STEEL

The Magazine of Metalworking and Metalproducing

VOL. 117, No. 6 Aug. 6, 1945

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TECHNICAL

FEATURES

MARKETS

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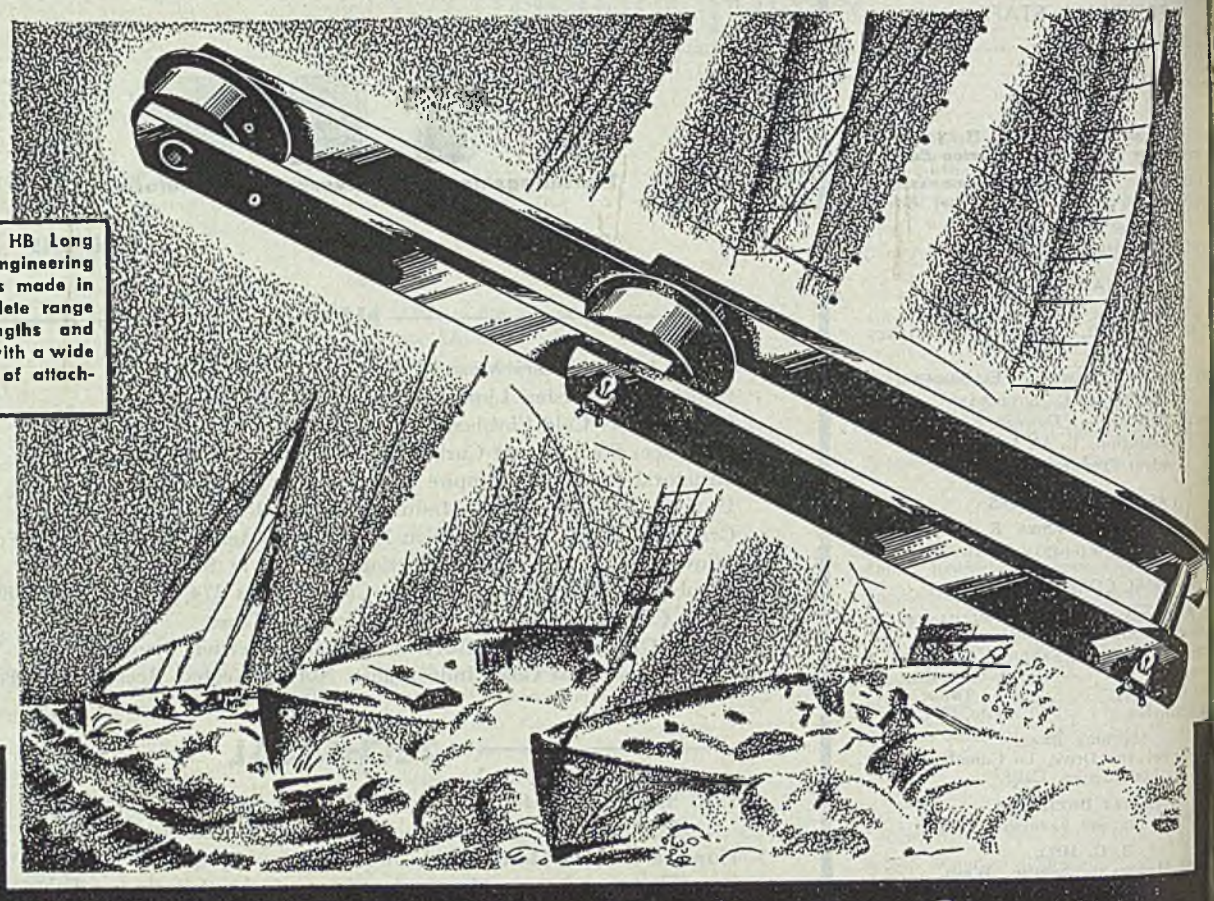
Determining Metal Thicknesses by Radiographic Inspection
Joining Turbine Wheels by Submerged Arc Welding
Lubrication in the Drawing of Metals
Elliott Co.'s New 2500 Horsepower Gas Turbine
Testing Future Metals for Corrosion Resistance



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Catalog A-2 covers Drive and Conveying Chain. B-2 covers Finished Steel Roller Chain. FC-1 covers Flexible Couplings. Ask for your copies.

ARMY E NAVY

UNION CHAINS

STEEL
Aug. 6, 1945

Lesson From Britain

Ever since the British election, numerous commentators and public officials in the United States have made much of the idea that the swing to the left in England justifies a corresponding shift in our country. They say the British overturn will encourage the Labor-New Deal coalition to press harder for social reform and that it may cause President Truman to bear more toward the left. Some members of Congress are using the British election as an argument for expanding social security.

From this enthusiasm to exploit the British reversal in the United States, one would think that our English cousins had found the key to Utopia. As a matter of cold fact, they have made a painful decision. They have been appraising the postwar economic prospects of Britain and have found them gloomy. They have been contemplating the problem of regaining a dominant position in foreign trade and are shocked by the difficulties of trying to revive this trade under the handicaps of depleted finances and shipping and of certain industries—coal, for instance—which are too backward to produce efficiently or to pay decent wages.

So discouraging is the prospect under the domestic policies pursued during the past decade that the British people, although conservative at heart, feel they are forced to try an alternative. They are turning leftward to invoke more government controls because private enterprise has not been effective.

If the situation in the United States were as acute as it is in war-weary Britain, then there might be some excuse for applying the desperate British remedy. But our situation is not acute. On the contrary, our prospect for stability on a high level for some years to come are bright. None of our important industries is decadent. Private enterprise in the United States is not so feeble that it must be shelved in favor of nationalization. A survey by the Department of Commerce shows that 7000 manufacturers and the railroads and utilities have $10,500,000,000 ready to spend for new plants, equipment, material and supplies as soon as regulatory, manpower and other restrictions permit.

Where in all the world is there a potential for jobs and economic well-being as great or as promising as this? No nationalization project anywhere can match these chips held by private enterprise.

The lesson of the British election for us is to keep private enterprise strong. Save it from strangulation by regulation. Encourage it to prosper and to serve the public satisfactorily.

CO-ORDINATION NEEDED: Too little attention in high places is being given to the challenges embodied in the prospective situations in coal and transportation.

Secretary Ickes says we should ship 6,000,000 tons of coal to Europe to prevent anarchy this winter. His argument is convincing. At the same time, Dr. C. J. Potter, deputy solid fuels administrator, is warning that the shortage of coal may force industry, including steel mills, to go on a 4-day week. Ickes has been consistent in telling the public it will have 80 per cent or less of last year's coal supply for next winter's home heating.

The transportation situation, already acute, probably will get worse before it can improve. It is due to the unprecedented heavy traffic and the transfer of men from the European to the Asiatic theaters of war.

In coal and transportation, early relief could be forthcoming if the Army could release coal miners and railroad men from military service. Army officers have promised some slight relief, but they

(OVER)

complain that such releases play havoc with the point system for discharge.

Here is a case where good co-ordination at the top in Washington could avert a calamity. It presents a challenge to and an opportunity for the Truman appointees to prove anew the adage that a new broom sweeps clean. —p. 87.

° ° °

CURB ON BIG BUSINESS: Uncle Sam is in business in a big way. There are 101 separate government corporations engaged in production, transportation, generation of power, loans, housing, insurance and other lines of business. These corporations have gross assets of $29.6 billion and liabilities of $28.4 billion.

Alarmed at the free and easy manner in which such government corporations can be created and operated, the House Committee to Investigate Expenditures in the Executive Departments has introduced H.R. 3660, a bill that would require all government corporations to be established by an act of Congress. The bill also would put an end to all government corporations after June 30, 1948, unless they had obtained congressional authority to incorporate under federal charter. The bill also provides for budgetary controls and periodic commercial-type audits.

This bill should help President Truman in his apparent determination to introduce more business-like methods in government. With administration approval it could be passed by both houses easily. The sooner it becomes a law, the better. —p. 95

° ° °

COMPLICATED RULING: An adjustment in the prices of cold-finished carbon steel bars effective Aug. 6 deserves special attention because it is the first compensatory price ruling applied by OPA to iron and steel products since the present system of government price control was inaugurated.

The adjustment involves an increase of $2 per ton in the base price of cold-finished bars and a reduction of $6 per ton in the extra for strain and stress relieving and a reduction of $2 per ton in the extra for physical inspection and testing.

No matter how carefully this price ruling may have been worked out, it is obvious that to apply such a complicated solution to all price problems in iron and steel is an endless job and one that probably will fall far short of being fair to all interests concerned. One must hope that the need for price control will pass before the rules become more complicated. —p. 86

SIGNS OF THE TIMES: Ability of structural steel to absorb dynamic forces greatly in excess of those anticipated in normal structural design was demonstrated by the unfortunate accident in which a B-25 bomber, traveling at from 250 to 300 miles per hour (p. 88), crashed into the Empire State Building at the 78th and 79th floors. Examination shows that the structural damage was minor and that the several spandrel beams distorted by the impact can be replaced with comparative ease. . . . The new Attlee government, committed to a broad program of nationalization, probably will start with coal mining (p. 83), which is in a dismal state of decadence. Next will come railroads, whose operators desire nationalization, air transport and public utilities. There will be stiff opposition to nationalizing British iron and steel. . . . According to the 1945-46 edition of Penton's Foundry List, just published, the number of foundries in the United States and Canada has increased from 5295 in 1943 to 5569 in 1945 (p. 90), a gain of 274 or about 5 per cent in two years. The increase in capacity during this period has been greater than indicated by the gain in number of foundries, owing to the fact many of the new ferrous foundries are large and numerous old ones have been enlarged and modernized. . . . The first of four ore carriers being built by Bethlehem Steel for its own use has started for Chile via the Panama Canal (p. 89) for the first load of Chilean ore to be brought to the states from Chile in several years . . . Senator Walter F. George, chairman of the Senate Finance Committee, believes the federal government will be spending from $22 to $25 billion annually for a year or two after the war ends (p. 91) and after that the amount will depend upon conditions and factors now incalculable. The $22 billion is the lowest figure yet attributed to a responsible spokesman. . . . A Bendix Aviation Corp. executive predicts that there will be 3,500,000 licensed private airplane pilots in the United States by 1960 (p. 108) if progress made since 1929 continues at the same rate during the next 15 years. This seems incredible, yet the estimate probably is conservative and certainly is significant. . . . Curtiss-Wright's new V-Tab, a simple control surface for cargo planes (p. 106) will permit loading without consideration of how weight distribution affects center of gravity.

E. L. Shaner

EDITOR-IN-CHIEF

Did You Ever Visit A Steel-Service Plant?

Let's take a quick look inside one of the 11 Ryerson Steel-Service plants. Before us stretch acre upon acre of steel in countless shapes and sizes—giant structurals, gleaming sheets of Allegheny Stainless, towering racks of alloy bars.

Everything is movement. A friction saw roars as it bites through a beam. We hear the dull crunch of heavy shears. Overhead a giant crane is speeding tons of plates to the loading door. Hundreds of tons are continuously moving out of stock to supply war industry and to speed partial conversion to peacetime production.

Today sizes may not always be in balance because of heavy wartime demands and we cannot always give the service you have come to expect from Ryerson. But our stocks are still the nation's largest. Deliveries generally prompt. Service interested and helpful. When you need steel quickly from stock phone the nearest Ryerson plant.

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...or Plates, Structurals,
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R Y E R S O N

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and you can't re-convert without planning.....
Pressed metal parts and stamping point the wa
to perfect reproduction of modern design and low co
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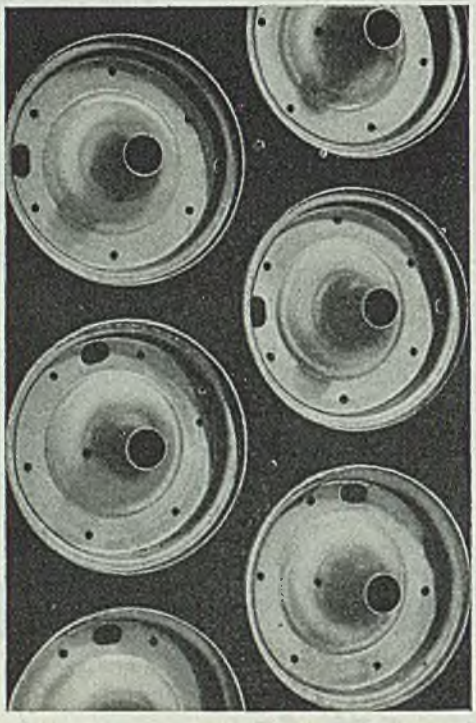
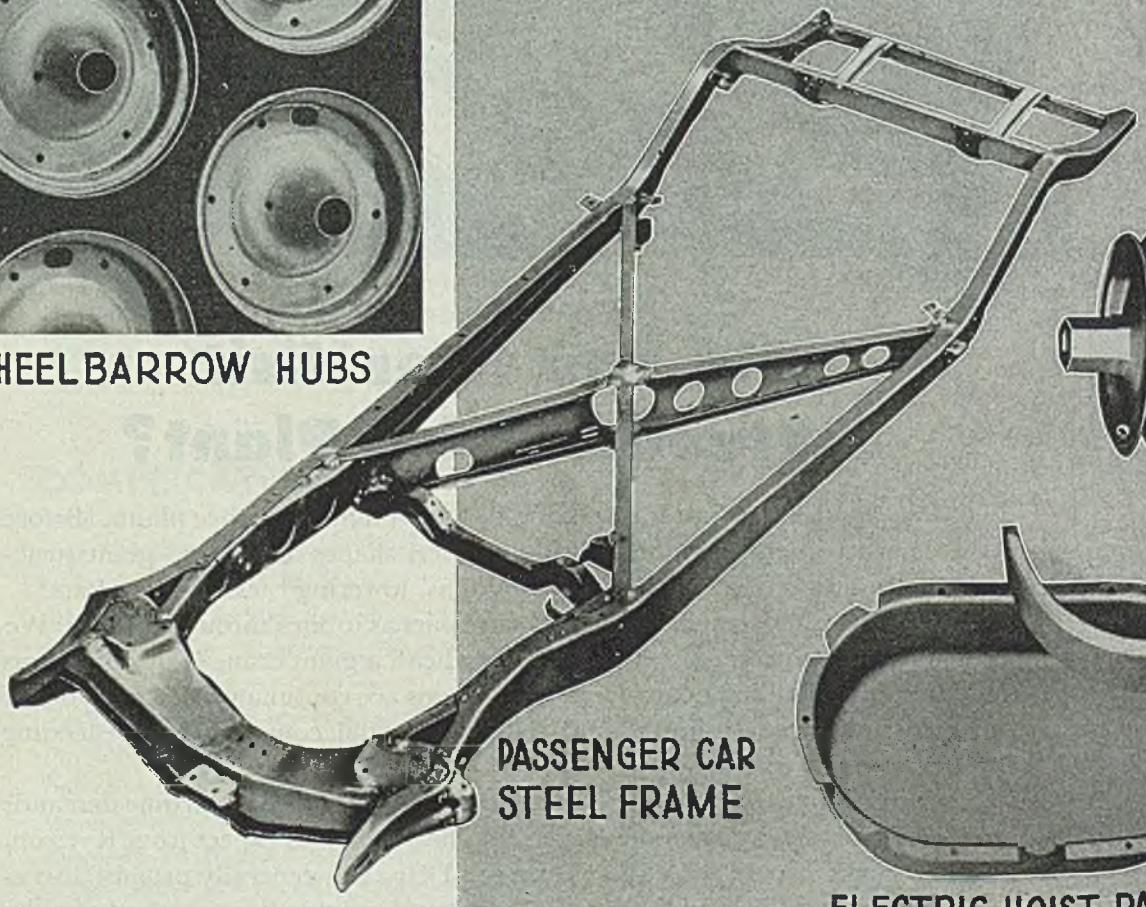
engineers are ready to assist you with your post-wa
fabricating problems. We'll be pleased to help you pla



