery, tool, instrument, material and engineering companies as enthusiastic participants, and with attendance—drawn from all parts of the United States and Canada, and also from abroad—conservatively estimated at 60,000.

As a matter of fact, this Society is no amateur when it comes to staging successful and valuable industrial expositions. Way back in 1938 it made its initial effort as a "producer" with a small exhibition in Detroit which aroused a gratifying amount of interest. Encouraged by that, the Society—in March of 1939—put on a second in Detroit which filled the Convention Hall and had a very real effect in helping off to a flying start what then was timidly called America's Defense Program. Then in March of 1941, it staged another and larger one in the same setting. That one attracted high ranking ordnance and other technical officers of the Army and Navy as well as leading industrialists at a time when industry was on the verge of swinging into its tremendous War Production Program.

Next, in March of 1943, when a lot of pessimists said it couldn't be done—and when some unsympathetic government officials came close to saying "It shall not be done!" ASTE did it again. That time it was in the Milwaukee Auditorium. That time it helped to inspire American industry to give the final big push which did so much to bring the war to an end two years later.

Those of us who were privileged to attend those earlier expositions, conceived and managed by the relatively small ASTE of those days, never have questioned the ability of the far greater and far better staffed ASTE of today to stage in the Cleveland Public Auditorium, April 8-12, 1946, a bigger and better "tool show" than any of the foregoing. How much bigger, how much better and how perfectly timed to aid in clearing away current industrial uncertainties and misunderstandings, none of us realized fully until the eve of its opening. At that time enthusiastic reports as to the exact nature of their individual exhibits poured in on us from a majority of the 300 or more individual exhibitors.

On the basis of this "preview" of the ASTE New Era Exhibition, I have been inspired to refer to it, in the heading of this article, as representing "The World's Most Modern Tool Room." That may be fair enough as a brief designation—provided that the reader has reasonably correct ideas as to what constitutes a really modern tool room, what kind of men work in it and what sort of person a modern tool engineer actually is. At this point let us indulge in a bit of psychoanalysis.

Do you carry in your mind the pre-war impression that a tool room is just a small, better-than-average general machine shop within a machine shop? Do you think of tool makers simply as cleaner and more ingenious than average "all-around machinists" who have the benefit of more and better micrometers than are used elsewhere in the shop? Do you picture a tool engineer as an anemic young fellow who quit the tool room to sit at a small table in a corner of the drafting room behind the blue print machine?

Do you see him in your mind's eye outlining production parts in red ink on brown drawing paper, vaguely sketching in jigs, fixtures or other "tooling" around them, finally inking in that sketchy "tooling" and shellacing the sheets? Do you conjure up the final act in which he timidly hands them over to a scornful head tool maker who wears half-spectacles and a ticking apron and who won't pay much attention to these "tooling layouts"?

No one with pre-war experience need be like Rip Van Winkle to have ideas of that kind. They represent actual conditions and individuals common much less than 20 years ago. Many of us can find ourselves somewhere in that picture—I know I can. It was all very picturesque, but it is historical stuff and it just won't do under present day industrial and economic conditions. So let's file away all that sort of thing in our memory books, and with the timely help of the ASTE exhibition and convention, let us fit ourselves out with a complete set of new and true ideas of 1946 vintage.

Even casual study of the five pages listing exhibitors and their products, which appear herewith, will bring to light the fact that many machines, tools, instruments and methods which formerly were confined to the tool room, now permeate the entire plant. On the other hand, many machines, tools and methods related to mass production now find effective use in the tool room—especially where large numbers of tools are being turned out.

Study of this exhibition will drive home the fact that tool engineers today must give just as much attention to economy and efficiency and topnotch working conditions in tool departments as anywhere else in a manufacturing plant. Ability on the part of toolmakers to accomplish extraordinary things with inadequate equipment may make interesting "coffee talks," but it makes a poor showing on the financial report. Using skill and ingenuity to overcome handicaps due to poor equipment is merely skill and ingenuity wasted.

You will find throughout this exhibition instruments and methods which within a few years or a few months have graduated from the laboratory and have gone forth into the tool room and shop "to seek their fortunes." Manufacturers already are—or soon will be—faced with problems of controlling limits of fit and finish on regular production work, which would have "stumped" the brains and facilities of the tool room before the war. Mechanical processes for doing the work itself already exist. How can its inspection keep pace with production? Modern instrumentation holds the answer. You will find not one—but several—answers to every such case.

To my way of thinking, this ASTE show furnishes overwhelming evidence that there is no such thing as monopoly in the American industrial system—regardless of what has been said lately of the effects of patents, big corporations, subsidized mass research, etc. In almost every instance you will find (as intimated above) that there are two or three entirely different methods of accomplishing the same difficult thing.

I will add that the resulting lively competitive selling will make the show doubly interesting. As long as American inventors and tool engineers keep on developing new ways of doing things, it is obvious that no one in the metalworking industry can afford to spend much time in a rocking chair on the front porch dreaming that his is the one best method, the one best material, the one best machine, the one best tool or the one best instrument.

I have not attempted to define exactly what tool engineering is, or what a tool engineer is. Attend the doings in Cleveland and "write your own ticket." Every one of the 300 exhibits will show a different and intensely interesting facet to every one of the 60,000 or more people who attend the big show. By the same token every one of the 18,000 members of ASTE has some special skill or knowledge or capability.

What seems most important now is that the New Era Exhibition and the ASTE convention serve to concentrate the sum total of all this on the problem of getting everybody thinking straight and doing the right things with the right tools and methods, in the good cause of more and better products and more and better jobs for more people. With that great contribution by ASTE to our neglected adult education, America certainly should start to "go places" industrially without further hesitation.

Technical Program

Fourteenth Annual Convention, American Society of Tool Engineers Headquarters, Hotel Statler, Cleveland; Technical Sessions, Public Auditorium Ballroom, April 8-12, 1946

SINCE its early days as a local organization in Detroit, the American Society of Tool Engineers has had the happy faculty of attacting outstanding speakers and of bringing out the best that such speakers have to give.

As the Society has spread throughout the industrial United States and Canada, the scope of its meetings constantly has broadened—thus making it possible to an ever increasing degree to attract speakers from the top ranks of engineering, science, industry and education. The rapid rise of many members from minor jobs to high executive positions in industry, can be attributed in no small degree to the inspiration and information gained by taking advantage of the meetings and conventions programs of ASTE.

The program set forth herewith is one of the finest ever presented at a national convention. It is in keeping with the great Exhibition coincidental with it. It strengthens the effect of the Exhibition by emphasizing trends which can further be studied in the show insofar as ways and means of their practical accomplishment in industry are concerned.

Questions and discussion always are important features of ASTE meetings. This policy of encouraging lively but orderly audience participation adds tredendously to the interest and value of the technical sessions. There is an old saying to the effect that a person benefits from an engineering meeting in proportion to what he contributes to it.

Monday, April 8

2 p. m.

SUBJECT: PLANT LAYOUT AND MATERIALS HANDLING

W. B. McClellan, Detroit Chapter, Chairman

"Plant Layout Theory"
Haylett B. Shaw, Midwestern Division Office
Methods Engineering Council, Kansas City, Mo.

"Production Methods"
Otto Ewart, plant manager, Ordnance Division
W. F. & John Barnes Co., Rockford, Ill.

8 p. m.

SUBJECT: ECONOMIC CONTROL OF QUALITY

Stephen Urban, Syracuse Chapter, Chairman

"Fundamentals of Inspection Procedure"
Alfred L. Davis, Member of Staff, Rochester Institute of Technology, Rochester, N. Y.

"A New Approach—Statistical Quality Control"
Joseph G. Manuele, director of quality control, Westinghouse Electric Corp., East Pittsburgh, Pa.

"Dimension Control"
Paul V. Miller, manager, Small Tool and Gage Division Taft-Peirce Mfg. Co., Woonsocket, R. I.

"Quality Production"
Edward S. Marks, quality engineer, Pratt & Whitney Division, United Aircraft Corp., Hartford, Conn.

Tuesday, April 9

2 p. m.

SUBJECT: CUTTING FLUIDS

F. J. Schmitt, Chicago Chapter, Chairman

"The Testing of Cutting Fluids"
D. J. Wangelin, Research and Development Laboratories, Pure Oil Co., Chicago

"What the Tool Engineer Should Know About Cutting Fluids"
W. H. Oldacre, president and general manager, D. A. Stuart Oil Co., Chicago

Prepared Discussions by:
Joseph Geschelin, Chairman, Independent Research Committee on Cutting Fluids
Fred W. Lucht, development engineer, Carboloy Co. Inc., Detroit
A. H. d'Arcambal, vice president and consulting metallurgist, Small Tool and Gage Department, Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford, Conn.

8 p. m.

SUBJECT: NEW TECHNIQUES IN CUTTING TOOLS

Robert W. Ford, Pittsburgh Chapter, Chairman

(A) "Manufacture of German Precision Cutting Tools and Gages During World War II"

and

(B) "Germany in Defeat"
A. H. d'Arcambal, vice president and consulting metallurgist, Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford, Conn.

"Exploring Carbide Possibilities in Single Point Turning"
J. F. Allen, project engineer, Warner & Swasey Co., Cleveland

Wednesday, April 10

2 p. m.

SUBJECT: TOOLING FOR PERMANENT MOLDS

Earl V. Johnson, Dayton Chapter, Chairman

"Applied to Rubber and Plastics"
Herman O. Poock, assistant master mechanic, Inland Mfg. Division, General Motors Corp., Dayton, O.

"Applied to Glass and Other Materials"
K. T. Kuck, chief engineer, Monarch Machine Tool Co., Sidney, O.

2 p. m.

SUBJECT: EDUCATION°

O. W. Winter, Buffalo Chapter, Chairman

"Professional Accomplishments of the British Association"
E. W. Hancock, general works manager, Rubery-Owen & Co. Ltd., Darlaston, South Staffs, England

°One of these sessions will be held in Public Auditorium Ballroom; the other in a location to be announced.

8 p. m.

SUBJECT: TOOL ENGINEERING EDUCATION AND PROFESSIONAL DEVELOPMENT

O. W. Winter, Buffalo Chapter, Chairman

"Higher Learning in Engineering"
C. E. McQuigg, Dean, College of Engineering, Ohio State University, Columbus, O.

"Tool Engineering Research"
Prof. O. W. Boston, Department of Metal Processing, College of Engineering, University of Michigan, Ann Arbor, Mich.

Thursday, April 11

2 p. m.

SUBJECT: TOOL ENGINEERING AND PROFITS

H. E. Linsley, Northern New Jersey Chapter, Chairman

Address by:
Ralph E. Flanders, president and chairman, Bryant Chucking Grinder Co., Jones & Lamson Machine Co., Springfield, Vt.

"Profit Producers for Industry"
A. G. Bryant, vice president, Cleereman Machine Tool Co., Chicago

"Relationship of Tool Engineering to the Field of Economics"
Clifford E. Ives, Ives Engineering & Planning Co., Chicago

7 p. m.

Annual Membership Meeting and Dinner Ballroom, Hotel Statler

Speaker: George T. Christopher, president, Packard Motor Car Co., Detroit

Friday, April 12

2 p. m.

SUBJECT: CONTROLS AND DRIVES FOR SPECIAL MACHINE DESIGN

E. W. Baumgardner, Cleveland Chapter, Chairman

"Hydraulic Controls and Drives"
L. R. Twyman, manager, Industrial Division, Vickers Inc., Detroit

"Mechanical Variable Speed Drives and Controls"
Lev A. Trofimov, consulting engineer, Cleveland

"Electric and Electronic Drives and Controls"
G. A. Caldwell, manager, Control Engineering, Westinghouse Electric Corp., East Pittsburgh, Pa.

"Drives and Controls on Standard Machines and Special Adaptations to Standard Machines — from the Machine Tool Builders' Angle"
B. P. Graves, director of design, Brown & Sharpe Mfg. Co., Providence, R. I.

TECHNICAL SESSION CHAIRMEN

STEPHEN URBAN
Pratt & Whitney Division, Niles-Bement-Pond Co., Syracuse, N. Y.

FRED J. SCHMIDT
D. A. Stuart Oil Co., Chicago

W. B. McCLELLAN
Gairing Tool Co., Detroit

EARL V. JOHNSON
Firth-Sterling Steel Co., Dayton, O.

H. E. LINSLEY
Machine Tool Editor
The Iron Age

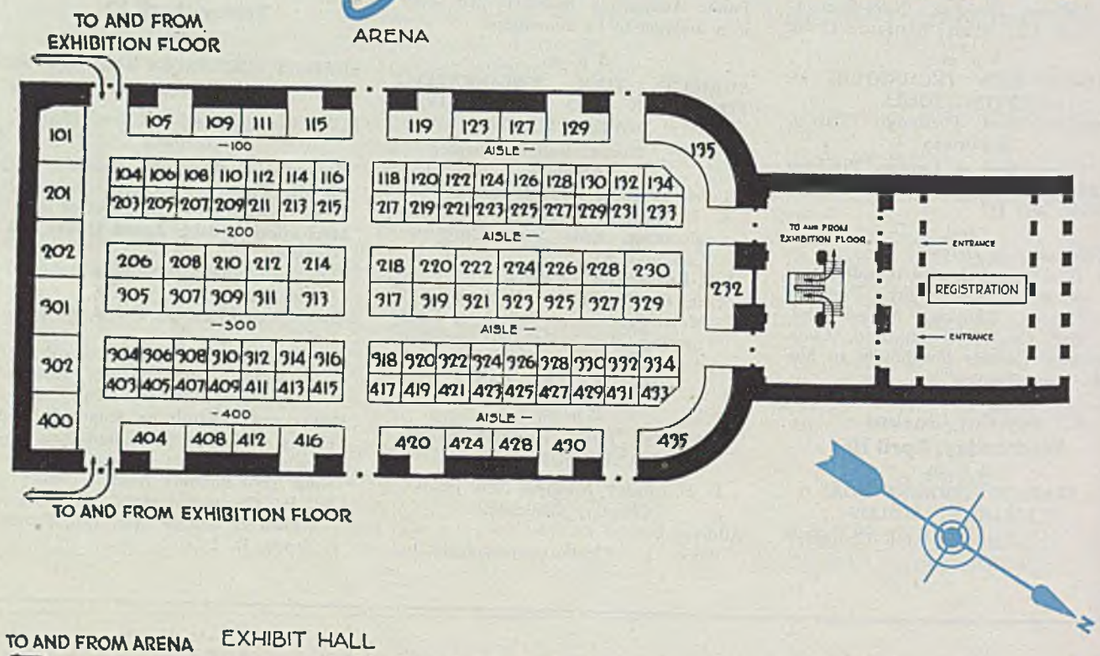
OTTO W. WINTER
Acme Pattern & Machine Co., Inc., Buffalo

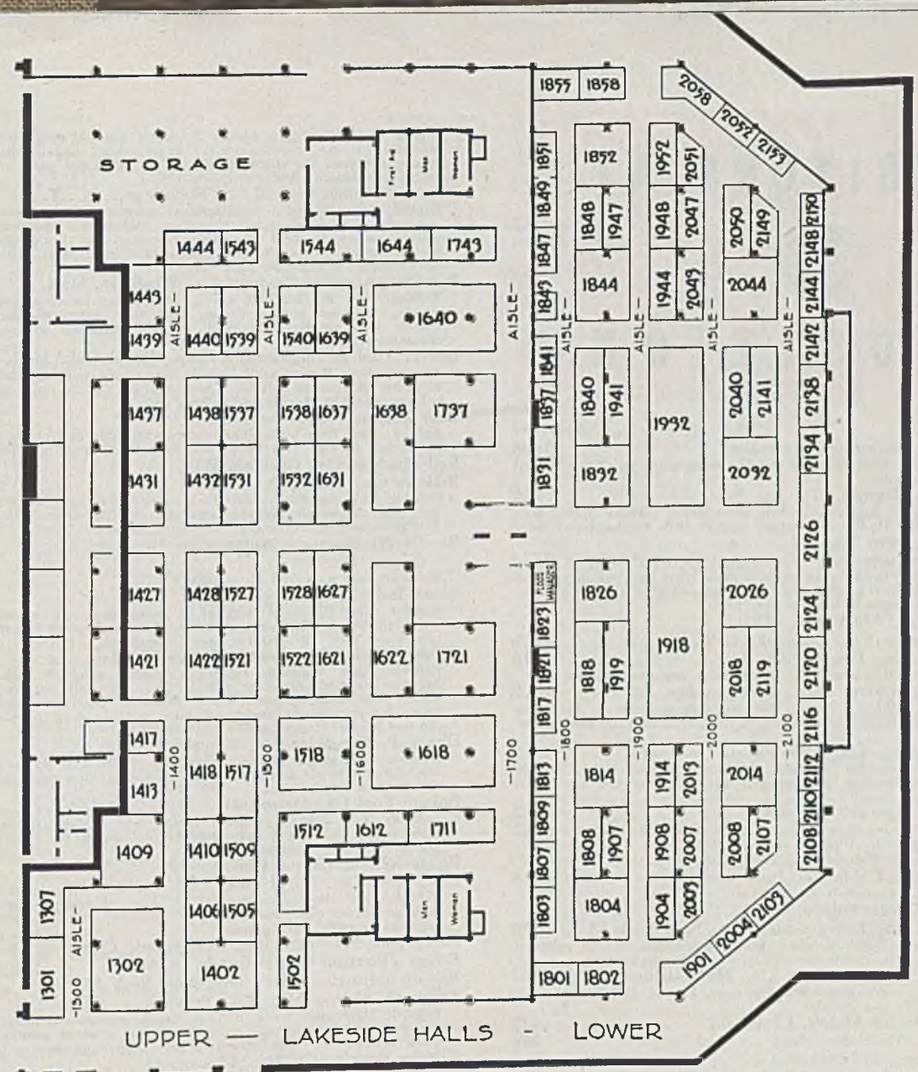
ROBERT W. FORD
Ex-Cell-O-Corp., Detroit

E. W. BAUMGARDNER
Edgewater Works, National Carbon Cleveland

EXPOSITION

Floor Plan





PUBLIC AUDITORIUM

East Sixth Street and Lakeside Avenue

CLEVELAND

Exhibits open 9:00 a.m. to 6:00 p.m. daily April 8-12, 1946

BOOTHS MAY BE LOCATED BY REFERRING TO THE INDEX ON THE FOLLOWING PAGES

EXHIBITORS AT

EXPOSITION

Booth No.

Ace Abrasive Laboratories, New York 7 1908
Exhibit: New Star Dust diamond lapping compound. Star Dust graded pure diamond powder

Ace Drill Corp., Detroit 27 226
Exhibit: New solid tungsten carbide twist drills; carbide tipped high speed twist drills; Hi-Brinnel carbide tipped drills for hardened steel.

Acme Tool Co., New York 13 .....

Aeronautical Products Inc., Washington Court House, O. 1814
Exhibit: New Seco fluid power units: railroad pins and bushings. Rigid Live center parts; precision hardened and ground aircraft engine parts; carburetor parts; aircraft landing gear parts

Agerstrand Corp., Muskegon, Mich. .....

Aircraft Machinery Co., Burbank, Calif. 1808

Air-Speed Tool Co , Los Angeles 44 610
Exhibit: New portable pneumatic power hack saw and file tool

Allegheny Ludlum Steel Corp., Brackenridge, Pa. 416
Exhibit: New Dunkirk E-Z tool steel for dies and gages; Airloy air hardening ground stock. General line of tool steels and die steels; Carmet carbides

Allis-Chalmers Mfg. Co., Milwaukee 1622
Exhibit: New induction heating equipment; Magic-Grip Texrope sheaves. Coolant pumps; general purpose and enclosed fan-cooled motors and motor control

Allison Co., Bridgeport, Conn. 1432
Exhibit: New abrasive tube drills for glass, plastics and ceramics; ball race grinding wheels. Abrasive cut-off wheels

American Abrasive Metals Co., Irvington, N. J. .....

American Chain & Cable Co., Inc., ... 1418
(See Andrew C. Campbell Division)

American Mat Corp., Toledo, O. .....

American Measuring Instruments Corp., New York 18 .. 110
Exhibit: Vernier calipers; height gages; depth gages; pocket calipers; quick action calipers; optoindicators; mechanical comparators

American Saw Mill Machinery Co., Hackettstown, N. J. 1544
Exhibit: New Monarch portable radial saws, 12 and 16" blades, magnesium frames; Prosser grinder

American Society for Metals, Cleveland 432

B. C. Ames Co., Waltham, Mass. 308

Ampco Metal Inc., Milwaukee 4 201

Anchor Coupling Co. Inc., Libertyville, Ill. 324
Exhibit: New angle adapter unions for hydraulic control hose; emergency repair and field service clamp couplings for high pressure hydraulic control hose; insulated high pressure hydraulic control hose assemblies. High pressure, medium pressure and low pressure hydraulic hose assemblies; suction return lines; reusable couplings

Anderson & Sons, Westfield, Mass. 230
Exhibit: New treatment and new finishes by the etched process, and applicable to dials and instrument parts for machine tools, etc.; new designs and methods of manufacturing escutcheons and data plates; examples of engraved dials and scales developed during war for range finding and target designators, now applicable for commercial instruments. Decorated metal parts in colored enamel and electroplated

Anker-Holth Mfg. Co., Port Huron, Mich. 601
Exhibit: Non-rotating hydraulic cylinders, rotating hydraulic cylinders and heavy-duty mill type cylinders. Two and three-jaw air or hydraulic operated chucks; parallel grip air operated collets; air operated hand valves and foot valves; air or hydraulic operated drill press chuck and cylinder combinations; hydraulic power units; rotating air cylinders

R. B. Annis Co., Indianapolis 2 810
Exhibit: New production type electric etcher. Precision dynamic balancing equipment; all types of demagnetizing equipment; low frequency induction heating for rings and special applications

Armstrong Bros. Tool Co., Chicago 12 211
Exhibit: Tool holders and tools; machine shop specialties, C-clamps; carbon steel and alloy wrenches; pipe tools

Aro Equipment Corp., Bryan, O. 712

Austin Tool Works, Chicago 4 225

Bailey Meter Co., Cleveland 10 2142
Exhibit: New master-controlled, duplicating contouring attachment for lathes and other machine tools

Barnes Drill Co., Rockford, Ill. 925
Exhibit: New Barnesdril magnetic-type automatic coolant separators for honing and grinding machines

W. O. Barnes Co. Inc., Detroit 704
Exhibit: Metal cutting band saw blades; hack saws—hand and power

Barrett-Cravens Co., Chicago 23 725
Exhibit: New Power Ox electric lift-truck. Hand operated lift-trucks; lift truck skids; portable elevators and cranes; lifting tables; Nifty Lifter; two-wheel trucks; related handling and storage equipment

Patrick Basset Co., Royal Oak, Mich. 310
Exhibit: New Fabrigage prefabricated plug and ring gages and component parts, hardened blanks in small graduations, together with facilities for the maintenance of gage-making departments; Midget centers designed for checking run-out on machined parts to 4-in dia. and 4½-in length; heavy duty die bench

Booth No.

Bausch & Lomb Optical Co., Rochester 2, N . Y. 104
Exhibit: New Balcoted metallurgical microscope objectives. Contour measuring projector and accessories; toolmaker's microscope; shop microscope; wide field stereoscopic microscope; brinell microscope; optical flats; C M metallurgical microscope; magnifiers; Filar micrometer eyepiece; microscope body tubes

Bay State Abrasive Products Co., Westboro, Mass. 2108
Exhibit: New Bayflex high speed, high safety factor abrasion cut-off wheels. Cylinder honing stones; tool and cutter wheels; mounted wheels and points; cylindrical wheels; snagging wheels; abrasive specialties; oil stones

Beaver Tool & Engineering Corp., Royal Oak, Mich. .. 1537
Exhibit: New Beaver solid carbide blade face mill and grinding fixture for sharpening blades. Quick-change milling and boring tool holders; adaptors; boring and milling tools

Behr Products Co., Detroit 3 423
Exhibit: New Behr boring bars, micro-adjustable and plain; bar blades for boring, facing, black facing and fly cutting; small hole bar adaptors

Bell Machine Co., Oshkosh, Wis. 2122

Bellows Co., Akron, O. 607
Exhibit: New electrically-controlled, air-operated, hydraulically checked, drill press feeds; air-powered automatic vise. Air motors; air cylinders; Electroaire feeds; heavy duty air vises; air collets

Bendix-Westinghouse Automotive Air Brake Co.,
Elyria, O. 1444
Exhibit: New industrial air controls

Black Industries, Cleveland 17 1909
Exhibit: New Hardsteel material for wear. heat and corrosion resisting applications. Hardsteel drills for hardened steels; Hardsteel tool bits; tools; dies; jigs; fixtures; special machines

Edward Blake Co., Newton Centre 59, Mass. 701
Exhibit: New Waltham cutter sharpening machine with diamond dressers for both faces of wheel; Blake staybolt tap grinder; and spiral point flute grinder. Black Diamond precision drill grinders; Blake tap grinders (chamfer); Filtaire portable dust collector; American tool holder; Hager carbide tool grinder

Henry P. Boggis & Co., Cleveland 13 921
Exhibit: New model Hybco tap grinder. Series 700 Hybco tap grinders; chamfer heads and flute heads for use on universal tool and cutter grinders

Bokum Tool Co., Detroit 21 120
Exhibit: New Bokum precision boring tool holders. Bokum internal tools, super high speed steel and carbide tipped, for boring, bottoming and internal threading

Boyar-Schultz Corp., Chicago 12 711

Boyd Tool Co., Royal Oak, Mich. 709
Exhibit: New Boyd dispenser for all types of pressure-sensitive tapes such as cloth, resin coated, paper masking, cellulose, acetate fiber adhesive, surgical and plastic

Bridgeport Machines Inc., Bridgeport, Conn. 1832

Briggs Filtration Co., Bethesda 14, Md. 1832

British Industries Sales Corp., New York 18 1944

Brown & Sharpe Mfg. Co., Providence, R. I. 820
Exhibit: Machinists' tools; milling cutters; arbors and adapters; screw machine tools; permanent magnet chucks; coolant pumps; machine vises; ground flat stock; other machine shop equipment

Charles Bruning Co. Inc., Chicago 41 2050
Exhibit: New Bruning 75-159B Volumatic sheet printer with large volume developer, Bruning 41 printer with medium volume developer and Bruning model 2 BW and Copyflex small volume combination, in action on black and white and matte film printing

Bryant Chucking Grinder Co., Springfield, Vt. 122
Exhibit: New portable indicator thread gage; universal diameter gage; squareness-of-face gage; universal external thread gage. Two sizes of external thread gages; three sizes of internal thread gages; various sizes of external and internal segments

Buckeye Tools Corp., Dayton 1, O. 804
Exhibit: New Ace-Cycle electric drills, screwdrivers and sanders. Pneumatic drills, screwdrivers, nutrunners, grinders, sanders and polishers; 180 cycle electric drills

Buffalo Machinery Co., Buffalo 13, N. Y. 1810
Exhibit: New reversible turbine motors; quadruplex control valves. Torque control transmission couplings; machine tool torque couplings; torque control stud drivers

Cadillac Gage Co., Detroit 5 223

Andrew C. Campbell Division of American Chain
& Cable Co. Inc., Bridgeport, Conn. 1418
Exhibit: New Campbell Autocutter completely automatic abrasive cutting off machine. Model 401 Campbell abrasive cutting off machine; model 250 Campbell nibbling machine with variable speed and stroke

Carboloy Co. Inc., Detroit 334

Carborundum Co., Niagara Falls, N. Y. 1013

W. R. Carnes Co., Madison 4, Wis. 1923
Exhibit: New sump tank cleaning machine; centrifugal clarifier

Chase Chemical Co., Cleveland 9 .....

Chicago Metal Hose Corp., Maywood, Ill. 1818
Exhibit: New machine tool conduit; stainless steel flexible metal hose; hydraulic hose. Rex Weld. Rex Tube and Rex Flex flexible metal hose

Chicago Pneumatic Tool Co., New York 17 1505

Chicago Show Printing Co., Chicago 39 709

Cincinnati Milling Machine Co., Cincinnati 9 1517
Exhibit: New Cimcool cutting fluid; water conditioner for use with cutting fluid; Optogrind; Center Saver; waterproof grease; dispensing reservoirs; tank wagons

Cincinnati Tool Co., Cincinnati 429

Circular Tool Co. Inc., Providence 5, R. I. 325

Clinton Machine Co., Clinton, Mich. 430

Booth No.

Clipper Diamond Tool Co. Inc., Cleveland 1806
Exhibit: New Diamond impregnated hones with tungsten carbide matrix, for sharpening carbide tools; diamond impregnated dental burrs, having industrial applications. Diamond wheel dressers including single point, clusters, etc.; diamond tipped and faced hand tools; rough industrial diamonds; shaped diamond tools for turning and boring nonferrous metals; diamond powder

Colonial Broach Co., Detroit 13 622
Exhibit: New junior press, redesigned to include light straightening, molding sheet plastic, etc.; large broaching tools, new and unusual in design. Broaching tools and fixtures; drill jig bushings; steel stamps and other metal marking devices

Commander Mfg. Co., Chicago 24 1910
Exhibit: Multi-drill universally adjustable multiple spindle drilling attachment

Commentry Industries Inc., New York .....
Exhibit: New Tavannes single and 6-spindle automatic screw machines; micrometers; Sun Dial indicator gages

Compar-Instrument Co., Detroit 3 222
Exhibit: New Comparoscope; Hy-Co center drills

Comtor Gage Co., Waltham 54, Mass. 1806

Cone-Drive Division of Michigan Tool Co., Detroit 12 620
(see Michigan Tool Co.)

Cosa Corp., New York 17 1518
Exhibit: New SIP hydroptic jig borer; MP-3K jig borer; profile projector; universal measuring apparatus; universal measuring machine; thread grinding machine; Studer profile grinding machine; Bechler automatic screw machine; Maag profile testing instrument; gear tester

Arthur A. Crafts Co. Inc., Boston 417
Exhibit: New special carboloy-tipped tools; diamond tools; carboloy and norbide gages and wear parts. Industrial diamonds; diamond tools; diamond dust; standard and special carboloy tools; carboloy wear parts; carboloy-tipped plug, ring and special gages

James H. Cross Co., Erie, Pa. 1822
Exhibit: New Jo-Set radius dresser

Crystal Lake Grinders, Crystal Lake, Ill. 1907
Exhibit: New model universal grinder; variable speed bench lathe. Plain grinder

Cushman Chuck Co., Hartford 1, Conn. 1106
Exhibit: New power wrench for application to multiple spindle lathes; Super spacer. Lathe chucks for American standard, cam lock, and taper key drive spindle noses

DCMT Sales Corp., New York 13 .....
Exhibit: New DCMT air-operated die caster, on high speed production of small castings

Dayton Rogers Mfg. Co., Minneapolis 803
Exhibit: New hydraulic safety over-load pitman for punch presses; self-contained hydro-pneumatic die cushion for punch presses, Bellows die cushion. Small lot metal stampings; pneumatic die cushions

Howard Dearborn, Inc., Cleveland 11 120
Exhibit: New Howard rigid live center; interchangeable point live center; combination boring bar and cut-off tool holder. Howard rigid carbide tool holder

Delco Products Division, General Motors Corp., Dayton 1, O. 1102

Delta Mfg. Co., Milwaukee 1 1014
Exhibit: New 14-in. Super Hi-speed drill press. Drill presses, surface grinder; cut-off machine; metal-cutting band saw; tool room grinder; carbide grinder; abrasive finishing machine; accessories and attachments

Denison Engineering Co., Columbus 16, O. 1109
Exhibit: New automatic Multipress of 4-ton capacity with reciprocating table; one with 11 gpm pump; one of 8-ton capacity with index table; one of 4-ton capacity with shuttle feed attachment, hopper feed and knockout ram; automatic Multi-Unit press of 4-ton capacity

A. P. de Sanno & Son Inc., Phoenixville, Pa. 802
Exhibit: Radiac wet abrasive cut-off machine; dry abrasive cut-off machine; rubber and resinoid bonded cut-off discs; Por-OS-Way vitrified, resinoid, rubber and silicate grinding wheels and points

Design Service Co., Newark 2, N. J. 1610
Exhibit: New product, machine tool and architectural designing and engineering examples; test equipment; architectural designing; production, technical and commercial illustrating

Detroit Power Screwdriver Co., Detroit 16 1804
Exhibit: Magazine feed power screwdrivers; 10, 12, 16 and 24-in. motorized hopper feed units for flat washers, screw blanks, bullet cores and card-board tubes, respectively

Detroit Reamer & Tool Co., Detroit 1843

Detroit Tap & Tool Co., Detroit 11 618

Detroit Universal Duplicator, Detroit 12 627
Exhibit: Duplimatic automatic profiling and contouring control for machine tools

Diamond Machine Tool Co., Los Angeles 23 1112
Exhibit: New Diamond 7, 12 and 24-ton open back, inclinable power punch presses; heavy duty tool room milling machine. Diamond standard and deluxe bench milling machines and accessories

Eugene Dietzgen Co., Chicago 14 301
Exhibit: Drafting instruments, equipment and supplies; surveying instruments, equipment and supplies; Directo reproduction process; blue print and direct print processes and equipment

DoAll Co., Minneapolis 1401
Exhibit: New 16-in. Zephyr friction saw in action; 4-range electrical comparators; DoAll lifetime gage blocks; butt welders; check sets; precision measuring instruments. Contour sawing machine; surface grinder; band filer; file bands; variable speed pulleys; Selectron electro magnetic chuck with electronic variable magnetism control

Don Gage Co., Detroit 2110

Downing Engineering Co., Dayton 2, O. .....
Exhibit: New combination mill and drill vises

Dumore Co., Racine, Wis. ..... 708 and 710
Exhibit: Seven models of lathe grinders; three models of hand grinders; high speed bench drill; flexible shaft tool

East Shore Machine Products Co., Cleveland 2120
Exhibit: New East Shore taper gear coolant pump. Glenny adjustable-expansion keyway push broach for keyways in bushings and gears

Eastern Etching & Mfg. Co. Chicopee, Mass. 420

Eclipse Counterbore Co., Detroit 20 ..... 218 and 220
Exhibit: Complete display of counterbore sets and other standard tools; tungsten carbide and high speed steel cutting tools

Electro Lift Inc., New York 7 1428

Elgin National Watch Co., Elgin, Ill. 314
(See Sapphire Products Div.)

Engis Equipment Co., Chicago 5 228
Exhibit: New 20-in. Engis vernier height gage, Hyprez lapping and polishing compounds, Watts 90° Clinometer (vernier angle gage) and mechanics' Clinometer; Watts Models A, B, C and D Clinometers

Eutectic Welding Alloys Corp., New York 13 1226
Exhibit: Continuous welding demonstrations of Eutectic low temperature welding rods and fluxes; display of welded samples and alloys

Everede Tool Co., Chicago 39 911
Exhibit: New lathe tool holder with triangular tool bits. Boring bars and holders; sine bar plate and vise

Ex-Cell-O Corp., Detroit 6 1437
Exhibit: New Ex-Cell-O drill chip broaches; taper inspection plate. Continental cutting tools; aircraft and miscellaneous parts; drill jig bushings; spindles

Executone Inc., New York 7 1820

Federal Products Corp., Providence, R. I. 319

Fonda Gage Co., Stamford, Conn. 405
Exhibit: New Fonda Lifetime carbide gage blocks, size range from 0.050 to 4.000-in. including one 0.10005 block, giving 480,000 possible combinations; carbide gage blocks, size range from 0.100 to 4.000-in. giving over 80,000 combinations. Ultra Finish steel gage blocks, complete sets and individual; special built-up gages, fixtures, dies, jigs, etc.

Ford Motor Co., Dearborn, Mich. 234

Gagemakers Supply Co., Pontiac, Mich. 109
Exhibit: Gagemakers supplies including gage blanks, handles, Trilocks and insulating grips

Gairing Tool Co., Detroit 32 825
Exhibit: New Gairing block-type boring bar and cutter blocks, an hydraulically operated tool for grooving chamfering and undercutting; standard tungsten carbide tipped interchangeable counterbores for ferrous and nonferrous material; other improved cutting tools and

Gammons-Hoaglund Co., Manchester, Conn. 912
Exhibit: Helical taper pin reamers; die makers' reamers; chucking reamers; hand reamers; expansion reamers; special reamers

Garfield Engineering Corp., Wichita 2, Kans. 2103
Exhibit: New Powrarm hydraulically clamped, ball-and-socket joint work holder and positioner

General Electric Co., Schenectady 5, N. Y. 912
Exhibit: New Tri-Clad totally-enclosed, fan-cooled motor for use outdoors, in hazardous areas, on dusty and dirty jobs and in corrosive atmospheres; oil-tight push-button station; compact limit switches for machine tool use; control transformers for machine tools; plugging switch. Fractional horsepower motors for machine tools; shell-type motors for built-in applications; demonstration of Thy-mo-trol drive

Gerotor May Corp., Baltimore 1422
Exhibit: New air and hydraulic cylinders; valves; pumps; pump units

Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. 209
Exhibit: New Davis expanding block type boring tools; expansion L-type boring tools; Super-Micrometer fly cutter tools; micrometer block-type line boring tools; car wheel boring tools

A. R. Gieringer Tool & Mfg. Co., Milwaukee 1110A

Gilman Engineering & Mfg. Corp., Janesville, Wis. 1421
Exhibit: Two new Gilman instrument lathes

Goddard & Goddard Co., Detroit ..... 1206 & 1210
Exhibit: New railroad cutters; cone-type, carbide tipped, cutter line; inserted high speed steel blade, cone-type, cutter line; standard railroad cutters; profile milling cutters; multiple thread cutters; inserted blade shell end mills; face mills; straddle mills; slotting cutters

Ray W. Goodwin, Cuyahoga Falls, O. 724

Govro-Nelson Co., Detroit .....
Exhibit: New model K automatic centrifugal feed unit with 3450 rpm spindle speed, suitable for drilling, reaming, countersinking, spotfacing and hollow milling; model K-T tapping unit; axial relief grinding fixture. Model C and H automatic centrifugal feed drilling units

V. L. Graf Co., Detroit 421

Gray Co. Inc., Minneapolis 13 628
Exhibit: New Luberator; Block Buster; gun loader; lub service cart; Gun-Fil automatic lubricator with interchangeable valves; Vaper-Scraper automatic water-unloader for air compressors; G-A floor cleaner; high pressure air-operated lubricant pump

Gray-Mills Co., Evanston, Ill. 1638

Greenleaf Corp., Pittsburgh 21 619
Exhibit: Demonstration of new Drafto metal disintegrator for removing broken taps and drills and for making holes of any shape in metals too hard to machine. New keyless drill chuck; Vibra-Damp tool shim; Strainfree carbide-tipped tools; and Graph-Tex cutting compound. Vibra-Drive; carbide-tipped lathe and grinder centers

Grenby Mfg. Co., Plainville, Conn. 1001

Grob Brothers, Grafton, Wis. 1108

E. F. Hager & Son, Queens Village 9, Long Island, N. Y. 612
Exhibit: New carbide tool grinder embodying reciprocating toolholder

Halco Products Sales, Detroit 423
Exhibit: New dove-tail form tool holder; tungsten carbide form tool; cut-off tool holder and blade; split collet holder; vertical slide for cut-off tool holders; tungsten carbide shaving tool and holder—all for Nos. 00, 0 and 2 screw machines

Hall Mfg. Co., Toledo, O. 1011
Exhibit: Hall valve seatgrinders; valve refacers; other servicing tools

Hanna Engineering Works, Chicago 22 1502
Exhibit: Stationary pneumatic riveter; portable electric hydraulic riveter; pneumatic and hydraulic cylinders; operating assemblies of pneumatic and hydraulic cylinders and valves; hand, foot and solenoid-actuated pneumatic and hydraulic operating valves; speed control valves

Booth No.