WHEELBARROW HUBS



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STEEL
August 6, 1945

British Election Means Swing to Left

Labor party committed to nationalization of industry. Government controls will be maintained to greater extent and for longer period than planned by Conservatives. New regime faces difficult problems in reconstruction, handicapped by strained economy, loss of overseas investments and shipping. International effects of program, should it mature, difficult to assess

By VINCENT DELPORT
European Editor, STEEL

LONDON (by cable)

THE VICTORIOUS Labor party's pro- a means reversal of the previous ernment's policy, which was to sup- private enterprise, to increase effici- of major industries and to stimulate rts.

he new government probably will tain controls to a greater extent and a longer time than would have the servatives.

abor is committed to nationalization he coal mines, transport, electricity ibution, the iron and steel industry the Bank of England.

st probably it will begin with the mines as a public corporation. Min- re insistent in their demands for na- alization now. The program probably mean the closing of the more inef- mines and integration of the more ductive mines now operated as in- dual units.

ationalization of railroads, and air sport as public utility companies bably will follow. Railroad opera- s want it. Electricity distribution follow later, nationalization of iron steel will be a tougher and more icate proposition.

eferring especially to iron and el it is doubtful that Labor yet has etailed plan. The industry is strongly organized to resist and meantime will carry out its own five-year plan. (See STEEL, July 30, p. 54).

Nationalization of the foundry and metalworking industries is most unlikely owing to the wide variety of products and the large number of small and medium-size concerns, although some action may be taken to eliminate small, inefficient firms unable to offer good wages and working conditions.

Such major transformations must take time and must have the approval of Parliament where strong opposition is expected—and not only from the Conservative side.

The new government also faces other weighty problems—rehousing, demobilization, national insurance legislation, and the responsibilities of office.

Should Labor's plans mature, it is impossible to assess the effect on the national economy, although the precedents are discouraging. It never has been tried on such a scale except in Russia where conditions are entirely different.

Regarding the effect on world steel trade, it appears likely all transactions would be through government agencies and that the tendency would be toward higher rather than lower prices.

Although the stock market reacted to the election news, there is no indication of panic. Generally it is believed cheap money will continue, but wages are almost certain to go higher and hours will be reduced with the usual effect on production costs.

Two leading figures in Britain's Labor government are Prime Minister Clement Attlee, above, and Foreign Minister Ernest Bevin, upper left, NEA photos

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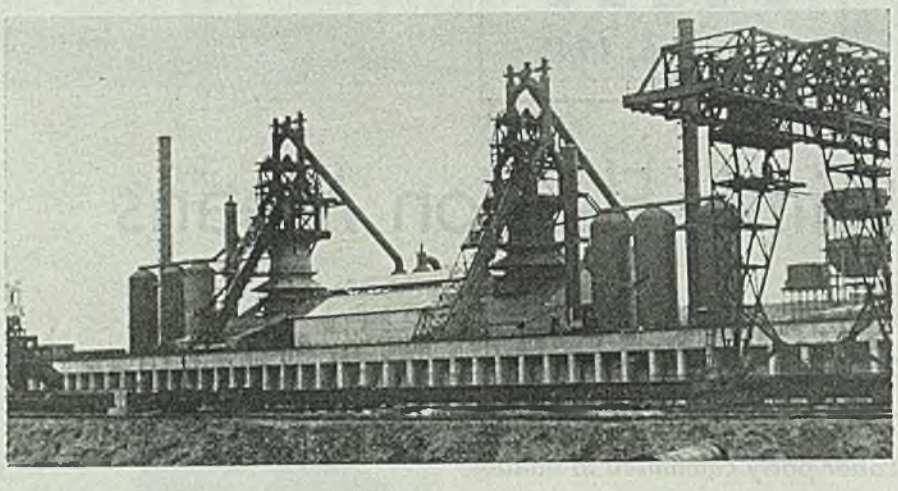
The two-to-one Labor vote gives to Clement Attlee, the new Prime Minister, a clear-cut majority and presages a fairly long life for the Labor government if it



Two of England's most modern blast furnaces are these stacks of the Appleby-Frodingham Steel Co. Ltd., at Scunthrope, completed shortly before the war

is successful in meeting Britain's difficult domestic and foreign problems.

Mr. Attlee is a socialist by conversion, being the son of a staunch Conservative. He was sent to Parliament in 1922, held various posts in the government and succeeded to the leadership of the Labor party in 1935. In the Churchill coalition cabinet he served as Deputy Prime Minister.

Among the key members of his cabinet will be:

Foreign Minister: Ernest Bevin, 64, a labor leader for many years, and Minister of Labor and National Services in the coalition cabinet.

Chancellor of the Exchequer: Hugh Dalton, 58, one of the Labor party's intellectuals, president of the Board of Trade in the coalition cabinet.

President of the Board of Trade: Sir Stafford Cripps, 56, a member of Parliament since 1931, brilliant radical lawyer, Churchill's ambassador to Russia and special envoy to India with England's proposals for self government, Lord Privy Seal and leader of commons in Churchill's war cabinet.

Lord Privy Seal: Arthur Greenwald, 65, a cabinet officer in many ministries since World War 1.

Lord President of the Council: Herbert Stanley Morrison, 57, one of the strong leaders of the Labor party who rose from errand boy and telephone operator to become a member of Parliament. He was Minister of Home Security and Home Secretary in Churchill's wartime cabinet.

Lord Chancellor: Sir William Jowitt, lawyer who once was expelled by the Labor party for supporting Ramsay MacDonald's National government. He was Paymaster General under Churchill, with special duties to plan postwar construction.

Little change in Britain's foreign policy as regards winning the war over Japan and setting up machinery to effectuate the peace appears likely. Adherence to the agreements already formulated is expected. Mr. Attlee was a delegate to the San Francisco conference and had been attending the Potsdam meetings before the election.

On the domestic front, Labor victory presages more radical changes. In addition to the program for nationalization of basic industries, the Laborites will press for far-reaching social reforms in housing, education, social security, employment and agriculture.

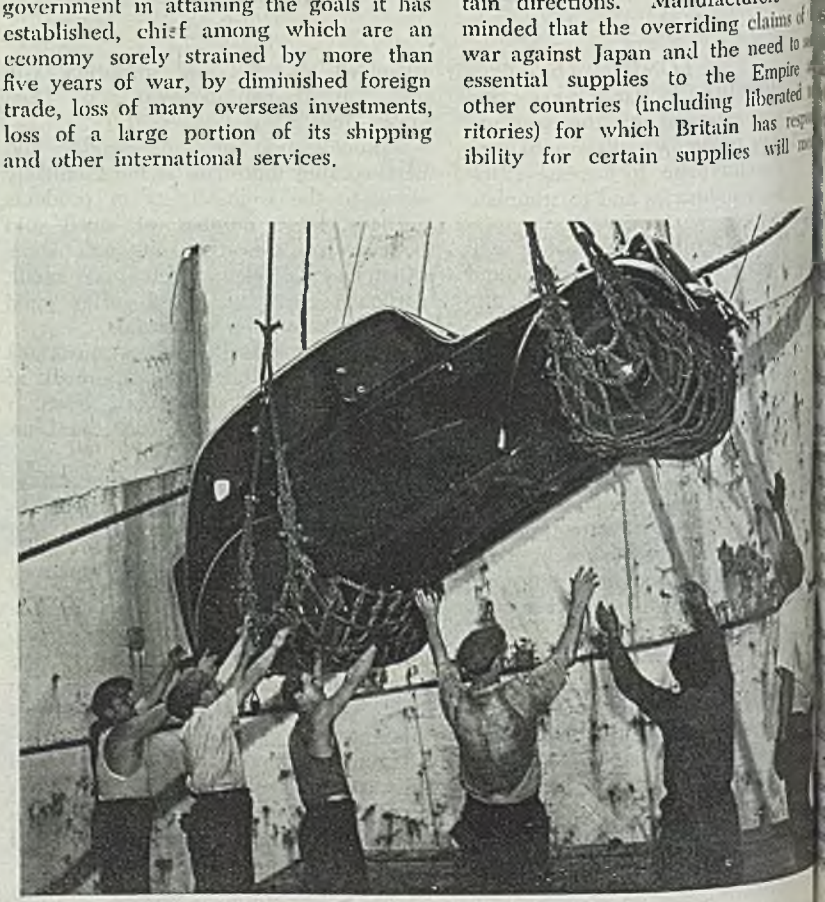
Many difficulties will face the new government in attaining the goals it has established, chief among which are an economy sorely strained by more than five years of war, by diminished foreign trade, loss of many overseas investments, loss of a large portion of its shipping and other international services.

British Reconversion Limited, Awaits V-J

By J. A. HORTON
British Correspondent, STEEL

RECONVERSION of British indust will be limited until war in the Pac is ended, although a partial resumpti of civilian goods already is underw as availability of materials and m power permits.

An extensive range of iron and st products has been freed from the re which forbids export except by spec authorization of the Board of Trad This is regarded as a step in the rig direction and in keeping with the gove ment's expressed intention of remov export licensing restrictions progressi ly, having regard to the situation in spect to supplies. The changed mili situation is responsible for the fact t some of the articles now dealt with in easier supply, but a warning is gi that during the transitional period of manpower and manufacturing ca pacity may constitute difficulties in c tain directions. Manufacturers are minded that the overriding claims of war against Japan and the need to s essential supplies to the Empire other countries (including liberated t ritories) for which Britain has resp ibility for certain supplies will



Dock hands direct the unloading of the first Austin, British-built passenger car, to arrive in New York. England is attempting to build up export trade to restore her credit resources drained by the economic stress of war. NEA photo

Sir Stafford Cripps, President of the Board of Trade in England's Labor government, won the good will of industry during his wartime tenure in the Ministry of Aircraft Production, NEA photo

refore, that many of the goods now
oved from export licensing control
not be freely available for export
some time to come. Among these
ds must be included steel sheets, for
ch makers are so heavily booked
they will not be able to accept
stantial orders for export for some
. The relaxation, however, applies
ngles, bars and rods, blooms, beams,
p and strip, ingots and tubes and
r products.

Whatever restrictions are relaxed,
vever, in regard to export licensing
ot alter the position in regard to
power which at present is the vital
r, not only in the steel industry
throughout the whole of industrial
in. The scarcity of skilled labor
pers progress everywhere and may
tinue to be a retarding influence in
transitional period for many months.
the early part of the year there
a slump in the demand for steel
s, but specifications are now im-
ing from shipyards, locomotive and
builders.

Plight of Industry Unrevealed

he enormous housing program which
be put in hand first by local author-
and secondly by private enterprise
s well for the producers of light

he full story of the plight of the
industry in Europe cannot yet be
n. Belgium, it would appear from
s which trickle through, is suffering
a fuel shortage. Producers hope
ecure at an early date iron ore
France and Luxemburg, and a first
gument of 10,000 tons of Ruhr coke
recently been made available for
n industry. It is believed that for
time a large proportion of the
s steel output will be reserved for
country's own needs. At present
works are producing between 40,000
50,000 metric tons of steel monthly.
therefore very unlikely that Britain
be able to import from Belgium the
onsiderable tonnages of semifinished
ts as was the prewar custom.

. Cyr. Van Overburgh, Belgian
ster of state, writing recently in
Soir (Brussels) said: "It is time to
k of the reparations that Germany
make to us. It is a question of
ations in kind such as raw materials
ding coal, wood, ores, certain fer-
s, dye-stuffs, metals, electrical
r, machinery, locomotives, other
w material, ships, airplanes, loan
attle, etc. On the principle of
ations our great Allies are in agree-
Germany must make reparations
foreign currency as in 1919 but
nd. The amount of our direct
ge has not yet been drawn up;
egards goods alone it exceeds 200
francs. If Germany supplied
um with 20,000,000 tons of coal
ally for 15 years this would still
represent one-quarter of the re-

parations due. If it is natural that the Saar Basin should be reserved for France, it is only equitable that the exploitation of the Ruhr should be allotted in order of priority to Belgium, Holland and Luxemburg.

In France, the arrival of Ruhr coke has enabled more iron and steelworks to resume operations. The government has plans to reorganize and replan the iron and steel industry. Machine tools and industrial equipment are to be imported from the United States during the next two years, and France will probably need to import steel and other materials for some time to come. The output of raw steel in February was 58,000 metric tons against 55,000 tons in January and 46,000 tons in December, 1944. Pig iron production was only 9,600 tons in February.

Criticism was made recently by Ernest Bevin, now Foreign Minister, of high prices in the iron and steel industry. He accused manufacturers of charging what he described as enormous prices so that obsolete plants inside the "ring" can be kept in operation. A reply has been issued by the British Iron & Steel Federation which says that steel prices are fixed by the government and the war has delayed the modernization of plant. The price arrangements to which Mr. Bevin referred were set up at the government's request in the early stages of the war to equalize and restrict profits in the industry to insure that steel needed for the war effort would be forthcoming. The arrangements not only cover the problem of utilization of the more obsolete plant to insure greater production during the war, but also meet the position when efficient firms are called upon to use unsuitable raw material and produce unusual products for which their plant was not intended.

As for Mr. Bevin's contention that steel prices in the United States are less than those prevailing in Britain, this is merely because in addition to the foregoing the steel industry, in common with the rest of British industry, has been carrying a war burden of insurance, interruption of supplies due to enemy action and other exceptional wartime charges unknown in U. S. The greatest single factor in price is the wartime increase in coal costs. Coke used in blast furnaces has risen by 137 per cent. Quite apart from the Ebbw Vale scheme other schemes of modernization in the industry had been completed. Others were in the process of being carried out when the war interrupted them.

Weakest spot in production was probably ironmaking. By 1930 Britain had fallen behind in blast furnace practice, but this position has now been remedied, and the majority of blast furnaces are as good as any in the world. The magnitude of the change is illustrated by the fact that 98 blast furnaces in Britain today produce approximately the same tonnage as 158 in 1929.

The federation statement concludes—"Critics of the industry's technical efficiency are apt to overlook the fact that the industry in Britain is designed to fulfill the requirements of our vast jobbing trade with the rest of the world. The long runs in the extensively integrated U. S. iron and steel plants are suitable for U. S. requirements, but it does not follow that the kind of production undertaken in U. S. is the right thing for Britain. On the contrary, our requirements are of a totally different character."

Adjusts Cold-Finished Bar Schedule

OPA effects $2 per ton increase in base prices but lowers certain extras as offset. Move designed to aid smaller producers

IN A SOMEWHAT complicated action last week, the Office of Price Administration announced an adjustment in the cold-finished carbon steel bar price schedule, effective Aug. 6.

The action, amendment 14 to price schedule No. 6, included the raising of base prices by $2 per ton to restore the historical spread between cold-finished and hot-rolled carbon bars erased last May when hot-rolled bars were upped $2 per ton without a corresponding increase on cold-finished. As an offset to the increase in base prices on cold-finished, however, OPA ordered a reduction of $6 per ton in the extra for strain and stress relieving, and a cut of $2 per ton in the extra for physical inspection and testing. The first named extra now will be $9 per net ton, while the physical testing extra will be $3 per net ton.

The increase in cold-finished carbon steel bar base price with simultaneous reduction in the two extra charges is particularly significant since it is the first compensatory price adjustment of its kind applying on iron and steel products since the beginning of government price control.

Net drop in the industry's profit margin will result from the action though the cut in extras will affect largely the return on shell bars, production of which will not be an important factor in peacetime operations. Further, because of the fact some producers have not been equipped to charge these extras, the reduction will not apply to the entire industry.

Adjustment Relieves Hardship

The adjustment was made, OPA said, because profit margins in the industry, especially small producers, were inadequate to permit absorption of the May increase of $2 per ton in hot-rolled carbon bars plus other cost increases during recent years.

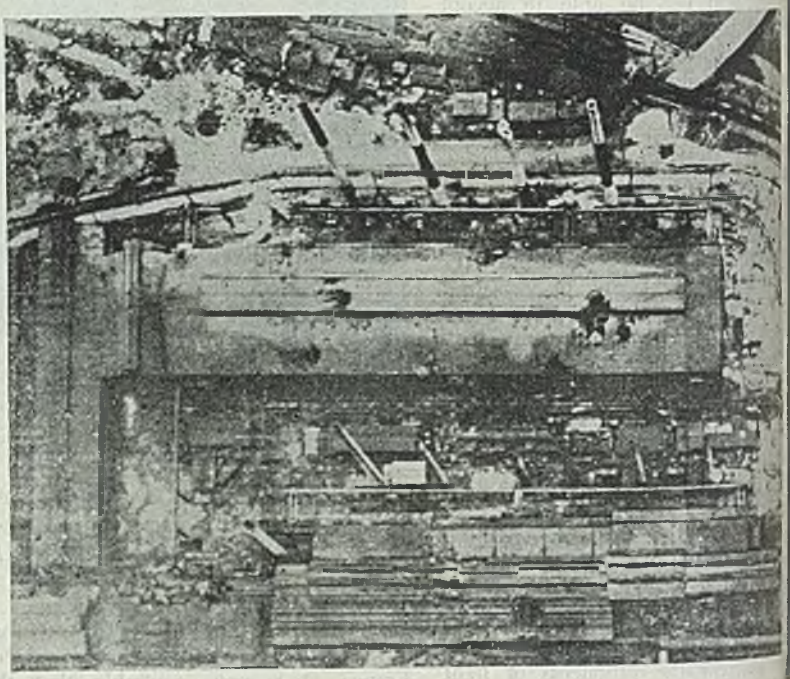
When the industry advisory committee petitioned OPA for a price adjustment last May it estimated 1,000,000 tons of cold-finished bars would be affected over the last seven months of this year by an increase of $2 per ton in the base price. It also estimated that 300,000 tons would be affected by a reduction of $6 per ton in the stress and strain extra, and 180,000 tons by a cut of $2 per ton in the inspection and testing extra. It is estimated, therefore, that as a result of the current adjustment the price advance will increase return to the industry by $2 million while the cut in extras will decrease the return by $2,160,000.

OPA revealed that 24 companies produce practically 100 per cent of cold-finished bar output. Of these, five integrated steelmakers account for 40 per cent, five large nonintegrated producers for about 47 per cent, and 14 smaller nonintegrated companies for 13 per cent.

Rate of return on net worth for a normal peacetime period (1936-1939) for cold-finished bar producers is 13 per cent, substantially higher than the base period rate of 4.2 per cent for the steel industry as a whole, according to OPA. Higher profits are attributed to certain heat-treating, annealing and testing extras which were in effect in April, 1941, when prices were frozen, but which applied on a much smaller volume of work at that time. In 1942 these extras were voluntarily reduced $7 per ton by the producers. At the same time, states OPA, all producers do not enjoy the higher profits accruing through these extras, the smaller interests not having heat-treating facilities to process ordnance components. As a result these latter companies, in the main, are operating at or below their base period rate of return.

In order to make subsequent price adjustments to maintain a close balance OPA now requires the filing of quarterly returns, setting forth tonnage figures so that OPA may regularly check the dollar increases granted against the dollar decreases allowed and make such periodic adjustments as may be necessary to attain true offsets. Quarterly financial reports also are required to be filed with OPA.

In conjunction with amendment 14 to price schedule No. 6, OPA issued amendment 33 to price schedule 49, permitting warehouse steel distributors to increase their maximum prices for cold-finished carbon bars $2 a net ton.



BLASTED JAP STEELWORKS: Big holes in the roof area of the open hearth building, at top, and the foundry building, at bottom, indicate damage caused to the Japanese steelworks at Kamaishi by big guns of the Third Fleet during bombardment of the Japanese home islands with fuzed shells, timed so they would explode after penetrating to the heart of the structure. U. S. Navy photo

Price Relief Inadequate, Small Steelmakers Protest

Unfair and arbitrary formulas employed by the Office of Price Administration in establishing maximum prices for carbon steel in 1945 fell so far short of reality they offset less than one-sixth of the indicated rise in steel-making costs since 1939, a group of 23 small steel companies charged [illegible]

eek in a formal protest to OPA against e schedule of carbon steel prices an-unced May 21.

The protest was filed by Robert W. olcott, president, Lukens Steel Co., atesville, Pa., acting on behalf of his n company and other smaller steel mpanies which, in the aggregate, ac-nted for about 4 million tons of steel 1944.

Over the past six years, the labor cost the protesting companies has increased approximately $6,700,000 on the s of 1939 output, while the cost of r materials has risen an additional 50,000. As against that total in-se of $14,950,000 in 1939 costs, the A in 1945 granted price relief equiv-t to only $2,700,000 per year on basis of 1939 volume.

The schedule of ceiling prices for announced May 21, 1945, by the unfairly penalized small steel pro-ers who do not own and derive t from mines, blast furnaces and sportation facilities, the protest ges. Instead the schedule was pre-ated substantially upon costs prevail-among larger companies. Further-e, in devising and applying its cost mula the OPA improperly excluded m consideration several important items, it is claimed.

rikes Curb Production eriously in Chicago Area

Unauthorized strikes and work stop-s over petty grievances continue to k back war production seriously in works, foundries and metalworking ts in the Chicago area.

The strike which started July 23 and ects 39 foundries in Chicago, Joliet, avia and Aurora, continues.

Five other strikes were brought to an last week. Most important was at Dodge Chicago plant, Chrysler Corp., ere 20,000 workers went back to k July 30.

Approximately 1300 workers at In-na Harbor, Ind., works of Inland l Co. resumed work last week after tting down the tin mill. Strike ted July 24.

A serious situation developed at the th Chicago plant of Republic Steel p., July 27, when 21 workers walked leaving hot metal in two tilting open rths, subsequently forcing 3700 other kers into idleness. Normal work re-ed July 30.

Operations at the Cicero, Ill., plant of ional Malleable & Steel Castings Co., re reduced starting July 24 when 0 workers remained away in protest inst discharge of six employes. Work med July 31.

Production of over 15,000 gears for lane engines was lost by Foote Bros. & Machine Corp., Chicago, through rike which 200 employees started July and which later spread to include 0. This strike terminated Aug. 1.

Ickes Sees Steel Output Curbed By 37 Million-ton Coal Shortage

PROSPECTIVE shortage of 37 million tons of coal this coming winter may force industry, including steel production, onto a 4-day week, Interior Secretary Ickes told a Senate committee last week. He declared some 30,000 miners now in the Army should be furloughed immediately so as to increase coal production to an adequate rate.

Supporting Secretary Ickes' position, Dr. C. J. Potter, deputy solid fuels administrator, told the committee he "expects all industry, including steel mills, will have to go on a 4-day week this winter unless more coal is produced."

Secretary Ickes recently recommended shipment of 6 million tons of coal to Europe to avert "chaos" there this winter.

Commenting on statements to the Senate Committee, Irving S. Olds, chairman, United States Steel Corp., last week said he did not anticipate any slowing down in his company's steel operations to a 4-day per week basis.

Recently Dr. Potter reported the average steel mill has only 16-day coal supply against a normal 30-day reserve. At that time he said one mill had only a 6-day supply.

Bituminous coal production in the week ended July 21, the latest data available, decreased approximately 380,000 tons from the preceding week, output totaling 11,620,000 tons. For the calendar year to July 21, production has amounted to 328,771,000 tons, or 23,813,000 tons less than in the like period of 1944. Current mine labor disturbances are causing considerable loss from week to week. Last week 35 bituminous mines employing 5799 men were affected by wildcat strikes.

Present, Past and Pending

■ ALLEGHENY LUDLUM OPENS BOOKS FOR CIVILIAN ORDERS

NEW YORK—Allegheny Ludlum Steel Corp. has opened its books for steel for civilian requirements and a substantial volume of business already has been placed, President Hiland G. Batchellor announced.

■ GUARANTEED WAGE INCLUDED IN UNION CONTRACT

NORRISTOWN, PA.—Wildman Mfg. Co., knitting machinery manufacturer, has agreed to guarantee 1200 hours of work annually, or pay at straight-time rates in lieu thereof, to all employees with five years of service with the company in a new union contract.

■ MANPOWER SHORTAGE STILL SERIOUS IN SOUTH

BIRMINGHAM—Workers are still needed in the steel, coal, lumber, textile and transport industries in the South, although a number of workers are reported idle as result of layoffs in other industries.

■ FLOW OF INDUSTRIAL EQUIPMENT TO CIVILIAN USERS SLOW

WASHINGTON—Heavy backlogs of unfilled orders and continuing military requirements are slowing the flow of general industrial equipment to civilian users, according to the War Production Board.

■ ANTICOLLISION SYSTEM MAY HELP PREVENT PLANE CRASHES

NEW YORK—Development of an anticollision system to prevent airplanes from crashing into tall buildings or other airplanes is disclosed by Panoramic Radio Corp., this city, and the Kollsman Aviation Instrument Divison, Square D Co., Elmhurst, N. Y. Device employs radio signals to warn pilots of obstructions ahead.

■ ACUTE LABOR SHORTAGE AREAS CONTINUE TO DECLINE

WASHINGTON—Areas of acute labor shortages now total 46, a drop of 27 from the V-E Day total of 73, according to War Manpower Commission.

■ ADDITIONAL SHEET STEEL FOR DRUMS DENIED

WASHINGTON—Request for 42,000 tons of additional sheet steel for production of steel drums during third quarter has been denied by War Production Board.

■ CHEVROLET TO CONCENTRATE AIRCRAFT ENGINE OUTPUT

BUFFALO—Chevrolet Motor Division, General Motors, will concentrate its aircraft engine production in this area to free other plants for civilian goods production.

■ NEW ENGLAND SHIPYARD EMPLOYMENT LOWER

BOSTON—Eight major New England shipyards report 103,077 workers have been laid off from peak employment. Only 99,100 are now employed by the yards.

U. S. Steel Chairman Says Industry Entitled to "Real" Price Relief

Speaking at corporation's quarterly meeting, he points out carbon steel prices have been upped an average of $1.50 per ton against cost increase of $8. Sees enough steel for automotive program. Income off in first six months of 1945

ASSERTING the steel industry is entitled to "real relief" on carbon steel prices, Irving S. Olds, chairman, United States Steel Corp., speaking at a press conference following the corporation's quarterly meeting last week, said increases in prices of $1.50 a ton have been averaged on the corporation's carbon steel products during the war emergency against increases in costs of $8 a ton.

The Steel corporation chairman revealed that while his company has received many cutbacks in orders, they, in themselves, have not affected overall operations. The corporation's main difficulty has been in obtaining adequate manpower, he declared. Labor disturbances also are an adverse factor. He estimated the corporation has lost 1,338,000 tons of steel this year through labor disturbances.

The Steel corporation has made no proposal for acquisition of the Geneva, Utah, steel properties, which it is now operating for the government, he said, declaring "The whole matter is still under consideration, but we have not yet arrived at any decision."

Responding to a question, Mr. Olds said he thought there should be sufficient steel to meet the 1945 civilian automobile program. He admitted there was a shortage in sheets and strip, but pointed out that the auto program for this year was not large.

Corporation backlogs are only slightly less than three months ago, although under present conditions, Mr. Olds added, he could not be sure how firm these backlogs are.

Reporting earnings of the corporation for second quarter of 1945, Mr. Olds announced income for second quarter after all costs—including allowance for estimated federal taxes on income—but before declaration of dividends, amounted to $16,774,202. Income for the first six months of 1945 was $32,153,373, or $229,160 less than the reported income for the first six months of 1944.