Hannifin Mfg. Co., Chicago 24 703
Exhibit: New hydraulic riveter with adjustable pressure allowing handling of variety of rivet sizes. Hydraulic presses; hydraulic riveters; hydraulic punches; hydraulic cylinders; pneumatic presses; air cylinders; control valves

Hardinge Brothers Inc., Elmira, N. Y. 1914
Exhibit: New Hardinge universal lathe collet stops; Tru-Chek gages; sharpening and checking fixtures for circular form tools. Sure-grip master collets and pads; master feed fingers and pads; regular collets and feed fingers; circular cut-off tools; circular form tools; adjustable tension master feed fingers; Sjogren speed collet chucks; lathe collets

Haynes Stellite Co., div. of Union Carbon and Carbide Co., New York 17 1521
Exhibit: New Haynes precision castings. Stellite metal cutting tools; Stellite machinery parts; hard-facing materials

A. W. Hecker Co., Cleveland 3 926
Exhibit: New Cooper-Bessemer cutting tools, including those with carbide tipped shanks; inserted blade cutters; carbide tipped cutters; milling operations demonstrating these cutters. Jigs; fixtures; gages

Heim Co., Fairfield, Conn. 801
Exhibit: New Unibal spherical rod-end bearings; spherical bearings; flanged needle bearings. Heim die polishing machines; dowel pins; flanged roller bearings

Howard H. Heinz Inc., Detroit 2 222
Exhibit: New Hy-Co center drills. Comparoscope

Heller Brothers Co., Newark 4, N. J. 419
Exhibit: Files; tools; rasps

Hitchcock Publishing Co., Chicago 219

Holo-Krome Screw Corp., Hartford 10, Conn. 206
Exhibit: Socket head cap screws; socket set screws; socket stripper bolts; socket pipe plugs; socket screw keys and key sets

E. F. Houghton & Co., Detroit 3 1632
Exhibit: New Antisep soluble oil—antiseptic and scouring properties; Liquid Heat No. 1550 for high speed steel, with graphite rod rectification; Liquid Heat No. 1145, a self-rectifying, non-decarburizing hardening bath of molten salt; synthetic rubber packings and "O" rings; Hydro-Drive hydraulic oils; Houghto-draw series of drawing compounds; Cosmoline fingerprint neutralizer. Sta-Put industrial lubricants; Liquid Heat No. 720, final casing salt for tools; Cut-Max fortified cutting oils; Houghto-Kote ethyl cellulose coating for tools,

HPL Manufacturing Co., Cleveland 3 1634
Exhibit: New shank adapter, a sleeve or collar or spacer used on shank of die set when press opening is too small. Metal stampings in small lots produced by temporary tool method

Huebner Publications—Tool & Die Journal—Cleveland 6 1011

C. B. Hunt & Son Inc., Salem, O. 719
Exhibit: New additional valve actions in single plunger air and low pressure hydraulic valves. Two-way, 3-way and 4-way air and hydraulic operating control valves

Hydraulic Machinery Inc., Dearborn, Mich. 1918
Exhibit: New Hy-Mac high pressure Hydro-Gun unit; 5000 psi pressure pump in operation. Hy-Mac test unit for propellers; Hy-Mac hydraulic power units

Illinois Testing Laboratories Inc., Chicago 10 905
Exhibit: New Dew point indicator. Pyrometers; velometer

Illinois Tool Works, Chicago 39 718

Independent Pneumatic Tool Co., Chicago 6 1418
Exhibit: New Thor pneumatic impact wrenches. Complete line of Thor pneumatic and electric power tools

Industrial Press—Machinery—New York ..... 231 & 233

Ingersoll Milling Machine Co., Rockford, Ill. 1621

Ingersoll-Rand Co., New York 4 1840
Exhibit: Complete line of air tools, drills, grinders, impact wrenches, chippers, riveters and hoists; line of centrifugal coolant pumps; 50 hp motor compressor

International Nickel Co. Inc., New York 5 ..... 123 & 127
Exhibit: Specimens showing tool, die and related applications of nickel alloy steels, heat resisting alloys, nonferrous alloys, nickel cast iron, stainless steel, Ni-Resist, Ni-Hard, and Ni-Rod welding rod

Iron Age, New York 232

Jack & Heintz Inc., Cleveland 922
Exhibit: New special purpose machine; electronic gages; bearings; electric motors; automotive engine

Jacobs Mfg. Co., Hartford 2, Conn. 427
Exhibit: New production chucks. Ball bearing super chucks; plain bearing chucks

Charles L. Jarvis Co., Middletown, Conn. 821

Jergens Tool Specialty Co., Cleveland 12 1424

Johnson Gage Co., Bloomfield, Conn. 111
Exhibit: New screw thread analyzer and classifier; uniform gaging pressure Ring-Snap gages; semi-automatic thread inspection unit. Roll thread snap gages; thread ring gages (solid); thread check plugs

Johnson Gas Appliance Co., Cedar Rapids, Ia. 1417
Exhibit: New heat treating furnaces and automatic temperature control equipment. Other heat treating furnaces: industrial gas burners

Jones & Lamson Machine Co., Springfield, Vt. 1721
Exhibit: New model comparators. Standard optical comparator and equipment

Karge & Son Machine Co., Brockport, N. Y. 1803

Kennametal Inc., Latrobe, Pa. 822

Knu-Vise Inc., Detroit 15, Mich. 118
Exhibit: Three new models of toggle clamps; one new model of toggle pliers. Entire line of other products

Koebel Diamond Tool Co., Detroit 13 207

Kyle-Johnson Machine Co., Los Angeles 15 605
Exhibit: K-J quick change lathe tools

Latrobe Electric Steel Co., Latrobe, Pa. 312
Exhibit: New Desegatized high speed steel

LaVallee & Ide Inc., Chicopee, Mass. 420

Lawson-Leschke Co., Royal Oak, Mich. 1843
Exhibit: Circularity relief grinding attachment on universal cutter grinder; Panyard precision holder on bench drill

Booth No.

H. Leach Machinery Co., Providence, R. I. 1627

Lempco Products Inc., Bedford, O. 1509
Exhibit: New precision anti-friction die sets. Spiral adjustable reamers; reamer drive; electric press; hydraulic press

Lepel High Frequency Laboratories Inc., New York 23 1414
Exhibit: New gear hardening unit with automatically controlled heating and quenching cycle, in operation. Other induction heating equipment in operation

Lincoln Engineering Co., St. Louis 608
Exhibit: New time clock-controlled Centro-Matic lubricating system. Power-operated drum pumps; bucket pumps; hand guns; other lubri-

Lipe-Rollway Corp., Syracuse 1. N. Y. 817

John E. Livingston Co., Detroit 1841

Lloyd Gage & Tool Co., Cleveland 3 2138

Logansport Machine Co. Inc., Logansport, Ind. 1543
Exhibit: New Rotocast hydraulic cylinders; air and hydraulic valves; Air Draulic cylinder; Sure Flow pumps. Chucks; air cylinder; air valves; power units

Lufkin Rule Co., Saginaw, Mich. 116
Exhibit: New chrome clad steel measuring tapes. Steel and woven measuring tapes; steel tape-rules; steel, aluminum and wood folding rules; precision tools

Lyon Machine Co., Worcester 3, Mass. 403
Exhibit: New Lyon internal grooving tool

MACHINE DESIGN, Cleveland 13 1009

Macklin Co., Jackson, Mich. 1637
Exhibit: New grinding wheels with V5 and V6 bond. General line of grinding wheels

Magnaflux Corp., Chicago 31 1817
Exhibit: New ZA-12 Zyglo inspection unit with roto-washer (for detecting surface flaws in carbide and stellite-tipped tools, glass, ceramics and plastics) Other Magnaflux inspection units and tanks

Master Mfg. Co., Hutchinson, Kans. 1523

Master Sales Co. Inc., Boston 10 603

Masterform Tool Co., Chicago 18 320
Exhibit: High speed and carbide metal cutting tools

F. A. Maxwell Co., Bedford, O. 927
Exhibit: Precision boring heads; recessing tools; utility and precision grinders; Balas collets and pushers

McCaskey Register Co., Alliance, O. 1008
Exhibit: Industrial control systems; planning boards, machine control boards, industrial cabinets and slip holders

McCrosky Tool Corp., Meadville, Pa. 829
Exhibit: New line of milling cutters with Jack-Lock blades. Reamers; block boring bars; Wizard quick-change chucks and collets; turret tool posts

McGraw-Hill Publication - American Machinist - New York 1016

M-B Products, Detroit 26 913
Exhibit: New Model M-CR pneumatic grinder. Models SS-SR, U-TR, HD-CR and W-SR pneumatic grinders

Merit Machine Co., Northfield, O. 923

Michigan Broach Co., Detroit 4 407
Exhibit: New commercial broaching service illustrated by jobs converted to broaching. Display of typical broached parts; broaches; fixtures; pullers; holders; plug and ring gages

Michigan Tool Co., Detroit 620
Exhibit: New Shear-Speed cutter; gear shaver tools; Cone-Drive speed reducers. Hobs; gear shaper cutters

Micro Switch Division of First Industrial Corp., Freeport, Ill. 205

Milwaukee Tool Center, National Tool & Die Mfgrs. Association
Exhibit: Literature dealing with Milwaukee as a tool center

Mill & Factory—Conover-Mast Corp., New York 305

Modern Machine Shop—Gardner Publications Inc.—Cincinnati 2 606

Modernair Corp., Oakland 8, Calif. 1506
Exhibit: New pneumatic and hydraulic cylinders; valves; filters; air line lubricators. Arnold lubricators for pneumatic tools

Monroe Tool & Mfg. Co., Monroe, Mich. 623
Exhibit: New Millgrinder heavy duty oscillating table grinding machine

Moore Products Co., Philadelphia 24 904
Exhibit: New pneumatic comparator gage with automatic orifice; adjustable inside and outside diameter comparator gage; Nullmatic thermometer and remote manual control panel. Pneumatic comparator gage for quartz crystal electros; tungsten carbide gage plugs; pressure regulator; differential pressure transmitter

Morton Machine Works, Ferndale 20, Mich. 1822
Exhibit: Fixtures; fixture clamps; fixture accessories

Motch & Merryweather Machinery Co., Cleveland 13 1737
Exhibit: New cold sawing machine with automatic feed and cycle; hydraulic feed and hydraulic clamp cold sawing machine; No. 12 saw sharpener; Nos. 3 and 4 sawing machines; segmental saw blades

Motor Tool Mfg. Co., Detroit 604
Exhibit: New Amtec spline arbor; multiple spindle tapping machine. Live centers; cutting tools

Mueller Engineering Co., Detroit 1837
Exhibit: New piercing machine with hydraulic cylinder and stripper, for high tensile materials; riveting equipment; Universal style riveting gun for portable, stationary or multiple automatic installations

Munton Mfg. Co., Franklin Park, Ill. 808
Exhibit: New plastic molding press; Hyspeed foot power press; power driven press of 20-ton capacity. Hydraulic vise and press

Nash-Zempel Tools, Milwaukee

National Broach & Machine Co., Detroit 13 ..... 1223 & 1227
Exhibit: New gear rolling fixture with Flash-o-matic head; motor driven model demonstrating pinion driving large broached internal gear; precision index plate; broaches and broached parts; checking device for parallelism. Lead comparator; gear checker; 10-in. gear

Booth No.

sound tester; gear shaving, Roto Milling and Roto-Shaving cutters

National Machine Tool Co., Racine, Wis. 2111
Exhibit: New Gripmaster vises; hand nib

Navy Department, Bureau of Ships, Washington 25, D. C.
Exhibit: $75,000 model of machinery space in modern naval ship; miscellaneous ship models showing end results of modern tool engineering

NEW EQUIPMENT DIGEST, Cleveland 13 1009

Nichols-Morris Corp., New York 7 634
Exhibit: New miller with automatic pneumatic table feed. Miller, longitudinal lever, rack and pinion cross feed; miller with longitudinal screw feed; Ellis double swivel dividing heads, Bemisine sine-angle plate and sine-angle dresser

Nicholson File Co., Providence 1, R. I. 322

Noble & Stanton Inc., Bedford, O. ..... 112 & 114
Exhibit: New component parts for jigs and fixtures; stud nut sets

Norton Co., Worcester 6, Mass. 2126
Exhibit: New Norflex wheels for polishing and deburring; vitrified bonded diamond wheels, Norbide boron carbide molded shapes and gages. Grinding wheels and mounted points; resinoid and metal bonded grinding wheels; refractory laboratory ware, heavy refractories

O. K. Tool Co. Inc., Div. Aerodynamic Research Corp., Shelton, Conn. 321

O'Neil-Irwin Mfg. Co., Minneapolis 15 1005
Exhibit: Re-designed Di-Acro brakes. Di-Acro benders and shears

Optron Laboratory, Dayton 6, O. 1512
Exhibit: New precision angle sets; parallels; gage base plates. Monochromatic light (Optron interference viewer for use with optical flats); optical flats, square and rectangular shaped

Owatonna Tool Co., Owatonna, Minn. 409

Oxford Engineering, Inc., Detroit 2
Exhibit: New automatic turning attachment for lathes

Parker-Kalon Corp., New York 14 329
Exhibit: New ground thread socket set screws and size-marked gear grip socket head cap screws. Self-tapping screws; hex cap screws; drive screws; wing nuts; thumb screws

C. F. Pease Co., Chicago 1427

Penton Publishing Co. — Cleveland 13 1009

Peerless Gauge Co., Detroit .....

Physicists Research Co., Ann Arbor, Mich. 818
Exhibit: New electronic bearing race tester; Profilometer

Pioneer Engineering & Mfg. Co., Detroit 3 316
Exhibit: Various examples of service as industrial engineers

Pioneer Pump & Mfg. Co., Detroit 3 1410
Exhibit: Impeller type and Rollway positive displacement pumps for circulating coolants, lubricants, and abrasive liquids

Pipe Machinery Co., Cleveland 8 1219
Exhibit: New lead testing machine. Gages and cutting tools

Plymouth Engineering Co., Plymouth, Ind. 1110

Pollak Mfg. Co., Arlington, N. J. 918
Exhibit: New Limitron

Porter-Cable Machine Co., Syracuse 8 919
Exhibit: Model BG-8 wet belt machine with automatic feed table; WG-4 wet belt machine; bench back stand idler; model G-4 wet-dry belt machine; various portable electric tools

Portman Machine Tool Co., New Rochelle, N. Y. 903
Exhibit: New variable speed transmissions. Optical comparators

Frederick Post Co., Chicago 224
Exhibit: New 10-in. plastic slide rule, Excelsior drawing instrument sets. Instruments, equipment and material for draftsmen, architects and engineers

Pratt & Whitney Kellerflex Division, West Hartford 1, Conn. 1612
Exhibit: New Hi-Speed machine; cast alloy master ground burs; carbide master ground burs. Working exhibit of Kellerflex machines, high speed steel master ground burs, file cut burs, sanding drums

Pratt & Whitney Division of Niles-Bement-Pond Co., W. Hartford, Conn. ..... 212 & 214, 311 & 313
Exhibit: New Selectronic gaging machine; power thread gaging unit; commercial lead tester; light beam meters for Electrolimit gages; combination Tri-Roll gage; adjustable pitch diameter gage; cutting tools of improved designs. Electrolimit gages; Air-O-Limit gages; basic measuring equipment; conventional cutting tools and gages. Display of World War II German-made cutting tools and gages

Precise Products Co., Racine, Wis. 134
Exhibit: New Vari Speed lathe. Precise 35,000 rpm electric powertools

Precision Service Corp., Cleveland 3 1527
Exhibit: Instrument repair service. Magnifiers; granite surface plates; checking plate fixtures; Tool Koter plastic dipping unit and material; Hull indicator and duplicating square; Nupla plastic hammers; Hinsdale tools

Prisoner of War Display, U. S. War Department, Washington, D. C.

Production Engineering & Management—Bramson Publishing Co., Detroit 131

Producto Machine Co., Bridgeport, Conn. 812

Putman Tool Co., Detroit 917

Rack Engineering Co., Pittsburgh ..... 424 & 428
Exhibit: New hydraulic die table; lightweight Bantam rack conveyor. Rack conveyor system

Racine Screw Works, Racine, Wis. 2111
Exhibit: New dial recess, shoulder and center indicator gages; releasing tap holder; Drillmore drill jigs

Racine Tool and Machine Co., Racine, Wis. 126
Exhibit: New variable volume hydraulic pumps, sleeve-type control valves, hydraulic pressure boosters

Redmer Air Devices Corp., Chicago 6 811

Booth No.

Exhibit: New collet index chuck; foot control and valve; No. 10 air chuck. Collet air chucks

Reeves Pulley Co., Cleveland 3 1909

Reliance Electric & Engineering Co., Cleveland 10 1631

Republic Drill & Tool Co., Chicago 7 1214

Republic Gage Co., Detroit 21 203
Exhibit: Thread plug and ring gages; plain plug and ring gages; special gages of this type

REVISTA INDUSTRIAL, Cleveland 13 1009

Robotools Inc., Dexter, Mich. 2009
Exhibit: New Robotrill head with capacity to handle from No. 68 to ⅜-in. drills in steel

Rockford Magnetic Products Co., Rockford, Ill. 1821
Exhibit: New magnetic coolant and oil separator. Magnetic chucks for grinders, lathes, milling machines, shapers, planers and welding operations; hand magnets; lifting magnets

Ross Operating Valve Co., Detroit 10 2134
Exhibit: New pilot-type solenoid air valve. Hand, foot, solenoid and cam air valves

H. C. Roushkolb Engineering, Detroit 2001

Royal Oak Tool & Machine Co., Royal Oak, Mich. 105

Rustless Iron and Steel Division, American Rolling Mill Co., Baltimore 13 210
Exhibit: Services to manufacturers. Operating a drilling test for identifying stainless steels

Saginaw Bearing Co., Saginaw, Mich. ..... 431 & 433
Exhibit: Sabeco bronze replacement split thrust washers; Sabeco bronze connecting rods. Seal rings for refrigeration and air conditioning; miscellaneous bronze castings; bar stock; lead screw feed nuts; finished machined parts; pump bushings

Sales Service Machine Tool Co., St. Paul 4, Minn. 1802
Exhibit: New 8" Shape-Rite shaper; Nos. 0, 1 and 2 Press-Rite punch presses; No. 3 Keller Hy-Duty power hack saw; No. 1 Keller bench model power hack saw

Sapphire Products Division of Elgin National Watch Co., Aurora, Ill. 314
Exhibit: New Elgin sapphire industrial products, including cylindrical plug and ring gages; sapphire tipped micrometers; honing and burnishing tools; gage contact points; flexible plug gage handles; textile guides and miscellaneous machine guides for wear applications

Schauer Machine Co., Cincinnati, O. 707
Exhibit: New Ideal multi-purpose speed lathe. Various other Ideal speed lathes, including variable speed and two-speed collet types, and a heavy duty, variable speed, chuck type model

A. Schrader's Son Inc., Division Scovill Mfg. Co. Inc., Brooklyn 1813
Exhibit: Pneumatic machine controls; power press operating controls; pneumatic cylinders, single and double acting; pneumatic valves 2, 3 and 4-way; blow guns of all descriptions; air ejection sets for blowing work from dies, etc.

Severance Tool Industries, Inc., Saginaw, Mich 1006
Exhibit: New solid radius-type combination tube deburring cutter; improved electrode dressing tool. High speed steel midget milling cutters; chatter-less countersinks; edging mills; disc cutters, hand files; inside and outside combination deburring tools; ball seating tool; special tools

Sheffield Corp., Dayton, O. 826
Exhibit: New crusher rolls and crusher roll fixtures, with examples of crush dressed abrasive wheels; Thredcheks; production type Leadchek; external measuring instrument; Electrigage comparators; Precisionaire gage block checking equipment, internal measuring instrument, cylinder block checking machine, and precisionaire applications; Electrigage height gages, optical comparators. Other Precisionaires; Multicheks; Electricheks; visual gages; standard precision gages; thread roll snaps; dial indicator snaps; Leadcheks

Sheldon Machine Co., Inc., Chicago, Ill. 1831
Exhibit: New Sheldon-Vernon milling machine. Model S-56 1" collet capacity lathe; model S-70 1" collet capacity lathe; model E-1026-WQ 10" swing lathe

Shell Oil Co., Inc., New York ..... 128 & 130

Simonds Abrasive Co., Philadelphia 722
Exhibit: New automotive assortments; hardware assortments; mounted point utility kits. Grinding wheels; mounted wheels and points; abrasive grain

Simonds Saw and Steel Co., Fitchburg, Mass. 1901
Exhibit: New tension tester for hack saw blades. Saws; machine knives; files; hack saws for wood and metal cutting

Simonds Worden White Co., Dayton 7, O. 602
Exhibit: New Dayton Crush Form grinding wheels. Air-Tru non-deforming flat ground stock. Dayton grinding wheels (centerless, cylindrical, surfacing, snagging); machine knives

Size Control Co., Chicago 44, Ill. 2103
Exhibit: New reversible plain sapphire gages; reversible tungsten carbide gages; reversible plain Norbide gages; reversible thread steel gages; reversible tungsten carbide gages: reversible thread chromcarbide gages; plain ring gages; thread ring gages. AGD plug gages (plain); flush pin gages; reversible plain gages, steel; reversible plain gages, stellite; thread measuring wires; gear measuring wires

Skilsaw, Inc., Chicago, Ill. 2124
Exhibit: New radial support for converting portable electric Skilsaws into stationary saws; bench stand for converting portable electric Skildrills into stationary drill presses; pressure handle; Skilshear; Skil Nibbler. Portable electric saws, drills, belt sanders, disc sanders and grinders; blowers; accessories for these tools

The Skinner Chuck Co., New Britain, Conn. 613

Snyder Tool & Engineering Co., Detroit, Mich. 208
Exhibit: Pictorial display of recently designed machines

Socony-Vacuum Oil Co., New York 1406

The Sommer & Adams Co., Cleveland, O. 1826
Exhibit: Nos. 1 and 1½ Cleveland vertical milling machines; Craftsman rotary milling machine; 12-spindle rotary drilling machine

Booth No.

South Bend Lathe Works, South Bend, Ind. 1904
Exhibit: New display of four South Bend precision lathes ranging from 9" to 16" swing, including tool room and turret models. All machines will be demonstrated in operation

Spartan Saw Works, Inc., Springfield 7, Mass. 420

Special Engineering Services, Detroit, Mich. 1814

Specialty Equipment & Machinery Co., New York 371
Exhibit: New Struthers Wells hydraulic tangent bender; Dorr multiple drill head. Pictures and samples of work covering Dorr Multi-Pierce and Multi-Bend machines

Standard Gage Co., Inc., Poughkeepsie, N. Y. 302
Exhibit: New DuBo gages; Decimatic dial indicators; comparator dial snap gages; Super-Snap gages. Dial bore gages; dial indicators; many other types of dimensional gages

Standard Pressed Steel Co., Jenkintown, Pa. 326

Standard Shop Equipment Co., Philadelphia, Pa. 229

Staples Tool & Engineering Co., Cincinnati 25, O. 327
Exhibit: New reamers with carbide cutting edges full length of the flutes; carboloy tipped expansion stub screw machine reamers. Expansion reamers; solid reamers; spot facers; end mills; counterbores; special tools

Star Machine & Tool Co., Cleveland 4, O. 408
Exhibit: Die sample board

The L. S. Starrett Co., Athol, Mass. ..... 213 & 215
Exhibit: Precision tools and instruments; dial indicators; steel tapes; hacksaws; metal and wood cutting band saws

State Manufacturing & Construction Co., Franklin, O. .. 115
Exhibit: Three sizes of Dialset boring tools with micrometer graduations by 0.0005" up to 0.025", for cutting diameters from ⅝" to 4½"; adjustable 4-cutter boring and reaming bars (50 standard sizes with plain or fluted bodies) for core drilling, precision boring and reaming; Velsey black granite high precision surface plates

STEEL — Cleveland 13. 1009

Steel City Testing Laboratory, Detroit 4. 1918
Exhibit: Brinell testing machines; universal testing machines; ductility testing machines; portable brinell testing hammers; proving instruments

The Steel Products Engineering Co., Springfield, Ohio 1919
Exhibit: Brehm trimming die

The Stites Tool Co., Cleveland 3, O. 318
Exhibit: Cams and circular form tools for Brown & Sharpe automatic screw machines. Examples of operation sheets, camming and tooling prepared from customer's part prints

The Steinle Machine Co., Hartford, Conn. 1222

Stokerunit Corp., Milwaukee 14, Wisc. ..... 630 & 729
Exhibit: Simplex double-end precision boring machine; single-end precision boring machine; two-way, unit type, hydraulic feed, precision boring machine; knee-type, hydraulic feed, precision boring machine; single-end, heavy duty, hydraulic feed, precision boring machine; unit type, heavy duty, milling head

H. E. Stone Supply Co., Oaklyn, New Jersey 1814
Exhibit: Simplex hydraulic pumps

The Herman Stone Co., Dayton 2, O. 1512
Exhibit: New Optron laboratories, Dayton, O., will use section of booth to demonstrate new optical interference viewer, optical flats and wear-blocks. Herman exhibits will include 4 x 6' granite surface plate on rolling stand; 12 x 18" granite surface plate on rolling stand; 18 x 24" granite surface plate

Strong, Carlisle & Hammond Co., Cleveland 13, O. 907 & 909
Exhibit: Complete line of Mac-It heat treated alloy steel screws; hollow set screws; socket head cap screws; stripper bolts; shoulder screws; hexagon socket pipe plugs; square head set screws; tool post screws; hexagon head cap screws; hollow lock screws

D. A. Stuart Oil Co., Ltd., Chicago 23 614
Exhibit: Wide variety of parts of ferrous and non-ferrous metal parts, machined, drawn or ground with help of Stuart metalworking lubricants

Sun Tool & Gage Corp., New York 1711

Sunnen Products Co., St. Louis 17 908
Exhibit: New line of hones ranging from ⅛" to 2⅝" diameter. Sunnen precision honing machine.

Superdraulic Corp., Dearborn, Mich. 1918
Exhibit: New line of Superdraulic 5000 psi hydraulic pumps, motors and transmissions; high pressure and extreme pressure, Superdraulic constant and variable delivery pumps. Several of the Superdraulic units will be in operation

Super Tool Co., Detroit 1903
Exhibit: New milling heads with solid carbide blades; solid carbide drills, sizes 1/16" to 3/16". Complete line of standard and special carbide tipped tools

Sutton Tool Co., Sturgis, Mich. 624
Exhibit: New machine designed for testing tension on feed fingers for automatic screw machines. Standard collets and feed fingers for all automatic and hand screw machines; lathe collets and accessories; standard and master collets and pads; standard and master feed fingers and pads; Sutton Diamond Grip collets, master feed fingers and pads and full floating master collets and jaws for hot rolled steel; special collets; small tools

Swartz Tool Products Co., Inc., Detroit 227
Exhibit: Standard line of fixtures and locks

Swedish Gage Co., of America, Detroit 4 234
Exhibit: New internal indicator, 0.155" to 0.855"; micro snap gage; micrometers. Internal indicators; Mikrokators; other types of micrometers

The Taft-Peirce Manufacturing Co., Woonsocket, R. I. . 323
Exhibit: New magnetic sine plate; wheel dressers; boring head; mobile inspection truck; ball bearing pilot plug gages; gage blocks. Gages; production and inspection tools; magnetic chucks; examples of contract machine work

Technical Publishing Co., Cleveland 13 107

G. H. Tennant Co., Minneapolis, Minn. 2150

Tinnerman Products, Inc., Cleveland 13 ..... 304 & 306
Exhibit: Speed Nuts; Speed Clips; Speed Clamps

Booth No.

Torit Manufacturing Co., St. Paul 2, Minn. 1508
Exhibit: Self-contained Torit dust collectors for grinders, polishing machines, etc.

Trabon Engineering Corp., Cleveland 717
Exhibit: New M system; K pump, a manually operated unit for pumping oil and grease into centralized lubricating systems. Trabon reversing systems for grease and oil lubrication, both automatic and manual

Triplex Machine Tool Corp., New York 7 1413
Exhibit: New Swedish Lidkoping centerless grinder, demonstrated under power, grinding three diameters, one tapered seat and one straight shoulder on aircraft engine valve guide—all these in one operation

Tubular Micrometer Co., St. James, Minn. 132
Exhibit: Sapphire tipped micrometers; crank shaft micrometer; pocket slide calipers; height gage. Tubular micrometers; snap gages; vernier calipers; hardened steel squares; inside micrometers

Tungsten Carbide Tool Co., Division Michigan Tool Co., Detroit, Mich. 620

Turchan Follower Machine Co., Detroit, Mich. 1218

Ultra-Lap Machine Co., Detroit 7 1522

Union Carbide & Carbon Corp., New York 1521
(See Haynes Stellite Co.)

United Precision Products Co., Chicago 18 217
Exhibit: New Fether-Lite gages; Uppcoloy gages; improved packaging. Dublife gages; Taperlock gages; progressive Taperlock gages; Trilock gages; progressive Trilock gages; number and letter precision pin sets; fractional pin sets; 0.030"-0.500" pin set; special gages

Engineers Specialties Division, Universal Engineering & Colorplate Co., Cleveland 15 400
Exhibit: New Pant-O-Jector system of optical gaging; engineering staging fixtures for optical gaging. Specially engineered chart gages for optical comparator; standard chart gages for optical comparators; standard projector and layout scales; protractors; thread chart gages, etc.

U. S. Navy, Washington, D. C.

Up-To-Date Tool Co., Worcester 6, Mass.
Exhibit: New sharpener for extremely small drills

Vapor Blast Manufacturing Co., Milwaukee 3, Wisc. 1807
Exhibit: New standard model, single stage vapor blast liquid honing cabinet. Photographic display showing microscopic surfaces, cutting edges of tools, etc.

Vascoloy-Ramet Corp., North Chicago 730
Exhibit: Vascoloy-Ramet carbide tools; blanks and dies; precision castings. Fanweld hard facing rods for oxy-acetylene and electric arc application

Vickers Inc., Detroit 32 ..... 1114 & 1116

Vinco Corp., Detroit 27 ..... 307 & 309

Visi-Trol Corp. 124

Waldes Kohinoor, Inc., Long Island City 1, N. Y. 1931
Exhibit: Truarc retaining rings for positioning shafts, gears, bushings and bearings

Wales-Strippet Corp., North Tonawanda, N. Y. 1438
Exhibit: Wales hole punching and notching units

Walker-Seed Tool and Engineering Co., Cleveland 3 2113
Exhibit: New Flash Freeze method of industrial cold treating. Metro positioners; H & H reciprocating tool; Nash-Zempel micrometer boring bars; Lingo tapping heads and centering devices; Production air-operated vises

Walker-Turner Co., Inc., Plainfield, N. J. 1105
Exhibit: New 16" metal cutting band saw; drill press, 20" power feed drill press; 15" hand feed drill press

Walsh Press & Die Co., Chicago
Exhibit: Punch presses, 6-80 tons capacity; arbor presses; two-button safety devices; stock reels

Wardwell Manufacturing Co., Cleveland 9 1823
Exhibit: New universal automatic machine for grinding flutes in taps, reamers, etc. Combination saw grinder for circular, hack and band saws; combination band saw filer and setting machine; Super double acting band saw filing and setting machine; rip and cross-cut saw filing machine; line of saw tooth setting machines

Webster Products Co., Cleveland 1113

Welco Products Division of General Motors Corp., Dayton, O.
Exhibit: New line of motors for industrial and machine tool applications; totally enclosed fan cooled motor; ventilated motor; general purpose open type motor

Wells Manufacturing Corp., Three Rivers, Mich. 626
Exhibit: Horizontal Metal cutting band saw machine equipped with wet cutting system

Welden Tool Co., Cleveland 4 221

Wetmore Reamer Co., Milwaukee 8 ..... 413 & 415
Exhibit: New line of end mills. Reamers and boring bars

Wesson Co., Detroit 2 119

The Wickman Corp., Detroit 106
Exhibit: Resinoid bonded diamond grinding wheels; steel bonded diamond grinding wheels; diamond drills

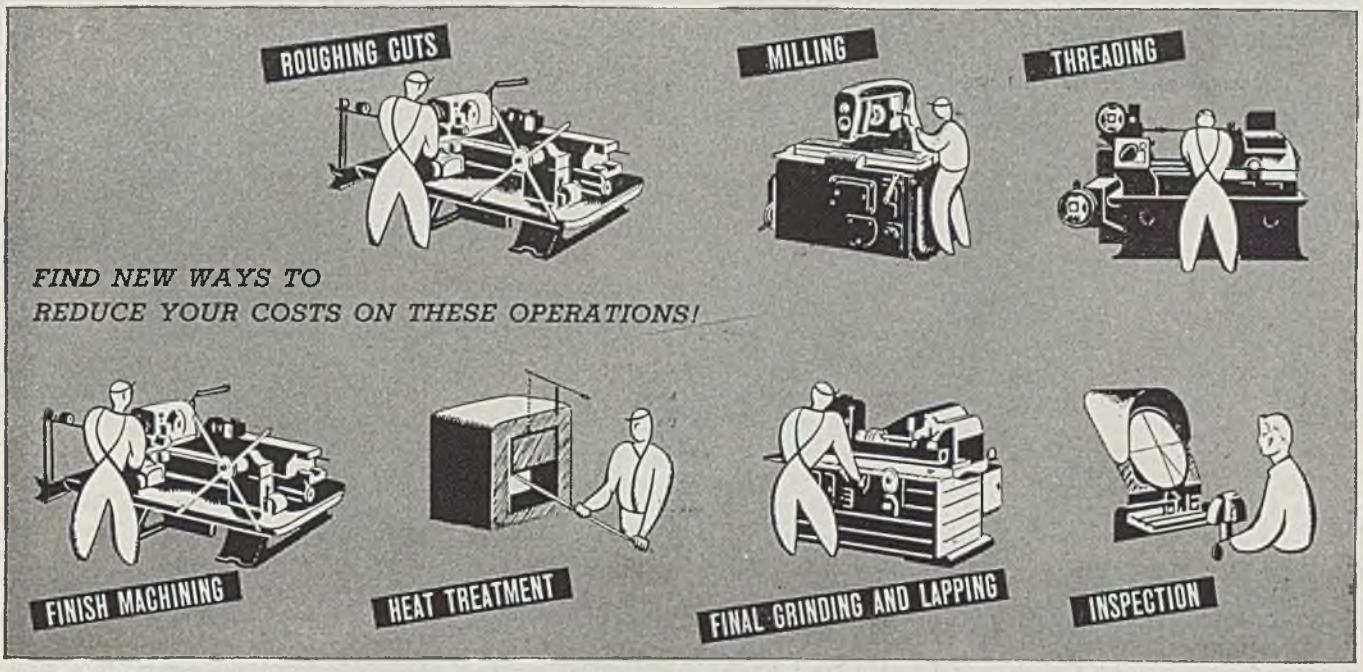
Wilson Mechanical Instrument Co., Inc., New York 54 425
Exhibit: New universal testing unit for Rockwell testing of large and heavy pieces. Standard Rockwell hardness tester; Rockwell superficial hardness tester; Tukon tester with Knoop indenter

Willey's Carbide Tool Co., Detroit 202

N. A. Woodworth Co., Detroit 20 1115
Exhibit: New adjustable thread ring gages; diaphragm chucks, reversible gages. Woodworth fixed limit gages; Cone-Lok adjustable clamping jigs; precision machined parts

Zagar Tool, Inc. Cleveland 17 1531
Exhibit: New multiple spindle drill heads. Collet tools; holding fixtures; air operated fixtures; indexing fixtures. Broaching machines, vertical and horizontal

William M. Ziegler Tool Co., Detroit 16 807
Exhibit: Roller drive floating tool holders for taps, reamers, counterbores, etc.



FOR LOWER COSTS ALL ALONG THE LINE

These Alloy Steels Are A Step Nearer To Your Finished Product Requirements

Frankly, these steels are not intended for ordinary jobs that any alloy steel can handle.

While they are often made to SAE analyses, they are produced in a tool steel mill to tool steel standards of quality, so you can expect far more from them.

If you produce certain parts that require unusual combinations of physical properties, there is a Carpenter Special Purpose Alloy Steel to fit the job.

One example is a pinion shaft application on oil field equipment. The gear is machined on the shaft and the specification calls for a definite hardness at the pitch diameter of the gear. By a special heat treatment and close inspection we furnish shaft material to this customer to a uniform hardness that does not vary over 30 points of Brinell at the pitch diameter. This means that we hit a specified uniform hardness at approximately ½" below the bar surface.

To meet your special requirements, cut down rejects and reduce unit costs on important parts, get more information from Carpenter, the company that pioneered automotive and aviation alloy steels. Start now by dropping us a note on your company letterhead. Ask for a copy of the new booklet, "Fitting the Steel to the Job."

Carpenter

SPECIAL PURPOSE

ALLOY STEELS

. . . made in a tool steel mill
. . . inspected by tool steel standards

THE CARPENTER STEEL COMPANY • 139 W. BERN STREET • READING, PA.

Powdered Iron Cores

(*Concluded from Page* 148)

wide application at low frequencies, primarily because of their much higher permeability at low field strengths. Alloys of this type known generally as Permalloy were described as early as 1923 by Arnold & Elman[4].

The nickel-iron alloy powders generally containing from 70 to 90 per cent nickel are manufactured by first melting the ingredients involved and rolling the cast alloy ingots so as to produce a brittle and grindable material. The material is then easily reduced to fine powder by means of a hammer mill or ball mill. The powder so produced is then annealed and the resulting partially sintered material again reduced to a powder. At this stage the material is ready for the insulating process. The binder used is of the refractory type and its constituents are added partially dry and partially in a water solution to the powder. The mixing is done usually in a heated rotating barrel, and is carried on until all the volatile ingredients are evaporated.

The insulated permalloy powder so prepared is pressed in steel dies from 200,000 to 250,000 psi. The pressed cores are then annealed very carefully, the operation serving to develop a low hysteresis loss, high permeability and suitable strength in the piece. The parts after cooling are passed through an extraction operation to remove water soluble impurities and dried. The cores are then normally vacuum dried and covered with a suitable plastic protective coating.

The density of the finished parts normally varies from 7.8 to 8.3. As a comparison the value of a similar Ni-Fe alloy in sheet form is 8.6. The permeability of this particular Permalloy group is normally about 80. It should be noted that the effect of heat treatment on nickel-iron alloys is very important, and by proper heat treatment unusually high values of permeability have been obtained by different investigators, especially in the region of 78 per cent nickel. The softer a material is magnetically the higher its permeability and conversely the harder the material is magnetically the lower its permeability.

A soft magnetic material is, in general, characterized by a steep magnetization curve or, in other words, large values of flux density are produced by small magnetizing forces. A hard magnetic material or permanent magnet material is characterized by a gradually ascending magnetization curve, consequently the material at all magnetizing forces has a relatively low permeability. Hard materials also have a greater hysteresis loss, said loss of energy being proportional to the area of the hysteresis loop. Typical hysteresis loops for soft iron and hard steel are shown in Fig. 5. When a sample of non-magnetized steel is subjected to an increasing magnetizing force and the flux density measured. a curve similar to OA will be obtained. If the magnetizing force is then reversed and varied up to a maximum and then reduced to zero a curve similar to BCDE will be obtained. If the magnetizing force is then increased to its original positive value the cuve EA will be obtained. It is apparent from this curve that after the initial magnetization the value of flux density (B) lags behind the value of magnetizing force (H). This lagging effect is known as magnetic hysteresis. It will be seen from the sketch that the hysteresis loss is much greater for hard materials than soft materials and must be kept at a minimum in soft materials which are to be used for magnetic cores. Referring to the curve OF for soft iron it will be seen as previously stated that the flux density increases very rapidly for small values of magnetizing force, but towards the end of the curve there is a sharp bend and the rate of increase of the flux density is considerably reduced. This effect is commonly referred to as magnetic saturation and at the point F the metal is said to be magnetically saturated. Compressed powdered iron cores, however, do not saturate easily, partially because of the numerous air gaps present.

To summarize, the desirable characteristics of materials for high frequency magnetic applications are: Small particle size, smooth regularly shaped particles, high particle volume resistivity, low hysteresis loss and high chemical purity. The prepared material should be pre-insulated and bonded in a manner which will result in high inter-particle electrical resistance to minimize eddy-current losses and a mechanically, electrically and chemically stable bond. In the fabrication of high permeability pure iron or nickel-iron alloy cores inorganic bonding materials and proper annealing treatments are employed to obtain high permeabilities with the necessary low core loss.

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[2]Compressed Powdered Permalloy. W. J. Shackleton & I. C. Barber, Transactions, A. I. E. E.

[3]Survey of Magnetic Materials in Relation to Structure. W. C. Ellis and E. E. Schumacher. Bell System Technical Journal, 1935.

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[5]Iron Powder Compound Cores for Coils. G. Howe Wireless Engineer (1933)

[6]Iron in HF Circuits. J. Britton. Proc. I. R. E., Australia, Sept. 1937.

[7]Iron Powder Cores. E. Friedlander, Wireless Eng. (1938)

[8]A Study of Iron. S. White. Communications, June 1943.

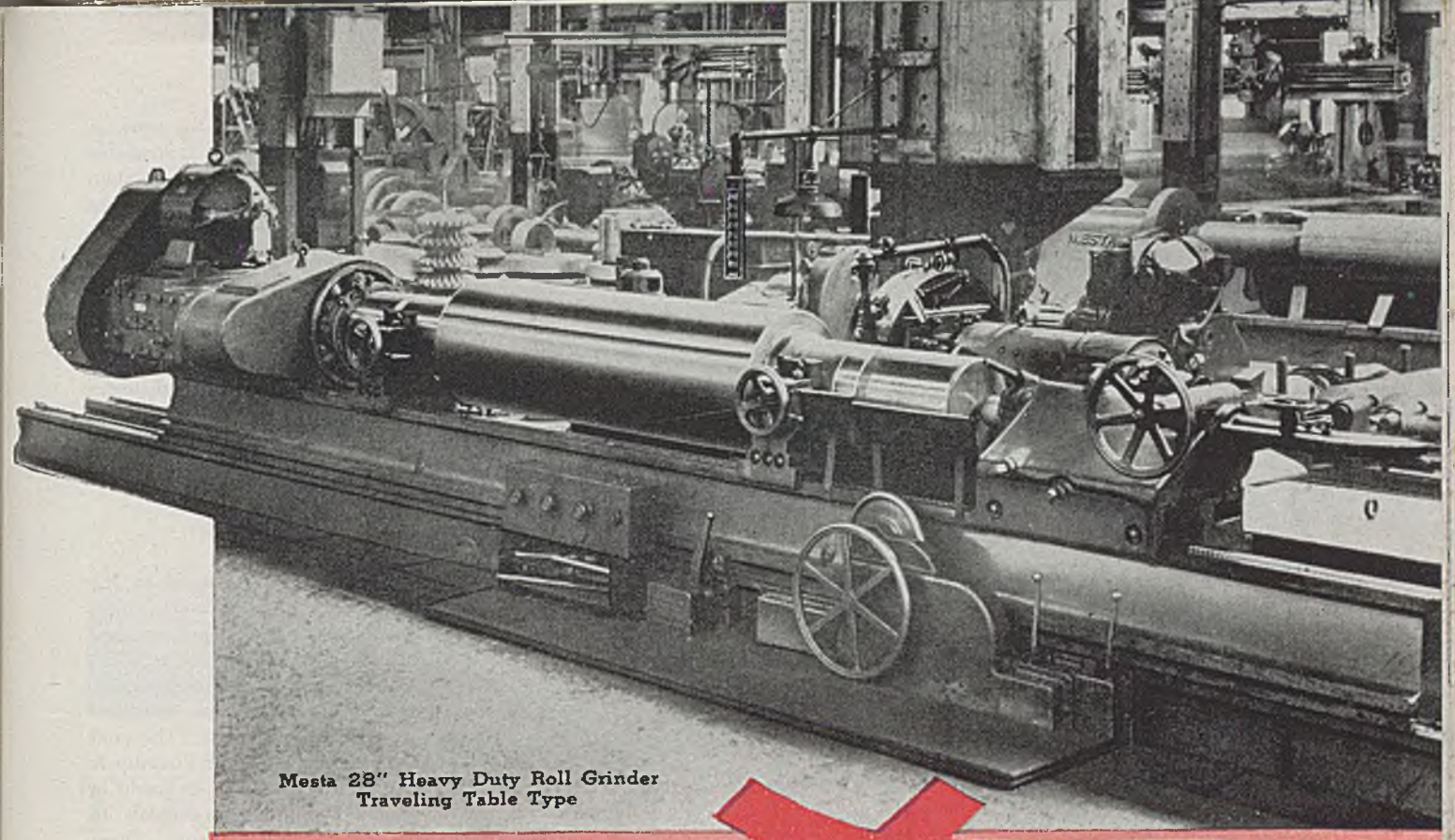
[9]Dust Cored Coils. V. Welsby. Electronic Eng., London, 1933.