Shipments of finished steel products in second quarter amounted to 5,123,714 net tons. For the first six months of 1945 shipments were 10,124,959 net tons, compared with 10,632,854 net tons shipped in the same period of 1944. Production of steel ingots and castings averaged 88 per cent of rated capacity.

Total capital expenditures during the second quarter, for additions to and betterments of fixed assets, were approximately $8,000,000. On June 30, 1945, unexpended balances for property additions and replacements amounted to approximately $133,000,000.

Net Profit of Youngstown Sheet & Tube Co. Rises

Net profit of Youngstown Sheet & Tube Co., Youngstown, O., for the second quarter of 1945 was $392,243 higher than that for the corresponding period of last year. The quarter's net profit this year was $2,190,260, compared with $1,798,017 for the second quarter of 1944.

Structural Damage to Empire State Building Slight in Bomber Crash

THE 102-story Empire State building, New York city, world's tallest building, withstood with minor damage the recent accident which occurred when an Army twin-engined B-25 bomber, traveling between 250 and 300 miles per hour, crashed into the 78th and 79th stories of the structure.

"While the forces delivered against the Empire State building by the heavy Army bomber, represent a tremendous potential for destruction, the structural damage actually sustained was very minor in nature, as indicated by newspaper reports," T. R. Higgins, director of engineering, American Institute of Steel Construction, said commenting upon the accident.

"The ability of structural steel to absorb dynamic forces, measured as foot-pounds of work, is many times the assignment given it in normal structural design. Thus the forces suddenly applied by the crashing plane were largely absorbed locally, with the distortion of no more than a couple of spandrel beams. And, having been absorbed into the steel frame, these forces were transmitted to the foundations more or less elastically."

The Empire State building required 58,300 tons of steel. The building was designed to withstand a wind pressure of 30 pounds per square foot, plus a pull of a dirigible. American Bridge Co. fabricated the steel and Post & McCord took charge of the erection. Starrett Bros. & Eken were the general contractors; Shreve, Lamb & Harmon, the architects; and H. G. Balcom Associates, the structural engineers. Starrett Bros. & Eken will assume charge of repairs. Only a relatively few new structural sections will be needed, and the ease with which damaged members may be removed will not be without significance.

Accompanying photo shows hole in wall of the building by the plane and firemen inspecting debris.

Grace Tells Why Bethlehem Is Not Interested in Geneva Steel Works

President of second largest steelmaking interest says Bethlehem can lay eastern-produced steel down on West Coast cheaper than it can produce it there. Notes some falling off in order backlogs but reports second quarter income gain

FOR THE first time for publication, ...ene G. Grace, president, Bethlehem ...el Corp., last week told why his ...anization is not interested in acquir... the steel plant at Geneva, Utah, ...ed by the government and operated ...r the United States Steel Corp. It is ...ply, he said, because Bethlehem can ...duce steel more cheaply in the East ...d lay it down more cheaply on the ...cific Coast than it can produce it out ...ere.

Speaking at a press conference follow... the corporation's quarterly meeting, ...r. Grace explained Bethlehem has ...ree steel plants on the Pacific Coast, ...th an aggregate ingot capacity of ...0,000 tons annually — at Seattle, ...n Francisco and Los Angeles; also ...bricating plants at San Francisco and ...s Angeles.

However, Bethlehem over the years ...s been expanding its Sparrows Point, ...d., plant with the requirements of the ...cific Coast in mind and it produces all ...f the important products required, ex... one, namely shapes, which are pro...ced at Bethlehem, Pa.

With these facilities (including shape ...ls at Bethlehem), Mr. Grace said, ...e can deliver products to the Pacific ...ast, to the four major ports of Los ...les, San Francisco, Seattle and ...rtland, cheaper than they can be made ...the West Coast, and that applies to ...n the Geneva and Fontana, Calif., ...rks."

With order backlogs shrinking about ...0 million in second quarter, from ...194 million to $995 million, there ...s been a reduction for the first time ...the steel and heavy ordnance business, ...r. Grace asserted. About half the ...duction was in ships (although there ...re no cancellations).

The corporation spent about $3 million ...r improvement during the last quarter, ...d now has an authorized expansion ...ogram of $80 million, compared with ...4 million at the close of the first ...arter. The program contemplates no ...pansion in steel production, but rather ...steel processing and mining facilities.

Mr. Grace revealed that the first of ...ur ore carriers being built by Bethle...em for its own use, had just started ...n its first voyage, heading for Chile by ...ay of the Panama canal. There it will ...ick up iron ore from Bethlehem's ac...cumulation. This load of ore will be the first in three or four years.

Net income in the second quarter was reported at $8,041,682 which compares with $7,695,909 in the first quarter and with $6,733,843 in the corresponding quarter of last year. Net income for the first six months of the year was $15,737,591 which compares with $13,-166,381 in the like six months of 1944.

Steel Earnings

Jones & Laughlin Steel Corp. reports for second quarter of 1945 net income of $2,357,524 compared with $1,879,835 in the like 1944 period. In the first six months of this year net income was $4,371,013 compared with $3,588,187 in the first half of last year.

—o—

Pittsburgh Steel Co. reports for the quarter ended June 30, net profit of $429,741, which compares with net profit of $192,718 in the preceding quarter and with a net loss of $187,840 in the corresponding quarter of 1944. Net profit for the first six months of 1945 was $622,459, comparing with a net loss of $72,901 in corresponding period of 1944.

—o—

Inland Steel Co. reports second quarter net earnings of $2,943,490, which compares with $2,472,734 in like period of 1944. First half net income was reported at $5,416,224 compared with $5,171,418 in the like period of 1944.

—o—

American Rolling Mill Co. reports for second quarter of 1945 net income of $2,071,925, which compares with $1,212,-456 in the corresponding period of last year. First six months 1945 income is reported at $3,947,428 compared with $2,441,491 in the first half of 1944.

—o—

National Steel Corp. reports net earnings for the quarter ending June 30, of $3,453,183. This compares with net earnings of $2,863,315 in the second quarter of 1944. Net income for the six months ending June 30, 1945 was $6,883,171, compared with $5,413,458 for the first half of 1944.

—o—

Sharon Steel Corp. reports for second quarter net profit of $364,793 which compares with $301,760 in first quarter.

—o—

Continental Steel Corp. and subsidiaries reports for the quarter ended June 30 net profit of $208,672, which compares with $167,573 in the like period of 1944. Net for the first six months this year was $360,564 which compares with $323,379 in the first half of 1944.

Alloy Steel Production Lower in June

PRODUCTION of alloy and hot-topped carbon steel ingots in June totaled 1,960,969 net tons, compared with 2,233,422 tons in May, according to the American Iron & Steel Institute, New York.

	Total Steel		Alloy Steel		Carbon Ingots
OPEN-HEARTH FURNACES	JUNE	PER CENT CAPACITY	JUNE	YEAR TO DATE	Hot Top JUNE
Ingots	6,110,663	...	516,341	3,521,256	1,158,338
Steel for castings	18,603	...	3,899	24,831	
Total	6,129,266	88.5	520,240	3,546,087	1,158,338
BESSEMER INGOTS	379,807	78.6	.....	.....	.....
ELECTRIC & CRUCIBLE FURNACES					
Ingots	326,838	...	268,889	1,796,449	9,725
Steel for castings	6,379	...	3,777	28,159	
Total	333,217	74.2	272,666	1,824,608	9,725
Total Steel	6,842,290	87.1	792,906	5,370,695	1,168,063

June Pig Iron Output Shows Loss from May

JUNE pig iron production totaled 4,-605,012 net tons, compared with 5,016,-060 tons in May, according to the American Iron & Steel Institute, New York.

	Pig Iron	Ferro, Spiegel	Total June	Total Year to Date	Per Cent Capacity
Eastern	797,059	33,225	830,284	5,228,089	77.7
Pittsburgh-Youngstown	1,899,765	17,098	1,916,863	11,793,231	89.9
Cleveland-Detroit	463,997	...	463,997	2,973,562	85.6
Chicago	1,000,894	2,222	1,003,116	6,286,599	86.6
Southern	241,341	8,077	249,418	1,912,763	61.6
Western	141,334	.....	141,334	948,039	60.6
Total	4,544,390	60,622	4,605,012	29,142,283	83.1

Number of Foundries in U. S. and Canada, 5569, Up 274 in 2 Years

NUMBER of foundries in operation in the United States and Canada increased by 274, or approximately 5 per cent, during the past two years, data compiled for the 1945-46 edition of *Penton's Foundry List*, published by the Penton Publishing Co., Cleveland, show. Number of active foundries in the United States is reported at 5048, compared with 4802 in 1943. The Canadian total is reported at 521 as against 493 two years ago.

Since 1943, capacity of the U. S. foundry industry for producing ferrous castings has expanded considerably more than is indicated by the gain in number of foundries. Not only have many of the newly constructed plants been large ones but numerous older foundries have been enlarged or modernized. By actual count, total gray iron producers declined from 2890 in 1943 to 2879 this year; 383 foundries are producing steel castings, compared with 335 in 1943, and the number of malleable producers has increased to 139 from 126 two years ago. Without making allowance for the fact some ferrous foundries make more than one type of casting, this means there are 84[illegible] sources of ferrous castings, an increase of 50, or about 1.5 per cent, since 1943. In Canada, the increase was from 8[illegible] to 408, or 4 per cent.

Numerically, the nonferrous group showed a much larger growth than the ferrous industry. The tabulation lists a United States total of 3040 producers of nonferrous castings, increase of 1[illegible] per cent compared with the 2631 two years ago. Of the current total 17[illegible] foundries produced nonferrous castings

(*Please turn to Page 208*)

Distribution of Foundries in the United States and Canada

	Total Foundries 1945	Total Foundries 1943	Gray Iron Foundries 1945	Gray Iron Foundries 1943	Steel Foundries 1945	Steel Foundries 1943	Malleable Foundries 1945	Malleable Foundries 1943	Total Nonferrous Foundries 1945	Total Nonferrous Foundries 1943	Exclusive Nonferrous Foundries 1945	Nonferrous Foundries Dept. of Other Shops 1945	Brass and Bronze Foundries 1945	Aluminum Foundries 1945	Magnesium Foundries 1945	Centrifugal Casting Producers 1945	Permanent Mold Casting Producers 1945	Machine Shops 1945	Pattern Shops 1945
Alabama	86	90	78	80	6	6	3	3	27	21	5	22	18	21	1	4	7	63	69
Arizona	7	7	5	7	2	3	..	..	6	4	2	4	5	4	..	..	3	3	7
Arkansas	18	18	13	15	1	1	..	..	12	8	3	9	8	8	..	..	..	12	..
California	392	331	149	136	37	30	3	2	280	186	226	54	189	215	14	14	51	158	216
Colorado	45	39	22	20	6	4	..	1	25	18	18	7	23	20	..	2	6	22	26
Connecticut	133	126	51	56	4	5	7	8	91	87	69	22	75	59	..	1	7	63	69
Delaware	13	11	5	6	3	3	1	1	8	7	3	5	7	6	..	..	1	9	10
Dist. of Columbia	2	2	2	2	2	1	..	..	2	2	..	2	1	2	1	1	1	2	2
Florida	35	33	22	24	2	1	1	..	26	28	7	19	30	27	..	..	2	27	30
Georgia	76	70	64	61	5	3	..	..	44	34	9	35	32	32	..	1	3	47	62
Idaho	5	6	5	5	..	1	..	..	4	5	..	4	4	3	..	..	..	4	4
Illinois	392	373	194	204	25	25	20	18	220	185	169	51	162	166	11	11	25	188	236
Indiana	220	210	130	126	14	12	9	10	120	106	73	47	85	94	5	9	10	102	129
Iowa	89	80	65	59	5	5	1	2	42	37	15	27	32	40	..	1	2	41	58
Kansas	48	49	39	41	1	1	1	..	27	25	8	19	19	23	..	1	2	31	40
Kentucky	37	36	26	24	1	..	..	..	23	19	10	13	22	13	1	1	2	22	25
Louisiana	35	33	24	24	5	5	..	..	22	25	8	14	21	13	..	1	2	21	25
Maine	24	24	21	22	..	..	1	..	16	15	2	14	14	12	..	..	..	14	20
Maryland	46	44	30	31	4	..	..	1	30	25	14	16	27	21	1	3	1	29	28
Massachusetts	216	207	104	114	11	8	3	3	144	133	100	44	133	105	3	7	9	81	120
Michigan	335	336	180	176	26	23	12	10	226	193	155	71	166	152	15	27	35	167	200
Minnesota	105	100	75	73	3	3	1	1	54	45	26	28	47	45	1	2	7	55	64
Mississippi	13	13	12	12	1	1	..	..	8	10	..	8	7	5	..	..	1	9	9
Missouri	106	104	55	59	10	12	2	1	58	50	43	15	45	50	1	4	7	56	66
Montana	8	8	8	8	..	..	..	..	6	6	..	6	6	1	..	..	1	7	7
Nebraska	23	19	14	14	2	1	1	..	18	13	7	11	16	15	..	1	..	17	15
Nevada	3	3	3	3	1	..	..	..	3	3	..	3	3	..	..	..	..	1	2
New Hampshire	22	23	13	15	2	2	2	1	16	16	7	9	16	12	..	2	1	15	15
New Jersey	187	172	83	81	13	7	2	2	123	104	90	33	97	85	7	9	9	90	119
New Mexico	1	1	1	1	..	..	..	..	1	1	..	1	1	..	..	..	..	1	1
New York	408	398	194	203	26	22	13	14	286	249	183	103	227	222	7	22	27	224	276
North Carolina	60	65	54	60	1	..	..	..	29	34	4	25	23	25	..	..	3	38	46
North Dakota	4	4	3	3	..	..	..	..	3	3	1	2	3	2	..	..	..	3	3
Ohio	522	503	279	279	36	34	21	17	288	266	202	86	210	213	13	21	39	264	330
Oklahoma	35	40	25	28	2	1	..	..	22	21	9	13	15	18	..	..	..	24	27
Oregon	55	50	36	35	10	6	..	..	29	24	9	20	25	17	..	..	2	26	36
Pennsylvania	532	519	327	328	60	61	17	16	300	258	149	151	246	192	2	20	27	323	388
Rhode Island	40	38	19	18	1	..	3	2	27	24	19	8	26	21	..	2	1	13	26
South Carolina	24	21	21	20	..	..	..	..	18	16	2	16	16	14	..	..	..	18	19
South Dakota	2	3	2	3	..	..	..	..	1	2	..	1	1	..	..	..	..	1	1
Tennessee	73	72	64	63	1	1	..	..	32	30	8	24	24	19	1	..	2	49	56
Texas	113	108	69	69	11	10	1	..	72	60	28	44	59	50	1	5	2	59	76
Utah	20	18	17	14	1	1	..	..	12	10	3	9	10	10	..	..	1	11	13
Vermont	18	16	15	14	..	..	1	..	6	5	2	4	5	5	..	..	2	13	11
Virginia	69	68	62	64	4	2	..	..	44	42	4	40	40	29	..	3	5	48	48
Washington	90	85	51	49	19	18	1	1	60	53	30	30	54	43	1	..	5	32	55
West Virginia	38	38	24	26	2	2	1	1	24	24	9	15	23	11	..	1	6	25	30
Wisconsin	201	186	123	114	16	14	11	11	103	98	63	40	85	80	3	11	19	96	120
Wyoming	2	2	1	1	1	..	..	..	2	1	1	1	2	..	..	..	..	2	1
Total	5048	4802	2879	2890	383	335	139	126	3040	2631	1795	1245	2329	2210	89	187	336	2629	3222
Alberta	15	12	12	10	1	1	..	..	14	10	3	11	11	10	..	1	3	13	14
British Columbia	58	55	44	41	9	8	1	1	44	39	14	30	40	29	1	1	3	30	48
Manitoba	19	17	14	10	3	2	..	..	13	8	4	9	8	12	..	..	..	12	17
New Brunswick	11	9	9	8	..	..	..	..	9	6	1	8	8	7	..	..	1	7	10
Newfoundland	4	5	4	4	1	1	..	..	4	4	..	4	3	4	..	..	..	2	4
Nova Scotia	24	23	21	21	2	2	..	1	15	16	1	14	15	8	..	..	2	16	19
Ontario	260	255	169	174	9	9	13	11	174	134	78	96	132	136	1	10	14	173	202
Prince Edward Island	3	4	3	3	..	..	..	..	2	2	..	2	2	1	..	..	..	2	2
Quebec	119	106	72	66	11	11	3	2	78	56	31	47	71	70	1	8	12	74	87
Saskatchewan	8	7	7	6	..	..	..	..	5	3	..	5	5	4	..	..	..	6	1
Total	521	493	355	343	36	34	17	15	358	278	132	226	295	281	3	20	35	335	409
Total U. S. and Canada	5569	5295	3234	3233	419	369	156	141	3398	2909	1927	1471	2624	2491	92	207	371	2964	3641