[10]Magnetic Properties of Compressed Powdered Iron. Buckner Speed and G. W. Elmen, A. I. E. E., June 1921.

NO TEETH, BUT "BITES": Heavily-laden steel barrels and plates are handled by this grab developed by Safety Division, Boyer-Campbell Co., 6540 St. Antoine street, Detroit. Operated by a cam-lever mechanism and chain, device grabs objects holding them in vise-like grip that grows tighter correspondingly with weight of load, releasing them immediately when brought to the floor. Two alloy steel bodies make up gripping units of the Granny Grip, as the development is called

Segmental Dies

Crescent Tool & Die Co., Lincoln Park, Mich., is now engaged in the manufacture of segmental type lamination dies which feature removable and replaceable punches and segments. The removable feature eliminates the necessity of replacing the entire punch build-up when one or more segments become worn. Only the worn pieces need be replaced, thus making possible considerable savings to the user, the manufacturer asserts.



Mesta 28" Heavy Duty Roll Grinder
Traveling Table Type

MESTA

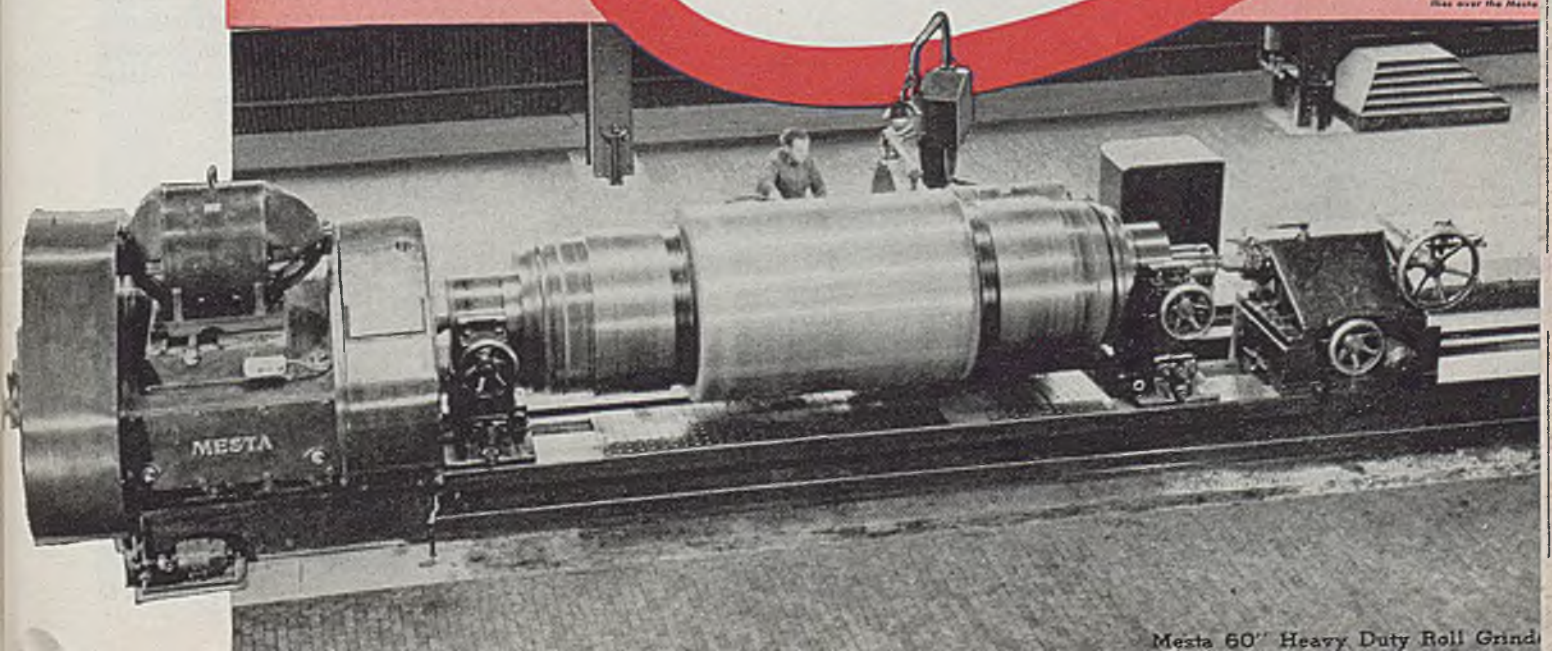
Roll Grinders

MESTA Roll Grinders of simplified design are the most accurate and dependable grinding machines available today. Built with precision for the finest finishing and with ruggedness for the heaviest roughing.

MESTA MACHINE CO.

PITTSBURGH, PA.

The Army-Navy "E" with five stars flies over the Mesta



Mesta 60" Heavy Duty Roll Grinde

INDUSTRIAL EQUIPMENT

Hydraulic Press

A new 20 ton motor driven, self-contained, completely portable hydraulic press has been developed by Northern Tool & Machine Co., P. O. Box 68, Melrose Park, Ill.

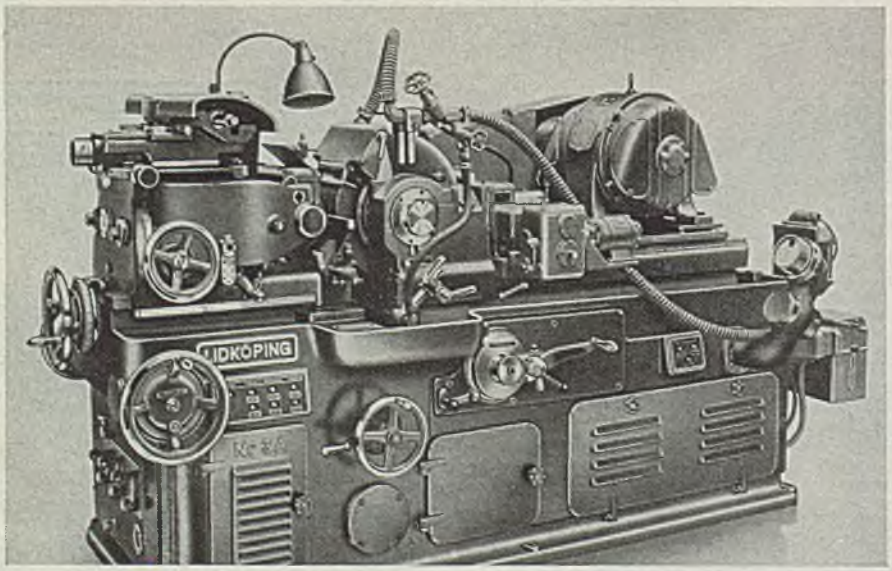
It is suitable for broaching, forcing, straightening, bending, die try-outs, forming, embossing, mold try-outs, riveting, piercing, flanging, staking, upsetting, crimping, assembling and clamping operations.

Press arch is 14 in. high by 24 in. wide. Alloy steel platen, 16 x 18 x 2 in. is ground on both sides, drilled and tapped to accommodate all set-ups to capacity of the press. Power stroke speed is 90 ipm and is easily adjusted to any length from zero to 12 in. while tonnage control is effective without retarding speed of the ram. When ram is fully extended, 12 in. remains in cylinder which provides pilot for ram travel, assuring exactly vertical stroke without side play. Return stroke travel is 120 ipm reducing idle period to a minimum. Ram is made of hard chrome-finished steel. Outside diameter of ram is 4 in. End cap on the ram may be bored out for a tool shank adapter. Pressure control valve is easily set to provide accurate pressure adjustments from 1 to 20 tons and incorporates a self-air eliminating feature which prevents "air locks" or pulsating and at all times provides smooth, steady power up to any pre-determined pressure.

Steel 4/1/46; *Item No.* 9108

Centerless Grinder

Lidkoping Mekaniska Verkstads A. B., Sweden, a division of S. K. F. Ball Bearing Corp., offers No. 3A centerless grinding machine. Triplex Machine Tool Corp., New York, has been appointed the agents. This unit is of heavy construction and has both grinding and regulating wheel spindles supported by bearings on both sides of the wheels. Due to this rigidity it is capable of high accuracy as well as of high production. A through-feed speed of 100 fpm and stock removal of 100 lb per hour have been obtained in the grinding of steel shafts. These grinders can be used for through-feed grinding and for in-feed (plunge-cut) grinding. Both wheels are provided with adjustment relative to the work. A wide variety of attachments is available for profile grinding, feeding of short pieces, grinding of bars and tubes, twist drills, etc.

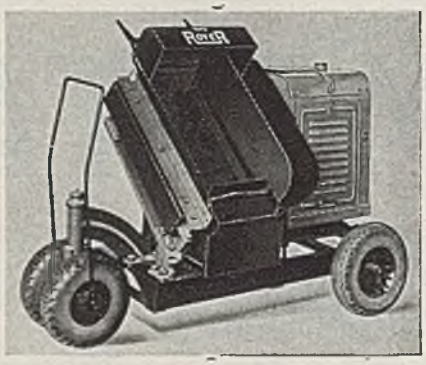


Horsepower rating of the grinding spindle drive motor on the No. 3A machine is 15 hp, 25 hp on the No. 4A, 50 hp on the No. 5A and it is 90 hp on the No. 6A grinder. Grinding wheel sizes accordingly range from 16 in. diameter by 6¾ in. width to 30 in. diameter by 16 in. width.

Steel 4/1/46; *Item No.* 9111

Sand Conditioner

Backing or core sand stored in the foundry yard quickly becomes caked and full of lumps. Before putting sand from the yard storage into use, it is desirable that it be given proper conditioning to break up all lumps, open and aerate it and eliminate refuse. The sand conditioner offered by Royer Foundry & Machine Co., Kingston, Pa., is made in portable gas engine driven models to meet this yard use equipment. Three sizes are available: Junior G with 1 to 3 cu yd per hour capacity; the model H



with 3 to 5 cu yd hourly capacity; and the model O with 3 to 8 cu yd hourly capacity.

These units can also be used indoors where desired and provide all of the essentials for thorough sand preparation—refuse removal, lump breaking, blending and mixing, moisture distribution, aeration, and permeability increase.

Steel 4/1/46; *Item No.* 9121

Indicating Flow Meter

Hays Corp., Michigan City, Ind., announces the Veriflow meter for measuring, indicating, and totalizing various liquids used in industry. Outstanding feature of the meter is its ability to indicate the rate of flow at a point remote from where the meter is installed. This is in addition to the rate of flow indication and integrator which are integral with the meter itself. To secure the

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 175.)

PRODUCTION WITH CARE

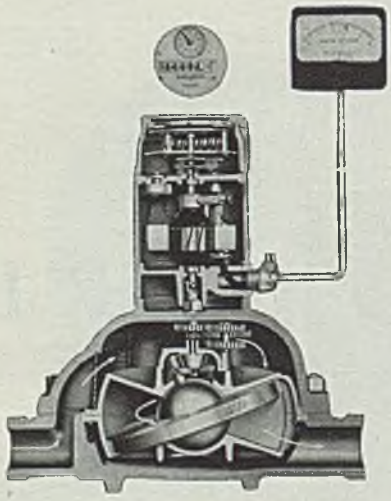
The sculptor of delicate figurines is obliged to exercise the greatest care and skill. CHANDLER workers compare with these highly skilled men day in and day out, creating skillfully wrought products with rigidly accurate machines. Our inspectors, provided with the finest measuring instruments, mount a constant guard on quality. Result: imperfections don't have a chance at CHANDLER'S, headquarters of custom-made cold wrought products.

CHANDLER PRODUCTS CORP.

1491 CHARDON RD. CLEVELAND 17, OHIO

remote indication generator is mounted on top of the flow meter. Same shaft operates both the generator and the totalizing register. No external source of electricity is required because the indicating meter measures the output of the generator and is calibrated to indicate the corresponding rate of liquid flow through the meter. The scale of the indicator can be calibrated to read in any values of flow desired such as gallons per minute.

The device will have many applications such as for measuring, indicating,



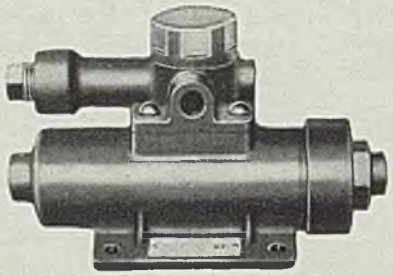
and totalizing the flow of oil, in testing hydraulically operated mechanisms, flow of water in chemicals in continuous manufacturing processes, flow of fuel oil burning furnaces and boilers, flow of a heating or cooling liquid, the blending of two or more liquids (proportioning), etc. Some of the unusual liquids that have been measured by the meter are lacquer, tar, molasses, chocolate, rosin, soap, and starch solution, whey, asphalt emulsions, paint, and varnish.
Steel 4/1/46; *Item No.* 9101

Water Ejector

An automatic water ejector, designed to remove water automatically and with effectiveness from compressed air systems is offered by National Pneumatic Co., 420 Lexington avenue, New York 17. It does away with frequent manual draining of water separator and air lines. Water damage to pneumatic equipment or production material is prevented.

An important feature is that the ejector never connects the compressed air system to atmosphere—therefore cannot cause any loss in pressure.

Occupying little space (7⅛ x 2¾ x 4½-in. high) and mounted horizontally, the device can be installed at any location where air line water is collected. Three connections of ¼-in. pipe or ⅜-in. copper tubing are necessary: One to bottom of water collector; another to drain (for disposal of the removed water); and the third to an air line that is repeatedly charged and discharged—such as the "unloader line" of an air compressor, or solenoid valve controlled by com-

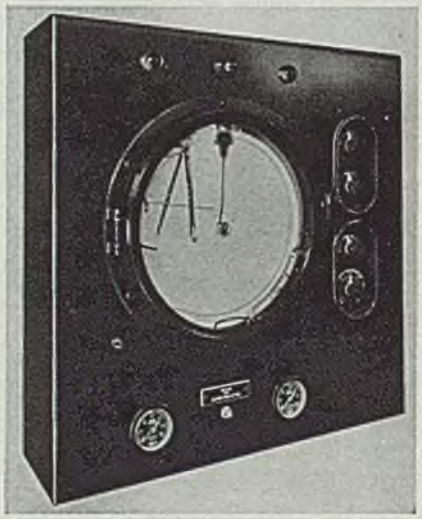


pressor switch, or control valves on compressed air equipment, etc.

With the ejector is provided a ½ x 6 in. pipe and fittings to provide a vertical sump of ample capacity for most water removal applications. At 100 lb pressure, 30 cycles will discharge 1 qt of water. Greater quantities can be handled by lengthening the pipe.
Steel 4/1/46; *Item No.* 9098

Temperature Controller

For batch-type processes and other operations where rate of temperature increase or decrease must be controlled, as well as the actual processing tempera-



ture and duration, Foxboro Co., Foxboro, Mass., has developed the Cycle-Log controller. No time-cams or supplementary instruments are used. Control is completely automatic, according to whatever schedule is predetermined by adjustments of four setting knobs on the instrument panel.

In batch dyeing, for example, the controller will bring bath temperature up from any starting point, regardless of daily or seasonal variations, to the desired holding point, and do this at any desired rate of rise from 1 to 8° F per minute. It will hold the bath at exactly the correct temperature for the correct period of time, and then shut off heat supply, and signal the operator that cycle has been completed.
Steel 4/1/46; *Item No.* 9127

Electric Marker

A new electric marking unit, light in weight, easily portable and operating at high speed, is announced by Breuer Electric Mfg. Co., 5128 Ravenswood avenue, Chicago 40. It weighs 8 oz, is 6 in. long, cutting stroke is 7200 per

minute, alternating current operation. With its 120 strokes per second, it cuts fine, deeply imbedded dots that mark tools, dies, etc., leaving a permanent mark for identification.

Barrel of marker is like a pencil and writes in the same manner. Switch on current from any alternating current outlet, adjust depth of cut by turning adjusting nut, and write numbers, letters or names into the surface of tools, dies, parts or finished products, whether made of steel, bronze, iron, plastics, porcelain, marble, lead or glass.
Steel 4/1/46; *Item No.* 9060

Portable Arc Welder

Mid-States Equipment Corp., 2429 South Michigan avenue Chicago 16, announces a small portable electric welder, designated as Zipper-Et. It is an electric welding unit that will handle all maintenance and repair work that does not require the heavy duty, industrial type welders of high amperage. Operates on 110 v ac.

Housed in a heavy gage metal case, it includes a transformer which is burn-out-proofed, with spun-glass insulation,

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 175.)

separate primary winding and a separate secondary winding, without any electrical connection between them. Accessories include lengthy, high-quality cables with insulated taper plugs and sockets that insure long service and safety; a separate electrode holder and rugged ground clamp; aluminum, brazing and steel welding rods together with starting carbon and complete instructions. Also

included as standard equipment is the 9000 arc torch. In addition, each Zipper-Et is supplied with an approved helmet, (full size), with a Federal Specification glass filter lens.

Device will handle five sizes of welding rod, from 3/32-in. through and including 5/32-in. It will handle ¼-in. carbons in 9000 arc torch.

Steel 4/1/46; *Item No.* 9103

Air Separator

Designated as Airfuge, a new separator for removing moisture, oil, scale, etc., from compressed air is announced by Swartwout Co., 18511 Euclid avenue, Cleveland 12. Air entering the inlet is diverted positively to the inner wall of

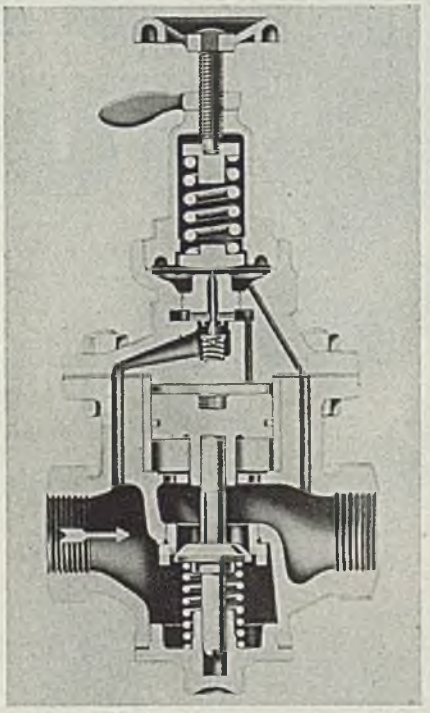
the round body and unwanted substances whirl out of the air stream and drain to the bottom. Cleaned air may be taken off horizontally or vertically from pipe-tapped ports. An integral float-operated trap releases condensate automatically. Separator is made of high-tensile iron; interior parts of corrosion-resisting materials. Bottom easily removed if necessary for cleaning. Made in three sizes for varying capacities and with a range of pipe connection sizes.

Steel 4/1/46; *Item No.* 9104

Air Reducing Valve

A new improved type of internal pilot operated air reducing valve, known as Class L-1A, is announced by Leslie Co., 152 Delafield avenue, Lyndhurst, N. J.

Among the main features of this valve, are its stability under all flow conditions, and its responsive instant reaction to wid-



est and most sudden variations in load. Plastic inserts in the valve seats provide positive tight shutoff and long life.

All wearing parts are renewable and complete interchangeability facilitates overhauling without removal from the pipe line. Corrosion and wear resistance is obtained by the use of stainless steel main valve, bronze controlling valve and corrosion resistant piston rings.

Device is available in sizes ½-in. through 4 in. inclusive, designed for initial pressures up to 400 air pressure and reduced pressures from 5 to 300 psi.

Steel 4/1/46; *Item No.* 9128

Abrasive Cut-Off Unit

A new 1 hp abrasive cut-off machine is announced by Buehler Ltd., 165 West Wacker drive, Chicago 1. This cutter, No. 1015 is a table mounted model, occupies small space, yet capable of cutting metal samples up to 1 in. stock. Coolant is supplied by a recirculating tank No. 1016 which is placed on the floor with hose connections to cutter.

While designed primarily for the metallurgical laboratory, this cutter is also adaptable to general industrial use where precision and accuracy are required in abrasive cutting.

Steel 4/1/46; *Item No.* 9123

Haulage Device

Phil-Dump Junior, introduced by Phillips Mine & Mill Supply Co., Jane street, Pittsburgh 3, is now adapted for use with fork lift trucks.

It has a ½ cu yd capacity with an overall length of 66 in., width 24½ in.,

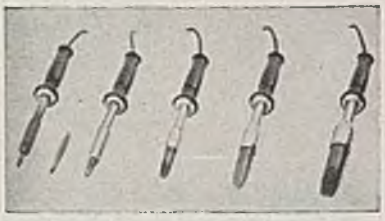
height 38¼ in. It is equipped with solid rubber tires for ease of operation and floor protection.

Applications of this unit include transporting and unloading scrap, castings, stampings, cuttings, sand, fertilizer, and powdered chemicals. It can be used with all standard type fork lift trucks. also as a hand push model.

Steel 4/1/46; *Item No.* 9106

Soldering Irons

A new and improved line of industrial soldering irons is announced by Industrial Heating Division of General Electric Co., Schenectady, N. Y. Ranging from 75 to 300 w in size and available

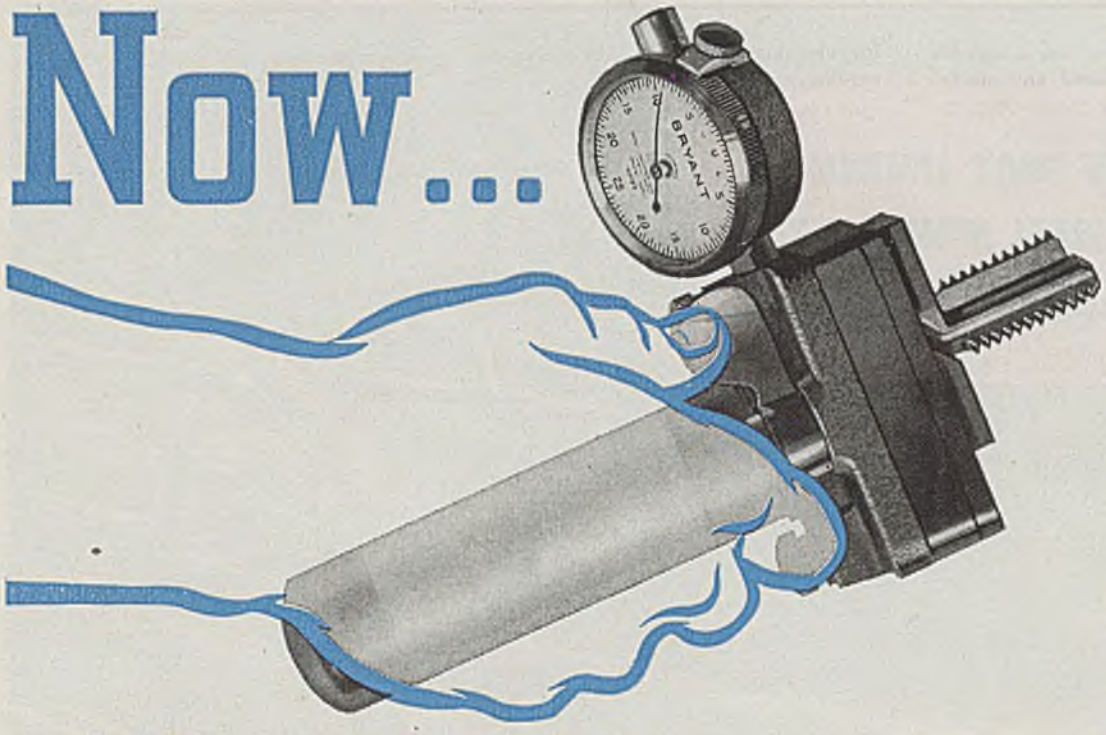


with tips from 3/8 to 1¼ in. in diameter, the irons are designed primarily for severe and exacting soldering operations in industrial plants where continuous, high quality soldering is required. They are also suitable for light, medium, and heavy intermittent soldering.

An important feature of these irons

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on page 175.)

NOW...



Portable Bryant Thread Gages

Bryant Thread Gages have proved their superiority for bench work . . . now, the new *Portable* gage offers fast, accurate inspection of internal threads in large castings, work in the machine, etc., or in any parts where bench inspection may be inconvenient.

The Bryant Portable Thread Gage is so accurate that it can be used to check master gages, and on production work it will check threads *all* over in a few seconds. It is 4 to 5 times faster than plug gaging. Retracting gage segments *eliminate* threading the gage into and out of threaded holes — they prevent wear — on Class 4 and 5 fits, selective assembly is possible by classing threads according to indicator readings — pilots on back of thread segments mean rapid, catchless insertion and removal of the gage — there is no chance of cross threading.

The fastest, cheapest, most accurate method of inspecting threads is the Bryant method — it is the *only* method for *visually* indicating the size of internal threads. Write for complete details.

Perfect for inspecting threads on large pieces that cannot be moved conveniently to the inspection department.

Allows checking of threads in the work in the machine.

Eliminates threading of gage into and out of threaded holes.

Four or five times faster than plug gaging.

Gives overall inspection in a few seconds—at a glance.

Master gage accuracy transferred quickly to production parts.

See the complete line of Bryant Thread Gages at the A.S.T.E. Show, Apr. 8-12, Booth 122

BRYANT

BRYANT CHUCKING GRINDER CO.

SPRINGFIELD, VERMONT, U. S. A.

—car buyers get still more for their money!

For necessary strength in vital parts produced by forging, motor car designers once had to rely heavily upon the mass and weight of the steel they used.

Today, they can design almost solely for utility and efficiency.

Tougher, stronger new alloy steels —developed by The Timken Roller Bearing Company — have helped bring about this change. Equally important are the results of successful research at The Timken Company in grain size control, hardenability, forgeability and surface quality of alloy steels.

From years of endless study and experiment have come special practices for producing uniformity in structure, composition and responsiveness to heat treatment essential to the mass production of stronger, uniform forgings.

In the automotive industry, and most other industries using high strength forgings, no alloy steel producer can exhibit so long a list of difficult performance problems solved. More than likely, our metallurgists could help with your forging problems too. Write Steel and Tube Division, The Timken Roller Bearing Company, Canton 6, Ohio. *Timken Bearings, Timken Alloy Steels and Seamless Tubes, Timken Removable Rock Bits.*

TIMKEN

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Fine Alloy

STEEL AND SEAMLESS TUBES

"A TWIST IN TIME—" For every one of the hundreds of alloy steels, there is a forging temperature recommended for developing its inherent strength to the highest possible point. Until not long ago, recommended maximum forging temperatures above 2000° Fahrenheit had to be found by laborious trial and error methods on actual forgings.

Then on special testing apparatus, metallurgists in the steel laboratories of The Timken Roller Bearing Company proved that critical temperatures obtained from twisting a specimen of hot steel to fracture, coincided exactly with results established by trial and error.

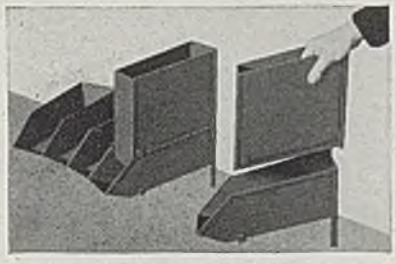
From this important basic research have come highly accurate forging temperatures for Timken Alloy Steels and much other data which has greatly aided the advance of improved forging practice.

★ YEARS AHEAD — THROUGH EXPERIENCE AND RESEARCH

is their quick recovery and high reserve-heat capacity, which permits soldering as fast and continuously as the character of the work allows. Another feature is the use in these irons of calorized (surface-alloyed with aluminum) copper and 18-8 stainless steel for all parts subjected to high temperatures. This, together with the use of the Calrod heating unit, assures long life, uniform performance, low maintenance and allows convenient renewal. The heating units can be easily replaced, since only one connection must be unsoldered in order to slip a new unit into place.
Steel 4/1/46; *Item No.* 9059

Hopper For Bins

New hopper developed by Stackbin Corp., Providence, R. I., increases the capacity of the assembly bin nearly four times, thus saving bench space, and also reducing interruptions in assembly work.

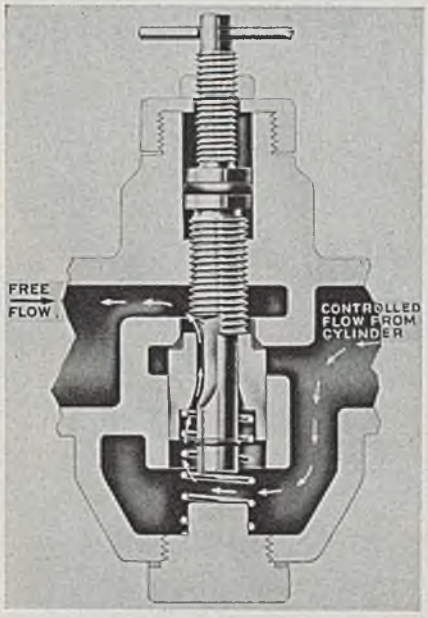


Bins are designed to keep every assembly part within easy reach of the worker's hands, right on the assembly bench. Nesting together, they taper towards the front so that when set up they are in the form of a conveniently accessible semicircle. Sloping floors feed parts continually towards the front.

This equipment is made of heavy gage sheet steel with welded construction throughout. Finish is baked-on olive green enamel. Attached to the assembly bin, it will remain absolutely rigid.
Steel 4/1/46; *Item No.* 9105

Control Valve

To provide an unlimited range of selectivity in the volume of air, thereby giving split-second control of the piston speed, is the purpose of the speed control valve, announced by Ross Operating



Valve Co., 6474 Epworth boulevard, Detroit 10.

Flow of air from cylinder to operating valve is regulated with absolute precision, and in either small volume or large volume, with changes taking place with smooth progression, rather than a series of "steps".

As shown by the cut-away view, both the principle and construction are very simple. There are but two moving parts, stem and poppet, with the stem so shaped as to form a venturi for the passage of air in small volume. As the threaded stem is turned downward from a closed position, incoming air in small volume is allowed to pass through the venturi into the outlet passage, increasing in volume as the stem is lowered. Continued turning of the stem causes a flange on the stem to open the poppet, permitting further increase in volume to full flow. Return air is at full flow.
Steel 4/1/46; *Item No.* 9117

Gear Puller

Design of the Klay puller, in which the pulling and gripping actions are independent of each other is claimed to develop greater pulling power plus a safer and more positive grip on the object being pulled.

Not only does the lock nut principle securely lock the hooks to the gear or

wheel so that they will not slip off, but the grip is equally applied on all sides. Thus, total force developed by the pulling screw is directed toward removing the wheel instead of part of its being di-

FOR MORE INFORMATION on the new products and equipment mentioned in this section, fill in this form and return to us. It will receive prompt attention.

Circle numbers below corresponding to those of items in which you are interested:

9108	9060	9059
9111	9103	9105
9121	9104	9117
9101	9128	9107
9098	9123	9093
9127	9106	9118

4-1-46

NAME ..... TITLE .....

COMPANY .....

PRODUCTS MADE .....

STREET .....

CITY and ZONE ..... STATE .....

Mail to: STEEL, Engineering Dept.—1213 West Third St., Cleveland 13, Ohio

(All claims are those of respective manufacturers; for additional information fill in and return the coupon on this page.)

verted into gripping power of the puller.

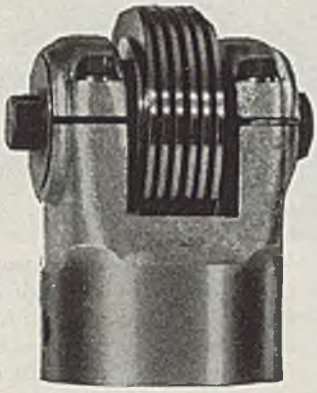
The puller is said to be fool-proof in operation—no loose parts to be fumbled with or adjusted. In addition to regular straight and curved hooks, many types of special hooks are available and interchangeable for specific applications — including expansion hooks which work just the opposite from regular hooks in that they are used in pulling from the inside.

Devices are made in two and three-hook types for pulling anything from a 5/8 in. gear up to a 40 in. wheel or hub. They are also extensively used for pulling pinions and couplings on new hot strip mills. Scott and Ewing Co., Findlay, O., are the manufacturers of this device.

Steel 4/1/46; *Item No.* 9107

Process Dresser

A new type crushed process dresser for truing and dressing Cincinnati centerless type grinding wheels has been announced by the Mechanical Wheel



Dresser Co., 4810 Whitfield avenue, Detroit. This crush type dresser provides a fast cutting characteristic to the grinding wheel because it produces more sharp, natural cutting edges.

Steel 4/1/46; *Item No.* 9093

Blade Holder

Designed to cut down the discard of broken lengths of hack saw blades, the blade holder distributed by A. D. McBurney, 939 West Sixth street, Los Angeles 14, also accommodates thin flat file sections. Using the Super hack saw blade holder, craftsmen or workmen of all kinds can find a multitude of uses for their old or broken cutting blades.

It is a single unit tool composed of a tubular handle with an extended positive grip nose for securing the working point of the blade or file. Ends of the handle are slotted to receive inserted blades. Almost any length blade can be held securely.

Steel 4/1/46; *Item No.* 9118

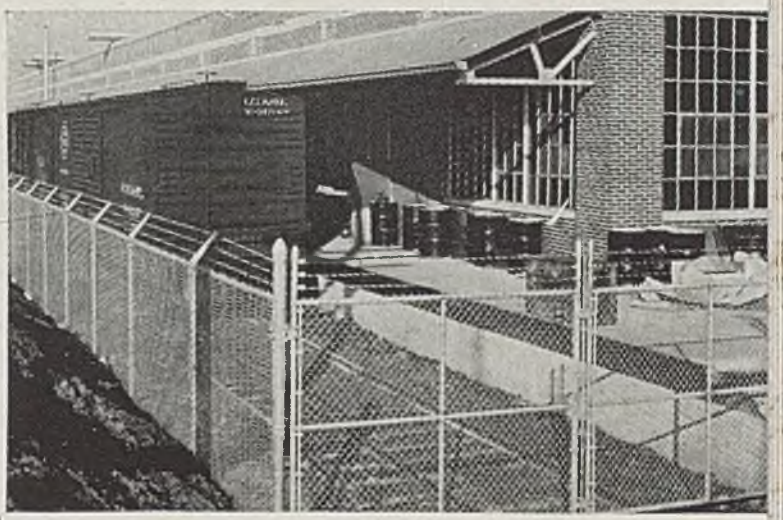
CONTINENTAL *Chain Link* FENCE

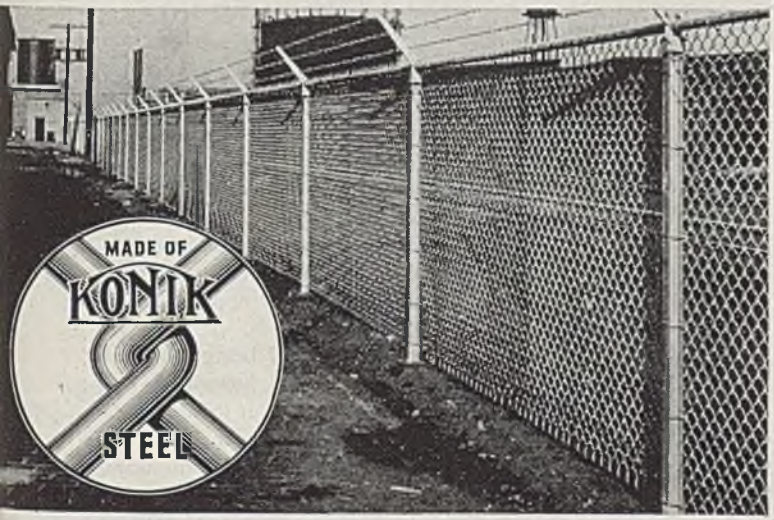
ENGINEERED FOR PROTECTION

Continental fence has 14 distinctive construction features including heavier line posts . . . stronger and more easily operated gates . . . improved pivot-type hinges . . . self-locking barb arms . . . and 20% more ties . . . fabric of rust-resistant, full gauge wire of KONIK steel with heavy uniform zinc coating.

If you want to guard against trespassing and vandalism, lessen fire hazards, prevent accidents, and control the use of your property, you can't beat Continental fence. It combines style with durability and positive protection.

Continental fence is designed for your installation by competent fence engineers, then custom-built for quick erection on the site.





MADE OF KONIK STEEL FOR LONGER LIFE

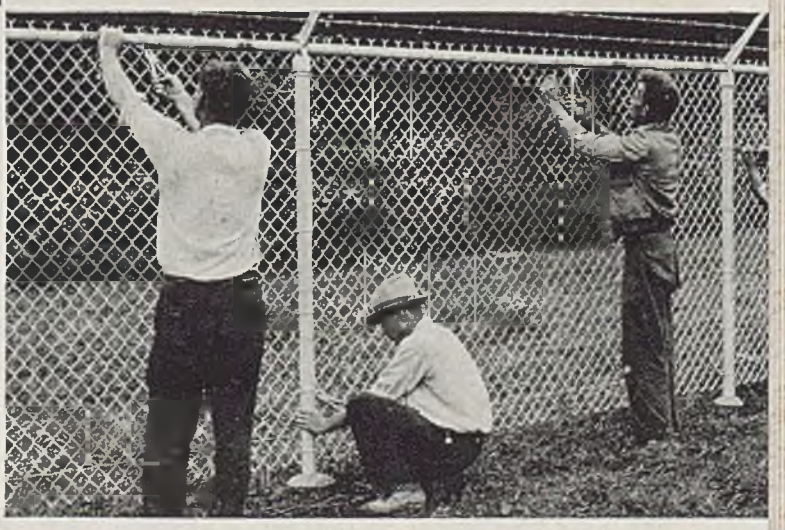
KONIK is the registered tradename for the patented steel containing copper, nickel and chromium used in Continental Chain Link fence fabric. KONIK possesses a greater tensile strength and higher elastic limit and is rust-resistant "clear through."

All this greater strength and rust-resistance . . . all this "clear through" quality . . . all the extra values of this modern steel now come to you only in Continental Chain Link Fence . . . and you get them at no added cost. No other fence gives you KONIK steel for longer fence life.

TAILORED TO FIT YOUR PROPERTY

Experienced fence engineers plan and help erect Continental Chain Link fence anywhere. No matter what your property protection problem, Continental engineers will work with you in laying out the most effective and economical installation. Your fence will be planned to harmonize with the character of your property, and provide the type of protection you want.

Correct and economical construction can be done by trained erection crews. When local labor is to be used, Continental can supply a competent foreman and inspection service. Write today for FREE fence manual.



CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF *Manufacturer's Wire* in many sizes, shapes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire. ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

Split Ball Bearings

(*Concluded from Page 137*)

and reamed. The bearing races then are hardened and finally fractured, the feature of the split bearing. Overall grinding completes the manufacture. A surface grinding operation locates the raceway in the center of the component and the opposite side then is surface ground to obtain the correct race width. The critical raceway is ground to its exacting curvature, and then the outside, or inside diameter, is finished ground. Brief outline of the grinding operations follows:

Surface Grinding: The sides of the races are surface ground on a 10-in. Blanchard vertical surface grinder on which a Norton 38A301-G8VBE[1] has been mounted. This operation is held to the very close limits of 0.0002-in.

Cylindrical Grinding: The outer surfaces of both races are ground on a Norton cylindrical grinder using a Norton 57A60-M5VBE[2].

Internal or Bore Grinding: Both of the races are ground on Bryant machines, as shown in Fig. 4. They are held in a special fixture for grinding. A 38A80-MV[3] mounted point has given excellent production performance in holding to a 0.0002-in. limit.

Track Grinding: The outer race is held firmly in a special device for grinding on a Landis No. 2 internal grinder, as in Fig. 5. The workhead of the machine oscillates in an arc that produces the correct track radius. A Norton A1001-R10R-6[4] is being used. The track of the iner race is ground (Fig. 6) on a Van Norman No. 639 machine, also an oscillating type grinder. However, a 12-in. rubber-bonded wheel, A120-L2R[5], is used on an oscillating wheelhead to produce the curvature while the workhead remains stationary.

All grinding operations on the split ball bearing are held to close limits and the inspection tolerances are very rigid. Accuracy is a necessity that must be constantly maintained.

The split type bearing is finding application in installations where it had not been practicable previously to install the solid types.

REFERENCES

[1]A 38 Alundum, BE Vitrified wheel, Grain 30, Grade G.
[2]A 57 Alundum, BE Vitrified wheel, Grain 60, Grade M.
[3]A 38 Alundum, Vitrified wheel, Grain 80, Grade M.
[4]An Alundum, Rubber-Bonded wheel, Grain 100, Grade R.
[5]An Alundum, Rubber-Bonded, wheel, Grain 120, Grade 1. All of these types are products of the Norton Co., Worcester, Mass.

More Power and Less Weight Characterize Portable

360 - CYCLE ELECTRIC TOOLS

TREND toward the use of higher-frequency alternating current in various types of electric motors as a means of obtaining more power with less weight—emphasized during the war particularly in aviation equipment—is reflected in the field of portable electric metalworking tools by the development of equipment operating on 360-cycle current, as against 60-cycle domestic current and 180-cycle current now used in many industrial plants.

Portable tools designed for 180-cycle frequencies were introduced as early as 1925 and saw their initial widespread adoption, particularly in the automotive industry, in the early 1930's. These tools covered such units as small drills, die grinders, screw drivers, nut runners, grinders, sanders, buffers, reamers, tap drivers, stud setters, etc. They are supplied in a number of sizes, usually rated by wattage, from about 150 to 3000 watts, or roughly 1/5 to 4-spindle-horsepower.

Hundreds of thousands of these tools are used throughout the metalworking industry, and the switch to 180-cycle current was predicated upon the idea of reducing the heft of the tools to lessen operator fatigue, saving time and reducing maintenance over the former 60-cycle equipment. The tools range in weight up to about 25 lb for the heaviest, which usually are suspended by cable and counterbalance in operation. To furnish power for the 180-cycle equipment it was necessary for the user to install motor-generator sets and new power lines, but the cost was considered to be more than offset, at least in larger plants, by the enhanced facility of operation.