harp Cut Seen n U. S. Postwar udget, Taxes

Senator George says budget should be tailored to federal revenues. Sees possible tax reduction of $18 billion

SHARP reduction in taxes on business a federal budget of between $22 and billion—about one quarter of the time budget—are envisaged by Sen. ter F. George (Dem., Ga.), chairman the Senate Finance Committee.

enator George pictured the possibility reduction in taxes amounting to $18 n a year after the defeat of Japan. postwar tax program should be ulated now and either adopted or in readiness for enactment, Sen- George told a news conference. is very essential that all taxpayers what their burdens are going to he said.

The senator's advocacy of prompt ac- is in line with the thinking of other inistration spokesmen. Although op- to any general reduction in taxes V-J Day, the national administra- favors early revision of the tax struc- for use when victory comes. Sec- of the Treasury Fred M. Vinson ly told Congress: "There is an ortant benefit to early adoption of postwar tax program. The sooner the certainties in the postwar tax struc- are removed the sooner business ill make commitments . . . and the men can be put to work."

Taxpayers' Ability To Pay

enator George recommended that the war budget should be based on the payers' ability to pay rather than the desire of the government to nd.

"It is putting the cart before the se to fix a budget first and then draw a tax program. We first must find what the taxpayer can stand and the budget accordingly."

enator George believes the $22 to billion annual spending rate will ntinue for a year or two after the war. er that the amount will depend on anging conditions and various factors ch now are incalculable.

He sets as an "irreducible minimum" government spending of $14 to $16 bil- a year to meet such commitments as erest on the public debt, payments veterans, administrative costs and intenance of the necessary armed ces. Some spending on top of this nount will be necessary, he said, add- that legislative and executive

Sen. Walter F. George, chairman, Senate Finance Committee, tells newsmen postwar federal spending and taxes must be reduced drastically. NEA photo

branches could run the outlay much higher.

A revised federal budget for the 1946 fiscal year calls for total expenditures of $85 billion, compared with about $100 billion in the 1945 fiscal year. This is based on the assumption the Japanese war will continue into next year. Receipts for the 1946 fiscal year are expected to drop from $46.5 billion to $39 billion, as a result of lowered spending for military purposes.

TRANSITION TOPICS

BRITISH ELECTION—Labor's victory interpreted as swing to left. New government committed to nationalization of basic industries, including iron and steel. See page 83.

PRICES—OPA makes compensatory adjustment in cold-finished carbon steel bar prices, granting increase in base prices while ordering decreases in extra allowances. See page 86.

TAXES—Senate Finance Committee chairman says postwar budget should be tailored to ability to pay. Sees sharp reductions in spending and taxes. See page 91.

RECONVERSION—Failure of government to provide adequately for resumption of civilian manufacturing criticized by Senate War Investigating Committee. See page 96.

AUTOMOBILES—United States Steel chairman believes auto manufacturers will obtain enough steel to fill 1945 quotas. Kaiser-Frazer combine arouses much interest. Los Angeles considered likely site for West Coast plant. See pages 88, 99.

ARC WELDING ELECTRODES—Revision of AWS and ASTM specifications for arc welding electrodes simplifies selection of these welding "tools" and points toward increased use after the war. See page 112.

INFRA-RED LAMP EQUIPMENT—Important advantages offered by infra-red installations for heating, drying and baking indicate many postwar applications. See page 118.

COLLECTING OIL MISTS—Mists resulting from break-up of cutting oil now may be precipitated electrostatically, eliminating unpleasant working conditions and reducing hazards. See page 120.

Tool Disposal Regulations Under Study by Surplus Property Board

Seeks answers to critics of sales policies. Complaints include failure to offer many modern machines though considerable equipment in this classification is idle. Only 20 per cent of tools available are readily salable types

OFFICIALS of the Surplus Property Board of late have been devoting considerable thought to current criticism of the board's regulations governing the sale of government-owned machine tools and other property. While these regulations have been drawn to insure property disposal in accordance with the provisions of the Surplus Property Act, the board does have considerable latitude and it is the desire of Administrator Alfred E. House and associates to lay down policies, as far as possible, that will meet with approval.

One of the principal complaints is that offerings by the Reconstruction Finance Corp. have included comparatively few general-purpose machine tools and other equipment, and comparatively few tools built in the last five years. Many tools, it has been pointed out, now are idle as a result of terminations, and the question has been raised by potential buyers, and in business paper editorials, whether many of these tools might not now be relinquished by the Army and Navy, the principal government owning agencies, for use by industry in reconverting to civilian production.

The SPB goes along with this thinking to the extent that idle government-owned equipment should be used to expand production of civilian goods, and provide peacetime employment with the least delay possible. But it has no practicable legal power to influence the Army and Navy in declaring equipment to be surplus; furthermore SPB officials cannot advise the Army and Navy as to whether or not there will be future war work for equipment which now is idle. Hence the SPB is unable to take any action that would increase current offerings of industrial equipment.

SPB officials can, and do, insure the widest publicity for such equipment as is currently available for sale. As a result, the RFC is about to step up its advertising campaign and other sales promotional activities. It will circularize potential buyers more intensively to acquaint them with the equipment available for sale. RFC also is continuing work on the preparation of a central inventory to list tools which currently are in the custody of its regional offices. It is hoped that with such a central inventory, which should be ready for use within a few weeks, the problem of advertising surplus equipment, and circularizing potential buyers, can be handled more effectively.

A check recently made by the RFC reveals ample justification for the complaint that it has few standard general-purpose tools of modern design on sale. This check revealed that only about 20 per cent of the surplus tools it now has available for sale are of readily salable types. Of about 20,000 tools in the hands of the RFC as of June 30, only about 4000 were standard general-purpose tools of fairly modern design, while the remaining 16,000 comprised single-purpose or over-age tools for which it is difficult to find buyers. The check revealed further that standard general-purpose tools are snapped up as fast as they are offered.

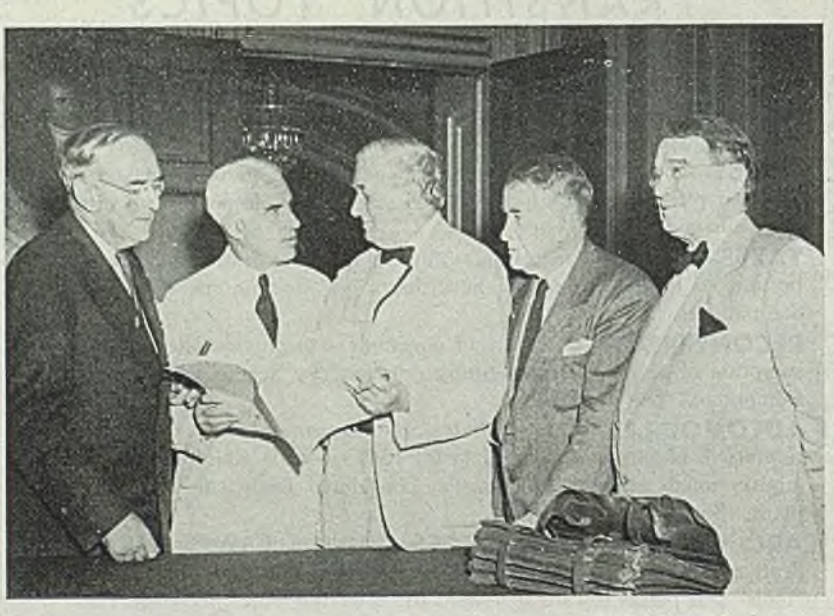
Another widely circulated criticism which has had the attention of SPB officials is that terminated contractors enjoy undue advantages in acquiring desired tools and other equipment under regulation 9. This is the regulation which instructs owning agencies like the Army and Navy with respect to disposition of equipment and materials involved in termination and pretermination settlements. Under regulation 9, the Clark formula of cost less depreciation does not apply; rather, prices are arrived at by negotiation. The regulation requires that the owning agency determine the value by testing the market. This may be done by advertising for competitive bids, by appraisal, or otherwise.

SPB officials admit that the terminated contractor does have some advantage under regulation 9. He frequently can get a concession in price. For instance, the owning agency may find that it might cost $200 to package, move and store a $1000 machine in order to make it available to other buyers; in such cases the owning agency might be willing to let the contractor have the tool at $800.

Concession Are Justified

Concessions of this kind, SPB officials feel, are in the interest of taxpayers and are in accord with the wishes of Congress in writing the Surplus Property Act. When a tool is moved out of a plant there is bound to be a delay of several months before that tool could be put to a new use. On the other hand, the chances are that if it is left in the contractor's plant it will be used promptly and thus provide employment. It is worth something to the taxpayer, the SPB reasons, to lower the price of a $1000 tool to $800 when such action promotes new production and employment.

However, regulation 9 contains a number of provisions to guard against what falls to the contractor during termination settlement. Generally, sales prices must be at market levels or must be fair and reasonable and must not be less than 50 per cent of cost. The regulation assumes that the contractor will retain property for use but the owning agency may authorize



CHARTER RATIFIED: Shown examining a copy of the world security charter after it had been ratified by the Senate by an 89-2 vote are, left to right: Sen. Arthur H. Vandenberg (Rep., Mich.); E. R. Stettinius Jr., chairman, American delegation to the world security conference; Sen. Tom Connally (Dem., Tex.); Sen. Alben Barkley (Dem., Ky.); Sen. Kenneth McKellar (Dem., Tex.), president pro tem of the Senate. NEA photo

What does it take to make a war?

...kes more than a toothbrush mustache, an upraised arm, ...mbol on a flag.

...it takes more than guns and tanks and planes.

...kes ignorance, intolerance and want. . . . The psycho-...ic mire that breeds little conquerors, and the political ...ess that makes nations look the other way.

...hat does it take to *prevent* a war?

...kes knowledge, communication, and freedom of thought. ...conomic opportunity, and productive power.

And it takes a strong police force to keep the rough neighbors kids in line and slap the gangsters down.

America lacked what it takes to *make* a war. But we have what it takes to win one . . . and to *prevent* one in the future. Today, the engineers of the basic machine tool producers stand ready to help the men of government and of industry in their postwar planning for a strong America — a nation powerful enough to prevent future wars with the strength of a healthy economy here at home, and the best equipped military police force the world has ever seen.

BRYANT CHUCKING GRINDER COMPANY SPRINGFIELD VERMONT, U.S.A.

...ch 8, 194...

him to sell surplus goods out of his inventory subject to certain stipulations aimed at insuring a fair deal to his customers, and preventing him from making an undue profit; also, competitive bids are required in cases where the goods are to be resold. The regulation provides that a sale of goods costing more than $25,000 cannot be made without advertising to develop values.

Regulation 9 also is believed to prevent utilization, except as scrap, of any tool bought by the terminated contractor at a scrap price. It defines the categories of scrap and salvage and prescribes that such property must be sold at competitive bids, also, the buyer paying less than 50 per cent of the cost of the property must give a warranty that it will be used as scrap only. A further protection is that nothing costing more than $300 can be declared scrap without review at a higher level in the owning agency. The net result of these protections, SPB officials believe, is to prevent a contractor from obtaining a usable tool at a scrap price.

The general philosophy of preventing windfalls to terminated contractors in negotiating either pretermination or final settlements also has been applied by the SPB in cases involving "hard-to-move" equipment. Often materials handling, processing and other equipment is so built into the plant that it could be removed only at considerable expense. In such instances a contractor is not allowed to buy the equipment at a fraction of its value just because the government would have to go to a lot of expense in tearing it out. Regulation 9 provides that in such cases the owning agencies are to go to whatever expense is necessary in order to prevent violation of the ban against sales of usable property at less than 50 per cent of the cost.

RFC Sales Practice Approved

Up to the present time SPB officials have not seen any necessity for amending the sales practice of the RFC in answer to complaints that the method of pricing under the Clayton formula, or of setting prices by appraisal, fails to give adequate encouragement to dealers who rebuild these tools and sell them with new tool guarantees. A check shows that approximately 50 per cent of the tools sold by the RFC so far have been made to companies that buy them for resale i a rebuilt condition. That is because many of the tools offered by the RFC are overage; most of the tools bought by the rebuilders were built prior to 1936. If any more liberal treatment is to be provided for the rebuilders it probably will be reserved until such time as tools of more recent vintage are offered in larger volume and the need for servicing by the rebuilders becomes more apparent.

As to demands by rebuilders that they be permitted to buy government-owned tools now in Europe and bring them back for rebuilding and sale to domestic industries, SPB officials rule that tools which may become surplus out of the country must not be brought back. There will be plenty of tools for everybody, they believe, without such action, and the reimportation of these tools would add t. marketing difficulties.

SPB officials have not yet seen the advisability of accepting suggestions that surplus machine tools be turned back to their original manufacturers who would act as sales agents for the RFC. Proposals for such an arrangement have envisioned that the manufacturers would be asked to sell in the ratio of, say, one surplus tool to two newly-produced tools—thus preventing sharp drops in employment at plants making machine tools and related equipment.

Recently the SPB adopted a resolution under which it can take appropriate action should its investigation of complaints brought to its attention reveal that sales of government-owned tools in special instances may be counter to the interests of taxpayers or may favor the larger buyers at the expense of buyers in general. Under this resolution it is prepared to direct that no more government-owned machinery can be sold to an individual company when that company is found to have come into possession of more equipment, either through purchase of tools offered as surplus, or through purchase of tools in terminated inventories, than it should reasonably have.

Dissatisfaction with the inventory control system of the Reconstruction Fi Corp. in listing surplus machine and production equipment agai been expressed by Senator Tom S (Dem., Tenn.) in further hearings Senate Small Business Surplus Pr Committee of which he is chairman

During the initial hearings in Senator Stewart requested RFC t pare a central inventory to sho tools held by it in its regional throughout the country. When E. Joyce, assistant director of the Office of Surplus Property, late submitted his list, Senator Stewart acterized it as merely an infor sheet lacking the detail which needs in order to locate a mach given type and size to meet his ments.

Under spirited questioning, Mr. admitted that the list which he produced was not one from w customer could make a direct s but he insisted it was an effective of locating the machine desired customer. For example the list s ted by Mr. Joyce showed that RF 17 types of drilling machines o and that it has a total of 2675 machines of these 17 types in its

"When RFC gets an inquiry for ing machine of a particular ty size," said Mr. Joyce, "it is a simp ter to send a teletypewritten inq

CITE BRITISH VOTE: Sponsors of the full employment bill in testifyi before the Senate Banking and Currency Committee cited labor's swe in the British election as an indication the United States must gu antee employment to prevent serious social upheavals. Here, Se James E. Murray (Dem., Mont.), tells the committee America must p vide a program to insure employment for all willing and able to wo At right is Sen. Joseph C. O'Mahoney (Dem., Wyo.), also a sponsor full employment. NEA photo

ch of the regional offices reporting illing machines in stock. By that eans, we can within a couple of hours cate any machine we have in stock."

To maintain a central, complete inven-y, Mr. Joyce said, it would be neces-y for RFC to enlarge its staff of trained rks and these people are hard to find. hen he referred to the extra expense ch an effort would entail, Senator ewart objected vigorously.

"Why we should balk at spending a w millions to build up an effective sys-m for selling property that cost the xpayers $18 billion is more than I n fathom," he declared.

Opinion of several spokesmen about e value of a central inventory was vided. Charleton MacVeigh, deputy ector of the Army's Readjustment Divi-n, thought a list purporting to be a plete inventory of tools on hand uld be misleading in a number of re-ects. It would necessarily include ny tools sold even while the list was ng assembled. It would have to in-ate which surplus tools, by action of War Production Board, cannot be gen-ly offered because they are in "short pply" — and Mr. MacVeigh point-out that some tools will be removed m the "short supply" category and es added as war needs change. He foresaw some difficulties from the t that a complete list would have to all tools available for sale whether ot they had been declared surplus.

Regulation 6 Criticized

r. MacVeigh brought up a point ch previously has aroused consid-e question; namely, that regulation the Surplus Property Board permits e sale of production equipment to ntractors in possession while the tools are engaged in war production and fore the tools have been declared sur-s by the owning agency and thus e available to buyers in general. This was not debated at length at the rings but undoubtedly will come up later investigation, for there have en at least two objections to regula-6. The first is that it covers the sale quipment prior to its being declared plus, and the other is that the con-r in possession—usually regarded Congress as a "big interest"—is able buy equipment on a favorable basis a time when other potential users—ally placed in the category of "small siness"—are unable to get a chance e.

Stuart Symington, the new chair-of the Surplus Property Board, lined with Senator Stewart in believing ntenance of a complete central in-tory is necessary. "You are not go-to be happy unless you get such nventory, and without such an in-tory the small buyer is definitely dicapped," Mr. Symington told the ator. It should be easy to set up h a list, he said. Every plant has a list of government-owned equipment therein and contractors or government representatives operating those plants can send a copy of the list to Washington where, said Mr. Symington, it could be assembled into useful form by a group of no more than ten people.

Matthew H. Wells, assistant director of the Smaller War Plants Corp. Surplus Property Division, also supported Senator Stewart. "As an old machine tool man," he said, "I feel that there ought to be a complete inventory at a central point. The present list does have some value in that it indicates the regional offices of RFC that may have a machine of desired type and size. But it does not go far enough," said Mr. Wells. "It is not sufficient to list all grinding machines in one group; there are 25 to 30 different types of grinding machines and they should all be shown."

Barnett Watson, of the Smaller War Plants Corp. legal staff, informed the subcommittee that the SWPC about Aug. 15 will canvass some 30,000 small manufacturers throughout the nation to ascertain what machine tools and items of production equipment they need presently, including what they will need during the reconversion period. This canvass, it is hoped, will make it possible to define the "small business" market for surplus government-owned equipment.

E. Richard Bagarozy, president, Pressurelube Inc., New York, testified that his company took a contract from the National Tube Co. on Navy work but, not being able to get two suitable automatic screw machines, was forced to subcontract about 90 per cent of the job—and this entailed some financial loss. Navy and RFC men on whom he called for assistance were unable to locate the machines. Thereupon Scott R. Gray, the subcommittee's counsel, introduced an RFC list of surplus equipment available for sale at a plant operated by the Delco-Remy Division, General Motors Corp. at the time Mr. Bagarozy wanted two screw machines. The latter identified two of the machines on this list as being just what he wanted.

The subcommittee proposes to send out investigators over the next couple of months to study all details of the present setup for disposing of surplus property. After their findings become available Senator Stewart expects to amplify a recently-introduced Senate resolution aimed at improving the present Surplus Property Act.

Patent Ownership Spread Widely Over United States

Ownership of patents is scattered widely over the United States, a survey of patents issued in the second quarter of 1945 indicates.

Announcing results of the survey, R. J. Dearborn, chairman of the patents committeee, National Association of Manufacturers, New York, pointed out that every state was represented in the 6253 U. S. patents issued to Americans between April 3 and June 26.

States receiving most patents were New York, Illinois, New Jersey, Ohio, California, and Michigan, in that order. On a per capita basis the highest ranking states were Delaware, New Jersey, Connecticut, Michigan, and Illinois, in that order.

Bill Proposes Congressional Sanction For All New Government Corporations

A BILL requiring that all corporations established to act as agencies or instruments must be established by an act of Congress or pursuant to such an act has been introduced in the House by the Committee to Investigate Expenditures in the Executive Departments.

Bill further provides that after June 30, 1948, there should be an end to all wholly-owned government corporations created under the laws of any state, territory or possession of the United States unless they obtain congressional authority to incorporate under federal charter.

The bill, H. R. 3660, would effect some reforms, stipulating that a business-type budget for wholly-owned government corporations be incorporated as part of the annual federal budget. It would require for all government-owned corporations a commercial-type audit by the General Accounting Office and a report to Congress. The bill also, with certain exceptions, would provide for overall Treasury control of the depositories, financing and government security transactions of all corporations.

The government has gone into business to an unjustified extent, the committee said in reporting its bill to the House. It said that 101 separate government corporations are engaged in various fields of production, transportation, generation of power, loans, housing, insurance and other lines of business. As of Mar. 31, they had gross assets of $29.6 billion, gross liabilities of $28.4 billion and net worth of $1.2 billion.

Of the gross assets, the major items, after deducting reserves for valuation and estimated losses, were $13.3 billion in loans receivable; $7.8 billion in land, structures and equipment; $2.9 billion in commodities, supplies and materials; $2.1 billion in investments; and $1.6 billion in other receivables. Of the gross liabilities, $22 billion were in bonds, notes and debentures.

Senate Group Criticizes Plans For Transition

Says U. S. unprepared to overcome postwar domestic problems. WPB claims good progress being made

FAILURE of the government to plan properly for reconversion was charged last week by the Senate War Investigating Committee in its fourth annual report. An early end to the Pacific war, it warned, would "find us largely unprepared to overcome domestic problems. . . Government work programs will not have been established. Unemployment on a large scale will ensue."

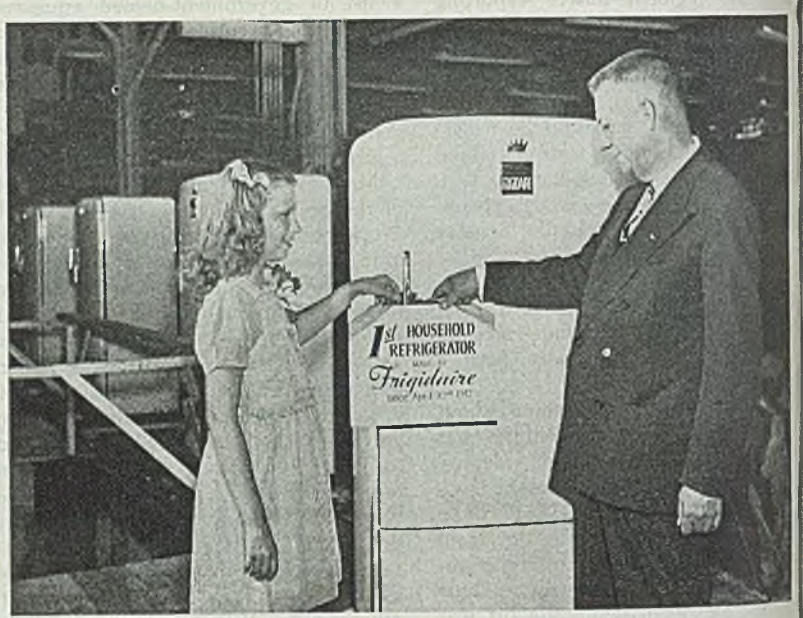
Although the committee concluded that reconversion "has not proceeded as swiftly as it should" since the end of the European war, this view is not held by the War Production Board. This agency said recently that American industry has made "excellent" progress toward reconversion while maintaining the high rate of production of goods required by the armed services.

WPB pointed out in its report that reconversion cannot go faster than resources of materials and manpower are released from war production. Industry has been aided in solving its reconversion problems by WPB's relaxation or cancellation of orders controlling the manufacture and distribution of many civilian products, open-ending the Controlled Materials Plan, and granting assistance to industry in obtaining tools and equipment or for construction necessary to reconversion.

WPB has issued a new regulation, priorities regulation 30, which requires application be made for a new "military" MM rating percentage not later than Aug. 15. New ratings will be based on July shipments. The "rating percentage" will indicate the proportion of their orders for production materials that manufacturers may rate as MM.

Those manufacturers who are most resourceful in seeking out idle and excess stocks, or in substituting materials that are in easy supply, such as aluminum sheet, for those that are in tight supply, such as light gage steel sheet, are the ones who are making the most rapid progress in reconverting to civilian production, WPB said. For instance, substitutions of aluminum corrugated sheet for galvanized steel sheet have been proposed for many types of Army and Navy shelters.

Procedure for getting priorities assistance on equipment needed for initiation, resumption or expansion of civilian production or services has been simplified.



NEW REFRIGERATORS: Frigidaire Division of General Motors Corp. in Dayton, O., produces the first of 50,000 household refrigerators authorized for manufacture. The first box is shown here being christened by Shirley Kreuger, 10-year-old daughter of the plant superintendent, and E. R. Godfrey, general manager. NEA photo

The filing of a single application (WPB form 541-A) to cover any number of items of equipment needed for the same civilian purpose is now permitted under priorities regulation No. 24, as amended.

Applications for equipment for war production or for production or services that are essential to the war effort must be filed under the customary procedures and not under the new civilian-production or services regulation.

Office of Price Administration and Office of Economic Stabilization announced recently a plan that will clear the decks for speedier handling of reconversion pricing problems. The plan sets up a procedure for removal of controls in less important fields, enabling OPA to give more effective attention in the task of setting prices for civilian goods coming back into production.

Price Administrator Chester Bowles is authorized now to suspend price control for specific items, or exempt them from price control entirely under stated conditions. Plans to lift the ceiling on some items, however, does not mean that suspension or termination of controls on major items in the American economy is contemplated, Mr. Bowles said.

Reconverting manufacturers have been given "profit factors" by OPA for use in working out rapid individual adjustments in ceiling prices of civilian products they are once more beginning to produce. Factors have been provided for 15 specified industries and for 7 industry groups, covering all unspecified industries covered by the three reconversion pricing orders issued July 19 (STEEL, July 30, p. 60.).

The profit factors equal one-half of the average percentage margin of profit over total cost for the industry or industry group in the period of 1936-1939. In the case of the small firms, these profit factors are to be used only when they are higher than the firm's own pre-war margin over cost.

By using these factors, in combination with adjustments for increases in materials prices and basic wage rates, individual reconverting firms may obtain under these orders, price relief over the above prices established after industry-wide reviews of existing ceiling prices of reconversion products.

The industries, industry groups, and profit factors in per cent are:

Specified Industries: Aluminum cooking utensils (sheets), 6.2; aluminum cooking utensils (cast), 2.3; bicycles, 3.8; clocks and watches, 5.5; coin-operated machines, 2.4; household sewing machines, 4.1; lighting fixtures, 2.6; metal casket, 1.6; metal office furniture, 5.4; metal toys, 5.1; musical instruments, except pianos and organs, 3.1; office and store machines, 8.9; photographic accessories and equipment, 8.1; radios and phonographs, 3.0; safes and vaults, 3.9; small firearms, 4.7; wood and upholstered furniture, 1.6.