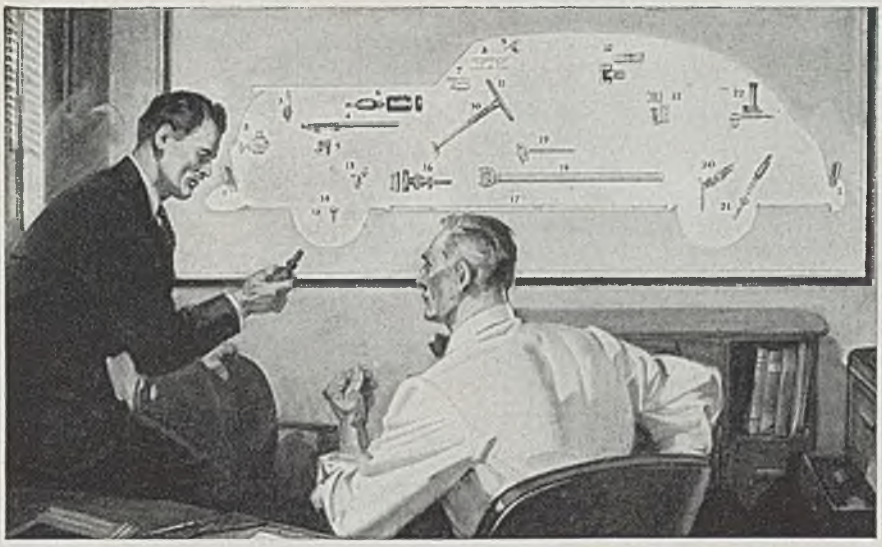
Currently, the introduction of 360-cycle tools permits still further substantial reduction in weight of the larger units, roughly on the basis of double the power with half the weight. A 3000-w 360-cycle tool weighing 11.5 lb, may be compared with a 3000-w 180-cycle tool which weighs 22 lb. As sizes grow smaller the weight saving of course becomes less, but the increased power remains an important factor, particularly in respect to maintenance, as the 180-cycle units usually are operated at nearly full power. The more powerful 360-cycle units of the same size would always have a considerable degree of reserve power and thus would not tend to wear as fast.

With the exception of the small die grinders, or "pencil" grinders as they are called, which operate at a 1:1 speed ratio between motor and spindle, most portable tools are geared down in various ratios to reduce the spindle speed. Motors operating on 180-cycle current have rotor speeds of about 10,800 rpm, usually geared down to 1800-6000 rpm by conventional types of gear trains in gear cases bolted to the ends of the motor housings.

Motors operating on 360-cycle current have speeds in excess of 21,000 rpm, obviously far too fast for safe operation of any but the smallest types of grinders. Hence they are geared down similarly to the 180-cycle units, but in higher ratios. Because power is in part a function of speed, the higher-speed motors can deliver more power to the bits, wheels or other devices being driven. Adoption of the 360-cycle equipment does not presuppose any appreciable increase in spindle speeds, as these are limited by type of tool being operated.

What will be required, however, is new motor-generator equipment to supply the higher-frequency current. It is believed few changes will be required in transmission lines. Actually, manufacturers of the high-frequency equipment, such as Buckeye Tools Corp., Dayton, O., do not consider the 360-cycle and 180-cycle lines competitive, preferring to regard the newer system as more ideally suited to entirely new installations, although of course some larger plants—automotive for example—may find it expedient from a labor standpoint to consider a changeover. Where a 360-cycle system is planned to supplement an installed 180-cycle system, it is planned to use special plug-in receptacles to avoid any accidental interchange of the two types, which would seriously damage the motors in the tools.

The Buckeye line of "Ace Cycle" tools, designed for 360-cycle current, has been introduced on a limited scale only in recent months, and will be exhibited at the American Society of Tool Engineers show in Cleveland, April 8-12. Hand-in-hand with the high-frequency equipment, the company has developed an ingenious planetary-type gear reduction system, which can be incorporated in either electric or air tools and which is far more compact and simpler to service than the conventional spur gear reduction system.



DRAWN FOR JONES & LAUGHLIN STEEL CORPORATION BY ORISON MAC PHERSON

FOR EASILY MACHINED, ACCURATE PARTS USE—
J&L COLD FINISHED STEEL

Your automobile is principally a product of steel—a family of steels made and finished in a variety of ways for the part each plays in giving you safe, fast, economical, dependable transportation.

Some parts are pressed. Others are forged. A great many stem from cold finished steel bars and shapes. Cold finishing of steel was discovered and developed at J&L. To this experience of the years has been added the quickening of research and production that the war demanded. Out of this now come new techniques and methods that promise profitable application in the peacetime manufacture of automobiles—of all manner of machines and equipment where strong, durable parts are needed.

The production of cold finished steel at J&L is integrated from raw materials to the hard, shining bars, the rounds, flats, hexagons and special shapes. Every step is controlled for quality. It is steel made to do the job, be it a gear in the water pump, the hard-working drive shaft or the special shapes that form the door hinges.

A few of the many uses of Cold Finished Steel in your car:

1. *Bumper guards—made from special shapes or ground bars.*
2. *Water-pump gear assembly.*
3. *Spark-plug parts.*
4. *Cold drawn tubing for rocker-arm shafts.*
5. *Piston pins.*
6. *Generator parts and shafts.*
7. *Control shafts on dashboard radios.*
8. *Speedometer gears.*
9. *J&L special precision ground stock for dashboard clock parts.*
10. *Steering column from cold drawn tubing.*
11. *Steering wheel hubs machined from cold drawn bars.*
12. *Door hinges from special shapes.*
13. *Door-lock and striker parts from specia sections.*
14. *Nuts made from hexagon and special sections.*
15. *Grease and lubrication cups from cold drawn hexagons.*
16. *Transmission ring-gears made from special sections.*
17. *Running board treads molded in molds machined from cold rolled flats.*
18. *Drive shaft.*
19. *Seat adjuster rods.*
20. *Hydraulic brake connections and parts.*
21. *Shock-absorber parts.*
22. *Socket wrenches and jack (in tool kit).*

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH, PENNSYLVANIA

LIGHTER, STRONGER, CONTROLLED QUALITY STEELS

J&L STEEL

STEEL FOR MACHINES

Discouragement to autos was considered duty of many American municipalities when "horseless carriage" first appeared on streets, terrifying pedestrians. Ordinances put anti-speed humps in paving, forbade sale of gasoline, required drivers to send flagman ahead, compelled operators of steam propelled autos to become licensed engineers. Can you recall other similar restrictions?

1,500 makes of cars and trucks have been on market. How many do you remember?

Spark plugs in 1902 on Cadillac car were advertised as big feature because they could be taken off for cleaning "with the greatest of facility." Even then, as now, J&L cold finished steel was popular for spark plug shells.

Machines that make machines are called machine tools. They use cold finished steels in huge quantities to make other machinery and equipment and are themselves made of cold finished steel.

Organized in 1904, the SAE (Society of Automotive Engineers) brought about standardization of specifications that aided rapid development of motor cars.

Partial fabrication of parts is offered by special cold finished shapes in which J&L specializes, resulting not only in material and cost saving but in better physicals.

Before steel, machinery was laboriously, often clumsily, handmade of iron or even wood. The marvels of the present machine-tool age became possible when steel in abundance was made available in America about half a century ago.

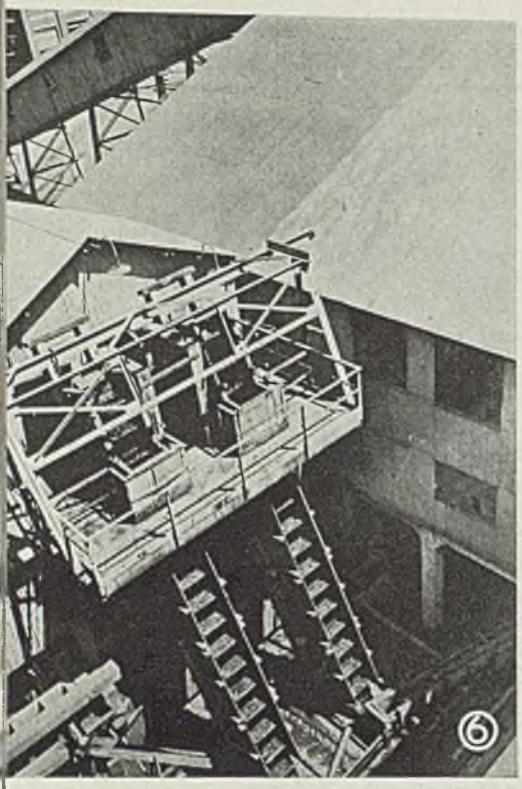
Design engineers like new steels that are lighter, stronger, more workable and give them opportunities to re-design machines and equipment for greater usefulness at lower cost with less weight.

Gold medal for Jalcase Steel was awarded J&L at the Philadelphia Sesqui-Centennial Exposition. This grade was later adopted by SAE.

Bequests of iron nails, along with jewels, are found in wills of wealthy American Colonists because England forbade the Colonies to manufacture articles of iron.

Measuring to 5/10,000 of an inch with delicately balanced, jeweled gauges, so sensitive a watchmaker is employed to keep them accurate, has long been the practice at J&L in production of cold finished steel.

J&L Steel Data Chart, 29 x 45 inches, shows many tables (SAE, AISI, NE, and others) of tolerances, weights, hardness, machinability ratings, heat treatments, carburizing practice and spindle speeds for cold finished steel bars. For a copy write to Publicity Manager, Jones & Laughlin Steel Corporation, Pittsburgh, 30, Pa.



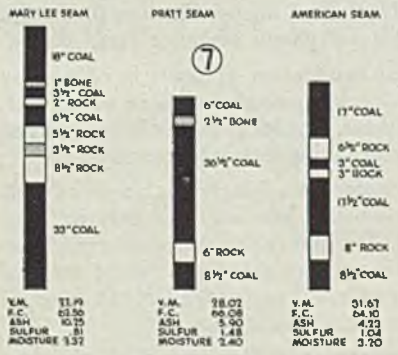


Fig. 6—Refuse pits and elevators. Pits at bottom receive impurities separated from coal by washer jigs. Refuse is de-watered and raised by elevators to refuse bin from which it is transported to refuse bank by truck

Fig. 7—Seams and analyses of coals washed

Fig. 8—Charts showing percentage of cumulative and elementary ash and specific gravity of all sizes of raw coal from (A) Edgewater mine, (B) Docena mine, and (C) Hamilton mine

Coal Washers

(*Continued from Page* 139)

problems have arisen and been solved. The increase in coal washed from 400 tons per day to 17,000 tons per day has called for a broadening of facilities and in many cases vast changes in methods. Due to the mechanization of the mines the raw product handled by the washers has undergone changes that would hardly have been dreamed of a few years ago. As late as the middle thirties a rock loaded out that weighed 100 lb would have called for a congressional investigation or its equivalent. Today it is not too uncommon to receive 1000-lb rocks and in some cases 2000-lb slabs of rock from the mines. The washers have handled these situations and it is their policy to be prepared for whatever future problems that may arise.

Five mines, Hamilton, Wylam, Docena, Edgewater and Short Creek, are now being operated. Coal from the Mary Lee seam, washed at the Hamilton Washer contains a high inherent ash. Washing reduces this sufficiently for coking purposes and at the same time still further reduces the already low-sulphur content.

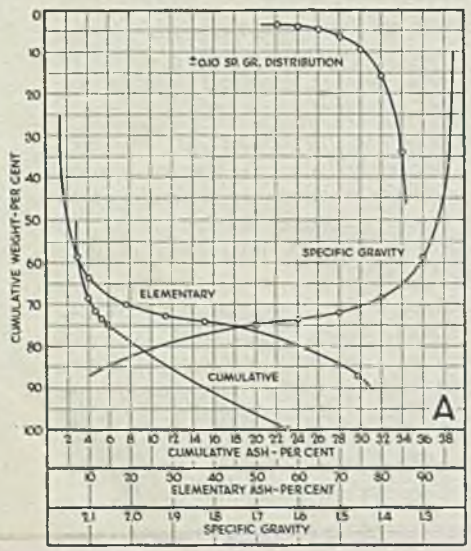
Crushing: Coal from the mine reaches the crusher building in all stages of moisture content from dust to soup, and in sizes from powder to large lumps. The first stage of preparation is 3-stage screening, producing a plus 2-in. product, a minus 2-in. plus 1¼-in. product, and a minus 1¼-in. product, this latter material going directly to the washer while the coarser product is reduced in size by breakers. About 20 per cent of the total impurities is eliminated at this stage.

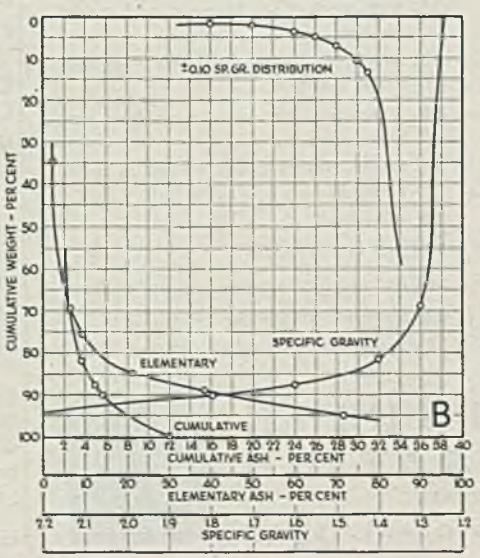
Jigging: Five modified 3-compartment jigs comprise the washing equipment. Pulsation is secured by 12 plungers, one for each cell, six on each side of the jig, a differential in stroke being provided for the three compartments. The jig bottom plates have a 22 per cent open area in the form of ⅛-in. round staggered holes. In the first compartment the plates are level, but slope forward at 2.78 per cent in the second and 5.55 per cent in the third. Automatic control serves to keep the jig operating at maximum capacity to produce a uniform product.

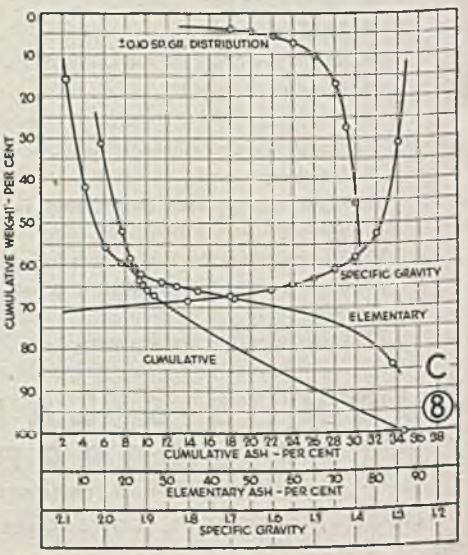
The automatic control consists of a submerged float located in the first compartment, a motor, speed reducer, and the necessary electrical and mechanical fixtures required to regulate the baffle plate above the feeder drum so as to keep the slate valve operating at full speed. As rock in the feed increases the feed is automatically decreased and vice versa. Provision is also made to operate the valve at half speed when the feed becomes abnormally clean so as to provide possible loss of coal.

Loading: Coal from the jigs advances through a flume to sumps from which it is removed by perforated bucket elevators and transferred to washed coal bins. As cars leave the bins they pass under a shaper which smooths the load, thus preventing loss of load in transit, and assuring maximum, uniform loading.

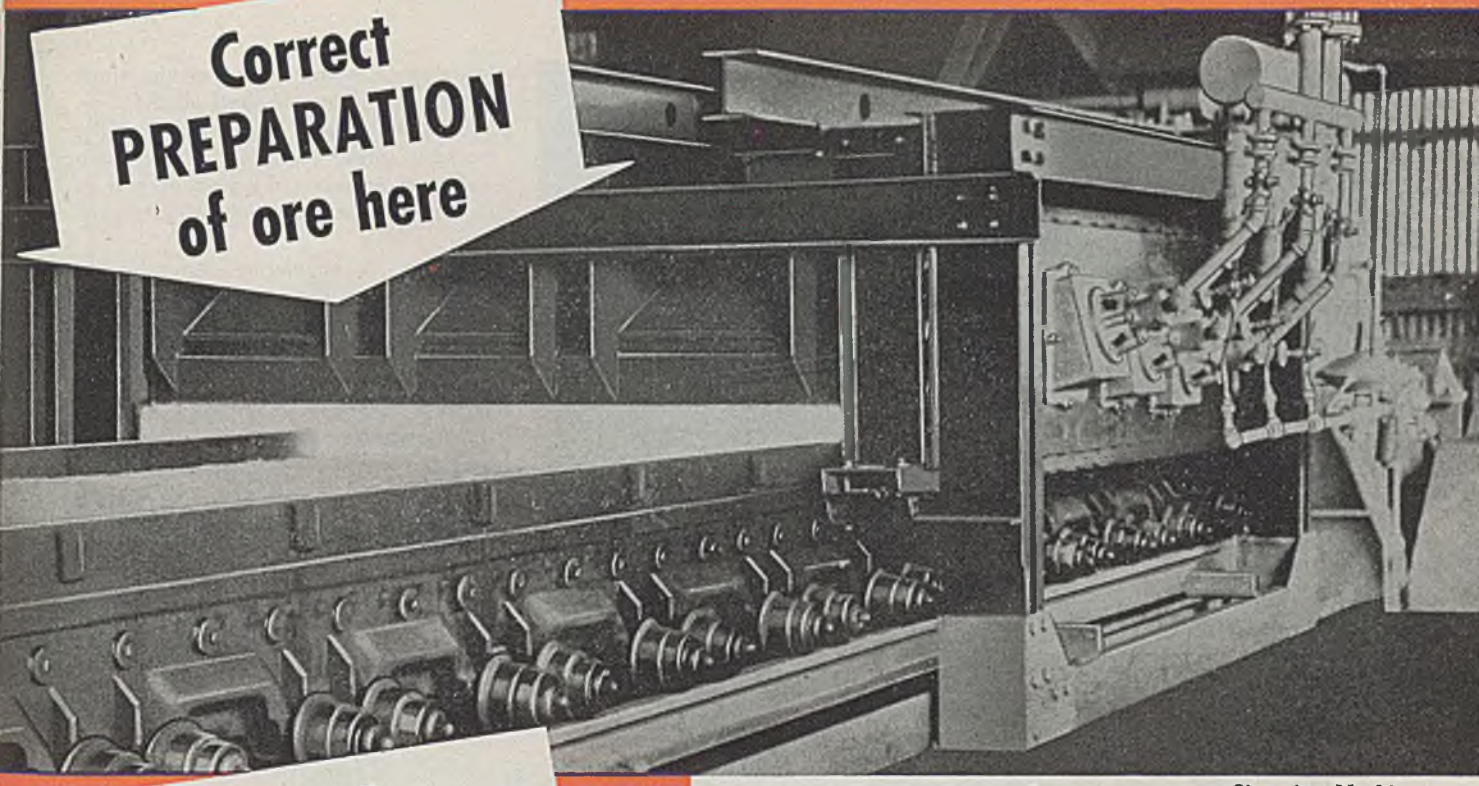
Refuse from the jigs is flumed to the refuse sump, transferred to a bin by bucket elevators and trucked to the dump. As the trucks back into position they push a lever which operates the





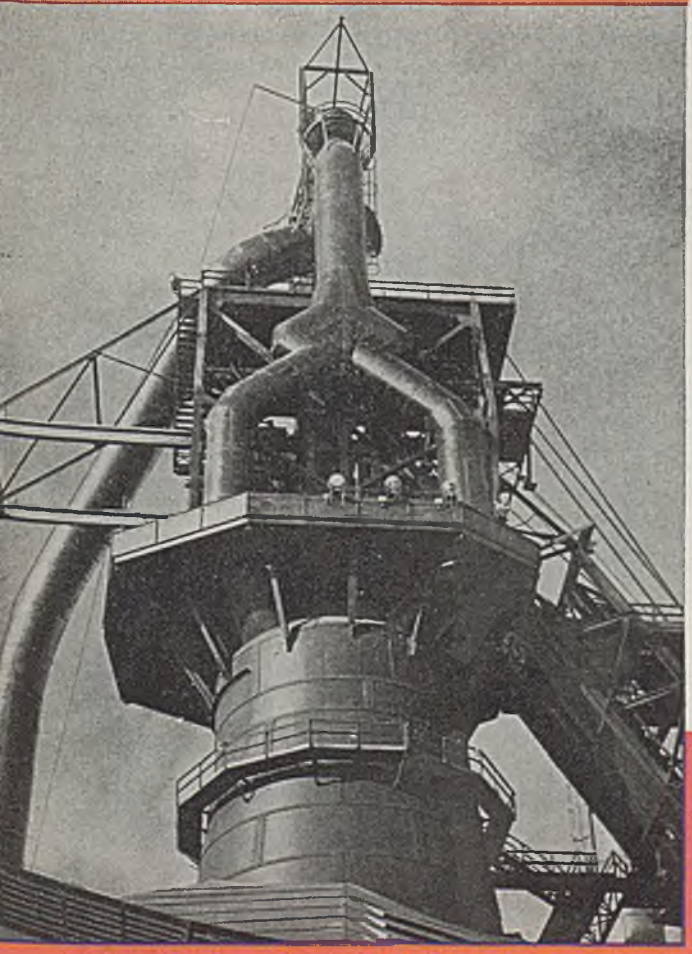


Correct PREPARATION of ore here



Ignition furnace for continuous type Sintering Machine. A specialized McKee feature.

...means LOWER COST per ton here



McKee-designed Blast Furnace.

PROPER treatment of raw materials is becoming one of the most effective means of reducing the cost per ton of iron and steel.

While your postwar plans may call for replacement, modernization or repair of existing blast furnaces and steel plants, you should not overlook the fact that opportunities for reducing costs *begin* with preparation of raw materials.

McKee engineering of ore treating plants is based on a study of raw materials, blast-furnace or open-hearth operating conditions and all other factors which determine correct plant design for your particular requirements.

The McKee organization, with 39 years of world-wide experience, is prepared to undertake engineering *now* for all phases of your *postwar* modernization program.

Arthur G. McKee & Company

★ *Engineers and Contractors* ★

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bin door; forward motion of the truck releases the lever and shuts off the flow. Special equipment is provided on the trucks to spread the refuse on the dump and to avoid excess dripping, as well as to control hoist raise and tail gate closing.

Water: A circulating water system avoids waste. The setup at the Hamilton mine is typical. To eliminate any wooden chips and mineral matter, enroute from the coal and refuse sumps to the circulating water sump, the water passes through a series of screens provided with ¼-in. openings and designed for easy cleaning. Centrifugal pumps then elevate the water with its content of fines to a conical settling tank.

This tank serves to provide a constant head of water to the various operations as well as to remove solids from the circulating system. As solids collect they are withdrawn through a valve at the bottom and piped to the top of the washed coal bin. Here the line empties into a feed box from which two streams of water and the muck overflow. One of these streams is the feed to a dewatering dragline and its flow is adjusted to the capacity of the drag. The other stream is the surplus feed.

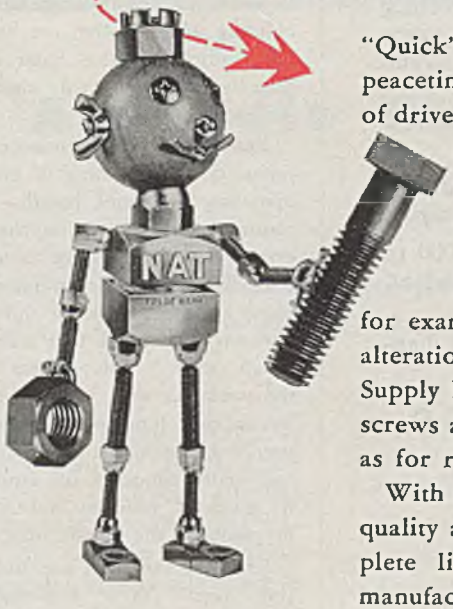
Sixty square feet of screen having ½-millimeter openings are used in connection with the drag. The flights, which are on 6-in. centers, are equipped with rubber wiping strips. Solids coming from the drag are deposited in the washed coal bins and loaded with the coal. Water that drains through the screen is combined with the excess stream from the feed box and returned to the circulating system through the washed coal sump. Water drippage from the washed coal and boiler coal bins, and that from the loaded cars, is collected on a concrete track pad and drains to a small sump. A centrifugal pump and solid bucket elevator raise this water and any accumulated solids to a flume that empties into the boiler coal elevator boot.

Operations at the Wylan mine washer handling Pratt & American seam coals are similar to those described at the Hamilton plant with the exception that the jigs do not have automatic control nor do they have sealed discharges on the second and third compartments.

Shakers, picking tables, and single roll crushers are used at the Docena and Edgewater washers for handling large sizes from the Pratt seam with three modified Elmore and one Baum jig operated in parallel for the washing. The Elmore jigs vary somewhat from those at the Hamilton plant in that they have sealed discharges on all three compartments, there is no valve in the first

First Aid to Reconversion

THE INDUSTRIAL DISTRIBUTOR



"Quick" is the word that means everything in the change-over to peacetime manufacturing. Rearrangement of machines, relocation of drives, remodeling of departments or a whole plant, installation of new equipment—all of these call for a multitude of supplies overnight. Thousands of jobs—to say nothing of earnings—depend on speed.

It is the unique service of the Industrial Distributor to furnish needed articles from stock, *quickly.* Take fastenings, for example, which are required in great variety both in factory alterations and in production operations. The Industrial or Mill Supply Distributor is ready with a complete stock of bolts, nuts, screws and other fastenings to take care of any emergency as well as for regular maintenance.

With the "National" line of fasteners, he has both dependable quality and the most complete line made by one manufacturer.

National
HEADED AND THREADED
PRODUCTS

THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.

compartment discharge, and the automatic control is located in the second compartment, regulating the rate of refuse discharge instead of the feed. The Baum jigs in these plants have three compartments each with two cells which operate under 2.25 lb pressure and at 41 strokes per minutee. Refuse at Edgewater is disposed of by means of a spreading system whereby the tail gate of the truck is opened gradually as the truck moves.

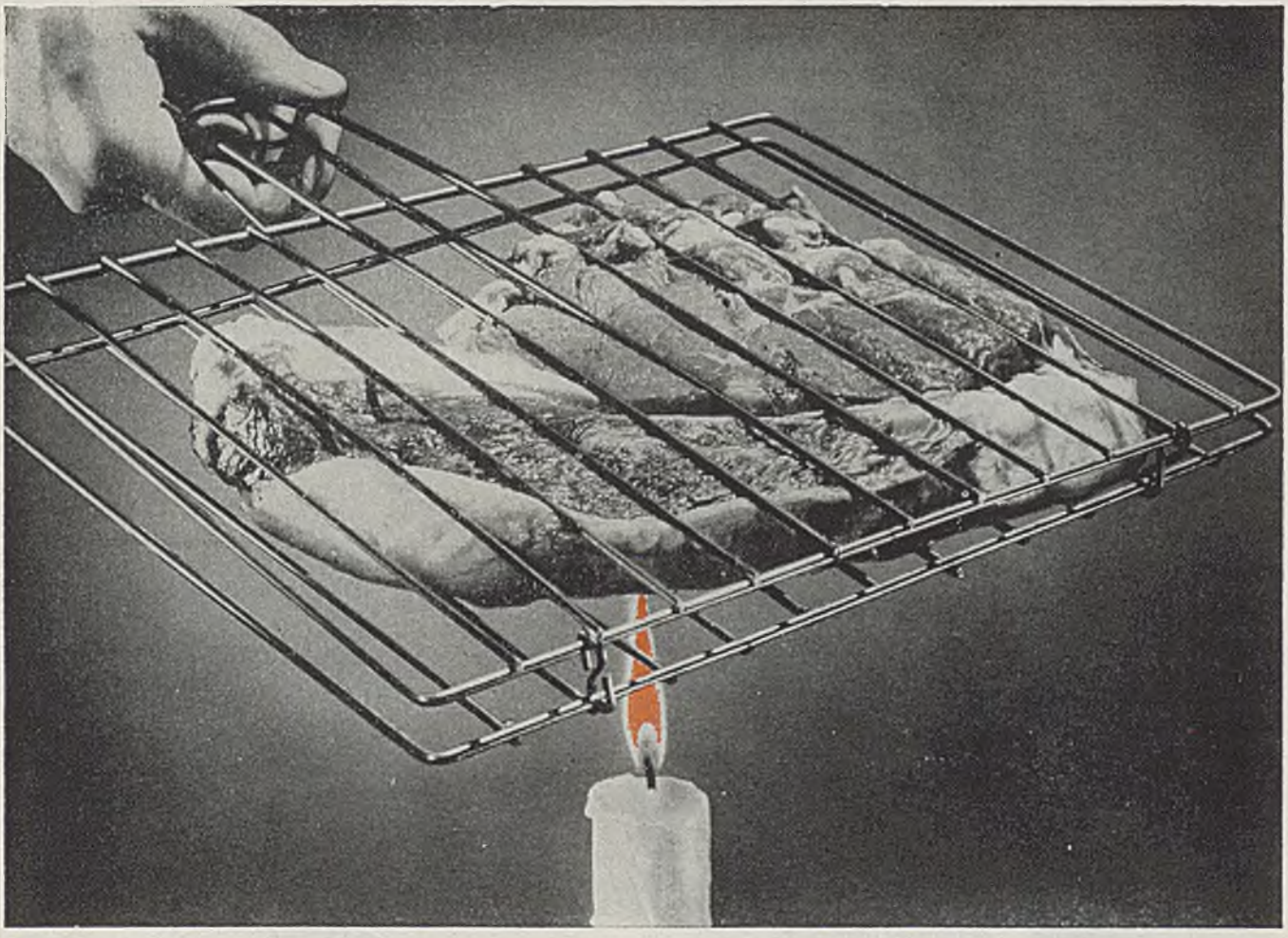
Pratt seam coal is also mined at Short Creek and the mine-run product carries a high percentage of impurities, much being in the form of large rock. The coal itself is friable and conseqently an extremely high percentage of fines is ordinarily found in the mine-run product. Only two products come from the Short Creek plant, washed coal and refuse, the cleaning being done by Baum and diaphragm jigs.

Material retained on a 2-in. perforated plate goes to a breaker, from which the rock is discharged. Smaller material from the breaker and a screen advances to the washer. Here two Baum jigs similar to those at the Edgewater and Docena plants are installed in parallel, followed by a diaphragm jig in series. Sink material from the second and third compartments of the Baum jigs go through a roll crusher set at 1¼-in. and on to the diaphragm jig. Solids from the conical settling tank in the circulating water system are heavy enough and sufficiently free from ash to load directly into railroad cars with the washed coal.

Repair and Maintenance: The local repair crew, consisting of men from the operating personnel, handles most of the routine repetitive repairs, the size of the crew varying according to needs. Customarily the man who operates a machine on the producing shift makes the necessary repairs to that machine on the repair shift. This system familiarizes the workman with his equipment, thereby making him more proficient in its use; it keeps him alert in the operation and maintenance of his equipment, and it prepares him to aid the foreman in planning the repair turn.

Eight or ten men are used in a full time repair crew and handle major repairs in all plants as well as working on the installation of new equipment. All electrical work is handled by electricians from the mine electrical department.

Sampling and Testing: Products sampled at the washers are the raw coal feeding to the jigs, the washed coal, boiler coal, and refuse. Where automatic trippers are used in distributing the raw coal, sampling is automatic. Where this equipment is not available, a



A Candle Won't Broil a Steak

—and neither will inadequate wiring run electrical equipment at FULL CAPACITY

Wire ahead!

IF A MACHINE is running 1500 RPM, and it should run 1800 RPM, don't blame the operator. Chances are that *reduced voltage* is curtailing the machine's production. In fact, inadequate wiring can reduce efficiency as much as 25% to 50%!

Check up now on your *real* power needs! Don't let obsolete wiring handicap expensive production equipment. Remember that emergency alterations later may cost much more than foresighted wiring improvements today.

Talk it over with consulting or plant power engineer, electrical contractor or power salesman. They'll advise: Wire Ahead! Anaconda Wire & Cable Company, Subsidiary of Anaconda Copper Mining Company, 25 Broadway, New York 4, N. Y. Sales Offices in Principal Cities. 46290

Look to Anaconda for wire and cable controlled from copper ore to finished product by Anaconda basic research and engineering. Every Anaconda product is a lasting investment . . .

Check your wiring plans before they check you!

DON'T BE PENNY-WISE AND POWER-FOOLISH

ANACONDA WIRE & CABLE COMPANY

washer helper takes a sample from the feed belt every half hour. Washed coal, boiler coal and refuse samples are taken at half hour intervals, all samples being cut to about 8000 g for the laboratory testing.

All materials larger than 14-mesh are analyzed daily; the minus 14-mesh material is sampled daily and accumulated for analysis four times a month. Determinations are made of specific gravity distribution and moisture content. Twice a month the raw coals are screen tested to determine size distribution for the guidance of the foremen for setting crushers. The laboratory is also organized to run many other tests than those involved in the normal wash plant operation. Ash tests are made, jig tests conducted, circulating water systems checked for quantity and quality of solids present, and numerous samples processed for the mining department, including coal, rock dust, gas and air.

Carpenter Steel Develops Nondeforming Die Steel

The new tool steel, called Vega, developed recently by Carpenter Steel Co., Reading, Pa., combines deep-hardening characteristics of air-hardening steel with low temperature heat treatment possible with oil-hardening steels. It provides good hardness in heavy sections, hardens at low temperatures, keeps dimensional changes in heat treatment to a minimum and provides an unusually satisfactory combination of hardness and toughness, according to the company.

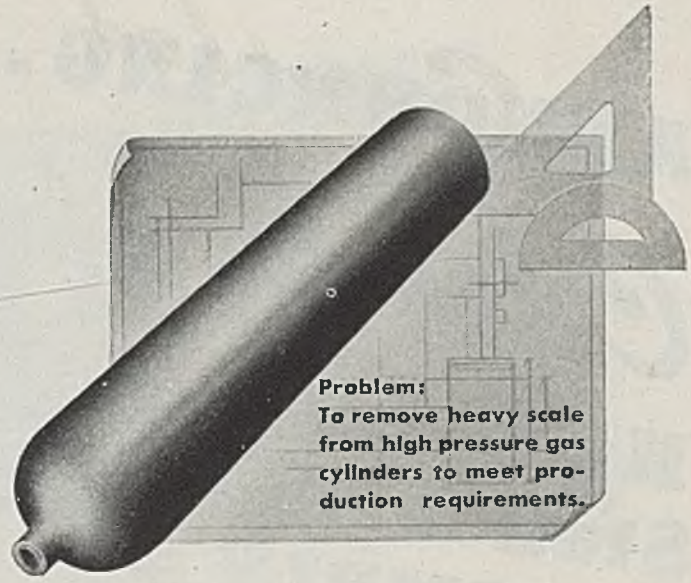
Steel hardens entirely through in large sections by simply cooling from 1550°F in air. In an 8 in. diameter, the steel has a hardness value from surface to center of C-60 rockwell, and at same time maintains a fine-grained tough fracture.

Because it can be heat treated from a temperature 200°F lower than 5 per cent chromium air-hardening steels, the new steel does not require special high-temperature furnaces, it is said. When properly heat treated it may be expected to expand only 0.0005-in. per inch of length, and upon drawing at 400°F will return to within 0.00025-in. of original size. The metal has no special tendency to decarburize and, because it contains relatively small percentages of hard-to-machine alloys, is easy to machine. It is said to be especially suited for tools used in blanking, piercing, trimming and forming sheet metal in light and heavy gages.

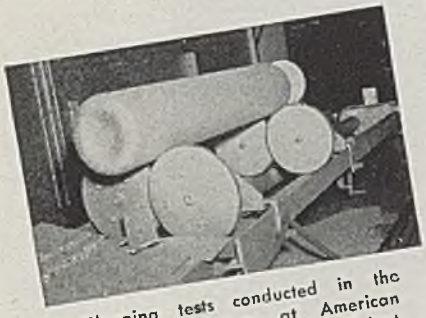
—o—

Complete line of spring-lock washers produced in compliance with standards adopted by American Standards Association is announced by Reliance Division, Eaton Mfg. Co., Massillon, O.

HOW **WHEELABRATOR** SOLVED THIS METAL-CLEANING PROBLEM

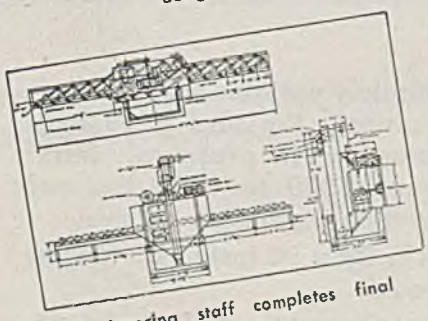


Problem:
To remove heavy scale from high pressure gas cylinders to meet production requirements.



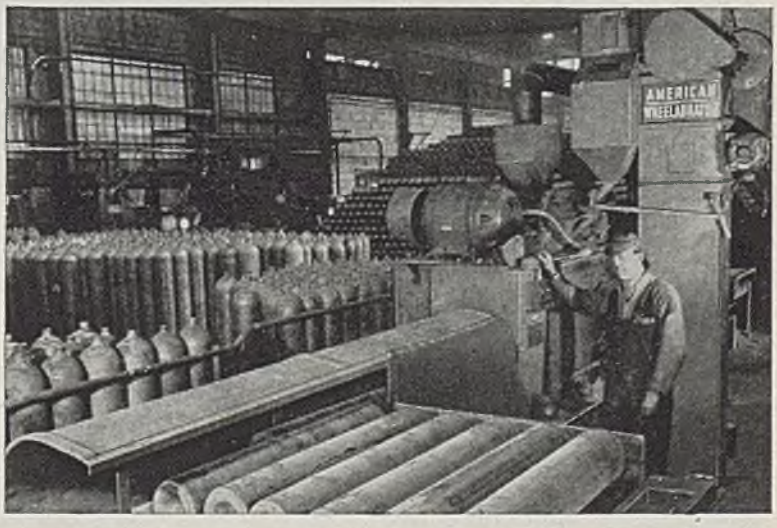
Cleaning tests conducted in the factory laboratory at American to determine the most efficient method of handling.

Years of blast cleaning experience are combined to answer this design problem.



Engineering staff completes final blueprints.

AMERICAN engineering skill was called upon by the Taylor-Wharton Iron and Steel Company to solve this production cleaning problem. After a thorough survey of plant operations, product specifications and production requirements, sample cylinders were sent to our laboratory for test cleaning. On the basis of exhaustive tests and a series of engineering consultations through the four steps pictured here, a special cabinet was designed and built that cut cleaning time to 1/6 the former cleaning time required by out-moded methods and also resulted in a 300% increase in production.

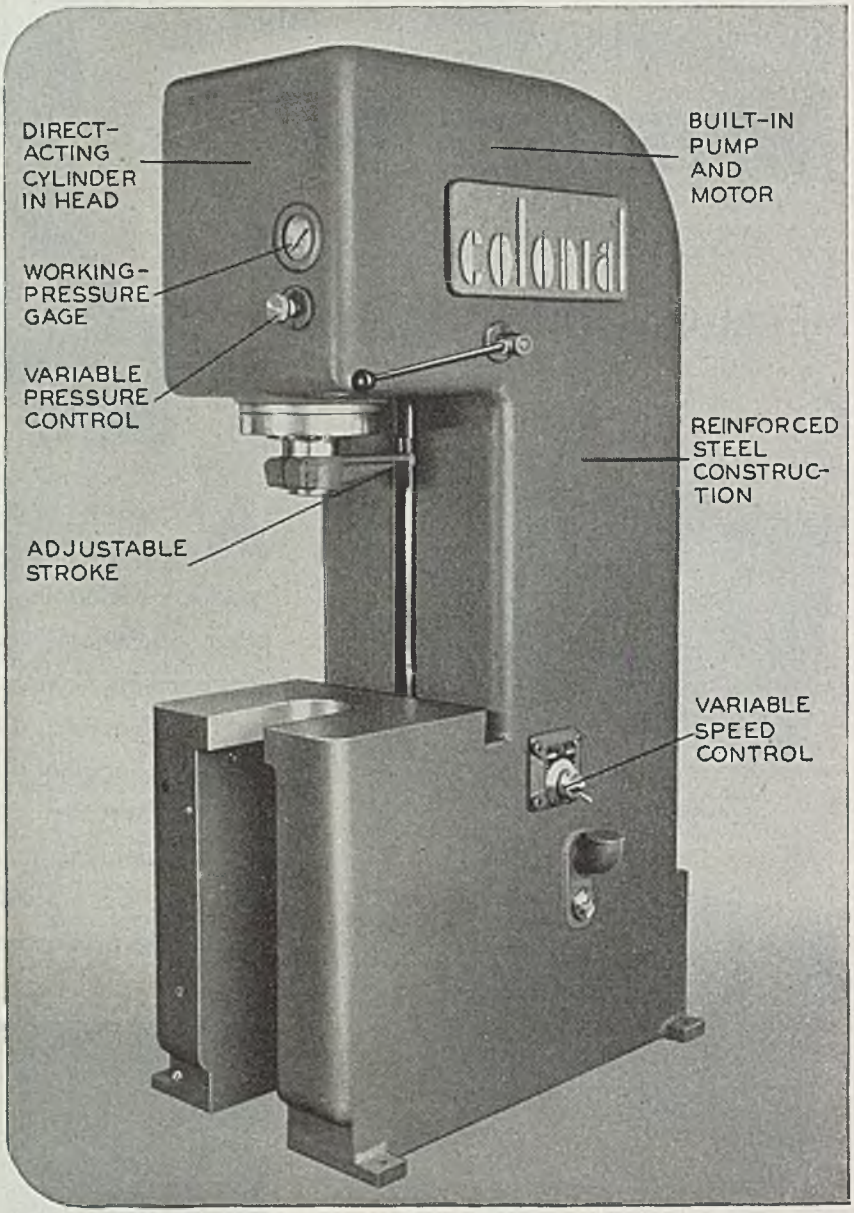


View of Wheelabrator Special Cabinet installed in the Taylor-Wharton Plant.

ANNOUNCING-----

Colonial

Hydraulic Standard ASSEMBLY PRESSES



Companions to Colonial's line of standard Broaching Presses and Straightening Presses, these ultra-modern all-hydraulic units are characterized by exceptionally smooth yet powerful action, due to use of the exclusive Colonial hydraulic pressure system, with direct acting cylinder built into the machine head, etc.