Industry Groups: Beds, mattresses, etc., 3.2; small electrical appliances, 4.; sporting goods, 3.1; miscellaneous non-ferrous metal products, 5.2; other miscellaneous durable products, 3.6; other wood products, 3.6.

Use of the factors is not mandatory in the case of manufacturers who do an annual business not in excess of $200,0

hese smaller manufacturers may take stead their own average profit margin uring the years 1936-1939, and very all manufacturers (under $50,000 a ar) may take their own margin for e first of the years 1939, 1940, and 41 for which they have profit data.

econversion Credit Aids or Small Business Urged

The period of reconversion, at best, ll be a trying one and Congress uld take action to insure that credit ll be available wherever needed, Leo Crowley, in his capacity as chair- an of the Federal Deposit Insurance rp., has advised the House Com- ittee on Small Business.

"However, in our enthusiasm to aid all business we should not make the istake of advocating policies which will courage business firms to assume debts ich they cannot service.

"The best way to aid in the financing small business is to ameliorate cer- in basic economic problems. If small siness is properly protected by the ntitrust laws and by enforcement of r trade practices, if taxation is fair d proper, and if the necessary steps e taken to avoid major depressions, all business will have such good pros- cts that it will have little difficulty being financed."

In some respects, says Mr. Crowley, e small business has exceptional ad- antages for financing itself. Its financ- g on a relatively direct and personal sis avoids most of the high cost and verhead which may be incident to the ancing of large business, he says.

"The primary role of the federal vernment," says Mr. Crowley, "is not rectly in the financing of small business t rather in helping to provide the ndamental conditions for confidence. ne of the chief contributions the gov- rnment can make in this connection is avoid giving advantages to big busi- ss.

"All this does not mean that there ll never be a need for the govern- nt to take positive action. In the pression of the 1930s govern- nt loans to business were most propriate. If depression again comes ss, the Congress should provide for h financing when and if necessity mands . . . . Harm rather than good uld result from extension of govern- nt activity in this field at present. depression does occur and govern- nt support of the financing of busi- s becomes necessary that support uld take the form of direct loans er than government guarantee of ns," declared Mr. Crowley, thus plac- himself squarely on record as opposed e loan insurance program advocated Maury Maverick of the Smaller War ts Corp. Insurance of bank credits uld encourage unsound banking thods, said Mr. Crowley.

PRIORITIES–ALLOCATIONS–PRICES

Summaries of revocations of and amendments to orders and regulations; official interpretations and directives, issued by War Production Board and Office of Price Administration

REVOCATIONS

MOLYBDENUM PRODUCTS: Order M-369, which established allocation control over molybdenum products, has been revoked. (M-369)

TUNGSTEN: Order M-369-a, which established allocation control with exceptions over tungsten and which restricted use of tungsten rod for contacts, has been revoked. (M-369-a)

CMP REGULATIONS

CLASS B PRODUCTS: A manufacturer who wants to produce a class B product under CMP need not file an application on form CMP-4B for an allotment of controlled materials or an authorized production schedule for the product. He may obtain his material without use of ratings or allotments or by extending his customers' ratings to get uncontrolled materials. (CMP-1)

ORDER SCHEDULING: A controlled materials producer who is able to produce and deliver an order in advance of the time permitted by WPB regulations may reschedule for an earlier date, provided he gets agreement from his customer, if it is an authorized controlled material order and the earlier date is within the same quarter for which the order was originally scheduled. (CMP-1)

ALUMINUM: The 60-day restriction on inventories of aluminum has been changed to 90 days for all forms and shapes of the metal, except foil and extrusions. These inventory resrtictions, as well as those contained in PR-1, do not apply to aluminum where the user's total inventory of all shapes and forms of it, except extrusions and foil, in any operating unit, does not exceed 100 000 pounds. A person is permitted to receive in anticipation of starting or resuming civilian production the maximum amount of aluminum, except extrusions and foil, he would need during the first 90 days of such production. (CMP-2)

CONTRACTORS' INVENTORIES: Prime contractors and subcontractors are now permitted to continue to accept "special" items when a war contract is severely cut back, but not terminated. If the customer is unable to reschedule deliveries so as to bring his inventory down to the limits required by CMP regulation No. 2 and priorities regulation No. 1 within six months, he may continue to accept delivery of the special items, provided deliveries are rescheduled at the lowest practicable rate and have been approved in writing to the customer by the procuring agency. (CMP-2, PR-1)

COPPER WIRE: Amount of copper wire that repairmen may buy in a quarter without WPB authorization has been increased from $75 worth, or one-tenth of what they used in making repairs in the year 1941 (whichever is greater), to $150 worth, or one-eighth of 1941 repair usage. (CMP-9A)

L ORDERS

ELECTRONIC EQUIPMENT: Restrictions on the production and sale of parts required for the manufacture and repair of electronic equipment have been removed. Restrictions were also removed from the sale of electronic equipment when produced under WPB authorization.

Procedures for applying for permission to make electronic equipment and for requesting permission for a producer to use idle and excess inventories that he may have on hand for civilan production have been simplified by WPB. (L-265)

MOTORCYCLES: Motorcycles with a piston displacement of less than 50 inches have been removed from distribution control. (L-331)

M ORDERS

IRON AND STEEL: Processors must file a report of estimated monthly production of tungsten and molybdenum wire with the Ferroalloys Branch, Steel Division, WPB. (M-21)

PRIORITIES REGULATIONS

ORDER CUTBACKS: Rules to be followed by manufacturers who received priorities assistance or an authorization for machine tools or other facilities for a military contract that has been canceled or cut back are set forth in direction 9 to priorities regulation 1. Procedures are established for machine tools or equipment orders that have not been placed, and also where orders already have been placed. (PR-1)

CIVILIAN PRODUCTION: Procedure for obtaining priorities assistance on equipment needed for the initiation, resumption or expansion of civilian production or services has been simplified. Filing of a single application to cover any number of items of equipment needed for the same civilian purpose is now permitted. The only exceptions are a few listed types of equipment such as some chemical processing or laboratory equipment and other items, for which the appropriate WPB form must also be filed. Applications for priorities assistance on equipment for war production or for production or services that are essential to the war effort must be filed under the customary procedures and not under the new civilian-production or services regulations. (PR-24)

PRICE REGULATIONS

IRON AND STEEL: Base price for cold-finished carbon bars has been increased $2 a net ton. Extras have been decreased $2 a net ton for physical inspection and testing and $6 a net ton for strain and stress relieving. Producers must file quarterly financial and production reports. (No. 6)

COPPER ALLOY SCRAP: Sellers of copper alloy scrap may add a special-use premium of 1.25 cents a pound to base maximum prices when the scrap is prepared to meet the specifications of certain qualified consumers and is sold suitable for their direct use without further preparation. (No. 20)

STEEL WAREHOUSES: Distributors may increase their maximum prices for cold-finished carbon steel bars $2 a net ton. (No. 49)

FERROSILICON: Sellers of silicon metal or ferrosilicon of grades different from those for which specific maximum prices are provided may submit proposed prices for the items to OPA for approval. (No. 405)

AIRCRAFT: Price control of airplanes and most airplane parts was suspended, effective July 18. The exceptions that will remain under price control include: Die castings nonferrous castings, and iron and steel castings. (GMPR)

Appointments-Resignations

M. J. Madigan, assistant to Robert P. Patterson, Under Secretary of War, has been appointed a member of the Aircraft Production Board, WPB. He replaces Lt. Gen. William S. Knudsen who has returned to civilian life.

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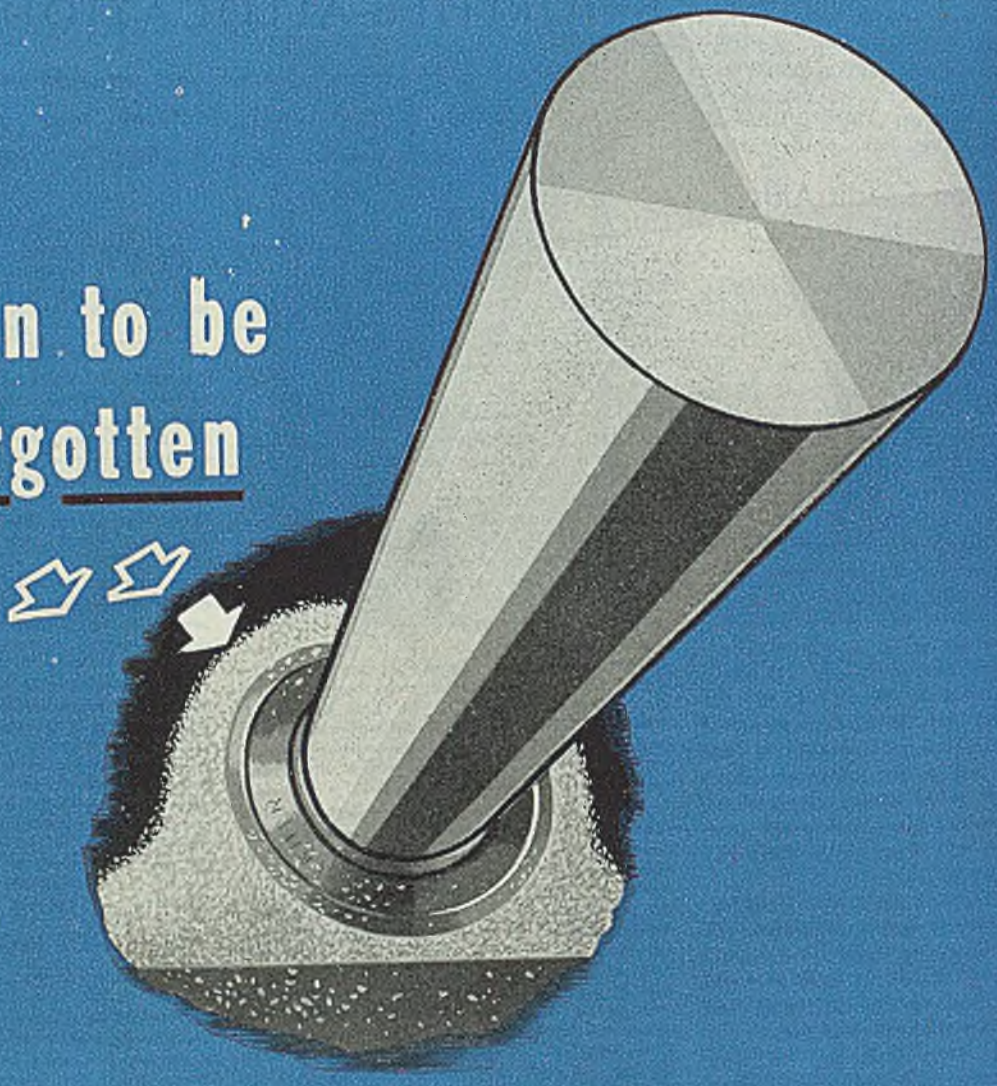
Lee Moran has resigned as head of the Automotive Division, Office of Surplus Property, Department of Commerce.

Born to be forgotten



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MOST COMPLETE LINE IN AMERICA

FAFNIR BALL BEARINGS

A. H. ALLEN Detroit Editor, STEEL

MIRRORS of MOTORDOM

Organization of Kaiser-Graham Corp. marks interesting chapter in automotive history. Name of Graham likely to disappear as hundreds of others have done. Los Angeles considered probable site for plant to manufacture new Kaiser cars

ORGANIZATION of the Kaiser-Frazer rp., with announced capitalization of million and its intent to embark on production and sale of two new senger cars, the Kaiser and the Fra- possibly by next spring, is the latest pter in the career of Joseph Washing- Frazer.

ssociated with Walter P. Chrysler the early days of the development the Maxwell, he was later vice presi- t in charge of sales for the Chrysler ision of the Chrysler Corp. for 15 rs, leaving his post there in 1939 to over the presidency of Willys- eland. He remained there four years, ding up around him a production administrative organization, most of ch he took along with him when he rchased the Warren City Mfg. Co., rren, O. At that time this company little known, but some Navy con- ts and a new building and equip- t, paid for in part by the Navy DPC, set things humming there.

ext came the deal whereby the 53- old Frazer acquired control of the am-Paige operations in Detroit, ging in the Warren company as a sidiary. He was named chairman the board at no salary, but acquired t 150,000 shares of Graham stock, priced at around $3.50 or less per . Soon thereafter Graham stock had ed to $7 per share. Thus, on paper least, Frazer had assets of better than illion, on an original investment re- ed to be meager.

Other Backers Reported

ders say there are other interests k of Mr. Frazer, including the Atlas , an eastern investment trust whose uence has been discerned in a score ore of industrial concerns through- the country, including steel and motive. A week ago Floyd Odlum, ident of Atlas Corp., denied Atlas interested in the new Kaiser-Frazer p.