Capacities: 15, 20, 35, and 50 tons.

Stroke: Adjustable, 12 in. maximum.

Speed: Adjustable, 60 to 180 inches per min. max. on working stroke, 120 to 360 inches per min. on return stroke (depending on machine size).

Pressure: Infinitely variable, External adjustment. Pressure gage indicates exact pressure. Max. Press. 1000 to 1500 lbs. per sq. inch depending on size.

Floor Space: Only 29 x 50 inches on largest model.

For Complete Details, ask for Bulletin PA-45.

colonial BROACH COMPANY

DETROIT 13, U.S.A.

Broaches — Broaching Machines - Broaching Equipment

Points Steel Tubes

(*Concluded from Page* 141)

ation, a 9-in. diameter point can be made; if a similar diameter point is required the tube would have to be repointed a second time and a 5-in. diameter point can be produced.

The length of the straight portion of the point can be made to suit the requirements. The life of the dies made of proper material is almost indefinite. Dies can be changed in a few minutes. During the full forward and return stroke the dies are synchronized hydraulically.

Water pressure is used at the die cylinders. An oil-hydraulic power unit with oil-water pressure interchanger supplies the pressure to the die cylinders.

Hydraulic Control System Has Wide Marine Usage

A hydraulic system for throttle, governor and clutch control which will meet requirements of work boats and small craft is expected to have wide application in industrial and marine fields, according to Ellinwood Industries, 150 West Slauson avenue, Los Angeles 3. The skipper can direct the speed and course of the craft through slave units on the engine. Master controls on the C model can be placed up to 150 ft from the slave unit; a torque of 500 in. lb may be transmitted; and, a maximum angular travel of 60° can be obtained. Engine unit will remain in synchronism with bridge control through temperature range of 100° F.

Nonmagnetic materials insure accurate compass indications. Noncorrosive materials or coatings are used throughout equipment and installation can be done with system maintained in positions to suit the need, fittings used are of standard SAE type. Unit comes in a variety of sizes.

Wheel Kits Adapted for All High-Speed Grinders

Mounted point utility kits for shops are being manufactured by Simonds Abrasive Co., Philadelphia 37.

A kit containing 20 wheels and points and a stick for dressing the points and altering shapes for special applications is offered along with three other kits, one containing nine mounted wheels and two other kits containing seven points each.

The wheels and points are mounted on stainless steel mandrels, 1½ in. long and ⅛-in. diameter and are said to be usable on all high-speed grinders, whether air, electric or flexible shaft.

the BUSINESS TREND

INDUSTRY, although still confronted with shortages of materials and components, continued to boost its output last week, with the result that STEEL's industrial production index reached a new postwar high of 130 per cent (preliminary). Previous high mark was 126 per cent in the preceding week.

Contributing importantly to the higher rate of activity is steel ingot production which on a percentage of capacity basis has reached into the high 80s.

AUTOS—Also helping push up the rate of industrial activity is automobile output. While still far below the prewar rate, production in the week ended March 23 rose slightly to 37,285 units, highest since January, 1942.

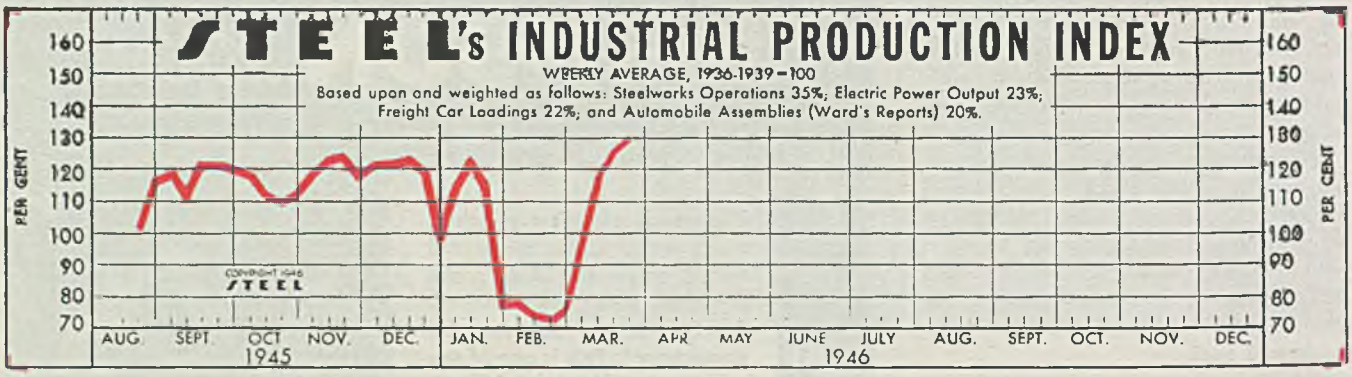
COAL—Bituminous coal output too is at a high rate, the week ended March 16 being the second consecutive one in which production set a new high for this year. That week's estimated production of 13,160,000 tons also was larger than output during any week of 1945.

FRB INDEX—The Federal Reserve Board's industrial production index for February dropped to 154 per cent of the 1935-1939 average, lowest since May, 1941. The decline from January's 160 per cent resulted largely from the steel strike. Production of steel, automobiles, and machinery has advanced measurably since settlement of wage disputes in these industries, and the board predicted its index of industrial production will show a considerable rise in March. Reflecting the steel strike, the board's index of iron and steel production dropped from 101 per cent in January to 40 per cent in February.

FABRICATED STRUCTURALS—Another effect of the steel strike was a drop in shipments of fabricated structural steel for bridge and building construction, February shipments being 47 per cent less than those of January. Tonnage available at the end of February for fabrication within the next four months continued at a high rate of 550,860 tons.

CASTINGS—Effect of the steel strike is further reflected in shipments of steel castings in January. Shipments that month totaled 90,836 tons, 14 per cent less than December shipments of 106,114 tons. Backlog at the end of January was 340,744 tons, compared with 368,171 tons at the end of December. Malleable iron castings shipments in January, however, were 51,988 tons, almost identical with December shipments of 51,963 tons. Backlog of orders from outside trades at the end of January totaled 245,878 tons, compared with 236,648 tons at the end of December.

FORGINGS—Shipments of steel forgings in January totaled 115,765 tons, an 11 per cent increase over December. Unfilled orders for steel forgings for sale to the trade at the end of January, 1946, amounted to 478,096 tons, a slight increase over December, 1945.



The Index (see chart above): Latest Week (preliminary) 130 Previous Week 126 Month Ago 80

FIGURES THIS WEEK

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)	88.5	84.5	16	97
Electric Power Distributed (million kilowatt hours)	4,017	3,988	3,923	4,402
Bituminous Coal Production (daily av.—1000 tons)	2,193	2,167	2,030	1,985
Petroleum Production (daily av.—1000 bbls.)	4,431	4,415	4,714	4,782
Construction Volume (ENR—Unit $1,000,000)	$105.9	$74.8	$51.6	$23.6
Automobile and Truck Output (Ward's—number units)	37,285	35,020	19,410	20,480

*Dates on request.

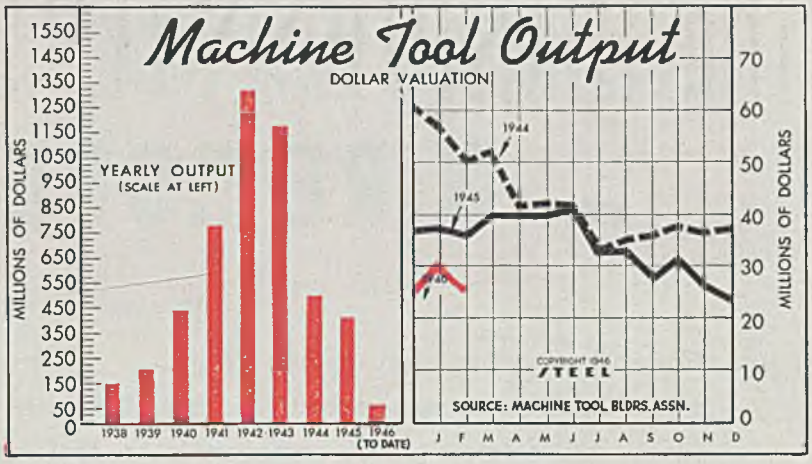
TRADE				
Freight Carloadings (unit—1000 cars)	800†	800	723	816
Business Failures (Dun & Bradstreet, number)	22	17	18	14
Money in Circulation (in millions of dollars)‡	$27,889	$27,946	$27,955	$25,836
Department Store Sales (change from like wk. a yr. ago)‡	+13%	+14%	+19%	+24%

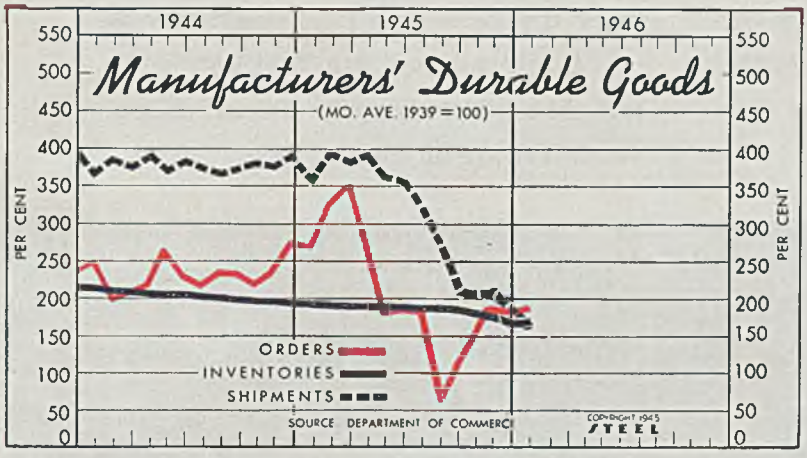
†Preliminary. ‡Federal Reserve Board.

Machine Tool Shipments

(000 omitted)

	1946	1945	1944	1943
Jan	$30,263	$37,353	$56,363	$117,384
Feb.	26,939	36,018	50,138	114,594
Mar.	.....	40,045	51,907	125,445
Apr.	.....	40,170	41,370	118,024
May	.....	39,825	41,819	113,859
June	.....	41,040	41,471	108,736
July	.....	32,504	32,758	97,541
Aug.	.....	32,500	35,177	87,805
Sept.	.....	27,300	35,889	85,842
Oct.	.....	31,200	37,516	78,302
Nov.	.....	26,000	36,277	71,811
Dec.	.....	23,200	36,784	60,873
Total	.....	$407,155	$497,464	$1,180,216





Index of Manufacturers' Durable Goods

(Mo. Avc. 1939 = 100)

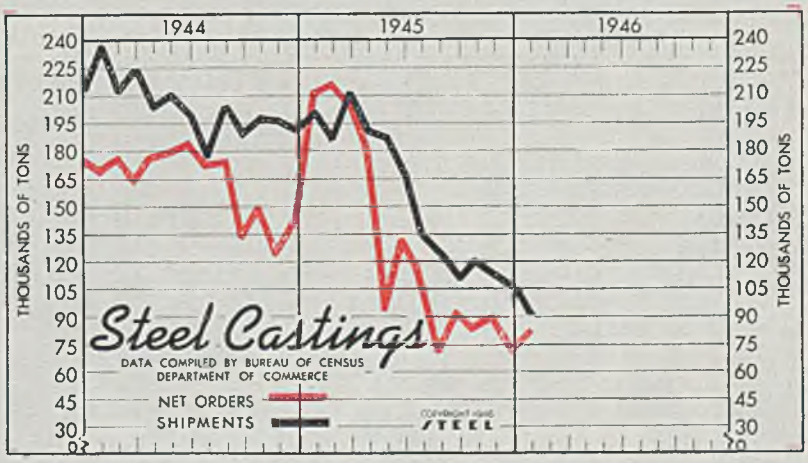
	Orders		Shipments		Inventories	
	1946	1945	1946	1945	1946	1945
January	175	267	170	354	173	190
February	...	326	...	394	...	189
March	...	351	...	382	...	189
April	...	267	...	389	...	189
May	...	177	...	361	...	189
June	...	182	...	356	...	189
July	...	179	...	320	...	187
August	...	54	...	262	...	185
September	...	122	...	216	...	185
October	...	160	...	203	...	182
November	...	171	...	200	...	177
December	...	170	...	196	...	172
Average		202		303		185

Commercial Steel Castings

(Net tons in thousands)

	New Orders†		Shipments‡	
	1946	1945	1946	1945
Jan.	81.6	210.2	90.8	201.2
Feb.	.	214.4	.	186.4
Mar.	.	203.2	.	211.9
Apr.	.	177.7	.	190.2
May	.	89.8	.	186.4
June	.	130.2	.	167.1
July	.	110.7	.	133.6
Aug.	.	68.3	.	123.8
Sept.	.	89.7	.	110.6
Oct.	.	79.8	.	119.9
Nov.	.	85.9	.	113.7
Dec.	.	70.1	.	106.1
Ave.	.	128.0	.	154.2

†For sale. ‡For sale and own use.



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$13,066	$11,135	$13,266	$11,261
Federal Gross Debt (billions)	$276.7	$278.6	$279.5	$234.6
Bond Volume, NYSE (millions)	$24.0	$23.8	$31.7	$43.5
Stocks Sales, NYSE (thousands)	6,370	5,923	7,598	5,291
Loans and Investments (billions)†	$67.7	$67.7	$67.9	$58.2
United States Gov't. Obligations Held (millions)†	$49,088	$49,231	$49,485	$43,799

†Member banks, Federal Reserve System.

PRICES

STEEL's composite finished steel price average	$63.54	$63.54	$64.45	$57.55
All Commodities†	108.4	108.2	107.2	105.1
Industrial Raw Materials†	121.0	121.4	119.7	116.3
Manufactured Products†	104.3	103.8	103.2	101.8

†Bureau of Labor Statistics Index, 1926 = 100.

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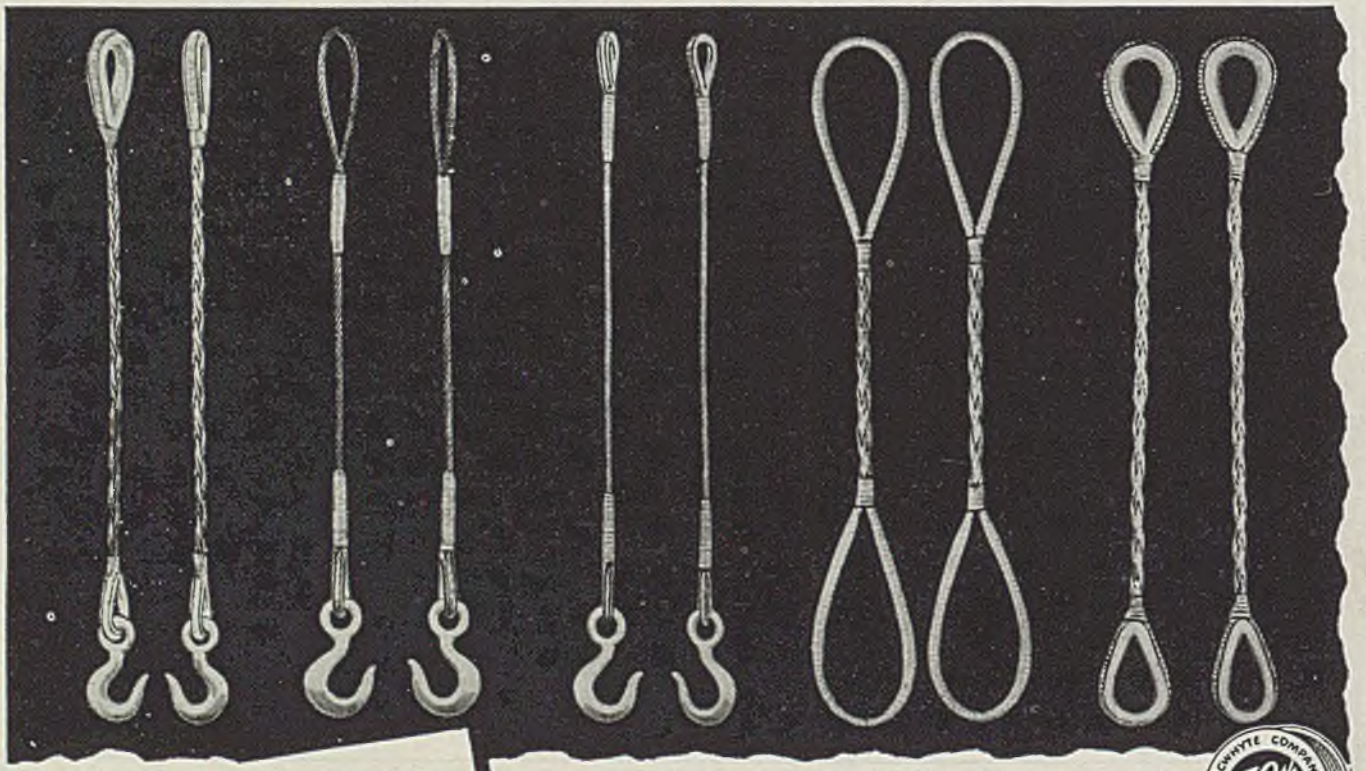
To assure you of maximum service, we use our best grade wire rope. Skilled craftsmen fabricate it into slings that meet the most exacting specifications.

Your needs are our first consideration. Macwhyte Distributors and Representatives are at your service.



Take the first step to easier handling!
. . . send for this sling literature

Lists the complete line of Macwhyte Wire Rope Slings, contains application pictures, gives helpful sling information. See your nearest Macwhyte representative, or mail request to Macwhyte Company. Ask for Catalogs S-7 and 44-1.

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HELPFUL LITERATURE

1. Cold Finished Steel

Jones & Laughlin Steel Corp.—29 x 45-inch "Cold Finished Steel Data Chart" has metal reinforcement for convenience in hanging on wall. Nominal composition of carbon, free cutting, manganese, nickel, nickel-chromium, molybdenum, chromium, chromium-vanadium, silicon-manganese and nickel-chromium-molybdenum steels are given. Also listed are standard manufacturing tolerances, decimal equivalents, weights of steel bars, hardness conversion tables, machinability ratings, spindle speeds and surface speeds, NE steel compositions, recommended heat treatments and carburizing practice.

2. Bending Machines

Pedrick Tool & Machine Co.—16-page illustrated bulletin on Pedrick compression process bending machines discusses art of bending. Considerations for selection of pipe bending machines are covered. Typical hand and power operated benders are described. Data related to pipe bending is presented.

3. Cold-Forged Parts

John Hassall Inc.—4-page illustrated bulletin on cold-forged parts shows typical units produced in nail, rivet and threaded shapes. Advantages of cold forging, economy of second operations, special services available and other data are given on special forged shapes.

4. Grinding Wheels

Electro Refractories & Alloys Corp.—64-page illustrated data book entitled "High Speed Grinding" presents data on available grades and recommended applications of Electro grinding wheels. Wheel selection data, recommended grinding practices, wheel speeds, wheel care and related engineering information are given. Included is circular calculator which facilitates determination of surface speed from known wheel diameter and revolutions per minute.

5. Steel Shaft Data

De Laval Steam Turbine Co.—16-page illustrated engineering bulletin No. WG-545 contains useful data for determining stresses, torques, bending moments and deflections in round, square, hollow, keyway and stepped shafts. Tables, charts and formulas are included.

6. Hydraulic Cylinders

Hannifin Mfg. Co.—20-page illustrated bulletin No. 35-B is descriptive of complete line of hydraulic cylinders. Data are presented on improved type of high pressure hydraulic cylinders of simplified design for all types of hydraulic power applications.

7. Cutters & Rotary Files

M. A. Ford Mfg. Co.—24-page illustrated catalog No. 12 describes line of rotary files, ground cutters, deburring tools and rasps made to meet practically every filing requirement. Dimensions and specifications are given on wide range of sizes and shapes. All are shown actual size.

8. Gearing

Foote Bros. Gear & Machine Corp.—56-page engineering bulletin UPA is devoted to data on power units using Aircraft Quality gears. Details are given on units engineered to actuate linear or rotary motion. Some are designed with built-in motors and others are actuated by direct drive or by flexible shaft. Typical designs are shown.

9. Magnetic Drive

Electric Machinery Mfg. Co.—16-page illustrated booklet No. 183 discusses E-M magnetic adjustable-speed drive for boiler draft fans, centrifugal pumps, blowers and compressors and other loads where torque required decreases with reduction of speed. Unit is placed between constant speed motor and equipment to be driven. Principles of operation, performance characteristics and applications are covered.

10. Materials Handling

Elwell-Parker Electric Co.—12-page illustrated bulletin "Industrial Logistics" discusses handling of materials in bales, barrels, boxes and other containers that can be made up into unit loads on pallets for convenience and economy in handling. Case studies are cited to show possibilities of this system.

11. Precision Gages

Elgin National Watch Co., Sapphire Products Div. — 4-page illustrated bulletin on "Elgin Sapphire Products" lists specifications and outlines features of line of precision gages which includes plug and ring gages, gage points, standard shapes and gage accessories.

12. Baling Machine

Dempster Brothers, Inc.—4-page illustrated bulletin describes Dempster Balester baling machine for scrap metals. Several sizes are available for heavy duty service. Gasoline, diesel or electric driven units can be supplied.

13. Plastics

E. I. du Pont de Nemours & Co., Plastics Dept.—8-page illustrated bulletin "A Review of Du Pont Plastics" is comprehensive digest of plastics made by this company. Typical parts produced from Nylon molding powder, bristles and filaments; Plastacele cellulose acetate; Pyralin cellulose nitrate, Butacite, polyvinyl butyral; Lucite methyl methacrylate and polythene plastics and resins are shown and properties listed.

14. High Tension Switches

Delta-Star Electric Co.—4-page illustrated bulletin No. 4601 gives specifications and other data on improved MB-39 pole top and outdoor substation switches in ratings from 7.5 to 161 kilovolts and ampere capacities from 400 to 1200, either manual or motor-operated.

15. Oil Hardening Tool Steel

Crucible Steel Co. of America—4-page illustrated folder on Ketos oil hardening tool steel covers typical applications, critical temperature, forging, normalizing, annealing, hardening, tempering, and hardness. Size change, toughness-hardness, and time-temperature of transformation characteristics are charted.

16. Muller Mixers

Clearfield Machine Co.—32-page illustrated catalog No. 77 deals with muller type mixers for conditioning foundry sand and other materials. Preparation of foundry sands, operating principles of mixer, construction, safety features, loading and other auxiliary equipment, automatic controls and applications are discussed. Models with diameters ranging from 4 to 9 feet are covered in detail.

17. Hand Trucks

Chicago Mfg. & Distributing Co.—4-page illustrated folder describes and shows pneumatic core trucks, resilient multiple-shelf core truck and core rack, pneumatic core barrows, resilient chassis truck, bag holding trucks and various replacement parts.

18. Lifting Magnets

Electric Controller & Mfg. Co.—2-page illustrated bulletin No. 902 lists advantages, typical applications and specifications of type CSM cold strip mill coil handling magnets.

19. Stock Feed Tube

Corlett-Turner Co.—4-page illustrated folder No. 1245 shows Silent-Stock tube in use on single and multiple spindle automatic screw machines. Available in eighteen standard sizes and special sizes as required, tube eliminates clatter caused by revolving bar stock. Method of fabrication is explained and specifications are given.

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8	18	28	38	48
9	19	29	39	49
10	20	30	40	50

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20. Machine Tools

Cincinnati Milling Machine & Cincinnati Grinders, Inc.—60-page illustrated booklet No. M-1420 presents information on general and automatic production type milling machines and attachments, Hydro-Broach broaching machines, cutter sharpening machines, center and centerless type grinding and lapping machines and attachments. Details are shown and specifications listed.

21. Powder Metallurgy

Metals Refining Co.—16-page illustrated booklet entitled "The Art of Making Things from Metal Powders" is brief and elementary discussion of powder metallurgy. Discussion includes explanation of this method of fabrication, what products can be made, how they are made, and limitations and advantages of method of manufacture. Copper, iron and lead powders are covered.

22. Automatic Instruments

Bristol Co.—24-page illustrated bulletin No. W1800 is general catalog of Bristol automatic controlling, recording and indicating instruments. Hints are given on use to effect saving of time and money and improve efficiency of operations. Specifications are given on each instrument.

23. Ammonia Dissociator

Drever Co.—12-page illustrated bulletin No. B-51 presents ammonia dissociator equipment which produces low cost protective furnace atmospheres for bright annealing, clean hardening, brazing and sintering of powdered metal parts. Advantages of use, specifications and comparative cost chart are included.

24. Electronic Heaters

Federal Electric Co., Electrical Equipment Div.—4-page illustrated bulletin on Fedelco electronic heaters describes high frequency induction heating machines which are adaptable for manufacturing, assembling or maintenance operations requiring heating, such as soldering, brazing, annealing and surface hardening. Dielectric heating equipment is available also.

25. Cemented Carbides

Carboloy Co.—64-page illustrated die service manual No. D-119 covers information on finishing and servicing of all types of Carboloy dies. Recommended practices are outlined. Accessories and supplies for die room use are presented. Helpful charts and tables are included.

26. Hydraulic Presses

Colonial Broach Co.—4-page illustrated bulletin No. PA-45 describes standard line of model PA hydraulic assembly presses. Specifications, dimensions and description of line available in capacities of 15, 20, 35 and 50 tons are included. Both vertical ram and angled ram types are shown. All include company's hydraulic pressure system featuring smooth, powerful action.

27. Reproduction Equipment

Charles Bruning Co.—Illustrated folder "What's your Postwar Problem?" shows various applications for black line prints. Models for high volume cut sheet production, roll stock production and photographic reproductions, and combined printer-developer are pictured.

28. Turbine Oil

Gulf Oil Corp.—20-page illustrated brochure entitled "Gulfcrest Oil for Steam Turbine Lubrication" discusses characteristics and advantages. Air is beneficial to Gulfcrest oil under service conditions in steam turbine since it permits oxidation to proceed far enough to produce additional oiliness. Alchlor process of refining makes lubricant highly responsive to oxidation and corrosion inhibitors.

29. Tachometers

Herman H. Sticht Co.—4-page illustrated bulletin No. 750 describes type U universal hand tachometer with five ranges, imported from Switzerland. Devices are nonmagnetic direct-reading, centrifugal type and are available in four models with speed ranges from 30 to 12,000, 45 to 18,000, 60 to 24,000 and 120 to 48,000 revolutions per minute. Readability to one revolution per minute is claimed.

30. Cutting Electrodes

Ellwood Products Corp.—4-page illustrated bulletin describes cutting electrodes for underwater or surface cutting. Specifications and information on use and manipulation are covered. Electrodes can be used with any portable welding set by adding tank of oxygen. Palmgren arc oxygen kit is also described.

31. Production Facilities

Ex-Cell-O Corp.—6-page illustrated bulletin No. 36151 describes facilities for manufacturing production parts and unit assemblies on contract basis. Facilities include departments for handling parts from rough stock to finished pieces. Engineering, machining, heat treating, grinding, subassembling and inspection operations are available.

32. Polyvinyl Materials

B. F. Goodrich Chemical Co.—16-page illustrated booklet gives properties and information about applications of Geon polyvinyl materials, including plastics and latices. Four Geon resins, two polymers and two copolymers of vinyl chloride are described. Methods of processing are covered.

33. Heavy Duty Drills

Baker Bros. Inc.—Three bulletins describe Model 36-HO vertical Cleanline heavy duty single and multiple spindle hydraulic feed drills. Engineering data sheet, specifications and description of machine together with information about applications are given.

34. Flow Rate Meters

Fischer & Porter Co.—8-page illustrated bulletin No. 45-A describes Rotameters. Written in nontechnical language, explanations of design and advantages are given. Units for normal pressures and temperatures, for high pressures and temperatures, meters for recording, controlling and totalizing rates of flow, for very low flows and for extremely large flows, and for laboratory and other uses are described.

35. Hydraulic Unit

Denison Engineering Co.—1-page illustrated reprint describes Multi-Unit HydrOILic power units which are adaptable for hydraulic applications. Available in 4 and 6-ton sizes, system includes motor, hydraulic pump, reservoir and pressure regulating valve.

36. Abrasives

Behr-Manning Co.—8-page illustrated booklet entitled "Your New Laboratory, Sir!" describes local area demonstration laboratories in which coated abrasives methods and equipment can be pretested by manufacturers. Facilities and methods of operation are explained. Postcard insert permits reader to apply for use of laboratory in St. Louis, Chicago, Boston, Detroit, Cleveland or Troy, N. Y.

37. Metal Analyzer

Control Equipment Co.—4-page illustrated folder No. 16 describes type B portable Metalsorter for sorting and identifying pure metals, steels and nonferrous alloys. Operating principles, procedure for testing and features are discussed.

38. Battery Chargers

Electric Products Co.—20-page illustrated bulletin No. 203 contains full data on line of battery chargers for materials handling systems. Described are motor-generator sets which are designed expressly for battery charging. Units are fully automatic.

39. Electronic Relay

General Electric Co.—8-page illustrated bulletin No. GEA-4214 is descriptive of type CR7511-A electronic relay which provides floatless control of levels of liquids, permits pressureless switching, and eliminates arcing and sticking of delicate contacts.

40. Magnetic Chucks

Hanchett Mfg. Co.—18-page illustrated bulletin No. 045-11 gives information on Hanchett Hermeti-Coil magnetic chucks and accessories. Typical applications of these units for all types of holding operations are shown. Specifications are given on rectangular, elevating, revolving and rotary chucks, as well as on parallels, laminated top plates, rectifiers and demagnetizers.

STEEL 5
1213 West Third St., Cleveland 13, Ohio

1	11	21	31	41
2	12	22	32	42
3	13	23	33	43
4	14	24	34	44
5	15	25	35	45
6	16	26	36	46
7	17	27	37	47
8	18	28	38	48
9	19	29	39	49
10	20	30	40	50

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Readers' Service Dept.

Long Coal Strike Would Cut Steel Output Deeply

Fuel stocks at plants only moderate . . . Limit on construction causes revisions . . . Priorities not to be restored

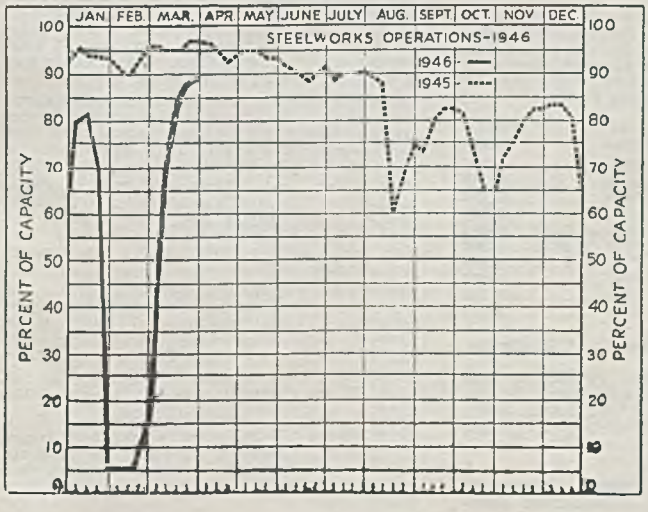
THREAT of a strike of soft coal miners at the beginning of this week overhangs the steel industry just as steel ingot operations made full recovery from the effects of the strike of steelworkers in January and February.

Effect of such a walkout is difficult to gage, depending on length of the strike and size of coal inventory at various steel plants. The latter vary but in some cases only a week's supply is on hand. From this low point stocks of coal reach 30 days' supply or more in a few cases, about two to three weeks being a fair average. Thus, cessation of coal shipments would close some plants in a week, while others might be able to continue operations up to a month, should the strike continue that long. In any case, short of resumption of mining within a short time, steel production would be hampered seriously.

Limitation of construction to aid the national housing program will cause substantial revisions of structural mill schedules and many projects will be suspended, though various classes of building will be allowed to proceed. Bridges and some utility work will be excepted, military construction and veterans' hospitals may proceed and some industrial construction of an essential character may be allowed to continue.

An unusual number of projects has come out in the past week and contracts for structural steel have been larger than in recent weeks, perhaps hastened by fear of the new limitation acting to prevent their consummation.

Continuance of the present voluntary quota system until its effects are more fully apparent has been approved by the Steel Industry Advisory Committee, instead of restoration of a system of priorities. The committee favors an attempt to meet steel demand from new business and emergencies by an arrangement with Civilian Production Administration to pass orders on to concerns able to fill them and also to suggest acceptable substitutes if plants are unable to meet orders for a specific type.



DISTRICT STEEL RATES

(Percentage of Ingot Capacity Engaged in Leading Districts)

	Week Ended Mar. 30	Change	Same Week 1945	Same Week 1944
Pittsburgh	96.5	None	92	93
Chicago	91	+ 3	101.5	100.5
Eastern Pa.	87	+ 4	95	95
Youngstown	88	None	93	95
Wheeling	86	— 4.5	93.5	99.5
Cleveland	95.5	— 1	90	98.5
Buffalo	85	+ 1.5	93	90.5
Birmingham	95	None	95	95
New England	94	+ 3	90	87
Cincinnati	81	+ 5	86	86
St. Louis	49.5	— 4.5	80	80
Detroit	88	— 2	95	92
Estimated national rate	89.5	+ 1	97	99

*Based on steelmaking capacities as of these dates.

Steel production continues to increase, though at a slower pace, the estimated national rate for last week rising one point to 89½ per cent of capacity. Chicago advanced 3 points to 91 per cent, eastern Pennsylvania 4 points to 87, Cincinnati 5 points to 81, Buffalo 1½ points to 85 and New England 3 points to 94. Wheeling declined 4½ points to 86, Cleveland 1 point to 95½, Detroit 2 points to 88 and St. Louis 4½ points to 49½. Youngstown was unchanged at 88 per cent, Pittsburgh at 96½ and Birmingham at 95. West Coast mills operated at 79½ per cent, up ½-point.

In general the delivery situation shows no change, mills being booked through the year on most products, with consumers pressing for delivery and seeking to place more tonnage in an effort to gain position on mill books for next year. Most producers are not booking orders beyond December and those operating under quota plans making schedules no further than the middle of the year. However, orders in hand are sufficient to occupy mills well into next year, especially if production is interrupted again.

Short supply of pig iron is becoming critical as a high rate of steel production is attained and consumers of merchant iron press for larger tonnage. Foundries have heavy orders for castings and with improved labor supply seek to enlarge production, only to find pig iron tonnage can not be increased. Producers are distributing iron to regular customers in proportion to normal requirements and melters without regular supply sources have difficulty placing orders. Plans for relighting high-cost furnaces have not developed yet, though under consideration.

Closely linked with the pig iron situation is lack of scrap, which causes greater use of pig iron. Slow return of manufacturing operations in steel-consuming plants has reduced the quick return of this class of material to mills. Railroad offerings also are small as scrapping of rolling stock is retarded by difficulty in obtaining new units.

COMPARISON OF PRICES

	Mar. 30	Mar. 23	Mar. 16	One Month Ago Feb. 1946	Three Months Ago Dec. 1945	One Year Ago Mar. 1945	Five Years Ago Mar. 1941
Finished Steel	$63.54	$63.54	$63.54*	$60.91	$58.27	$57.55	$56.73
Semifinished Steel	40.60	40.60	40.60	39.20	37.80	36.00	36.00
Steelmaking Pig Iron	25.50	25.50	25.50	24.75	24.25	24.05	23.05
Steelmaking Scrap	19.17	19.17	19.17	19.17	19.17	19.17	20.15

*Revised

Finished Steel Composite:—Average of industry-wide prices on sheets, strips, 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. Finished steel, net tons; others, gross tons.

COMPARISON OF PRICES

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

Finished Material, cents per lb.; coke, dollars per net ton; others dollars per gross ton.

Finished Material	Mar. 30, 1946	Feb., 1946	Dec., 1945	Mar., 1945
Steel bars, Pittsburgh	2.50c	2.375c	2.25c	2.15c
Steel bars, Philadelphia	2.82	2.695	2.57	2.47
Steel bars, Chicago	2.50	2.375	2.25	2.15
Shapes, Pittsburgh	2.35	2.275	2.10	2.10
Shapes, Philadelphia	2.465	2.340	2.215	2.215
Shapes, Chicago	2.35	2.225	2.10	2.10
Plates, Pittsburgh	2.50	2.375	2.25	2.20
Plates, Philadelphia	2.55	2.425	2.30	2.25
Plates, Chicago	2.50	2.375	2.25	2.20
Sheets, hot-rolled, Pittsburgh	2.425	2.3125	2.20	2.20
Sheets, cold-rolled, Pittsburgh	3.275	3.165	3.05	3.05
Sheets, No. 24 galv., Pittsburgh	4.05	3.875	3.70	3.65
Sheets, hot-rolled, Gary	2.425	2.3125	2.20	2.20
Sheets, cold-rolled, Gary	3.275	3.165	3.05	3.05
Sheets, No. 24 galv., Gary	4.05	3.875	3.70	3.65
Hot-rolled strip, over 6 to 12-in., Pitts.	2.35	2.225	2.10	2.10
Cold-rolled strip, Pittsburgh	3.05	2.925	2.80	2.80
Bright bess., basic wire, Pittsburgh	3.05	2.90	2.75	2.60
Wire nails, Pittsburgh	3.25	3.075	2.90	2.80
Tin plate, per base box, Pittsburgh	$5.25	$5.125	$5.00	$5.00

Semifinished Material	Mar. 30, 1946	Feb., 1946	Dec., 1945	Mar., 1945
Sheet bars, Pittsburgh, Chicago	$38.00	$37.00	$36.00	$34.00
Slabs, Pittsburgh, Chicago	39.00	37.50	36.00	34.00
Rerolling billets, Pittsburgh	39.00	37.50	36.00	34.00
Wire rods, No. 5 to ⅜-inch, Pitts.	2.30c	2.225c	2.15c	2.00c

Pig Iron	Mar. 30, 1946	Feb., 1946	Dec., 1945	Mar., 1945
Bessemer, del. Pittsburgh	$27.69	$26.94	$26.94	$26.19
Basic, Valley	26.00	25.25	25.25	24.50
Basic, eastern del. Philadelphia	27.84	27.09	27.09	26.34
No. 2 fdry., del. Pgh. N. & S. sides	27.19	26.44	26.44	25.69
No. 2 foundry, Chicago	26.50	25.75	25.75	25.00
Southern No. 2, Birmingham	22.88	22.13	22.13	21.38
Southern No. 2, del. Cincinnati	26.80	26.05	26.05	25.36
No. 2 fdry., del. Philadelphia	28.34	27.59	27.59	26.34
Malleable, Valley	26.50	25.75	25.75	25.00
Malleable, Chicago	26.50	25.75	25.75	25.00
Lake Sup., charcoal del. Chicago	37.34	37.34	37.34	37.34
Gray forge, del. Pittsburgh	26.69	25.94	25.94	25.19
Ferromanganese, del. Pittsburgh	140.00	140.00	140.00	140.33

Scrap	Mar. 30, 1946	Feb., 1946	Dec., 1945	Mar., 1945
Heavy melting steel, No. 1, Pittsburgh	$20.00	$20.00	$20.00	$20.00
Heavy melt. steel, No. 2, E. Pa.	18.75	18.75	18.75	18.75
Heavy melting steel, Chicago	18.75	18.75	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	20.00

Coke	Mar. 30, 1946	Feb., 1946	Dec., 1945	Mar., 1945
Connellsville, furnace ovens	$7.50	$7.50	$7.50	$7.00
Connellsville, foundry ovens	8.25	8.25	8.25	7.75
Chicago, by-product fdry., del.	13.35	13.75	13.75	13.35

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Following are maximum prices established by OPA schedules, except those for stainless steels which are now exempt from price control. Price schedule No. 6 covers semifinished and finished iron and steel products; by-product foundry coke, No. 29; relaying rails, No. 46; beehive oven coke, No. 77; bolts, nuts and rivets, No. 147; coke by-products, GMPR, except sulphate of ammonia, No. 205. Finished steel quoted in cents per pound and semifinished steel in dollars per gross ton, except as otherwise noted. Pricing on rails was changed to net ton basis as of Feb. 15, 1946.

Semifinished Steel

Carbon Steel Ingots: F.o.b. mill base, rerolling qual., stand. analysis, $33.

Alloy Steel Ingots: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon; uncrop, $46.80.

Rerolling, Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Sparrows Point, Birmingham, Youngstown, $39; Detroit, del., $41; Duluth (bll), $41; Pac. ports (bll), $51. (Andrews Steel Co., carbon slabs, $41; Northwestern Steel & Wire Co., $41, Sterling, Ill.; Granite City Steel Co. $47.50 gross ton slabs from D.P.C. mill. Geneva Steel Co. $58.64, Pac. ports.)

Forging Quality Blooms, Slabs, Billets: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, Youngstown, $47; Detroit, del., $49; Duluth, billets, $49; forg. bll. f.o.b. Pac. ports, $59.

(Andrews Steel Co. may quote carbon forging billets $50 gross ton at established basing points; Follansbee Steel Corp., $49.50 f.o.b. Toronto, O. Geneva Steel Co. $64.64, Pacific ports.)

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, $56.16, del. Detroit $58.16, eastern Mich. $59.16.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Sparrows Point, Youngstown, $38. (Empire Sheet & Tin Plate Co., Mansfield, O., carbon sheet bars, $39, f.o.b. mill.)

Skelp: Pittsburgh, Chicago, Sparrows Point, Youngstown, Coatesville, lb., 2.05c.

Wire Rods: Pittsburgh, Chicago, Cleveland, Birmingham, No. 5—⅜ in. inclusive, per 100 lbs., $2.30. Do., over ⅜—47/64-in., incl., $2.45; Galveston, base, $2.40 and $2.55, respectively. Worcester add $0.10; Pacific ports $0.50.

Bars

Hot-Rolled Carbon Bars and Bar-Size Shapes under 3: Pittsburgh, Youngstown, Chicago, Gary, Cleveland, Buffalo, Birmingham base, 20 tons one size, 2.50c; Duluth, base, 2.60c; Detroit, del., 2.60c; eastern Mich., 2.65c; New York, del., 2.84c; Phila., del., 2.82c; Gulf ports, dock, 2.85c; Pac. ports, dock, 3.15c. (Calumet Steel Division, Borg-Warner Corp., and Joslyn Mfg. & Supply Co., may quote 2.55c, Chicago base; Sheffield Steel Corp., 2.75c, f.o.b. St. Louis.)

Rail Steel Bars: Same prices as for hot-rolled carbon bars except base is 5 tons.

Hot-Rolled Alloy Bars: Pittsburgh, Youngstown, Chicago, Canton, Massillon, Buffalo, Bethlehem, base 20 tons one size, 2.81c; Detroit, del., 2.91c. (Texas Steel Co. may use Chicago base price as maximum f.o.b. Fort Worth, Tex., price on sales outside Texas, Oklahoma.)

AISI Series	(*Basic O-H)	AISI Series	(*Basic O-H)
1300	$0.104	4300	1.768
2300	1.768	4600	1.248
2500	2.652	4800	2.236
3000	0.52	5100	0.364
3100	0.884	5130 or 5152	0.468
3200	1.404	6120 or 6152	0.988
3400	3.328	6145 or 6150	1.248
4000	0.468	8612	0.676
4100 (.15-.25 Mo)	0.728	8720	0.728
(.20-.30 Mo)	0.78	9830	1.352

* Add 0.25 for acid open-hearth; 0.50 electric.

Cold-Finished Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base, 20,000-39,999 lbs., 3.10c; Detroit, 3.15c; Toledo, 3.25c.
Cold-Finished Alloy Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base, 3.48c; Detroit, del., 3.58c; eastern Mich., 3.63c.

Reinforcing Bars (New Billet): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Sparrows Point, Buffalo, Youngstown, base, 2.35c; Detroit, del., 2.45c; eastern Mich. and Toledo, 2.50c; Gulf ports, dock, 2.70c; Pacific ports, dock, 2.75c.

Reinforcing Bars (Rail Steel): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Buffalo, base, 2.35c; Detroit, del., 2.45c; eastern Mich. and Toledo, 2.50c; Gulf ports, dock, 2.70c.

Iron Bars: Single refined, Pitts., 4.76c; double refined, 5.84c; Pittsburgh, staybolt, 6.22c; Terre Haute, single ref., 5.42c; double ref., 6.76c.

Sheets, Strip

Hot-Rolled Sheets: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown, Sparrows Pt., Middletown, base, 2.425c; Granite City, base, 2.525c; Detroit, del., 2.525c; eastern Mich., 2.575c; Phila., del., 2.595c; New York, del., 2.665c; Pacific ports, 2.975c.

(Andrews Steel Co. may quote hot-rolled sheets for shipment to Detroit and the Detroit area on the Middletown, O., base; Alan Wood Steel Co., Conshohocken, Pa., may quote 2.60c on hot carbon sheets, nearest eastern basing point.)

Cold-Rolled Sheets: Pittsburgh, Chicago, Cleveland, Gary, Buffalo, Youngstown, Middletown, base, 3.275c; Granite City, base, 3.375c; Detroit, del., 3.375c; eastern Mich., 3.425c; New York, del., 3.615c; Phila., del., 3.585c; Pacific ports, 3.925c.

Galvanized Sheets, No. 24: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Youngstown, Sparrows Point, Middletown, base, 4.05c; Granite City, base, 4.15c; New York, del., 4.29c; Phila., del., 4.22c; Pacific ports, 4.60c.

Corrugated Galv. Sheets: Pittsburgh, Chicago, Gary, Birmingham, 29-gage, per square, 3.73c.

Culvert Sheets: Pittsburgh, Chicago, Gary, Birmingham, 16-gage not corrugated, copper alloy, 4.15c; Granite City, 4.25c; Pacific ports, 4.60c; copper iron, 4.50c; pure iron, 4.50c; zinc-coated, hot-dipped, heat-treated, No. 24, Pittsburgh, 4.60c.

Enameling Sheets: 10-gage; Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, base 3.20c; Granite City, base 3.30c; Detroit, del., 3.30c; eastern Mich., 3.35c; Pacific ports, 3.85c; 20-gage: Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, base, 3.80c; Detroit, del., 3.90c; eastern Mich., 3.95c; Pacific ports, 4.45c.

Electrical Sheets No. 24:

	Pittsburgh Base	Pacific Ports	Granite City
Field grade	3.90c	4.65c	4.00c
Armature	4.25c	5.00c	4.35c
Electrical	4.75c	5.50c	4.85c
Motor	5.425c	6.175c	5.525c
Dynamo	6.125c	6.875c	6.225c
Transformer			
72	6.625c	7.375c	.....
65	7.625c	8.375c	.....
58	8.125c	8.875c	.....
52	8.925c	9.675c	.....

Hot-Rolled Strip: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Middletown base, 6-inch and narrower, 2.45c; Detroit, del., 2.55c; eastern Mich., 2.60c; Pacific ports, 3.10c; over 6-inch, base, 2.35c; Detroit, del., 2.45c; eastern Mich., 2.50c; Pacific ports, 3.00c.

Cold Rolled Strip: Pittsburgh, Cleveland, Youngstown, 0.25 carbon and less, 3.05c; Chicago, base, 3.15c; Detroit, del., 3.15c; eastern Mich., 3.20c; Worcester, base, 3.25c.

Cold Finished Spring Steel: Pittsburgh, Cleveland, bases, add 20c for Worcester; .26-.50 Carb., 3.05c.

Tin, Terne Plate

(OPA ceiling prices announced March 1, 1946.)

Tin Plate: Pittsburgh, Chicago, Gary, 100-lb. base box, $5.25; Granite City, Birmingham, Sparrows Point, $5.35.

Electrolytic Tin Plate: Pittsburgh, Gary, 100-lb. base box, 0.25 lb. tin, $4.60; 0.50 lb. tin, $4.75; 0.75 lb. tin, $4.90; Granite City, Birmingham, Sparrows Point, $4.70, $4.85, $5.00, respectively.

Tin Mill Black Plate: Pittsburgh, Chicago, Gary, base 29-gage and lighter, 3.30c; Granite City, Birmingham, Sparrows Point, 3.40c; Pacific ports, boxed, 4.30c.

Long Ternes: Pittsburgh, Chicago, Gary, No. 24 unassorted, 4.05c; Pacific ports, 4.80c.

Manufacturing Ternes (Special Coated): Pittsburgh, Chicago, Gary, 100-base box, $4.55; Granite City, Birmingham, Sparrows Point: $4.65.

Roofing Ternes: Pittsburgh base per package 112 sheets; 20 x 28 in., coating I. C. 8-lb. $12.50; 20-lb. $15.50 (Nom.); 40-lb. $20.00 (Nom.).

Plates

Carbon Steel Plates: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Sparrows Point, Coatesville, Claymont, 2.50c; New York, del., 2.69c; Phila., del., 2.55c; St. Louis, 2.74c; Boston, del., 2.82-3.07c; Pacific ports, 3.05c; Gulf ports, 2.85c.

(Granite City Steel Co. may quote carbon plates 2.65c f.o.b. D.P.C. mill; Geneva Steel Co., Provo, Utah, 3.20c f.o.b. Pac. ports.)

Floor Plates: Pittsburgh, Chicago, 3.75c; Pacific ports, 4.40c; Gulf ports, 4.10c.

Open-Hearth Alloy Plates: Pittsburgh, Chicago, Coatesville, 3.75c; Gulf ports, 4.20c; Pacific ports, 4.40c.

Shapes

Structural Shapes: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Bethlehem, 2.35c; New York, del., 2.52c; Phila., del., 2.465c; Pacific ports, 3.00c; Gulf ports, 2.70c.

(Phoenix Iron Co., Phoenixville, Pa., may quote the equivalent of 2.45c, Bethlehem, Pa., on the general range and 2.55c on beams and channels from 4 to 10 inches.)

Steel Piling: Pittsburgh, Chicago, Buffalo, 2.65c; Pacific ports, 3.20c.

Wire and Wire Products

(Fob Pittsburgh, Chicago, Cleveland and Birmingham, per 100 pounds)

Wire to Manufacturers in carloads

Bright basic or bessemer	*$3.05
Spring (except Birmingham)	*$3.65

Wire Products to Trade

Nails and staples

Standard and cement-coated	†$3.25
Galvanized	††$2.90

Wire, Merchant Quality

Annealed	§$3.50
Galvanized	§$3.85

(Fob Pittsburgh, Chicago, Cleveland, Birmingham, per base column)

Woven fence, 15½ gage and heavier	72
Barbed wire, 80-rod spool	79
Barbless wire, twisted	79
Fence posts	74
Bale ties, single loop	72½

* Add $0.10 for Worcester, $0.05 for Duluth and $0.50 for Pacific ports.

† Add $0.30 for Worcester, $0.50 for Pacific ports.

†† Add $0.50 for Pacific ports.

§ Add $0.10 for Worcester, $0.70 for Pacific ports.

Tubular Goods

Welded Pipe: Base price in carloads, threaded and coupled 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.

Butt Weld

In.	Steel Blk.	Steel Galv.	In.	Iron Blk.	Iron Galv.
⅛	53	30	½	21	0½
¼ & ⅜	56	37½	¾	27	7
½	60½	48	1-1¼	31	13
¾	63½	52	1½	35	15½
1-3	65½	54½	2	34½	15

Lap Weld

In.	Steel Blk.	Steel Galv.	In.	Iron Blk.	Iron Galv.
2	58	46¼	1¼	20	0½
2½-3	61	49½	1½	26½	7
3½-6	63	51½	2	27½	9
7-8	62	49½	2½-3½	28½	11½
9-10	61½	49	4	30½	15
11-12	60½	48	4½-8	29½	14
			9-12	25½	9

Boiler Tubes: Net base prices per 100 feet f.o.b. Pittsburgh in carload lots, minimum wall, cut lengths 4 to 24 feet, inclusive.

O.D. sizes	B.W.G.	—Seamless— Hot Rolled	Cold Drawn	—Elec. Weld— Hot Rolled	Cold Rolled
1"	13	.....	$9.90	$9.36	$9.65
1¼"	13	.....	11.73	9.63	11.43
1½"	13	$10.91	12.96	10.63	12.64
1¾"	13	12.41	14.75	12.10	14.37
2"	13	13.90	16.52	13.53	16.19
2¼"	13	15.50	18.42	15.06	18.03
2¼"	12	17.07	20.28	16.57	19.83
2½"	12	18.70	22.21	18.11	21.68
2¾"	12	19.82	23.54	19.17	22.95
3"	12	20.79	24.71	20.05	24.02
3½"	11	26.24	31.18	25.30	30.29
4"	10	32.56	38.68	31.32	37.52
4½"	9	43.16	51.29	.....	.....
5"	9	49.96	59.36	.....	.....
6"	7	76.71	91.14	.....	.....

Rails, Supplies

Standard rails, over 60-lb., f.o.b. mill, net ton, $43.40. Light rails (billet), Pittsburgh, Chicago, Birmingham, net ton, $49.18.

°Relaying rails, 35 lbs. and over, f.o.b. railroad and basing points, $31-$33.

Supplies: Track bolts, 4.75c; heat treated, 5.00c. Tie plates $51 net ton, base, Standard spikes, 3.65c.

° Fixed by OPA Schedule No. 46, Dec. 15, 1941.

Tool Steels

Tool Steels: Pittsburgh, Bethlehem, Syracuse, Canton, O., Dunkirk, N. Y., base, cents per lb.; Reg. carbon 15.15c; extra carbon 19.48c; special carbon 23.80c; oil-hardening 25.97c; high car.-chr. 46.52c.

Tung.	Chr.	Van.	Moly.	Base, per lb.
18.00	4	1	...	72.49c
1.5	4	1	8.5	58.43c
...	4	2	3	58.43c
6.40	4.15	1.90	5	62.22c
5.50	4.50	4	4.50	75.74c

Rivets

Fob Pittsburgh, Cleveland, Chicago, Birmingham

Structural	3.75c
⅛-inch and under	65-5 off

Washers, Wrought

Fob Pittsburgh, Chicago, Philadelphia, to jobbers and large nut and bolt manufacturers, lcl ..... $2.75-$3.00 off

Bolts, Nuts

Fob Pittsburgh, Cleveland, Birmingham, Chicago. Additional discounts: 5 for carloads; 10 for full containers, except tire, step and plow bolts.

Carriage and Machine

½ x 6 and smaller	65½ off
Do., ⅞ and ⅝ x 6-in. and shorter	63½ off
Do., ¾ to 1 x 6-in. and shorter	61 off
1⅛ 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, nuts separate, 71-10 off, nuts attached, 71 off; bulk, 80 off on 15,000 of 3-in. and shorter, or 5000 over 3 in., nuts separate.

Nuts

Semifinished hex	U.S.S.	S.A.E.
⅞-in. and smaller		64
1¼-in. and smaller	62	..
1⅛-in.-1-in.		60
1⅛-in.-1 in.	59	..
1⅛-in.-1½-in.	57	58
1⅝-in. and larger	56	..

Additional discount of 10 for full kegs.

Hexagon Cap Screws

Upset 1-in., smaller	64 off
Milled 1-in., smaller	60 off

Square Head Set Screws

Upset 1-in. and smaller	71 off
Headless, ¼-in. and larger	60 off
No. 10 and smaller	70 off

Stainless Steels

(Open market prices. OPA price control suspended Oct. 11, 1945.)

Base, Cents per lb.

CHROMIUM NICKEL STEELS

	Bars	Plates	Sheets	H. R. Strip	C. R. Strip
302	25.96c	29.21c	36.79c	23.93c	30.30c
303	28.13	31.38	38.95	29.21	35.71
304	27.05	31.38	38.95	25.45	32.46
308	31.38	36.79	44.36	30.84	37.87
309	38.95	43.28	50.85	40.03	50.85
310	53.02	56.26	57.35	52.74	60.59
312	38.95	43.28	53.02	.....	.....
*316	43.28	47.61	51.94	43.28	51.94
†321	31.38	36.79	44.36	31.65	41.12
†347	35.71	41.12	48.69	35.71	45.44
431	20.56	23.80	31.38	18.94	24.35

STRAIGHT CHROMIUM STEEL

403	23.93	26.51	31.92	22.99	29.21
**410	20.02	23.93	28.67	18.39	23.80
416	20.56	23.80	29.21	19.75	25.45
††420	25.96	30.84	36.25	25.70	39.49
430	20.56	23.80	31.38	18.94	24.35
‡‡430F.	21.10	24.35	31.92	20.29	26.51
440A.	25.96	30.84	36.25	25.70	39.49
442	24.35	27.59	35.17	25.96	34.62
443	24.35	27.59	35.17	25.96	34.62
446	29.76	33.00	39.49	37.87	56.26
501	8.66	12.98	17.04	12.98	18.39
502	9.74	14.07	18.12	14.07	19.48

STAINLESS CLAD STEEL (20%)

304	.....	§§19.48	20.56	.....	.....

*With 2-3% moly. §With titanium. ‡With columbium. **Plus machining agent. ††High carbon. ‡‡Free machining. §§Includes annealing and pickling.

Metallurgical Coke

Price Per Net Ton

Beehive Ovens

Connellsville, furnace	°7.50
Connellsville, foundry	8.00- 8.50
New River, foundry	9.00- 9.25
Wise county, foundry	7.75- 8.25
Wise county, furnace	7.25- 7.75

By-Product Foundry

Kearney, N. J., ovens	13.05
Chicago, outside delivered	13.00
Chicago, delivered	13.75
Terre Haute, delivered	13.50
Milwaukee, ovens	13.75
New England, delivered	14.65
St. Louis, delivered	†13.75
Birmingham, delivered	10.90
Indianapolis, delivered	13.50
Cincinnati, delivered	13.25
Cleveland, delivered	13.20
Buffalo, delivered	13.40
Detroit, delivered	13.75
Philadelphia, delivered	13.28

°Operators of hand-drawn ovens using trucked coal may charge $8.00; effective May 26, 1945. †14.25 from other than Ala., Mo., Tenn.

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	15.00c
Toluol, two degree	27.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. works

Phenol (car lots, returnable drums)	10.50c
Do., less than car lots	11.25c
Do., tank cars	9.50c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls., to jobbers	8.00c

Per ton, bulk, f.o.b. port

Sulphate of ammonia	$29.20

WAREHOUSE STEEL PRICES

Base delivered price, cents per pound, for delivery within switching limits, subject to established extras. Quotations based on OPA mill prices announced March 1, 1946.

	Hot-rolled bars	Structural shapes	Plates	Floor plates	Hot-rolled sheets (10 gage base)	Hot-rolled strip (14-gage and lighter, 6-in and narrower)	Hot-rolled strip (12-gage and heavier wider than 6-inch)	Galvanized flat sheets (24 gage base)	Cold-rolled sheets (17 gage base)	Cold finished bars	Cold-rolled strip
Boston	4.294[1]	4.162[1]	4.162[1]	5.977[1]	3.999[1]	5.476[1]	4.356[1]	5.674[14]	4.969[14]	4.594[11]	4.965
New York	4.103[1]	4.008[1]	4.018[1]	5.824[1]	3.815[1]	4.324[1]	4.224[1]	5.460[13]	4.838[14]	4.553[21]	5.024
Jersey City	4.103[1]	3.997[1]	4.018[1]	5.824[1]	3.815[1]	4.324[1]	4.224[1]	5.460[13]	4.838[14]	4.553[21]	5.024
Philadelphia	4.072[1]	3.916[1]	3.855[1]	3.768[1]	3.743[1]	4.622[1]	4.172[1]	5.468[15]	5.097[28]	4.022[21]	5.022
Baltimore	4.052[1]	4.009[1]	3.844[1]	5.502[1]	3.619[1]	4.602[1]	4.152[1]	5.344[1]	5.077[28]	4.502[21]	.....
Washington	4.191[1]	4.180[1]	4.046[1]	5.591[1]	3.821[1]	4.741[1]	4.291[1]	5.646[17]	5.066[20]	4.491[21]	.....
Norfolk, Va.	4.315[1]	4.252[1]	4.221[1]	5.715[1]	3.996[1]	4.665[1]	4.415[1]	5.821[17]	4.490[24]	4.615[21]	.....
Bethlehem, Pa.*	.....	3.70[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Claymont, Del.*	.....	.....	3.70[1]	.....	.....	.....	.....	.....	.....	.....	.....
Coatesville, Pa.*	.....	.....	3.70[1]	.....	.....	.....	.....	.....	.....	.....	.....
Buffalo (city)	3.60[1]	3.65[1]	3.88[1]	5.51[1]	3.575[1]	4.169[1]	4.069[1]	5.20[13]	4.625[18]	4.20[21]	4.919
Buffalo (country)	3.50[1]	3.55[1]	3.55[1]	5.15[1]	3.475[1]	3.85[1]	4.060[1]	5.10[13]	4.525[10]	4.10[21]	4.60
Pittsburgh (city)	3.60[1]	3.65[1]	3.65[1]	5.25[1]	3.575[1]	3.95[1]	3.850[1]	5.20[13]	4.625[24]	4.20[21]	4.70
Pittsburgh (country)	3.50[1]	3.55[1]	3.55[1]	5.15[1]	3.475[1]	3.85[1]	3.750[1]	5.10[13]	4.525[24]	4.10[21]	4.60
Cleveland (city)	3.60[1]	3.838[1]	3.65[1]	5.438[1]	3.575[1]	3.95[1]	3.850[1]	5.327[13]	4.625[24]	4.20[21]	4.70
Cleveland (country)	3.50[1]	.....	3.55[1]	.....	3.475[1]	3.85[1]	3.750[1]	.....	4.525[24]	4.10[21]	4.60
Detroit	3.70[1]	3.911[1]	3.859[1]	5.531[1]	3.675[1]	4.050[1]	3.950[1]	5.450[13]	4.725[24]	4.25[13]	4.909
Omaha (city, del.)	4.293[1]	4.343[1]	4.343[1]	5.943[1]	4.018[1]	4.493[1]	4.393[1]	5.965[15]	5.668[24]	4.893[21]	.....
Omaha (country)	4.193[1]	4.243[1]	4.243[1]	5.843[1]	3.918[1]	4.393[1]	4.293[1]	5.865[15]	.....	.....	.....
Cincinnati	3.861[1]	3.941[1]	3.911[1]	5.541[1]	3.650[1]	4.025[1]	3.925[1]	5.275[13]	4.700[24]	4.461[21]	4.961
Youngstown*	.....	.....	.....	.....	.....	.....	.....	4.85[13]	.....	.....	.....
Middletown, O.*	.....	.....	.....	.....	3.475[1]	3.85[1]	3.750[1]	5.10[13]	.....	.....	.....
Chicago (city)	3.75[1]	3.80[1]	3.80[1]	5.40[1]	3.475[1]	3.95[1]	3.850[1]	5.681[13]	4.425[24]	4.20[21]	4.90
Milwaukee	3.887[1]	3.937[1]	3.937[1]	5.537[1]	3.612[1]	4.087[1]	3.987[1]	5.722[18]	4.562[24]	4.337[21]	5.037
Indianapolis	3.83[1]	3.88[1]	3.88[1]	5.48[1]	3.743[1]	4.118[1]	4.018[1]	5.368[15]	4.793[24]	4.43[21]	5.030
St. Paul	4.01[2]	4.06[2]	4.06[2]	5.66[2]	3.735[2]	4.21[2]	4.110[2]	5.707[15]	4.685[24]	4.811[21]	5.352
St. Louis	3.924[1]	3.947[1]	3.947[1]	5.547[1]	3.622[1]	4.097[11]	3.997[1]	5.622[15]	4.572[24]	4.481[21]	5.181
Memphis, Tenn.	4.265[1]	4.315[1]	4.315[1]	6.03[1]	4.190[1]	4.565[1]	4.465[1]	5.715[18]	5.005[24]	4.78[21]	.....
Birmingham	3.65[1]	3.80[1]	3.80[1]	6.153[1]	3.675[1]	4.05[1]	3.950[1]	5.20[13]	5.077[24]	4.99[21]	5.465
New Orleans (city)	4.35[4]	4.15[4]	4.15[4]	6.10[4]	4.283[4]	4.55[4]	4.450[4]	5.70[26]	5.304[19]	5.05[21]	5.679
Houston, Tex.	4.00[3]	4.50[1]	4.50[1]	5.75[9]	3.938[3]	4.663[3]	4.563[3]	5.763[26]	5.819[19]	4.10[22]	.....
Los Angeles	4.65[4]	4.90[4]	5.20[4]	7.45[4]	5.225[4]	7.10[4]	5.200[4]	6.45[13]	7.425[4]	6.033[22]	5.863
San Francisco	4.40[7]	4.60[7]	4.90[7]	6.60[7]	4.775[7]	6.10[7]	4.750[7]	6.80[18]	7.525[18]	5.783[21]	7.583
Portland, Oreg.	4.70[27]	4.70[27]	5.00[27]	6.75[27]	4.875[27]	6.65[27]	5.000[27]	6.20[18]	6.825[18]	5.983[18]	.....
Tacoma, Wash.	4.60[6]	4.70[6]	5.00[6]	6.75[6]	4.875[6]	5.80[6]	4.500[6]	6.40[18]	7.825[18]	6.233[21]	.....
Seattle	4.70[6]	4.70[6]	5.00[6]	6.75[6]	4.875[6]	5.80[6]	4.500[6]	6.40[18]	7.275[18]	6.233[21]	.....

*Basing point cities with quotations representing mill prices, plus warehouse spread.

NOTE—All prices fixed by Office of Price Administration in Revised Price Schedule No. 49, as amended. Deliveries outside above cities computed in accordance with regulations.

BASE QUANTITIES

[1]—400 to 1999 pounds; [2]—400 to 14,999 pounds; [3]—any quantity; [4]—300 to 1999 pounds; [5]—400 to 8999 pounds; [6]—300 to 9999 pounds; [7]—400 to 39,999 pounds; [8]—under 2000 pounds; [9]—under 4000 pounds; [10]—500 to 1499 pounds; [11]—one bundle to 39,999 pounds; [12]—150 to 2249 pounds; [13]—150 to 1499 pounds; [14]—three to 24 bundles; [15]—450 to 1499 pounds; [16]—one bundle to 1499 pounds; [17]—one to nine bundles; [18]—one to six bundles; [19]—100 to 749 pounds; [20]—300 to 1999 pounds; [21]—1500 to 39,999 pounds; [22]—1500 to 1999 pounds; [23]—1000 to 39,999 pounds; [24]—400 to 1499 pounds; [26]—1000 to 1999 pounds; [28]—under 25 bundles. Cold-rolled strip, 2000 to 39,999 pounds, base: [27]—300 to 4999 pounds.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (Natural) Lower Lake Ports

Old range bessemer	$4.95
Mesabi nonbessemer	4.55
High phosphorus	4.55
Mesabi bessemer	4.70
Old range nonbessemer	4.80

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56-63% contract	13.00

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Manganiferous ore, 45-55% Fe., 6-10% Mang.	Nom.
N. African low phos.	Nom.
Swedish basic, 60 to 68%	Nom.
Spanish. No. African basic, 50 to 60%	Nom.
Brazil iron ore, 68-69% f.o.b. Rio de Janeiro	7.50-8.00

Tungsten Ore

Chinese Wolframite, per short ton unit, duty paid	$24.00

Chrome Ore

(Equivalent OPA schedules):

Gross ton f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., Portland, Ore., or Tacoma, Wash.

(S S paying for discharge; dry basis, subject to penalties if guarantees are not net.)

Indian and African

48% 2.8:1	$39.75
48% 3:1	41.00
48% no ratio	31.00

South African (Transvaal)

44% no ratio	$27.40
45% no ratio	28.30
48% no ratio	31.00
50% no ratio	32.80

Brazilian—nominal

44% 2.5:1 lump	$33.65
48% 3:1 lump	48.50

Rhodesian

45% no ratio	$28.30
48% no ratio	31.00
48% 3:1 lump	41.00

Domestic (seller's nearest rail)

48% 3:1	$43.50

less $7 freight allowance.

Manganese Ore

Sales prices of Metals Reserve Co., cents per gross ton unit, dry, 48%, at New York, Philadelphia, Baltimore, Norfolk, Mobile and New Orleans, 85c; Fontana, Calif., Provo, Utah, and Pueblo, Colo., 91c; prices include duty on imported ore and are subject to premiums, penalties and other provisions of amended M.P.R. No. 248, effective May 15, 1944. Price at basing points which are also points of discharge of imported manganese ore is fob cars, shipside, at dock most favorable to the buyer. Outside shipments direct to consumers at 10c per unit less than Metal Reserve Co. prices.

Molybdenum

Sulphide conc., lb., Mo. cont., mines	$0.75

NATIONAL EMERGENCY STEELS (Hot Rolled)

(Extras for alloy content)

Basic open-hearth Electric furnace

Designation	Chemical Composition Limits, Per Cent — Carbon	Mn.	Si.	Cr.	Ni.	Mo.	Bars per 100 lb.	Billets per GT	Bars per 100 lb.	Billets per GT
NE 9415	.13-.18	.80-1.10	.20-.35	.30-.50	.30-.60	.08-.15	$0.780	$15.60	$1.300	$26.00
NE 9425	.23-.28	.80-1.20	.20-.35	.30-.50	.30-.60	.08-.15	.780	15.60	1.300	26.00
NE 9442	.40-.45	1.00-1.30	.20-.35	.30-.50	.30-.60	.08-.15	.832	16.64	1.352	27.04
NE 9722	.20-.25	.50-.80	.20-.35	.10-.25	.40-.70	.15-.25	.676	13.52	1.196	23.92
NE 9912	.10-.15	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.248	24.96	1.612	32.24
NE 9920	.18-.23	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.248	24.96	1.612	32.24

Extras are in addition to a base price of 2.80Sc, per pound on finished products and $56.16 per gross ton on semifinished steel major basing points and are in cents per pound and dollars per gross ton. No prices quoted on vanadium alloy.

Pig Iron

Prices (in gross tons) are maximum fixed by OPA Price Schedule No. 10, effective June 10, 1941, amended Feb. 14, Oct. 23, 1945, and March 15, 1946. Exceptions indicated in footnotes. Base prices bold face, delivered light face. Federal tax on freight charges, effective Dec. 1, 1942, not included.

	Foundry	Basic	Bessemer	Malleable
Bethlehem, Pa., base	$27.50	$27.00	$28.50	$28.00
Newark, N. J., del.	29.03	28.53	30.03	29.53
Brooklyn, N. Y., del.	30.00	.....	.....	30.50
Birdsboro, Pa., base	27.50	27.00	28.50	28.00
Birmingham, base	22.88	21.50	27.50	.....
Baltimore, del.	28.11	.....	.....	.....
Boston, del.	27.64	.....	.....	.....
Chicago, del.	26.72	.....	.....	.....
Cincinnati, del.	26.56	25.23	.....	.....
Cleveland, del.	26.62	25.74	.....	.....
Newark, N. J.	28.64	.....	.....	.....
Philadelphia, del.	27.96	27.46	.....	.....
St. Louis, del.	28.62	27.54	.....	.....
Buffalo, base	26.50	25.50	27.50	27.00
Boston, del.	28.00	27.00	29.00	28.50
Rochester, del.	28.03	.....	29.03	28.53
Syracuse, del.	28.58	.....	29.58	29.08
Chicago, base	26.50	26.00	27.00	26.50
Milwaukee, del.	27.60	27.10	28.10	27.60
Muskegon, Mich., del.	27.69	.....	.....	27.69
Cleveland, base	26.50	26.00	27.00	26.50
Akron, Canton, del.	27.89	27.39	28.39	27.89
Detroit, base	26.50	26.00	27.00	26.50
Saginaw, Mich., del.	28.81	28.31	29.31	28.81
Duluth, base	27.00	26.50	27.50	27.00
St. Paul, del.	29.13	28.63	29.63	29.13
Erie, Pa., base	26.50	26.00	27.50	27.00
Everett, Mass., base	27.50	27.00	28.50	28.00
Boston, del.	28.00	27.50	29.00	28.50
Granite City, Ill., base	26.50	26.00	27.00	26.50
St. Louis, del.	27.00	26.50	.....	27.00
Hamilton, O., base	26.50	26.00	.....	26.50
Cincinnati, del.	27.61	27.11	.....	27.61
Neville Island, Pa., base	26.50	26.00	27.00	26.50
§Pittsburgh, del. No. & So. sides	27.19	26.69	27.69	27.19
Provo, Utah, base	24.50	24.00	.....	.....
Sharpsville, Pa., base	26.50	26.00	27.00	26.50
Sparrows Point, base	27.50	27.00	.....	.....
Baltimore, del.	28.49	.....	.....	.....
Steelton, Pa., base	.....	27.00	.....	.....
Swedeland, Pa., base	27.50	27.00	28.50	28.00
Philadelphia, del.	28.34	27.84	.....	28.04
Toledo, O., base	26.50	26.00	27.00	26.50
Youngstown, O., base	26.50	26.00	27.00	26.50
Mansfield, O., del.	28.44	27.94	28.94	28.44

Base grade, silicon 1.75-2.25%; add 50 cents for each additional 0.25% silicon, or portion thereof; deduct 50 cents for silicon below 1.75% on foundry iron. §For McKees Rocks, Pa., add .55 to Neville Island base; Lawrenceville, Homestead, McKeesport, Ambridge, Monaco, Aliquippa, .84; Monessen, Monongahela City .97 (water); Oakmont, Verona 1.11; Brackenridge 1.24.

Note: Add 50 cents per ton for each 0.50% manganese or portion thereof over 1.00%.

Nickel differentials: Under 0.50%, no extra; 0.50% to 0.74% incl., $2 per ton; for each additional 0.25% nickel, $1 per ton.

High Silicon, Silvery

6.00-6.50 per cent (base) $32.00

6.51-7.00	$33.00	9.01- 9.50	38.00
7.01-7.50	34.00	9.51-10.00	39.00
7.51-8.00	35.00	10.01-10.50	40.00
8.01-8.50	36.00	10.51-11.00	41.00
8.51-9.00	37.00	11.01-11.50	42.00

F.o.b. Jackson county, O., per gross ton. Buffalo base $1.25 higher, whichever is most favorable to buyer. Prices subject to additional charge of 50 cents a ton for each 0.50% manganese in excess of 1.00%.

Electric Furnace Ferrosilicon: Sil. 14.01 to 14.50%, $45.50 Jackson Co.; each additional .50% silicon up to and including 18% add $1; low impurities not exceeding 0.005 Phos., 0.40 Sulphur, 1.0% Carbon, add $1.

Bessemer Ferrosilicon

Prices same as for high silicon silvery iron, plus $1 per gross ton.

Charcoal Pig Iron

Northern

Lake Superior Furn. $34.00
Chicago, del. 37.34

Southern

Semi-cold blast, low phos.

f.o.b. furnace, Lyles, Tenn. $33.00 (For higher silicon irons a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Gray Forge

Neville Island, Pa. $26.00
Valley base 26.00

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Buffalo, N. Y., $32.00 base; $33.24, del. Philadelphia. Intermediate phos., Central Furnace, Cleveland, $29.00.

Switching Charges: Basing Point prices are subject to an additional charge for delivery within the switching limits of the respective districts.

Silicon Differential: 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.

Ceiling 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.

Exception to Ceiling Prices: Struthers Iron & Steel Co. may charge 50 cents a ton in excess of basing point prices for No. 2 Foundry, Basic, Bessemer and Malleable.

Refractories

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

Fire Clay Brick

Super Duty

Pa., Mo., Ky. $68.50

High Heat Duty

Pa., Ill., O., Md., Mo., Ky. 54.40
Ala., Ga. 54.40
N. J. 59.35

Intermediate Heat Duty

Ohio 47.70

Low Heat Duty

Pa., Ill., Md., Mo., Ky. 49.35
Ala., Ga. 40.30
N. J. 52.00
Ohio 38.15

Malleable Bung Brick

All bases 63.45

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry Press 32.85
Wire Cut 30.75

Silica Brick

Pennsylvania 54.40
Joliet, E. Chicago 62.45
Birmingham, Ala. 54.40

Magnesite

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
Magnesite brick 76.00
Chem. bonded Magnesite 65.00

Fluorspar

Metallurgical grade, f.o.b. Ill., Ky., net tons, carloads, CaF_2 content, 70% or more, $33; 65 but less than 70%, $32; 60 but less than 65% $31; less than 60%, $30. After Aug. 29, 1944, base price any grade $30.00.

Ferroalloy Prices

Ferromanganese, standard: 78-82% c.l. gross ton, duty paid, $135 fob cars, Baltimore, Philadelphia or New York, whichever is most favorable to buyer, Rockdale or Rockwood, Tenn. (where Tennessee Products Co. is producer), Birmingham, Ala. (where Sloss-Sheffield Steel & Iron Co. is producer); $140 fob cars, Pittsburgh (where Carnegie-Illinois Steel Corp. is producer); add $6 for packed c.l., $10 for ton, $13.50 for less ton; $1.70 for each 1%, or fraction contained manganese over 82% or under 78%.

Ferromanganese, low carbon: Eastern zone: Special, 21c; regular, 20.50c; medium, 14.50c; central zone: Special, 21.30c; regular, 20.80c; medium, 14.80c; western zone: Special, 21.55c; regular, 21.05c; medium, 15.75c. Prices are per pound contained Mn, bulk carlot shipments, fob shipping point, freight allowed. Special low-carbon has content of 90% Mn, 0.10% C, and 0.06% P.

Spiegeleisen: 19-21% carlot per gross ton, Palmerton, Pa., $36; Pittsburgh, $40.50; Chicago, $40.60.

Electrolytic Manganese: 99.9% plus, less ton lots, per lb. 37.6c.

Chromium Metal: 97% min. chromium, max. .50% carbon, eastern zone, per lb. contained chromium bulk, c.l., 79.50c, 2000 lb. to c.l. 80c; central 81c and 82.50c; western 82.25c and 84.75c; f.o.b. shipping point, freight allowed.

Ferrocolumbium: 50-60% per lb. contained columbium in gross ton lots, contract basis, R. R. freight allowed, eastern zone, $2.25; less-ton lots $2.30. Spot prices 10 cents per lb. higher.

Ferrochrome: High carbon, eastern zone, bulk, c.l., 13c, 2000 lb. to c.l. 13.90c; central, add .40c and .65c; western, add 1c and 1.85c—high nitrogen, high carbon ferrochrome; Add 5c to all high carbon ferrochrome prices; all zones; low carbon eastern, bulk, c.l. max. 0.06% carbon, 23c, 0.10% 22.50c, 0.15% 22c, 0.20% 21.50c, 0.50% 21c, 1.00% 20.50c, 2.00% 19.50c; 2000 lb. to c.l., 0.06% 24c, 0.10% 23.50c, 0.15% 23c, 0.20% 22.50c 0.50% 22c, 1.00% 21.50c, 2.00% 20.50c; central, add .4c for bulk, c.l. and .65 for 2000 lb. to c.l.; western, add 1c for bulk, c.l. and 1.85c for 2000 lb. c.l.; carload packed differential .45c; f.o.b. shipping point, freight allowed. Prices per lb. contained Cr. high nitrogen, low carbon ferrochrome: Add 2c to low carbon ferrochrome prices; all zones. For higher nitrogen carbon add 2c for each .25% of nitrogen over 0.75%.

Special Foundry ferrochrome: (Chrom. 62-66%, car. approx. 5-7%) Contract, carload bulk 13.50c, packed 13.95c, ton lots 14.40c, less, 14.90c, eastern, freight allowed, per pound contained chromium; 13.90c, 14.35c, 15.05c and 15.55c central; 14.50c, 14.95c, 16.25c and 16.75c, western; spot up .25c.

S.M. Ferrochrome, high carbon: (Chrom: 60-65%, sil. 4-6%, mang. 4-6% and carbon 4-6%.) Contract, carlot, bulk, 14.00c, packed 14.45c, ton lots 14.90c, less 15.40c, eastern, freight allowed; 14.40c, 14.85c, 15.55c and 16.05c, central; 15.00c, 15.45c, 16.75c and 17.25c, western; spot up .25c; per pound contained chromium.

S.M. Ferrochrome, low carbon: (Chrom. 62-66%, sil. 4-6%, mang. 4-6% and carbon 1.25% max.) Contract, carlot, bulk, 20.00c, packed 20.45c, ton lots 21.00c, less ton lots 22.00c, eastern, freight allowed, per pound contained chromium, 20.40c, 20.85c, 21.65c and 22.65c, central; 21.00c, 21.45c, 22.85c and 23.85c, western; spot up .25c.

SMZ Alloy: (Silicon 60-65%, Mang. 5-7%, zir. 5-7% and iron approx. 20%) per lb. of alloy contract carlots 11.50c, ton lots 12.00c, less 12.50c, eastern zone, freight allowed; 12.00c, 12.85c and 13.35c central zone; 14.05c, 14.60c and 15.10c, western; spot up .25c.

Silicaz Alloy: (Sil. 35-40% cal. 9-11%, alum. 5-7%, zir. 5-7%, tit. 9-11% and boron 0.55-0.75%), per lb. of alloy contract, carlots 25.00c, ton lots 26.00c, less ton lots 27.00c, eastern, freight allowed, 25.50c, 26.75c and 27.75c, central; 27.50c, 28.90c and 29.90c, western; spot up .25c.

Silvaz Alloy: (Sil. 35-40%, van. 9-11%, alum. 5-7%, zir. 5-7%, tit. 9-11% and boron 0.55-0.75%), per lb. of alloy. Contract, carlots 58.00c, ton lots 59.00c, less 60.00c, eastern freight allowed; 58.50c, 59.75c and 60.75c, central; 60.50c, 61.90c and 62.90c, western; spot up ¼c.

CMSZ Alloy 4: (Chr. 45-49%, mang. 4-6%, sil. 18-21%, zir. 1.25-1.75%, and car. 3.00-4.50%). Contract carlots, bulk, 11.00c and packed 11.50c; ton lots 12.00c; less 12.50c, eastern, freight allowed; 11.50c and 12.00c, 12.75c, 13.25c, central; 13.50c and 14.00c, 14.75c, 15.25c, western; spot up .25c.

CMSZ Alloy 5: (Chr. 50-56%, mang. 4-6%, sil. 13.50-16.00%, zir. .75-1.25%, car. 3.50-5.00%) per lb. of alloy. Contract, carlots, bulk, 10.75c, packed 11.25c, ton lots 11.75c, less 12.25c, eastern, freight allowed; 11.25c, 11.75c and 12.50c, central; 13.25c and 13.75c, 14.50c and 15.00c, western; spot up .25c.

Ferro-Boron: (Bor. 17.50% min., sil. 1.50% max., alum. 0.50% max. and car. 0.50% max.) per lb. of alloy contract ton lots $1.20, less ton lots $1.30, eastern, freight allowed; $1.2075 and $1.3075 central; $1.229 and $1.329, western; spot add 5c.

Manganese-Boron: (Mang. 75% approx., boron 15-20%, iron 5% max. sil. 1.50% max. and carbon 3% max.), per lb. of alloy. Contract ton lots, $1.89, less $2.01, eastern; freight allowed; $1.903 and $2.023, central, $1.935 and $2.055 western; spot up 5c.

Nickel-Boron: (Bor. 15-18%, alum. 1% max., sil. 1.50% max., car. 0.50% max., iron 3% max., nickel, balance), per lb. of alloy. Contract, 5 tons or more, $1.90, 1 ton to 8 ton, $2.00, less than ton $2.10, eastern, freight allowed; $1.9125, $2.0125 and $2.1125, central; $1.9445, $2.0445 and $2.1445, western; spot same as contract.

Chromium-Copper: (Chrom. 8-11%, cu. 88-90%, iron 1% max. sil. 0.50% max.) contract, any quantity, 45c, eastern, Niagara Falls, N. Y., basis, freight allowed to destination, except to points taking rate in excess of St. Louis rate to which equivalent of St. Louis rate will be allowed; spot up 2c.

Vanadium Oxide: (Fused: Vanadium oxide 85-88%, sodium oxide approx. 10% and calcium oxide, approx. 2%, or Red Cake; Vanadium oxide 85% approx., sodium oxide, approx. 9% and water approx.

2.5%) Contract, any quantity, $1.10 eastern, freight allowed per pound vanadium oxide contained; contract carlots, $1.105, less carlots, $1.108, central; $1.118 and $1.133, western; spot add 5c to contracts in all cases.

Calcium metal; cast: Contract ton lots or more $1.35, less, $1.60, pound of metal; $1.36 and $1.61 central, $1.40 and $1.65, western; spot up 5c.

Calcium-Manganese-Silicon: (Cal. 16-20% mang. 14-18% and sil. 53-59%), per lb. of alloy. Contract, carlots, 15.50c, ton lots 16.50c and less 17.00c, eastern, freight allowed; 16.00c, 17.35c, and 17.85c, central; 18.05c, 19.10c and 19.60c western; spot up .25c.

Calcium-Silicon: (Cal. 30-35%, sil. 60-65% and iron 3.00% max.), per lb. of alloy. Contract, carlot, lump 18.00c, ton lots 14.50c, less 15.50c, eastern, freight allowed; 13.50c, 15.25c and 16.25c central; 15.55c, 17.40c and 18.40c, western; spot up .25c.

Briquets, Ferromanganese: (Weight approx. 3 lbs. and containing exactly 2 lbs. mang.) per lb. of briquets. Contract, carlots, bulk .0605c, packed .063c, tons .0655c, less .068c eastern freight allowed; .063c, .0655c, .0755c and .078c, central; .066c, .0685c, .0855c and .088c, western; spot up .25c.

Briquets: Ferrochrome, containing exactly 2 lb. cr., eastern zone, bulk, c.l., 8.25c per lb. of briquets, 2000 lb. to c.l., 8.75c; central, add .3c for c.l. and .5c for 2000 lb. to c.l.; western, add .70c for c.l., and .2c for 2000 lb. to c.l.; **silicomanganese,** eastern, containing exactly 2 lb. manganese and approx. ¼ lb. silicon, bulk, c.l., 5.80c, 2000 lbs. to c.l., 6.30c; central add .25c for c.l. and 1c for 2000 lb. to c.l.; western, add .5c for c.l., and 2c for 2000 lb. to c.l.; **ferrosilicon,** eastern, approx. 5 lb., containing exactly 2 lb. silicon, or weighing approx. 2½ lb. and containing exactly 1 lb. of silicon, bulk, c.l., 3.35c, 2000 lb. to c.l., 3.80c; central, add 1.50c for c.l., and .40c for 2000 lb. to c.l.; western, add 3.0c for c.l. and .45c for 2000 to c.l.; f.o.b. shipping point, freight allowed.

Ferromolybdenum: 55-75% per lb. contained molybdenum f.o.b. Langeloth and Washington, Pa., furnace, any quantity 95.00c.

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.

Ferrosilicon: Eastern zone, 90-95%, bulk, c.l., 11.05c, 2000 lb. to c.l., 12.30c; 80-90%, bulk c.l., 8.90c, 2000 lb. to c.l., 9.95c; 75%, bulk, c.l., 8.05c, 2000 lb. to c.l., 9.05c; 50%, bulk c.l., 6.65c and 2000 lb. to c.l., 7.85c; central 90-95%, bulk, c.l., 11.20c, 2000 lb. to c.l., 12.80c; 80-90%, bulk, c.l., 9.05c, 2000 to c.l., 10.45c; 75%, bulk, c.l., 8.20c, 2000 lb. to c.l., 9.65c; 50% bulk, c.l., 7.10c, 2000 lb. to c.l., 9.70c; western, 90-95%, bulk, c.l., 11.65c, 2000 lb. to c.l., 15.60c; 80-90%, bulk, c.l., 9.55c, 2000 lb. to c.l., 13.50c; 75%, bulk, c.l., 8.75c, 2000 to c.l., 13.10c; 50%, bulk, c.l., 7.25c, 2000 to c.l., 8.75c; f.o.b. shipping point, freight allowed. Prices per lb. contained silicon.

Grainal: Vanadium Grainal No. 1 87.5c; No. 6, 60c; No. 79, 45c; all f.o.b. Bridgeville, Pa., usual freight allowance.

Silicon Metal: Min. 97% silicon and max. 1% iron, eastern zone, bulk, c.l., 12.90c; 2000 lb. to c.l., 13.45c; central, 13.20c and 13.90c; western, 13.85c and 16.80c; min. 96% silicon and max. 2% iron, eastern, bulk, c.l., 12.50c, 2000 lb. to c.l., 13.10c; central, 12.80c and 13.55c; western, 13.45c and 16.50c f.o.b. shipping point, freight allowed. Price per lb. contained silicon.

Manganese Metal: (96% min. manganese, max. 2% iron), per lb. of metal, eastern zone, bulk, c.l., 30c, 2000 lb. to c.l., 32c, central, 30.25c, and 33c; western 30.55c and 35.05c.

Ferrotungsten: Spot, 10,000 lb. or more, per lb. contained tungsten, $1.90; contract, $1.88; freight allowed as far west as St. Louis.

Tungsten Metal Powder: Spot, not less than 97 per cent, $2.50-$2.60; freight allowed as far west as St. Louis.

Ferrotitanium: 40-45%, R.R. freight allowed, per lb. contained titanium; ton lots $1.23; less-ton lots $1.25; eastern. Spot up 5 cents per lb.

Ferrotitanium: 20-25%, 0.10 maximum carbon; per lb. contained titanium; ton lots $1.35; less-ton lots $1.40 eastern. Spot 5 cents per lb. higher.

High-Carbon Ferrotitanium: 15-20% contract basis, per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destination east of Mississippi River and North of Baltimore and St. Louis, 6.8% carbon $142.50; 3-5% carbon $157.50.

Carbortam: Boron 0.90 to 1.15% net ton to carload, 8c lb. f.o.b. Suspension Bridge, N. Y., frt. allowed same as high-carbon ferrotitanium.

Bortam: Boron 1.5-1.9%, ton lots 45c lb., less ton lots 50c lb.

Ferrovanadium: 35-55%, contract basis, per lb. contained vanadium, f.o.b. producers plant with usual freight allowances; open-hearth grade $2.70; special grade $2.80; highly-special grade $2.90.

Zirconium Alloys: 12-15%, per lb. of alloy, eastern contract, carlots, bulk, 4.60c, packed 4.80c, ton lots 4.80c, less tons 5c, carloads, bulk, per gross ton $102.50; packed $107.50; ton lots $108; less-ton lots $112.50. Spot ¼c per ton higher.

Zirconium Alloy: 35-40%, Eastern, 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.

Alsifer: (Approx. 20% aluminum, 40% silicon, 40% iron) contract basis f.o.b. Niagara Falls, N. Y., per lb. 5.50c; ton lots 6.00c. Spot ½ cent higher.

Siminal: (Approx. 20% each Si., Mn., Al.) Contract, frt. all. not over St. Louis rate, per lb. alloy; carlots 8c; ton lots 8.75c; less ton lots 9.25c.

Borosil: 3 to 4% boron, 40 to 45% Si., $6.25 lb. cont. Bo., f.o.b. Philo, O., freight not exceeding St. Louis rate allowed

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Following prices are quotations developed by editors of STEEL in the various centers. For complete OPA ceiling price schedule refer to maximum price regulation No. 4. Quotations are on gross tons.

PHILADELPHIA:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$18.75
No. 2 Heavy Melt. Steel	18.75
No. 2 Bundles	18.75
No. 3 Bundles	16.75
Mixed Borings, Turnings	13.75
Machine Shop Turnings	13.75
Billet, Forge Crops	23.75
Bar Crops, Plate Scrap	21.25
Cast Steel	21.25
Punchings	21.25
Elec. Furnace Bundles	19.75
Heavy Turnings	18.25

Cast Grades
(F.o.b. Shipping Point)

Heavy Breakable Cast	16.50
Charging Box Cast	19.00
Cupola Cast	20.00
Unstripped Motor Blocks	17.50
Malleable	22.00
Chemical Borings	16.51

NEW YORK:
(Dealers' buying prices)

No. 1 Heavy Melt. Steel	$15.33
No. 2 Heavy Melt. Steel	15.33
No. 2 Hyd. Bundles	15.33
No. 3 Hyd. Bundles	13.33
Chemical Borings	14.33
Machine Turnings	10.33
Mixed Borings, Turnings	10.33
No. 1 Cupola	20.00
Charging Box	19.00
Heavy Breakable	16.50
Unstrip Motor Blocks	17.50
Stove Plate	19.00

CLEVELAND:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$19.50
No. 2 Heavy Melt. Steel	19.50
No. 1 Comp. Bundles	19.50
No. 2 Comp. Bundles	19.50
No. 1 Busheling	19.50
Mach. Shop Turnings	14.50
Short Shovel Turnings	16.50
Mixed Borings, Turnings	14.50
No. 1 Cupola Cast	20.00
Heavy Breakable Cast	16.50
Cast Iron Borings	13.50-14.00
Billet, Bloom Crops	24.50
Sheet Bar Crops	22.00
Plate Scrap, Punchings	22.00
Elec. Furnace Bundles	20.50

BOSTON:
(F.o.b. shipping points)

No. 1 Heavy Melt. Steel	$14.06
No. 2 Heavy Melt. Steel	14.06
No. 1 Bundles	14.06
No. 2 Bundles	14.06
No. 1 Busheling	14.06
Machine Shop Turnings	9.06
Mixed Borings, Turnings	9.06
Short Shovel Turnings	11.06
Chemical Borings	13.31
Low Phos. Clippings	16.56
No. 1 Cast	20.00
Clean Auto Cast	20.00
Stove Plate	19.00
Heavy Breakable Cast	16.50

Boston Differential 99 cents higher, steel-making grades; Providence $1.09 higher.

PITTSBURGH:
(Delivered consumer's plant)

Railroad Heavy Melting	$21.00
No. 1 Heavy Melt. Steel	20.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Comp. Bundles	20.00
No. 2 Comp. Bundles	20.00
Short Shovel Turnings	17.00
Mach. Shop Turnings	15.00
Mixed Borings, Turnings	15.00
No. 1 Cupola Cast	20.00
Heavy Breakable Cast	16.50
Cast Iron Borings	16.00
Billet, Bloom Crops	25.00
Sheet Bar Crops	22.50
Plate Scrap, Punchings	22.50
Railroad Specialties	24.50
Scrap Rail	21.50
Axles	26.00
Rail 3 ft. and under	23.50
Railroad Malleable	22.00

VALLEY:
(Delivered consumer's plant)

No. 1 R.R. Heavy Melt.	$21.00
No. 1 Heavy Melt Steel	20.00
No. 1 Comp. Bundles	20.00
Short Shovel Turnings	17.00
Cast Iron Borings	16.00
Machine Shop Turnings	15.00
Low Phos. Plate	22.50

MANSFIELD, O.:
(Delivered consumer's plant)

Machine Shop Turnings	$15.00

BIRMINGHAM:
(Delivered consumer's plant)

Billet Forge Crops	$22.00
Structural, Plate Scrap	19.00
Scrap Rails Random	18.50
Rerolling Rails	20.50
Angle Splice Bars	20.50
Solid Steel Axles	24.00
Cupola Cast	20.00
Stove Plate	19.00
Long Turnings	8.50- 9.00
Cast Iron Borings	8.50- 9.00
Iron Car Wheels	16.50-17.00

CHICAGO:
(Delivered consumer's plant)

No. 1 R.R. Heavy Melt.	$19.75
No. 1 Heavy Melt. Steel	18.75
No. 2 Heavy Melt. Steel	18.75
No. 1 Ind. Bundles	18.75
No. 2 Dlr. Bundles	18.75
Baled Mach. Shop Turn.	18.75
No. 3 Galv. Bundles	16.75
Machine Turnings	13.75
Mix. Borings, Sht. Turn.	13.75
Short Shovel Turnings	15.75
Cast Iron Borings	14.75
Scrap Rails	20.25
Cut Rails, 3 feet	22.25
Cut Rails, 18-inch	23.50
Angles, Splice Bars	22.25
Plate Scrap, Punchings	21.25
Railroad Specialties	22.75
No. 1 Cast	20.00
R.R. Malleable	22.00
(Cast grades f.o.b. shipping point, railroad grades f.o.b. tracks)	

BUFFALO:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$19.25
No. 2 Heavy Melt. Steel	19.25
No. 1 Bundles	19.25
No. 2 Bundles	19.25
No. 1 Busheling	19.25
Machine Turnings	14.25
Short Shovel Turnings	16.25
Mixed Borings, Turn.	14.25
Cast Iron Borings	15.25
Low Phos.	21.75

DETROIT:
(Delivered consumer's plant)

Heavy Melting Steel	$17.32
No. 1 Busheling	17.32
Hydraulic Bundles	17.32
Flashings	17.32
Machine Turnings	12.32
Short Shovel, Turnings	14.32
Cast Iron Borings	13.32
Low Phos. Plate	19.82
No. 1 Cast	20.00
Heavy Breakable Cast	16.50

ST. LOUIS:
(Delivered consumer's plant)

Heavy Melting	17.50
No. 1 Locomotive Tires	20.00
Misc. Rails	19.00
Railroad Springs	22.00
Bundled Sheets	17.50
Axle Turnings	17.00
Machine Turnings	10.50
Shoveling Turnings	12.50
Rerolling Rails	21.00
Steel Car Axles	21.50-22.00
Steel Rails, 3 ft.	21.50
Steel Angle Bars	21.00
Cast Iron Wheels	20.00
No. 1 Machinery Cast	20.00
Railroad Malleable	22.00
Breakable Cast	16.50
Stove Plate	19.00
Grate Bars	15.25
Brake Shoes	15.25
(Cast grades f.o.b. shipping point)	
Stove Plate	18.00

CINCINNATI:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$18.50
No. 2 Heavy Melt. Steel	18.50
No. 1 Comp. Bundles	18.50
No. 2 Comp. Bundles	18.50
Machine Turnings	9.50-10.00
Shoveling Turnings	11.50-12.00
Cast Iron Borings	11.00-11.50
Mixed Borings, Turnings	10.50-11.00
No. 1 Cupola Cast	20.00
Breakable Cast	16.50
Low Phosphorus	21.00-21.50
Scrap Rails	20.50-21.00
Stove Plate	16.00-16.50

LOS ANGELES:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$14.00
No. 2 Heavy Melt. Steel	13.00
No. 1, 2 Deal Bundles	12.00
Machine Turnings	4.50
Mixed Borings, Turnings	4.00
No. 1 Cast	20.00

SAN FRANCISCO:
(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	$15.50
No. 2 Heavy Melt. Steel	14.50
No. 1 Busheling	15.50
No. 1, No. 2 Bundles	13.50
No. 3 Bundles	9.00
Machine Turnings	7.00
Billet, Forge Crops	15.50
Bar Crops, Plate	15.50
Cast Steel	15.50
Cut, Structural, Plate, 1", under	18.00
Alloy-free Turnings	7.00
Tin Can Bundles	14.50
No. 2 Steel Wheels	15.50
Iron, Steel Axles	23.00
No. 2 Cast Steel	15.50
Uncut Frogs, Switches	15.50
Scrap Rails	15.50
Locomotive Tires	15.50

Copper: Electrolytic or Lake from producers in carlots 12.00c, Del. Conn., less carlots 12.12½c, refinery; dealers may add ¾c for 5000 lbs. to carload; 1000-4999 lbs. 1c; 500-999 1½c; 0-499 2c. Casting, 11.75c, refinery for 20,000 lbs., or more. 12.00c less than 20,000 lbs.

Brass Ingot: Carlot prices, including 25 cents per hundred freight allownace; add ¼c for less than 20 tons; 85-5-5-5 (No. 115) 13.00c; 88-10-2 (No. 215) 16.50c; 80-10-10 (No. 305) 15.75c; Navy G (No. 225) 16.75c; Navy M (No. 245) 14.75c; No. 1 yellow (No. 405) 10.00c; manganese bronze (No. 420) 12.75c.

Zinc: Prime western 8.25c, select 8.35c, brass special 8.50c, intermediate 8.75c, E. St. Louis, for larlots. For 20,000 lbs. to carlots add 0.15c; 10,000-20,000 0.25c; 2000-10,000 0.40c; under 2000 0.50c.

Lead: Common 6.35c, chemical, 6.45c, corroding, 6.45, E. St. Louis for carloads; add 5 points for Chicago, Minneapolis-St. Paul, Milwaukee-Kenosha districts; add 15 points for Cleveland-Akron-Detroit area, New Jersey, New York state, Texas, Pacific Coast, Richmond, Indianapolis-Kokomo; add 20 points for Birmingham, Connecticut, Boston-Worcester, Springfield, New Hampshire, Rhode Island.

Primary Aluminum: 99% plus, ingots 15.00c del., pigs 14.00c del.; metallurgical 94% min. 13.50c del. Base 10,000 lbs. and over; add ½c 2000-9999 lbs.; 1c less through 2000 lbs.

Secondary Aluminum: All grades 12.50c per lb. except as follows: Low grade piston alloy (No. 122 type) 10.50c; No. 12 foundry alloy (No. 2 grade) 10.50c; chemical warfare service ingot (92½% plus) 10.00c; steel deoxidizers in notch bars, granulated or shot, Grade 1 (95-97½%) 11.00c, Grade 2 (92-95%) 9.50c to 9.75c, Grade 3 (90-92%) 8.00c to 8.25c, Grade 4 (85-90%) 7.75c; any other ingot containing over 1% iron, except PM 754 and hardeners, 12.00c. Above prices for 30,000 lb. or more; add ¼c 10,000-30,000 lb.; °c 1000-10,000 lbs.; 1c less than 1000 lbs. Prices include freight at carload rate up to 75 cents per hundred.

Magnesium: Commercially pure (99.8%) standard ingots (4-notch, 17 lbs.) 20.50c lb., add 1c for special shapes and sizes. Alloy ingots, incendiary bomb alloy, 23.40c; 50-50 magnesium-aluminum, 23.75c; ASTM B93-41T, Nos. 2, 3, 4, 12, 13, 14, 17, 23.00c; Nos. 4X, 11, 13X, 17X, 25.00c; ASTM B-107-41T, or B-90-41T, No. 8X, 23.00c; No. 18, 23.50c; No. 18X, 25.00c. Selected magnesium crystals, crowns, and muffs, including all packing screening, barrelling, handling, and other preparation charges, 23.50c. Price for 100 lbs. or more; for 25-100 lbs., add 10c; for less than 25 lbs., 20c. Incendiary bomb alloy, f.o.b. plant, any quantity; carload freight allowed all other alloys for 500 lbs. or more.

Tin: Prices ex-dock, New York in 5-ton lots, Add 1 cent for 2240-11,199 lbs., 1½c 1000-2239. 2°c 500-999, 3c under 500. Grade A, 99.8% or higher (includes Straits), 52.00c; Grade B, 99.8% or higher, not meeting specifications for Grade A, with 0.05 per cent maximum arsenic, 51.87½c; Grade C, 99.65-99.79% incl. 51.62½c; Grade D, 99.50-99.64% incl., 51.50c; Grade E, 99-99.49% incl. 51.12½c; Grade F, below 99% (for tin content), 51.00c.

Antimony: American bulk carlots f.o.b. Laredo, Tex., 99.0% to 99.8% and 99.8% and over but not meeting specifications below, 14.50c; 99.8% and over (arsenic, 0.05%, max. and other impurities, 0.1%, max.) 15.00c. On producers' sales add ¼c for less than carload to 10,000 lb.; ½c for 9999-224 lb.; and 2c for 223 lb. and less; on sales by dealers, distributors and jobbers add ½c, 1c, and 3c, respectively.

Nickel: Electrolytic cathodes, 99.5%, f.o.b. refinery 35.00c lb.; pig and shot produced from electrolytic cathodes 36.00c; "F" nickel shot or ingot for additions to cast iron, 34.00c; Monel shot 28.00c.

Mercury: Open market, spot, New York, $103-$106 per 76-lb. flask.

Arsenic: Prime, white, 99%, carlots, 4.00c lb.

Beryllium-Copper: 3.75-4.25% Be., $17 lb. contained Be.

Cadmium: Bars, ingots, pencils, pigs, plates, rods, slabs, sticks, and all other "regular" straight or flat forms 90.00c lb., del.; anodes, balls, discs and all other special or patented shapes 95.00c lb. del.

Cobalt: 97-99%, $1.50 lb., for 550 lb. (bbl.); $1.52 lb. for 100 lb. (case); $1.57 lb. under 100 lb.

Indium: 99.9%, $7.50 per troy ounce.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, N. Y. 70.625c per ounce.

Platinum: $35 per ounce.

Iridium: $165 per troy ounce.

Palladium: $24 per troy ounce.

Rolled, Drawn, Extruded Products

(Copper and brass product prices based on 12.00c, Conn., for Copper. Freight prepaid on 100 lbs. or more.

Sheet: Copper 20.87c; yellow brass 19.48c; commercial bronze, 90% 21.07c, 95% 21.28c; red brass 80% 20.15c, 85% 20.36c; phosphor bronze, Grades A and B 5% 36.25c; Everdur, Herculoy, Duronze or equiv. 26.00c; naval brass 24.50c; manganese bronze 28.00c; Muntz metal 22.75c; nickel silver 5% 28.50c.
Seamless Tubing: Copper 21.37c; yellow brass 22.23c; commercial bronze 90% 23.47c; red brass 80% 22.80c, 85% 23.01c.

Rods: Copper, hot-rolled 17.37c, cold-rolled 18.37c; yellow brass 15.01c; commercial bronze 90% 21.32c, 95% 21.53c; red brass 80% 20.48c, 85% 20.61c; phosphor bronze Grade A, B 5% 36.50c; Everdur, Herculoy, Duronze or equiv. 25.50c; Naval brass 19.12c; manganese bronze 22.50c; Muntz metal 18.87c; nickel silver 5% 26.50c.

Extruded Shapes: Copper 20.87c; architectural bronze 19.12c; manganese bronze 24.00c; Muntz metal 20.12c; Naval brass 20.37c.

Angles and Channels: Yellow brass 27.98c; commercial bronze 90% 29.75c, 95% 29.78c; red brass 80% 28.65c, 85% 28.86c.

Copper Wire: Soft, f.o.b. Eastern mills, carlots 15.37½c, less-carlots 15.87°c; weatherproof, f.o.b. Eastern mills, carlot 17.00c, less-carlots 17.50c; magnet, delivered carlots 17.50c, 15.000 lbs. or more 17.75c, less carlots 18.25c.

Aluminum Sheets and Circles: 2s and 3s flat mill finish, base 30,000 lbs. or more; del.; sheet widths as indicated; circle diameter 9" and larger:

Gage	Width	Sheets	Circles
.249"-7	12"-48"	22.70c	25.20c
8-10	12"-48"	23.20c	25.70c
11-12	26"-48"	24.20c	27.00c
13-14	26"-48"	25.20c	28.50c
15-16	26"-48"	26.40c	30.40c
17-18	26"-48"	27.90c	32.90c
19-20	24"-42"	29.80c	35.30c
21-22	24"-42"	31.70c	37.20c
23-24	3"-24"	25.60c	29.20c

Lead Products: Prices to jobbers; full sheets 9.50c; cut sheets 9.75c; pipe 8.15c, New York; 8.25c, Philadelphia, Baltimore, Rochester and Buffalo; 8.75c, Chicago, Cleveland, Worcester, Boston.

Zinc Products: Sheet f.o.b. mill, 13.15c; 36,000 lbs. and over deduct 7%; Ribbon and strip 12.25c, 3000-lb. lots deduct 1%, 6000 lbs. 2%, 9000 lbs. 3%, 18,000 lbs. 4%, carloads and over 7%. Boiler plate (not over 12") 3 tons and over 11.00c; 1-3 tons 12.00c; 500-2000 lbs. 12.50c; 100-500 lbs. 13.00c; under 100 lbs. 14.00c. Hull plate (over 12") add 1c to boiler plate prices.

Plating Materials

Chromic Acid: 99.75%, flake, del., carloads 16.25c; 5 tons and over 16.75c; 1-5 tons 17.25c; 400 lbs. to 1 ton 17.75c; under 400 lbs. 18.25c.

Copper Anodes: Base 2000-5000 lbs., del.; oval 17.62c; untrimmed 18.12c; electro-deposited 17.37c.

Copper Carbonate: 52-54% metallic cu, 250 lb. barrels 20.50c.

Copper Cyanide: 70-71% cu, 100-lb. kegs or bbls. 34.00c f.o.b. Niagara Falls.

Sodium Cianide: 96%, 200-lb. drums 15.00c; 10,000-lb. lots 13.00c f.o.b. Niagara Falls.

Nickel Anodes: 500-2999 lb. lots; cast and rolled carbonized 47.00c; rolled depolarized 48.00c.

Nickel Chloride: 100-lb. kegs or 275-lb. bbls. 18.00c lb., del.

Tin Anodes: 1000 lbs. and over 58.50c del.; 500-999 59.00c; 200-499 59.50c; 100-199 61.00c.
Tin Crystals: 400 lb. bbls. 39.00c f.o.b. Grasselli, N. J.; 100-lb. kegs 39.50c.

Sodium Stannate: 100 or 300-lb. drums 36.50c, del.; ton lots 35.50c.

Zinc Cyanide: 100-lb. kegs or bbls. 33.00c f.o.b. Niagara Falls.

Brass Mill Allowances: Prices for less than 15,000 lbs. f.o.b. shipping point. Add ¾c for 15,000-40,000 lbs.; 1c for 40,000 or more.

Scrap Metals

	Clean Heavy	Rod Ends	Clean Turnings
Copper	10.250	10.250	9.500
Tinned Copper	9.625	9.625	9.375
Yellow Brass	8.625	8.375	7.785
Commercial bronze			
90%	9.375	9.125	8.625
95%	9.500	9.250	8.750
Red Brass, 85%	9.125	8.875	8.375
Red Brass, 80%	9.125	8.875	8.375
Muntz Metal	8.000	7.750	7.250
Nickel Sil, 5%	9.250	9.000	4.625
Phos. br., A, B, 5%	11.000	10.750	9.750
Herculoy, Everdur or equivalent	10.250	10.000	9.250
Naval brass	8.250	8.000	7.500
Mang. bronze	8.250	8.000	7.500

Other than Brass Mill Scrap: Prices apply on material not meeting brass mill specifications and are f.o.b. shipping point; add ¾c for shipment of 60,000 lbs. of one group and ½c for 20,000 lbs. of second group shipped in same car. Typical prices follow:

(Group 1) No. 1 heavy copper and wire, No. 1 tinned copper, copper borings 9.75c; No. 2 copper wire and mixed heavy copper, copper tuyeres 8.75c.

(Group 2) soft red brass and borings, aluminum bronze 9.00c; copper-nickel and borings 9.25c; car boxes, cocks and faucets 7.75c; bell metal 15.50c; babbit-lined brass bushings 13.00c.

(Group 3) zincy bronze borings, Admiralty condenser tubes, brass pipe 7.50c; Muntz metal condenser tubes 7.00c; yellow brass 6.25c; manganese bronze (lead 0.00%-0.40%) 7.25c, (lead 0.41%-1.0%) 6.25c; manganese bronze borings (lead 0.00-0.40%) 6.50c, (lead 0.41-1.00%) 5.50c.

Aluminum Scrap: Price f.o.b. point of shipment, truckloads of 5000 pounds or over; Segregated solids, 2S, 3S, 5c lb., 11, 14, etc., 3 to 3.50c lb. All other high grade alloys 5c lb. Segregated borings and turnings, wrought alloys, 2, 2.50c lb. Other high-grade alloys 3.50, 4.00c lb. Mixed plant scrap, all solids, 2, 2.50c lb. borings and turnings one cent less than segregated.

Lead Scrap: Prices f.o.b. point of shipment. For soft and hard lead, including cable lead, deduct 0.55c from basing point prices for refined metal.

Zinc Scrap: New clippings 7.25c, old zinc 5.25c f.o.b. point of shipment; add ½-cent for 10,000 lbs. or more. New die-cast scrap, radiator grilles 4.95c, add ½c 20,000 or more. Unsweated zinc dross; die cast slab 5.80c any quantity.

Nickel, Monel Scrap: Prices f.o.b. point of shipment; add ¼c for 2000 lbs. or more of nickel or cupro-nickel shipped at one time and 20,000 lbs. or more of Monel. Converters (dealers) allowed 2c premium.

Nickel: 98% or more nickel and not over ½% copper 26.00c; 90-98% nickel, 26.00c per lb. nickel contained.

Cupro-nickel: 90% or more combined nickel and copper 26.00c per lb. contained nickel, plus 8.00c per lb. contained copper; less than 90% combined nickel and copper 26.00c for contained nickel only.

Monel: No. 1 castings, turnings 15.00c; new clipping 20.00c; soldered sheet 18.00c.

Sheets, Strip . . .

Sheet & Strip Prices, Page 216

While some hot-rolled sheets may be obtained by regular customers of certain mills for late third and fourth quarter delivery the situation is much tighter in cold-rolled, galvanized and electrical sheets. Most producers are filled for the year in the latter, with considerable tonnage on books for next year. Carryover from first quarter is heavy in almost every instance.

New York — Certain larger producers of hot-rolled sheets still have some tonnage available for late third quarter and early fourth quarter delivery. It is doubtful if other than regular customers could obtain such shipments, but the position of these mills in hot-rolled does not appear quite as strong as recently indicated. On the other hand, cold-rolled sheets, galvanized and certain specialties, such as electrical sheets in particular, are tighter than ever. To all practical intents and purposes, no more tonnage in these latter grades can be had this year, and backlogs for 1947 are building up rapidly for formal entry on schedules as soon as mills believe the time is right for opening their books.

Cincinnati — Sheet mills have a heavy carryover into second quarter even though some facilities operated full during the steel strike. Meanwhile pressure for deliveries and for position on mill schedules continues unabated. Normal production by the Andrews Steel Co. may be attained in one month. Labor difficulties were solved by signing of a new contract but pig iron supply was not immediately available.

St. Louis — Sheet production remains at a standstill here as the strike of machinists at the Granite City Steel Co. for a wage increase continues. Although a small number of employes is involved, CIO steel workers decline to cross the picket line. Before the strike rolling schedules were filled through 1946. Books for 1947 have not been opened.

Birmingham — As with all steel commodities manufactured in this district, production of sheets is far behind orders and the outlook for deliveries to fully meet demand is not favorable for months to come. Every day brings a wider gap between tonnages available and needs of purchasers.

Boston — Flat-rolled carbon products, notably in lighter gages, are sold through this year. Stainless is in the same position. In most cases, though a substantial portion of this tonnage has not been definitely scheduled on either a monthly or quarterly basis, bookings are sufficient to extend beyond fourth quarter, except for scattered and uncertain openings. Pressure for electrical sheets is strong and mill carryovers are heavy in this grade. Third quarter capacity with one producer will be devoted mainly to clearing up carryover. End of the electrical strike has brought new buying by one leading consumer, while inventories of another are unusually low for resumption of operations, when the stoppage ends at several plants. Delays in expected production of at least two new tandem mills and reconversion of equipment at a third also endanger tentative sheet schedules and will make for further revisions later. Several units expected to start production late this spring will not be producing in volume before fall. One leading producer of hot strip has started booking for first quarter. Cold rollers are dropping more unprofitable grades and sizes.

Chicago — Sheetmakers assert that at no time can they recall demand for sheets equal to the present. Consumers are exerting terrific pressure for tonnage on schedule and seek to place new tonnage for the future. Some mills are booked through the year and decline to consider commitments beyond that limit. It would appear that a forward buying movement is gaining momentum, with customers fearing they will not have needs satisfied unless they get on books. Mills have reached prestrike production, but are fanning shipments out so widely that consumers are having difficulty accumulating sufficient inventories to get volume production under way.

Philadelphia — Sheet sellers continue to be deluged by inquiry. There is constant shopping by consumers with little success. Most sellers are booked for the entire year or are reserving space for regular customers, with formal contracts to be filed later.

Steel Bars . . .

Bar Prices, Page 216

Demand for hot-rolled carbon bars, especially in small diameters, has caused that product to become even tighter than light flat-rolled products, in the opinion of some producers. Better deliveries in cold-rolled has caused some consumers to shift specifications to the latter. Little tonnage in hot-rolled can be obtained for delivery this year and backlogs are sufficient to extend into next year.

New York — Hot carbon bars are in increasingly tight supply, especially small sizes such as come off a 10-inch mill. Some market observers believe the situation in small hot carbon bars is even tighter than in light flat products. One trade leader recently observed that in his opinion small hot carbon bars are now the most scarce, with hot narrow strip second, cold-rolled sheets third and galvanized sheets fourth. There might be some room for argument with respect to the two latter products, but he was confident that a close check would find small hot bars and hot narrow strip lined up in that order.

Few sellers have anything to offer before fourth quarter in any size of hot carbon bars and few have much to offer on small and medium sized hot bars before next year. Various sellers have not formally closed their books for fourth quarter; in fact, some have not for third quarter, but their tonnage is well spoken for by regular customers. On the other hand, in the absence of official scheduling for late in the year by some mills, certain buyers may get on the books for more tonnage than now indicated. Some sellers by keeping their late position fairly open, do so with the idea of reviewing order books later on, with the possibility that some customers may not be getting quite as much as is really due them in comparison with the needs of others.

Cold drawn bar schedules are tightening, especially in view of the disposition of various consumers to specify cold-drawn instead of hot bars as they would ordinarily, so as to take advantage of the better position in cold-drawn. Recently, as a result of this and other influences, cold-drawn bar deliveries have stiffened to a point where only certain very large sizes can be had for shipment as early as third quarter. Hot alloy bar deliveries are now being quoted for May and June shipment.

Pittsburgh — Carbon steel bar supply continues far short of steadily expanding requirements from cold-finishers, forge shops and companies serving automotive, farm implement and railroad industry. Output compares favorably with prestrike volume, but little headway is made against large order backlogs because of heavy volume of incoming business. Carryover tonnage is heaviest on record, and should anticipated coal strike materialize April 1 mills soon will have to curtail operations. In most instances mills are booked through third quarter on most small sizes, while second quarter delivery is available on large rounds and alloys. A few customers have altered carbon bar specifications to alloy grades to obtain earlier delivery.

Crucible steel Co. will spend nearly $6 million at its Midland Works this year, mainly on new bar mill facilities and auxliaries. This expansion involves a new 24-inch mill and the revamping of the company's 8, 12 and 14-inch mills. Similar improvement in facilities is planned for the company's Park Works.

St. Louis — Production of merchant bars continues a gradual increase although it was set back last week by the shutdown of one of four furnaces for repairs. Schedules are filled through 1946, extending in some sizes into first quarter.

Boston—When offered on a delivery basis involving specification changes more bar producers are refusing alloy orders, while others discourage the practice, which thus far has been limited. Hot-rolled alloy bar deliveries have moved back a month or more with some mills, although May is still possible and some are promising July. Demand for bessemer in small sizes is heavy, with deliveries in fourth quarter. This reflects demand for cold-drawn screw stock. On most sizes of carbon stock, both hot and cold-rolled, deliveries have been extended and little capacity for the former is open for the remainder of this year. In larger sizes of cold-drawn carbon scattered shipments are possible for July and August. Consumer inventories of carbon bars differ widely; some, if checked, might approach the allowable limit. Cold-drawn alloy bars have moved back a month or more on smaller sizes.

Philadelphia — Consumers are pushing hard for hot-rolled carbon bars but in some cases are placing orders for cold-drawn bars and even in some cases for hot alloy bars instead of carbon, because of better deliveries. Most hot-rolled carbon bar producers have little to offer before fourth quarter and apparently only in larger sizes. Hot-rolled alloy bars are being offered for delivery in May and June.

Steel Plates . . .

Plate Prices, Page 217

Demand for plates is surprisingly strong, especially in wider sizes. While some early deliveries are possible in

heavy plates, in general it is difficult to place orders currently for any position before fourth quarter.

Chicago — One of the surprises in the current steel situation is the extremely heavy demand for plates. Because most plate tonnage during the war went to shipbuilding, a condition such as now exists had not been foreseen. Wider sizes of plates are most sought, these for heavy machinery, tanks, pipe lines, railroad equipment and the like.

Cleveland—Demand for light plates, especially from farm implement, storage tank, pressure tank and similar industries, continues in excess of supply. Most producers are out of the market for the balance of this year on ⅜-inch and lighter plate. Heavier plate is still available for May delivery and for second half. Most plate mills will be able to maintain operations at least through April, regardless of developments in the coal supply situation.

Seattle — Bechtel Bros.-McCone Co., San Francisco, has the general contract for Shell Oil Co's. proposed refinery at Portland, Oreg., requiring a large tonnage of plates. Reclamation Bureau will open bids April 9 for three steel oil storage tanks for the Grand Coulee project and April 18 for two 20-inch steel siphon pipes for the Roza and Grand Coulee projects.

Birmingham—It is doubtful if demand for plates during the war exceeded that being experienced currently by mills here. Pressure from buyers is constant and heavy from every section that this territory serves.

Philadelphia — Continued heavy demand for light-gage material features the plate market. Requirements are principally for underground fuel oil storage tanks, with various oil companies having large programs before the trade. While one large producer still can quote August delivery most sellers have little to offer before fourth quarter. One district mill has resumed operations after having been down since the beginning of the steel strike, thus all plate mills have now resumed.

Tubular Goods . . .

Tubular Goods Prices, Page 217

New York — Stringency in merchant pipe continues pronounced. Producers are rationing tonnage carefully and so heavy is demand that distributors are unable to build up their stocks. In fact, they usually have the tonnage sold before it actually is received.

Volume of demand is surprising in view of the absence of large building projects. Many substantial building jobs are under contemplation, but are slow in going ahead.

Pipe sellers declare there is a large amount of small work, such as alterations, additions and maintenance. Reconversion programs at various industrial plants in themselves require considerable pipe, sellers point out. There also is a heavy demand from abroad, although the export movement is being held in check.

Boiler and mechanical tubing is not generally in as heavy demand as merchant pipe; nevertheless producers are rationing tonnage.

Seattle — Demand for cast iron pipe greatly exceeds supply, orders being taken on uncertain delivery basis. A number of major projects are being planned. H. G. Purcell, Seattle, has booked 600 tons for the Maplewood district at Portland, Oreg., and 250 tons for Seattle. Award of 200 tons at Tacoma, Wash., is pending. Seattle will open bids April 8 for 2300 feet of 10-inch pipe. Hillsboro, Oreg., will open bids April 11 for the first unit of a $710,000 project. This will involve 10½ miles of 18-inch pipe, replacing wood.

Cleveland—Pipe shipments from mills are six to eight weeks behind schedule and some jobbers have not received shipments since mid-January. Mills are attempting to eliminate arrears by drastically cutting quotas for April. Most pipe mills will be able to operate at least through April, regardless of the coal situation. Except for conduit and alloy tubing, which are available in third and second quarters, respectively, tubular goods producers are not accepting new business for 1946 and are allocating available supplies on a strict quota basis.

Tin Plate . . .

Tin Plate Prices, Page 217

Boston—Industrial and miscellaneous consumers of tin plate are badly pinched for tin mill products and are seeking to buy rejects and make substitutions of light-gage materials, with limited success. One leading producer has been cleaned out of rejects and others are short, with prime grades earmarked for food packs.

Structural Shapes . . .

Structural Shape Prices, Page 217

Buffalo — Expecting curbs on industrial construction not already under way, contractors have rushed beginning of numerous projects. February building permits in this area were highest in 16 years. Approximately $30 million worth of building is under way in this city and suburbs and considerable in adjacent territory.

Cleveland — Civilian Production Administration's order issued last week, restricting construction above stipulated amounts in various categories to essential projects, is not expected to have any immediate effect on the structural market here. Some orders now scheduled for fabrication may have to be deferred, if the regional construction review office so rules, but any resulting open positions will be quickly filled from the heavy backlog. At present, no orders for fabricated structurals are being accepted for delivery earlier than fourth quarter. Fabricators are hampered by limited amounts of plain material and by continued shortage of estimators.

Boston—Strike of nearly 600 draftsmen, junior engineers and other drafting-room help at the main office of Stone & Webster Engineering Corp., Boston, has interrupted detailing and plans for a large volume of structural work located in all sections of the country. Ramifications of this walkout are potentially great, and coupled with the ban on some types of unstarted heavy construction, has slackened inquiry for fabricated structural steel, with deliveries on small and standard shapes well into fourth quarter. Most tonnage on which fabricators are committed is expected to be rolled, although some changes in sizes and specifications may develop. Another effect will be to release more shape tonnage to warehouses, now short of plain material.

Chicago — Structural fabricators are trying to figure how they will be affected by the government's new order curtailing commercial and industrial building to channel materials and labor into veterans housing. Fabricators already have sufficient commitments to keep them occupied several months, depending upon whether they can get steel from mills. Flow is much improved, but still far below needs. Millwise, wide flange beams are in particularly heavy demand, and shipments of all shapes are being allocated to serve the maximum number of customers. Apparently a reflection of the tight steel situation, fabricators have received few inquiries in recent days, and awards have been light.

Philadelphia — The shape producer at Phoenixville, Pa., has signed a new labor contract and is resuming operations. Meanwhile, the company is advising its customers it will invoice shipments on an interim basis, pending outcome of its appeal to Washington for additional special price relief.

Backlogs of shape mills and fabricating shops will come in for substantial revisions as a result of restrictions imposed by Washington on various types of heavy construction in an effort to facilitate the national housing program. However, shock of the new ruling should not be seriously felt for some time as mills and fabricating shops are booked well in advance on work that can go ahead and are well behind schedules as a result of the steel strike. Certain types of construction can be booked, such as bridges and some types of utility work, as well as military work veterans' hospitals, even including some important industrial construction, where urgency can be proven.

Seattle — Fabricating shops report considerable small work, many jobs taking 20 tons or less. Because of lack of steel little interest is taken in new projects. Mill shipments are scheduled to arrive in April but sufficient supply of shapes is not expected until June. Pacific Car & Foundry Co. is building 500 refrigerator cars for Pacific Fruit Express and has a contract for 20 dump cars for the Alaska railroad, requiring about 500 tons of shapes.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 217

Pittsburgh — Output of reinforcing bars is back to prestrike pace. However, on basis of steel allotted for this purpose, little headway can be made against large order backlogs which extend through most of this year. No accurate estimate of sales for producers east of the Rocky mountains is available for March. However, it is believed that the downward trend in bookings under way since November continued last month. Contractors have been reluct-

ant to bid on numerous projects, while many companies have temporarily shelved expansion programs, because of uncertain wage and steel cost and delivery promises. Contractors are pressing for early deliveries.

Seattle — Demand for reinforcing bars is strong and in spite of handicaps building construction is increasing, with reinforcing steel output below consumption. Largest prospective reinforcing bar tonnage is for the Columbia basin irrigation project, bids to the Bureau of Reclamation at Grand Coulee April 15. This requires 1375 tons of reinforcing for a tunnel, 200 tons for canal work and 2000 tons of steel supports for the tunnel.

New York — Approximately 13,000 tons of reinforcing steel are scheduled for bidding this month for two housing projects, 6000 tons for the Brownsville house development in Brooklyn, April 9, and 7000 tons for the James Weldon Johnson project in Manhattan, April 23, Both are for the New York State Housing Authority. H. R. H. Construction Co., East 40th St., New York, is low bidder on superstructure for the Elliott Houses project in lower Manhattan, involving 1200 tons.

Bolts, Nuts . . .

Bolt, Nut, Rivet Prices, Page 217

New York — Bolt and nut makers are still confronted by heavy inquiries, with backlogs on many of the more standard lines running 12 and 15 weeks. Their major difficulty is in obtaining steel, especially small sizes. They report little success in placing new tonnage before fourth quarter and not much for even that position, as some producers are booked solidly for the entire year on all but larger sizes. Where bolt and nut makers are on a quarterly quota basis with their suppliers and have tried to get their quotas increased they have been unsuccessful in practically all cases.

Pig Iron . . .

Pig Iron Prices, Page 219

Continued shortage of pig iron is becoming a choke point to recovery of production in many lines. Merchant supply is far below needs and foundries with better labor supply are unable to increase castings production because they cannot obtain more iron. In some areas the situation is critical and shortage of scrap at the same time eccentuates the tightness.

New York—Barring a soft coal strike, pig iron melt in April should be increased at an accelerated rate. The daily melt in March was naturally higher than for February, when furnaces were banked for practically the entire period as a result of the steel strike; however, the gain in March was less than some trade leaders anticipated because of the difficulty of getting furnaces back into full production, and because of continued labor disturbances.

This latter situation though, improved rather rapidly toward the end of March and at present there are only three sizable foundries strikebound in this district.

Due to shortage, pig iron export shipments along the eastern seaboard have been practically absent for some weeks and now it is reported that further limitations are being imposed on export shipments from the West Coast, with a view to possibly having to ship West Coast iron to the Midwest to provide relief in that area.

One large eastern furnace is expected to switch from basic to foundry iron this week.

Pittsburgh — Merchant pig iron supply outlook is becoming critical as output is not matching consumer demand and this situation is expected to be further accentuated as civilian goods production gathers momentum. Supply problem locally was adversely affected recently by blowing out of the only merchant producers' stack for about 10 days for repairs. Many problems have to be worked out before the Struthers furnace and other units now idle can resume operations. Problems of coke supply and subsidy price arrangement are chief hurdles at the moment. There is growing belief that some form of a pig iron allocation system will have to be put into effect to meet expanding pig iron requirements.

Boston—Furnace rationing of pig iron continues and will for some months, at least through second quarter, through which producers are sold and scheduled. Those worst off for iron are getting small shipments but some are operating with only a week's supply. All are now under 30 days. Strikes at a few larger consumers up to now have indirectly as-

sisted in this thin distribution but with settlement of these strikes demand for iron will increase. The district cast pipe foundry has resumed melting, with a large backlog, and will maintain a heavier melt than before the strike. Cast pipe deliveries have been extended sharply by some foundries, due largely to lack of pig iron or uncertainty as to supply over the next few weeks.

Cincinnati — Shipments of pig iron are steadier, but supplies are tight on close rationing by furnaces. Regular customers are getting tonnage which will maintain melt close to first quarter levels and must therefore abandon for the present any plans for expansion to meet insistent demand for castings. Books for second quarter are about filled, new customers having a difficult time finding position.

Buffalo — Gains in foundry melt are checked by inability of producers to supply increased pig iron supply. Furnaces have large backlogs of orders and much better labor situation. Shipments are being limited to spread supply as widely as possible. One producer has a furnace idle because operation, even at the new higher pig iron price, would not be profitable.

Philadelphia — Pig iron consumers are pressing for tonnage, but producers are rationing iron cautiously. Possibility of a coal strike beclouds the outlook and further restrictions on shipments will develop shortly if a walkout at the mines occurs. Consumers generally have little tonnage on hand, with well less than the 30-day limitation imposed by Washington.

Chicago — Threat of a coal strike comes as a blow to foundries hard pressed to meet their heavy backlog. With coke already on a hand-to-mouth basis and critical, and pig iron nearly as tight, it is a foregone conclusion that in event of a strike both of these commodities would be sharply reduced if not cut off. Currently only 34 of the district's 41 blast furnaces are operating, and a strike will result in banking of a number of these as a coke conservation measure. Wisconsin Steel Works, International Harvester Co., has blown out its South Chicago No. 3 blast furnace for relining.

Birmingham—The tight pig iron market here shows no signs of easing, with demand far exceeding output. The backlog of orders on producers' books is mounting daily.

Scrap . . .

Scrap Prices, Page 220

Tightness in scrap shows no easing and demand is for much more than dealers can develop. Considerable freight is paid for remote supplies and all offerings are taken immediately. Shortage of pig iron at the same time accentuates the situation.

Chicago—The tight situation in scrap continues. Demand far exceeds supply of virtually all grades and ceiling prices prevail. Since end of the steel strike, steelmaking operations have recovered steadily until last week they reached 91 per cent of capacity, the highest level since early December. Blast furnace hot metal is below requirements, placing pressure on scrap. Production scrap has not yet shown appreciable improvement, as steel consumers and fabricators are not receiving steel from mills in sufficient quantity to restore plant operations. At least another month and perhaps longer will be required for a good flow to develop. Railroad material is in somewhat better volume, while cast scrap is far below demand.

Cleveland — No easing in scrap supply has appeared and dealers are hard pressed to obtain tonnage for their regular customers. Absence of industrial scrap is an important factor in the shortage and lack of railroad offerings also reduces supply. Consumers continue to pay considerable freight charges to obtain remote scrap and springboards are much in evidence. With steelmaking in this district approaching capacity mills are taking all the material they can obtain and in many cases are dipping into reserves accumulated during the strike idleness.

Cincinnati — Demand for iron and steel scrap, from all types of melters, continues to exceed supply. Production scrap and railroad lists are not producing normal tonnage, while requirements of mills and foundries are heavy. Scrap reserves are fair. Some material was laid down during the steel strike but even then the district melt was sufficient to use a large proportion of scrap coming out.

St. Louis — Scrap shipments continue low, with demand unabated. Several attempts to place substantial orders in this area have failed, brokers declining

them. Transactions are limited generally to renewal of old orders as they expire. Mills are in no distress, however, reserves running from 30 to 60 days. Foundries have somewhat less. Declaration of surplus scrap continues slow. Premium grades are in greatest demand and least supply. All prices are at ceilings.

Washington — The India and Burma pipelines, wartime adjuncts to the abandoned Stilwell Road and military operations in Burma, have been sold as scrap for approximately $1,376,000, the Office of Foreign Liquidation has announced.

Birmingham—As it has for weeks, the scrap market continues strong here, with all items at ceiling prices and mills taking all available material. Some tonnages are moving to northern consumers.

Pittsburgh — Coal strike would present steel producers an opportunity to augment scrap stocks, for mills plan to begin curtailing primary steel operations soon after mines are closed. Consumers are actively in the market for good quality open-hearth scrap, in some instances paying springboards up to $2.50 per ton on heavy melting steel, and some are using low phos scrap in open-hearth operations. No improvement in supply of railroad scrap is noted, as indicated by recent monthly scrap lists. Mills report adequate supply of blast furnace turnings, and relatively large tonnage of war scrap is moving into this district. However, normal flow of scrap from surrounding areas is substantially below normal, although tending upward in recent weeks.

Buffalo — A minor seasonal increase in scrap collections last week as spring cleanups brought out slightly more tonnage. All offerings are taken at once, although the leading consumer here accumulated a three months supply during the strike. Industrial scrap is light as many plants are operating on a curtailed basis.

Philadelphia — With the last two of the district steel mills no longer strikebound demand for heavy melting steel has tightened, notwithstanding the highly favorable weather which has prevailed recently. Demand for cast scrap also has tightened further. The largest tonnage of surplus material to come out in this district will be up for bids at the Sun Shipbuilding & Dry Dock Co., Chester, Pa., April 8. Approximately 16,000 tons will be bid, a portion of it salvageable.

New York — Steel scrap demand continues strong. Two eastern Pennsylvania consumers recently strikebound are resuming operations and are active in the market. All leading consumers on the eastern seaboard are pressing for tonnage here as well as Pittsburgh consumers and the leading buyer at Lackawanna, N. Y. Barge shipments to the latter point are expected to be resumed April 1, with opening of the state canal. Luria Bros. & Co. were successful bidders on approximately 12,000 tons of steel, part of it salvageable, at the Federal Shipbuilding & Dry Dock Co., at Kearny, N. J.

Warehouse . . .

Warehouse Prices, Page 218

St. Louis — Warehouse steel inventories continue to decline. Shipments from mills are small and mill orders have been set back 30 to 90 days. Demand for warehouse items has eased somewhat, due to curtailment of commercial construction in favor of housing. Pickled sheets and boiler tubing are scarcest. Sheets, 18 to 20-gage, are virtually unobtainable but 10 to 16-gage are in fair supply. Total warehouse tonnage is fair but sizes are broken.

Seattle — Jobbers are in better position, as steel increases may be passed on to consumers. Demand is large but suppliers' stocks are low, particularly in popular sizes. Demand for construction material is particularly strong but nails, sheets and pipe are critically short. Jobbers do not expect inventories to be back to normal for a long time. Standard items move immediately to consumers and in many lines stocks cannot be replenished.

Cleveland—Warehouse stocks are still out of balance and will be depleted further if mills are forced to close down by a coal shortage. Narrow strip, small sized bars and other popular products are especially tight. Shipments now average about one week behind schedule. Warehouses are receiving a fair amount of products from mills but the flow is far short of meeting demand.

Cincinnati — Warehouse stocks declined in March, reflecting the steelworkers' strike. Jobbers are now getting more steel but not enough to meet demand. Shortage of sheets is acute.

Philadelphia — Warehouse stocks are

lowest in months, if not in years. Incoming tonnage has been on a slightly better scale since end of the steel strike, but outgoing tonnage has been larger. Daily sales for March were slightly better than in February.

Semifinished Steel . . .

Semifinished Prices, Page 216

Pittsburgh — Considerable pressure is developing to force integrated mills, either through a subsidy plan or some form of allocation, to meet a greater proportion of demand from nonintegrated mills and for export. Nonintegrated interests are constantly pressing for more tonnage of skelp, sheet bars, wire rods, etc., while integrated plants are under forced draft to meet own requirements. Recent price advance of $3 a ton on semifinished ($2 on sheet bars) is held inadequate by most sellers, and consequently mills are attempting to convert as much semifinished as possible into products netting the best return. Sheet bar producers still are faced by deficit operations at the new price and although most nonintegrated mills have resumed operations, they are not assured of a steady supply of sheet bars.

Iron Ore . . .

Iron Ore Prices, Page 218

Consumption of Lake Superior iron ore in February, as reported to the Lake Superior Iron Ore Association, Cleveland, totaled 1,748,469 gross tons, compared with 3,718,958 tons in January and with 6,370,504 tons in February, 1945. Cumulative consumption for two months this year was 5,467,427 tons, compared with 13,353,123 tons in the comparable period in 1945. These declines resulted from the steel strike.

Stocks of ore on hand at furnaces and on Lake Erie docks March 1 totaled 33,647,260 tons, compared with 35,341,615 tons Feb. 1 and with 24,576,589 tons a year earlier.

Furnaces in blast March 1 numbered 138, compared with 29 Feb. 1 and 169 on March 1, 1945. Seven blast furnaces were active in Canada on March 1, the same as a year earlier.

New York — Some leading ore interests look for an early revival in shipments from Brazil, as ships are now being scheduled to go down to Brazil with coal, and come back either with iron or manganese ore.

Canada . . .

Toronto, Ont. — While ceiling prices will be retained on food, rents and various essentials, it is reported from Ottawa that soon there will be further relaxation of price controls. On some materials price ceilings will be removed entirely, while on others they will be moved upward. It is stated that steel will be approved for moderate price rises to take care of higher costs and also to allow for anticipated wage increases. It is stated that at present wage boosts will be allowed only where they are possible without raising consumer costs.

For some time Canadian steel interests have been petitioning Wartime Prices and Trade Board, to grant higher prices for steel materials and this subject has been under consideration for several weeks. It is claimed that steel prices in this country now are far out of line with those in the United States, but it is not expected that any advance here will equal that now prevailing across the line. As a result of the price advance in the States many Canadian consumers that formerly obtained the greater part of their steel from American producers have been endeavoring to swing to Canadian steel. Not only is the United States steel price approximately $5 per ton above the domestic price, but Canadian buyers also are faced with an exchange rate of 10½ per cent, as well as duty and freight. With ceiling prices prevailing on consumer goods in this country, the higher prices for raw materials cannot be passed along to buyers.

Despite renewed production across the line and resumed imports of steel into Canada, but on a smaller scale than formerly, and the fact that Canadian output of pig iron and steel have been increased by some 10,000 tons monthly each, over the closing months of last year, there has been no easing in domestic supply. All lines of steel are short and producers are unable to cope with growing demand. The situation is most critical in sheets and sheet mills are loaded with orders covering production for the next three months and in some instances well into third quarter. Steel bars are only slightly better than sheets and plate deliveries now extend to the end of second quarter on new order account.

Canadian production of iron and steel has been upward since the turn of the year, and for January output of steel ingots and castings amounted to 244,623 net tons or 81 per cent of rated capacity against 72.6 per cent in December. Pig iron output at 143,685 net tons showed an average rate of 62.2 per cent compared with 58.5 per cent in the month immediately preceding.

During January one stack was blown in and the month ended with 9 furnaces in blast and five idle.

Following are comparative production figures in net tons:

	Steel Ingots Castings	Pig Iron	Ferro-alloys
January, 1946 ...	244,623	143,685	10,878
December, 1945..	219,281	135,225	15,456
January, 1945 ...	268,722	155,969	12,130

Steel in Europe . . .

London—(*By Cable*)—Output figures for the steel industry in Great Britain are near the war peak but shortage of fuel restricts further expansion of production. Both domestic and export markets press for supplies of all products. Sheet deliveries are particularly extended.

Industrial Construction Hit Drastically by CPA Curb

(*Continued from Page* 109)

contracts, are now making surveys of their projects to determine what stage of development they have reached. Until these surveys are complete, they are unable to estimate the probable effect of the order on their activities. Consensus in the trade is, however, that as projects are completed, commercial and indus-

trial construction will drop sharply. It is believed that by the end of May it will be increasingly difficult to find construction projects which can pass CPA's requirements.

Backlogs of shape mills and structural shops, it is believed, will come in for substantial revision as a result of the restrictions imposed by Washington. Unquestionably, steel on order for many projects will be suspended, where work on construction has not been started. Also numerous projects, now in the inquiry stage, will be held up indefinitely.

However, the shock of the new ruling on schedules should not be seriously felt for some time, for structural mills and fabricating shops are booked well in advance on work that can go ahead, and, in fact, are well behind on their schedules as a result of the recent steel strike. Moreover, there will be certain types of construction that can be booked, such as bridges, and some types of utility work in particular, to say nothing of military projects, veterans hospitals and an assortment of other work, even including some important industrial construction, where urgency can be demonstrated—all of which in the aggregate may add up to a fair total.

Such action, if it had to be, is probably coming at as favorable a time as any from the standpoint of the shape mills and fabricating shops, for there continues to be a marked shortage of draftsmen and estimators and, as indicated above, these companies have substantial, workable backlogs on hand. And from the builders' standpoint, it comes at a time when there is a scarcity of many materials and components and when cost factors have seldom, if ever, been more uncertain or unpredictable.

However, such unsatisfactory conditions have not stood in the way of builders in a large number of cases, as is borne out by the many inquiries on file with the fabricators. Despite these conditions they have been willing to go ahead on the assumption that in the end they would gain by being able to meet postwar needs that much more quickly and fully. There is no doubt that the new building curb will set back reconversion in various lines, in one degree or another.

While bridge work is exempt from the new ruling and will contribute to new tonnage, it will not be the factor it would be under more stable conditions. Much of this construction is public work, for which budgets are more rigid. Hence, as has been witnessed over recent months, there will likely be considerable delay on many projects, if not indefinite postponement, because of costs exceeding budgets.

With less domestic pressure, the shape

mills may be able to provide more tonnage for export—and fabricators also may experience some lift in this direction. However, conservation of steel for other products may limit exports.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

6500 tons, stamping plant No. 2, Detroit, for Fisher Body Division General Motors Corp. to American Bridge Co., Pittsburgh.

2010 tons, superstructure, Pennsylvania railroad bridge, Tuscarawas river, Massillon, O., to Mount Vernon Bridge Co., Mount Vernon, O.; bids Feb. 27 to U. S. engineer, Huntington, W. Va.

1300 tons, hotel-apartment, Houston, Tex., to Mosher Steel Co., Houston; Stone & Webster Engineering Corp., Boston, contractor-engineer.

1100 tons, store J. N. Adam & Co., Buffalo, to Bethlehem Steel Co., Lackawanna, N. Y.; John W. Cowper Co. Inc., Buffalo, general contractor.

600 tons, telephone exchange building, Malden, Mass., to Ingalls Iron Works, Birmingham.

540 tons, including 200 tons of junior beams, store building for W. T. Grant Co., Bangor, Me., to American Bridge Co., with junior beams to Bethlehem Steel Co., Bethlehem, Pa., through Aberthaw Construction Co., Boston.

500 tons or more, 20 dump cars for Alaska Railroad, to Pacific Car & Foundry Co., Seattle.

470 tons, spillway bridge, Somerset, Ky., to Decatur Iron & Steel Co., Decatur, Ala.

450 tons, telephone building at Plainfield, N. J., to Harris Structural Steel Co., New York.

400 tons, two warehouses for Bangor Real Estate Development Co., Bangor, Me., to American Bridge Co., Pittsburgh, through W. H. Matthews & Son, Bangor, contractor.

400 tons, building for General Electric Co., Erie, Pa., to Ingalls Iron Works, Verona, Pa.; John W. Cowper Co. Inc., Buffalo, general contractor.

295 tons, fixed wheel gate frames, Davis Dam, Louise, Ariz., for U. S. Bureau of Reclamation, to Schmitt Steel Co., Portland, Oreg.

280 tons, alterations Chevrolet Division plants, Buffalo, to Bethlehem Steel Co., Lackawanna, N. Y.; John W. Cowper Co. Inc., Buffalo, general contractor.

200 tons, building addition, Kokomo, Ind., for Pittsburgh Plate Glass Co., to International Steel Co., Evansville, Ind.

200 tons, bank building for Peoples Savings Bank, Providence, R. I., to Utica Structural Steel Co., Utica, N. Y., through George A. Fuller Co., Boston.

185 tons, printing plant addition for Chilton Co., Philadelphia, to American Bridge Co., Pittsburgh.

180 tons, addition to Durez Plastics & Chemical Co., North Tonawanda, N. Y., to R. S. McMannus Steel Construction Co., Buffalo; Siegfried Construction Co., Buffalo, general contractor.

175 tons, transmission towers, Virginia Electric Power Co., Bellwood, Va., to Bethlehem Steel Co., Bethlehem, Pa.; Stone & Webster Engineering Corp., Boston, contractor-engineer.

160 tons, building for Bruce-Mueller-Huntley Co., Buffalo, to R. S. McMannus Steel Construction Co., Buffalo; Siegfried Construction Co., Buffalo, general contractor.

110 tons, church and rectory at Washington, to Reliance Steel Co., Pittsburgh, through McCloskey & Co., Philadelphia.

STRUCTURAL STEEL PENDING

12,000 tons, bearing piling, Green Cove Springs, Fla., for U. S. Navy, Bureau of Yards & Docks.

4850 tons, bearing piling, Ft. Gibson Dam, Okla., for U. S. Engineer.

2000 tons, supports for Columbia Basin tunnel; bids to Bureau of Reclamation, Grand Coulee, Wash., April 15.

2000 tons, permanent tunnel supports, main canal, Columbia Basin Project, Coulee City, Wash.; bids April 15, Bureau of Reclamation, Coulee Dam, Wash.

1850 tons, truss and beam spans, bridges 876, 886 and 913, various locations in Iowa, for Chicago & North Western railroad.

1300 tons, power plant at Middletown, Pa., for Metropolitan Edison Co., Reading, Pa., through Gilbert Associates, Reading, Pa.

1200 tons, plant for General Aniline & Fibre Corp., Grasselli, N. J., through United Engineers, Philadelphia.

1000 tons, addition, Des Moines, Iowa, for *Des Moines Register and Tribune.*

825 tons, power house, Virginia Electric Power Co., Norfolk, Va.; Stone & Webster Engineering Corp., Boston, contractor-engineer.

300 tons, plant for Keller-Dorias Co., Amityville, L. I., through the Ballinger Co., Philadelphia.

750 tons, mill building, W. & J. Sloane Co., South Norwalk, Conn.

750 tons, five buildings, Sacramento, Calif., for Campbell Soup Co.; Austin Co., contractor.

625 tons, warehouses, Chicago, for Goldblatt Bros. Inc.; John Griffith & Son Construction Co., Chicago, contractor.

600 tons, fixed wheel gates, Davis Dam, Louise, Ariz., for U. S. Bureau of Reclamation.

500 tons, warehouse buildings, Louisville, Ky., for Belknap Hardware & Mfg. Co.

500 tons, extensions, state pier, Portland, Me.; Fay, Spofford & Thorndike, engineers, Boston.

400 tons, Pennsylvania state bridge Westmoreland county; Latrobe Construction Co., Latrobe, Pa., general contractor.

335 tons, lock and dam, Pearl river, Mississippi-Louisiana; bids about May 15 to U. S. engineer, Mobile, Ala.; also 143,000 square feet sheet steel piling; 260 tons steel forgings, 60 tons steel castings, 290 tons reinforcing bars.

300 tons, first unit of refinery for Atlantic Refining Co., Philadelphia; E. T. Badger & Co., Boston, engineer-contractor.

275 tons, warehouse addition, Chicago, for Benjamin Wolff & Co.

250 tons, building for Scott Tissue Co., Chester, Pa., Stone & Webster Corp., Boston, engineer-contractor.

180 tons, Pennsylvania state bridge Cameron county; H. T. Osburn, Franklin, Pa., general contractor.

125 tons, shipping platform for Heintz Mfg. Co., Philadelphia.

120 tons, plant addition for Trenton Pottery Co., Trenton, N. J.

105 tons, bridge, Sheboygan, Wis., for Chicago & North Western railroad; bids March 11.

REINFORCING BARS . . .

REINFORCED BARS PLACED

2550 tons, building for John Hancock Insurance Co., Boston, to Truscon Steel Co., Youngstown; Turner Construction Co., Boston, general contractor.

600 tons, building, Washington, for Ring Engineering Co., to Rosslyn Steel & Cement Co., Washington.

500 tons, Brewerwyck Breweries, Inc., Albany, N. Y., to Bethlehem Steel Co., Bethlehem,

Pa., through Industrial Engineering Co., Inc., New York.

300 tons, addition for Rumford Press, Concord, N. H., to Fabricated Steel Products Co., Boston.

200 tons, expansion, buildings 51 and 52, Laporte, Ind., for Allis-Chalmers Mfg. Co., to Ceco Steel Products Corp., Chicago; Larson-Danielson Co., Laporte, Ind., contractor; bids Feb. 14.

182 tons, Sec. D6-F, Chicago subway, for Department of Subways and Superhighways, to Olney J. Dean Steel Co., Chicago; Kenny Construction Co., Chicago, contractor; bids Dec. 27.

170 tons, store for J. N. Adam & Co., Buffalo, to Bethlehem Steel Co., Lackawanna, N. Y.

160 tons, new building, Moorehead, Minn., for Concordia College, to Bethlehem Steel Co., Bethlehem, Pa.; Steenberg Construction Co., St. Paul, contractor; bids Feb. 25.

100 tons, St. Luke's hospital, Cleveland, to Paterson-Leitch Inc., Cleveland, through Gillmore, Carmichael & Olson, Cleveland, contractors.

REINFORCING BARS PENDING

1575 tons, tunnel and canal, Columbia Basin project; bids to Bureau of Reclamation, Grand Coulee, Wash., April 15.

555 tons, Fall River dam and appurtenances, Greenwood county, Fall River, Kans.; bids April 11, U. S. engineer Tulsa, Okla.; also for tainter gates, 350 tons, movable parts; 108 tons, embedded structural steel, including 38 tons semicorrosion resisting, seal plates and other miscellaneous metal.

550 tons, tanks, Toledo, O., for Libbey-Owens-Ford Glass Co.

500 tons, Veterans hospital, Providence, R. I.

485 tons, Panama, sch. 8223; bids March 28.

400 tons, General Aniline & Film Corp., Binghamton, N. Y.

300 tons, expansion, Indianapolis, for Eli Lilly & Co.

200 tons, housing project, Columbus, O.

190 tons, earthwork and structures, Owyhee project, Oregon-Idaho; H. L. Horn, Caldwell, Idaho, low $177,700.

145 tons, power plant, Elgin, Ill., for Elgin State Hospital; W. E. O'Neill Construction Co., Chicago, low on general contract; bids March 5.

128 tons, addition, Chicago, for Ravenswood Hospital.

PLATES . . .

PLATES PLACED

250 tons, oil storage tank, 70,000 barrels capacity, Devon, Conn., to Chicago Bridge & Iron Co., Chicago, through United Engineers.

PLATES PENDING

Unstated, refinery for Shell Oil Co., Portland, Oreg.; Bechtel Bros-McCone Co., San Francisco, general contractors.

Unstated, three oil storage tanks, Grand Coulee project; bids to Bureau of Reclamations, April 9.

Unstated, two 20-inch siphons, Roza and Coulee projects; bids to Bureau of Reclamations, April 18.

Unstated, 55,000 feet 18-inch water pipe, for Hillsboro, Oreg.; bids soon; J. W. Barney city engineer; alternate cast iron.

PIPE . . .

CAST IRON PIPE PLACED

850 tons, 600 for Maplewood district, Portland, Oreg., and 200 tons for Seattle, to H. G.

Purcell, Seattle, for U. S. Pipe & Foundry Co., Burlington, N. J.

CAST IRON PIPE PENDING

700 tons, local improvements, Seattle; bids in April.

250 tons, for Rockland, Mass.

200 tons, for Tacoma, Wash.; general contract placed; pipe award pending.

125 tons, 6-inch, for North Attleboro, Mass.

125 tons, 12-inch for Dartmouth, Mass.

120 tons, 6, 8 and 10-inch for Milton, Mass.

Unstated, 2300 feet 10 inch, for Reedsport, Oreg.; bids April 8.

RAILS, CARS . . .

RAILROAD CARS PLACED

Kansas City Southern, eight sleepers, to Pullman-Standard Car Mfg. Co., Chicago.

Northern Pacific, 50 refrigerator cars, to Northern Refrigerator Lines Inc., Chicago.

RAILROAD CARS PENDING

Pacific Fruit Express, 2000 forty-ton refrigerator cars; bids asked.

CONSTRUCTION AND ENTERPRISE

CALIFORNIA

EL MONTE, CALIF.—Western Tractor Co., 400 East Gorney St., will build a 65 x 150-foot plant, to cost about $45,000. J. A. Sjarbock, 1312 South Garfield Ave., Alhambra, Calif., is architect.

LOS ANGELES—Pacific Brake Co., care J. H. MacDonald, 1013 East Eighth St., architect, has let contract to Buttress & McClellan, 1013 East Eighth St., for a one-story machine shop 100 x 200 feet, to cost about $60,000.

LOS ANGELES—Pacific Gage Co., 6511 Avalon Blvd., has permit for machine shop addition 75 x 95 feet, to cost $32,000.

LOS ANGELES—Peerless Pump Division of Food Machinery Corp. is building an office addition 77 x 80 feet, to cost $30,000.

LOS ANGELES—Union Hardware & Metal Co., 140 North Central Ave., has permit for alterations and improvements to warehouse building, to cost about $60,000.

LOS ANGELES—Structural Steel Panels Inc. has been incorporated with $75,000 capital, represented by Hibbard & Kleindinst, Citizens National Bank Bldg.

OAKLAND, CALIF.—Gerber Products Co., 801 98th Ave., has let contract to C. H. Thrams, 28 Home Place, for a boiler plant estimated to cost $123,000. George E. Atkins, 1308 Hobart Bldg., San Francisco, is engineer.

VAN NUYS, CALIF.—Ted S. Cannon, 11048 Weddington St., North Hollywood, Calif., has building permit for machine shop at 10921 Chandler Blvd., 40 x 60 feet, to cost $7200.

VENICE, CALIF.—McCulloch Aviation Inc., 3305 Wilshire Blvd., Los Angeles, is erecting a plant building at 6101 West Century Blvd., Venice, 160 x 380 feet, to cost about $185,000.

VERNON, CALIF.—Laing & Weil are building a machine shop 37 x 94 feet at 3301 Slauson Ave., to cost about $10,000.

VERNON, CALIF.—Butler Engineering Co., is building a factory and warehouse 30 x 147 feet, at 4906 Alcoa Ave., to cost about $20,000.

CONNECTICUT

NAUGATUCK, CONN.—Naugatuck Chemical Division of United States Rubber Co. H. E. Smith, president, plans an eight-unit plant expansion, laboratory and factory buildings, to cost about $2 million.

STRATFORD, CONN.—Stratford Rubber & Metal Co., 1558 Barnum Ave., plans a one-story 60 x 150-foot plant, to cost about $40,000. P. P. Petrofsky, 177 State St., Bridgeport, Conn., is architect.

WALLINGFORD, CONN.—General Electric Co. plans construction of a plant to cost $2 million for production of molded plastic parts, providing 150,000 square feet of manufacturing space, including office and storage. Plant will replace unit now operated at Meriden, Conn.

WATERBURY, CONN.—Waterbury Corrugated Container Co., 596 Thomaston Ave., has let contract to Frouge Construction Co. Inc., 74 Goodsell St., Bridgeport, Conn., for a plant building estimated to cost $118,000.

YANTIC, CONN.—Yantic Woolen Co. will let contract soon for a 45 x 52-foot boiler plant 30 feet high, including chimney and boiler foundations, D. D. Eames, Boylston St., Boston, is engineer.

GEORGIA

HAPEVILLE, GA.—Ford Motor Co., Dearborn, Mich., has let contract to Thompson & Street Co., Charlotte, N. C., for a parts depot costing about $2 million.

ILLINOIS

CHICAGO—Schaub Engineering Co., 325 West Huron St., has let contract to Cook Co., 228 North LaSalle St., for a one-story 58 x 175-foot plant to cost about $60,000. Olsen & Urbain, 75 East Wacker Dr., are architects.

ELGIN, ILL.—Illinois Tool Works, 2501 North Keeler Ave., Chicago, has bought 40 acres near the south city limits for future expansion, with no plans for 1946 building. Harold B. Smith is president.

INDIANA

UNION CITY, IND.—Union City Body Co., has let contract to the Austin Co., 16112 Euclid Ave., Cleveland, for a two-story 71 x 221-foot plant addition, estimated to cost about $100,000.

MARYLAND

BALTIMORE — General Refractories Co., Chesapeake Ave. and Seventh St., Brooklyn, a suburb, manufacturer of chrome and megnesite brick, is replacing periodic kilns with tunnel kilns, at cost of about $300,000, to add to efficiency and reduce smoke. Also is erecting a 30,000-square foot buidling to house operations now in open.

BALTIMORE—Western Welding Co., 110 North Calverton Rd., is building a one-story plant addition 60 x 100 feet. Allen Zink is owner.

BALTIMORE — Harbison-Walker Refractories Co., Pittsburgh, plans erection of a plant here on a 30-acre site on Patapsco Ave., east of Ninth St., bought several years ago.

MASSACHUSETTS

FRAMINGHAM, MASS.—General Motors Corp., Framingham, will let contract soon for a boiler plant. Albert Kahn Associated Architects & Engineers Inc., 345 New Center Bldg., Detroit, are engineers.

SPRINGFIELD, MASS.—Smith & Wesson Inc., 55 Stockbridge St., has let contract to Ernest F. Carlson Inc., 1694 Main St., for a one-story 100 x 800-foot factory and 50 x 200-foot office, to cost about $500,000.

SPRINGFIELD, MASS.—Springfield Gas Light Co., 35 State St., has let contract to Stacey Mfg. Co., Township St., Cincinnati, O., for a steel gas storage tank 102 feet in diameter and 103 feet high to cost about $115,000.

TAUNTON, MASS.—Glenwood Range Co., 300 West Water St., will let contract soon for

factory expansions, including two-story 30 x 65 feet, one-story 60 x 65 feet and 40 x 96 feet.

MICHIGAN

BATTLE CREEK, MICH.—Alsteel Inc., 15 Carlyle St., has been incorporated with 50,000 shares no par value to manufacture tools, dies and jigs, by Harold J. Rose, same address.

BAY CITY, MICH.—Harwill Inc., 308 Fraser St., has been incorporated with $20,000 capital to manufacture light metal and plastic products, by L. B. Harkins, same address.

BRIGHTON, MICH.—Brighton Tool & Die Co., 735 North Second Ave., has been incorporated with $50,000 capital to manufacture dies and tools, by John A. Renirie, same address.

CARO, MICH.—Russell Mfg. Co., 1055 Luder Rd., has been incorporated with $50,000 capital to manufacture tools, parts and machinery, by Boyd H. Russell, same address.

DEARBORN, MICH. — Rehmann Products Corp., 24539 West Warren Ave., has been incorporated with $1000 capital to manufacture tools, dies, jigs, molds and fixtures, by Adolph Rehmann, 34231 John St., Wayne, Mich.

DETROIT—Alloy Casting Co., 720 Maccabees Bldg., has been incorporated with $100,000 capital to manufacture alloy castings, by Charles F. Hough, 231 South LaSalle St., Chicago.

DETROIT—Robinson Welding Supply Co., 1951 East Ferry Ave., has been incorporated with $150,000 capital to manufacture welding supplies and do welding, by James M. Robinson, same address.

DETROIT—Michigan Foundry Products Inc., 3359 Gratiot Ave., has been incorporated with $10,000 capital to make ferrous and nonferrous castings, by Clyde Bierworth, same address.

DETROIT—Meid Inc., 7410 Woodward Ave., has been incorporated with 2500 shares no par value to manufacture tools and machines by Frank T. Bromley, 250 Marquardt Ave., New Baltimore, Mich.

GRAND RAPIDS, MICH.—Betz Foundry Inc., 2001 Bristol Rd. NW., has been incorporated to operate a foundry, by Karl Betz, 1019 Widdicomb Ave.

GRAND RAPIDS, MICH.—Layman Welding Supply Co., 215 Oakes St. SW., has been incorporated with $25,000 capital to manufacture welding machinery and equipment, by R. Dudley Layman, 2330 Lake Dr. SE., Grand Rapids.

MONROE, MICH.—Paragon Aluminum Corp., North Dixie Highway, Route No. 4, Monroe, has been incorporated with $35,000 capital to manufacture aluminum and other metal products, by Walter E. Streeter, 637 St. Marys Ave., Monroe.

MINNESOTA

MINNEAPOLIS—Minneapolis Honeywell Regulator Co., 2753 Fourth Ave. S., has let contract to C. F. Haglin & Sons, 720 National Bldg., for a one-story 48 x 126-foot boiler plant addition, estimated to cost $100,000.

MINNEAPOLIS—J. W. Thomas & Co., Nicollet Ave., has let contract to Leck Construction Co., 2838 Stevens Ave., for a warehouse addition to cost about $60,000. Magney, Tusler & Setter, 202 Foshay Tower, are architects.

MISSOURI

ST. LOUIS—Anheuser Busch Inc., Ninth and Pestalozzi Sts., has let contract to Fruin-Colnon Contracting Co., 1706 Olive St., at $25,000, for a power house, coal hopper and tunnel 2914 South Ninth St., W. J. Knight & Co., Wainwright Bldg., are architects.

ST. LOUIS—American Stove Co., 2001 South Kingshighway, has let contract to Gamble Construction Co., 620 Chestnut St., for a six-story 112 x 115-foot office and plant, estimated to cost about $500,000.

NORTH CAROLINA

RALEIGH, N. C.—City is considering bids on a $500,000 water project at Lexington.

OHIO

CLEVELAND—Bar Products Co., Vincent H. Povse, manager, is building a machine shop at 17702 Waterloo Rd. to cost about $15,000.

CLEVELAND—Cleveland Twist Drill Co., 1242 East 49th St., George F. Kest, vice president, will build a plant addition 30 x 38 feet and remodel existing plant to increase manufacturing space, at cost of $22,000.

CLEVELAND—Advance Die & Tool Co. has been incorporated with 6000 shares no par value by Norman C. Schwenk, 1019 Williamson Bldg., and associates.

CLEVELAND—Great Lakes Engineering Co., Clifford E. Willis, president, 4040 Mayfield Rd., is building a $15,000 factory and office building at 1046 East 134th St., for manufacture of hydraulic and pneumatic control parts.

COLUMBUS, O.—Columbus Plastic Products Co., 1625 West Mound St., W. J. Braley, secretary, has let contract to George Sheaf & Co., 499 Neilston St., for a one-story 120 x 260-foot plant to cost about $120,000. A. F. Tynan, 387 East Broad St., is architect.

OREGON

PORTLAND, OREG.—C. W. Meyers and associates have bought the site and fire damaged buildings of the marine engine plant of Iron Fireman Mfg. Co. and will recondition it for manufacture of logging and construction industry equipment.

PENNSYLVANIA

BRADDOCK, PA.—Wilson Snyder Division of Oil Well Supply Co., Braddock, will build a one and two-story 140 x 152-foot and 20 x 152-foot plant addition.

PITTSBURGH—Boiler Tube Co. of America, 3125 Preble Ave., has let contract to Navarro Corp., 6219 Broad St., for a one and two-story 72 x 102-foot plant in Stowe Township, to cost about $40,000. Prack & Prack, Martin Bldg., Pittsburgh, are architects.

PORT ALLEGANY, PA.—Pittsburgh Corning Corp., 632 Duquesne Way, Pittsburgh, has let contract to Toledo Engineering Co., 958 Wall St., Toledo, O., for foamglass plant expansion costing about $300,000.

TEXAS

FREEPORT, TEX.—Dow Chemical Co., Freeport, has let contract to Tellepson Construction Co., 3900 Clay St., Houston, Tex., for chemical plant additions, estimated to cost about $150,000.

HOUSTON, TEX.—Metal Goods Corp., St. Louis, Robert E. Grote, president, has bought site for a $1 million plant 150 x 460 feet and 50 x 100 feet. Harris T. Gregg, Houston, is branch manager.

VIRGINIA

WILLIAMSBURG, VA.—City has approved issue of $350,000 bonds for improvements to the municipal waterworks system.

WASHINGTON

TACOMA, WASH.—Tacoma Powder Metals Co. plans construction of a plant to manufacture powdered iron from scrap.

WISCONSIN

MILWAUKEE—Milwaukee Electric Tool Corp., 5316 West State St., has let contract to Gebhard-Berghammer Inc., 5420 West State St., for a one and two-story 128 x 230-foot plant and office building. Grassold & Johnson, 734 North Jefferson St., are architects.

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30-Ton Morgan 77' Span
30-Ton Morgan 30' Span
30-Ton Niles 53'9" Span
30-Ton Reading 58' Span
25-Ton Bedford 50' Span
25-Ton Cleveland 106' Span
25-Ton P&H 70' Span
25-Ton Whiting 106' Span
25-Ton Whiting 82' Span
20-Ton Alliance 77' Span
20-Ton Cleveland 65' Span
20-Ton Morgan 77' Span
20-Ton Northern 60' Span
20-Ton P&H 51'4" Span
20-Ton P&H 39'6" Span
20-Ton Shaw 76'4" Span
20-Ton Shepard Niles 49'6" Span
15-Ton Alliance 50' Span
15-Ton Alliance 35' Span
15-Ton Cleveland 55'6" Span
15-Ton Cleveland 35' Span
15-Ton Morgan 77' Span
15-Ton Niles 32' Span
15-Ton Northern 53' Span
15-Ton Shaw 82' Span
15-Ton Shaw 77' Span
15-Ton Toledo 82' Span
15-Ton Whiting 74'8½" Span
12-Ton Morgan 56' Span
10-Ton Alliance 58'9" Span
10-Ton "American" 27' Span
10-Ton Case 31'9" Span
10-Ton Cleveland 38' Span
10-Ton Cleveland 50' Span
10-Ton Lane 50' Span
10-Ton Morgan 39'5" Span
10-Ton Morgan 77' Span
10-Ton P&H 57' Span
10-Ton Northern 34' Span
10-Ton P&H 37'4" Span
10-Ton P&H 48'10½" Span
10-Ton P&H 60' Span
10-Ton P&H 80' Span
10-Ton P&H 87'6" Span
10-Ton Toledo 36' Span
10-Ton Manually Operated
7½-Ton Erie 70' Span
7½-Ton P&H 30'6" Span
7½-Ton Shepard 38' Span
6-7-Ton Milwaukee 70' Span
6-Ton Shaw 23' Span
5-Ton "American" 10' Span
5-Ton Champion 37'6" Span
5-Ton Euclid
5-Ton Milwaukee 39'8" Span
5-Ton Milwaukee 66'9" Span
5-Ton Milwaukee 70' Span
5-Ton Northern 49'6" Span
5-Ton P&H 45' Span
5-Ton Shaw-Box 25' Span
5-Ton Shepard 40' Span
5-Ton Toledo 98' Span
5-Ton Whiting 80' Span
3-Ton P&H 46'4" Span
3-Ton Shaw 33' Span
3-Ton Whiting 57'3" Span
2-Ton Detroit 28' Span
2-Ton Louden 19'2" Span
2-Ton P&H 46'4" Span
2-Ton Shep. Niles 18' Span
2-Ton Shep. Niles 14' Span
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