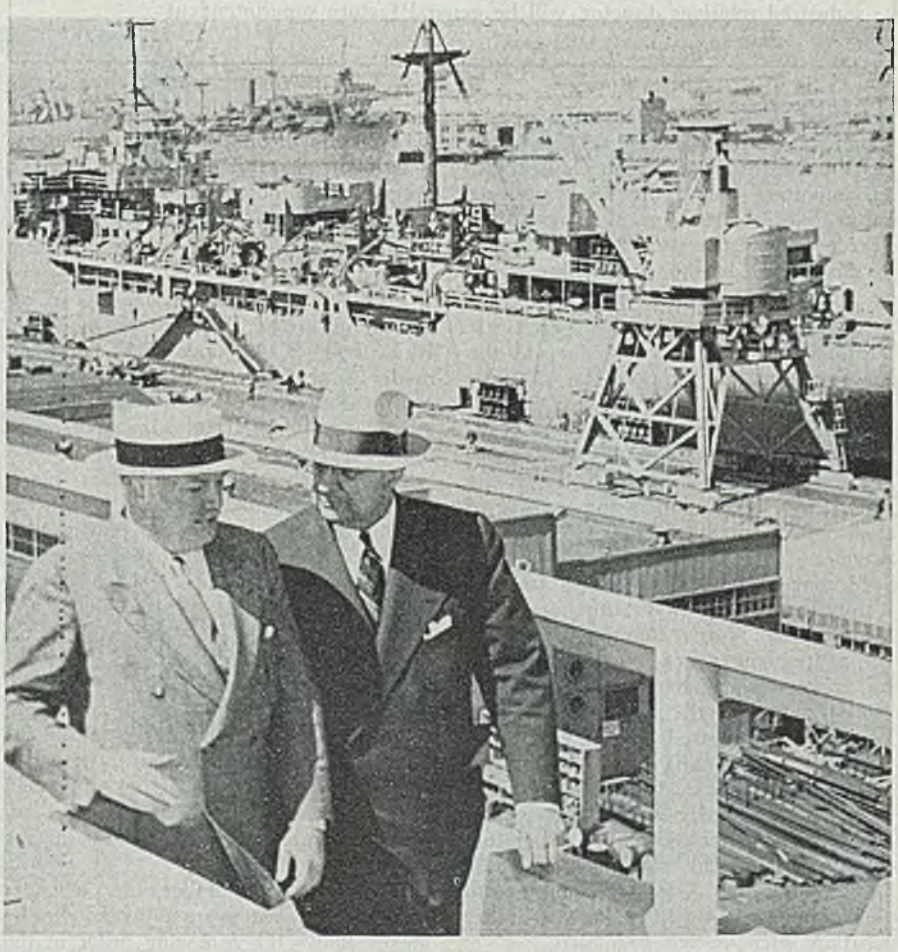
nouncement of the new company a carefully timed affair. Newsmen not informed of the meeting at h the announcement was made un- after the stock market had closed the day. Thus, at 3 p.m. they were phoned and asked to be present at eeting at 5 p.m. when an "im- t disclosure" would be made. gathered in a small suite at the -Cadillac to be greeted by Mr. r and his public relations men. the announcement of the Kaiser- r Corp. was made, followed by Frazer getting on the long-distance telephone with Mr. Kaiser in San Francisco and saying, "Yes, Henry, the press conference is underway and they all seem quite impressed."

As everyone knew would happen, furious trading in Graham common stock developed on the day following the announcement, transactions totaling over 205,000 shares and the price going from 7⅞ to 9. It kept moving at this pace as idle money poured into the "low-priced motors," as Graham is called in market parlance. Last Tuesday, it touched $12 per share, or an increase of 52 per cent in 3½ days of trading.

Realignment of the Graham board sees the removal of R. L. Hodgson as president to make way for Mr. Frazer who now apparently is to be a salaried official. Mr. Hodgson is a former official of the RFC who went into Graham years ago after the RFC granted a large loan to the company. W. L. Eaton, for many years a Graham vice president and director, has resigned, and two new vice presidents, Vern Drum and W. A. MacDonald, both former associates of Mr. Frazer in Willys, have been named.

So the name Graham on passenger cars now appears relegated to the graveyard of hundreds of other makes which have come and gone over the years. Its successor is the Frazer, the name which also will be given to the tractor the company hopes to get into production some day. W. B. Stout, research expert for Consolidated Vultee Aircraft, continues to be a consultant for Mr. Frazer, some observers guessing this arrangement may have been sanctioned by Convair and its associates, the Aviation Corp., in exchange for Mr. Frazer agreeing to use a Lycoming engine in his car.

As for the West Coast arm of this newest automotive combine, many are convinced Mr. Kaiser has the backing of powerful financial interests including the Gianninis, Felix Kahn and a host



Contemplating the use of expanded western industrial facilities for the future manufacture of passenger cars are Henry J. Kaiser, right, and Joseph W. Frazer on catwalk of warehouse overlooking Richmond Shipyard No. 2 at Richmond, Calif. Formation of the new Kaiser-Frazer Corp. was being announced as this picture was taken. NEA photo

F. R. HOOK

JAMES L. CONLON

Mr. Conlon has been appointed resident manager of the new General Motors plant to be operated at Columbus, O., by Ternstedt Mfg. Division, a unit of Fisher Body. A veteran of 20 years with Ternstedt, he has been manager of the Detroit plant since last February. Mr. Hook has been named resident manager of the Fisher Body stamping plant to be built at Hamilton, O. Works manager at the Columbus plant will be Paul Jones, executive assistant to the general plant superintendent of Ternstedt, and John Broden, now industrial relations director, will be general factory superintendent.

of others. His name by virtue of his glamorized ship production achievements, has a powerful appeal to the lay public, an important factor in merchandising automobiles. His association with Mr. Frazer may prove to be the solution to merchandising the automobile which he intends to build on the Coast.

Speculation concerning the West Coast location of a plant to manufacture the Kaiser automobile indicates Los Angeles as the probable site.

An important consideration is availability of raw material. If, as is probable, steel sheets are supplied by the Kaiser mill at Fontana, the source of steel will be only 50 miles from Los Angeles.

Moreover, bodies produced for the test models of the new auto have been stamped by Norris Stamping & Mfg. Co. at its plant in Los Angeles. Although no announcement has been made that Norris will be the subcontractor for bodies, it is believed that it likely will be. Norris Stamping which has grown into one of the West Coast's biggest war plants, undoubtedly will have surplus plant space after the war. Therefore it appears logical that Norris would utilize its Los Angeles plant rather than build or buy a plant at another location, such as San Francisco.

A third factor in favor of Los Angeles is the aircrafts parts industry, which could probably be converted readily to making automobile components. When plane manufacture slumps from its wartime rate, large numbers of the plane parts subcontractors will face the alternative of finding new products to manufacture or of going out of business. It is likely therefore that they will make every effort to obtain the Kaiser business.

Another reason for a Los Angeles location is the presence there of tire making facilities.

First summary of passenger car registrations in the U. S. to be made by R. L. Polk & Co. since 1941 has been made as of July 1, 1944, and it indicates car mortality has not been nearly as severe as popularly supposed. The figure of 5000 per day has been used widely as the number of cars being scrapped, but Polk's survey shows cars leaving the road at a rate of 3365 a day, and not all of these are being scrapped, since thousands of cars, particularly in the East, are being stored until the gasoline and tire situation eases, thus not showing on registrations.

Total registrations on July 1, 1944, were 24,114,922 units, compared with 27,700,011 three years previous. At this rate of decline, registrations on July 1 of this year would have declined to about 22,919,892. Chances are, however, the rate of decline slows as the overall total shrinks.

Of the total number of passenger cars licensed last year, a breakdown by makes shows the following order in the first ten: Chevrolet 6,079,937, Ford 5,536,418, Plymouth 3,041,222, Buick 1,542,725, Dodge 1,479,421, Pontiac 1,358,833, Oldsmobile 1,202,736, Chrysler 584,963, Studebaker 568,347 and Packard 435,664. Order is unchanged from 1941.

Widespread population shifts caus by wartime industrial movement reflected in registration figures. some counties where production been concentrated, registrations have creased more than 50 per cent 1941 levels. Three states, Calif Oregon and Utah, showed increase registrations, 1944 over 1941.

Henry Ford celebrated his eigh second birthday last Monday and iss a prepared statement from his home Dearborn, the first word from the eran manufacturer in many weeks. said, in part, "The nation and the w are on the threshold of a prosperity standard of living that never b was considered possible. There problems — human, economic and litical — that must be solved. Emp ment hinges on the right of private dustry to go forward unhampered. Th must be more and more industry, and more competition for greater e lence in quality.

"Labor should be educated s may know and understand the prob of industry and the full benefits o operation. Industry wants to he that education, given the chance. M of the barriers between manage and labor will dissolve when the c is given.

"We owe the men and women fought and are fighting in this w debt. The Ford Motor Co. will forget them. Nor will it forget who were too young to fight, but were forced to live through the h of war. The veterans of this war these young men and women are ones who will prevent its repetition."

New Valve Alloy Developed

New hard-facing alloy for automo engine valves has been developed metallurgists of the Wilcox-Rich D sion of Eaton Mfg. Co., called Eato It contains 40 per cent nickel, 30 c mium, 15 tungsten, 10 cobalt, 2.25 c and the balance iron. The alloy is signed to show improved wear and rosion resistance over stellite-type terial, particularly when subject to corrosive attack of leaded fuels at temperatures. It is applied to valves conventional puddling methods, in ness of about 3/64-inch.

Coreroom operations at the gray iron foundry will start Aug. 6 the foundry itself will resume Aug after a brief shutdown for renova and installation of new equipment duction of the Hercules engine in process for the past several m has been completed.

OPA-approved price on the W peacetime jeep has been announced $1090, f.o.b. Toledo, exclusive o and any extras, such as top, power off, accessories, etc. This would app to make the delivered price in farmer's barn, with only basic access something like $1500.

LOW COST Rust Prevention!

USE HARPER NON-FERROUS AND STAINLESS FASTENINGS

Rust is the Great Destroyer. Every year it causes damage of "war debt" proportions.

Fortunately, the cost of preventing rust and corrosion through the use of Harper Everlasting Fastenings is low. Of course, the first cost of a bronze bolt or a stainless screw is more than a comparable fastening made of common steel. Yet the difference in price is small, particularly when considered in relation to the total cost of a machine, instrument or other fastened assembly. Everlasting fastenings add longer service life to your product...and the ability to perform under tough conditions. Such qualities provide a big advantage over competition.

4360 ITEMS IN STOCK

Harper is known as "Headquarters for Non-Ferrous and Stainless Fastenings" . . . carries large and complete stocks of 4360 different items and is continually adding others . . . maintains large stocks of metals in bars, rods, wire, sheet and other basic forms from which special fastenings can be quickly made. Write for 1945 Catalog.

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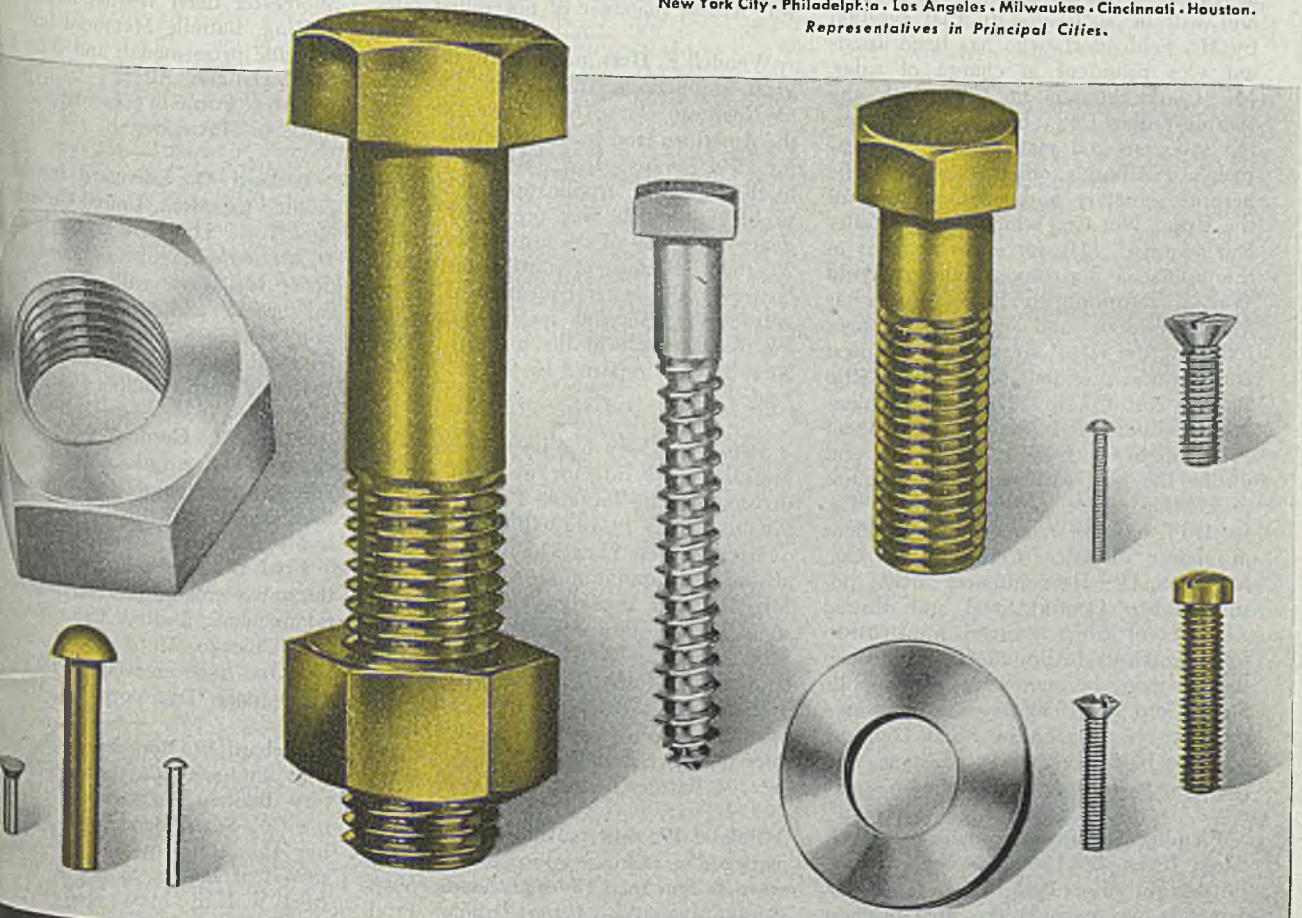

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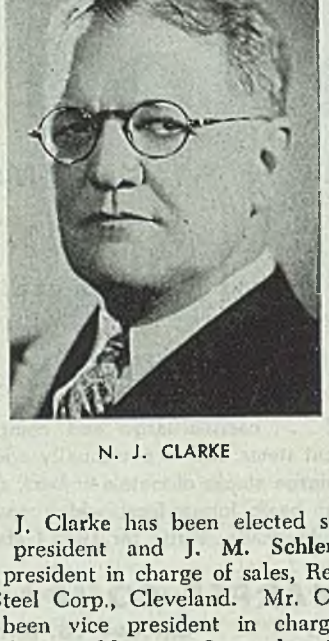
EVERLASTING FASTENINGS

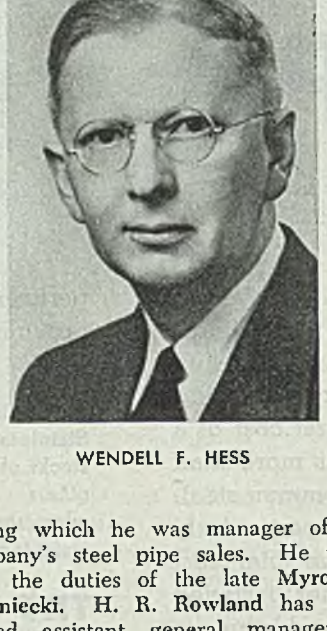
ARMY E NAVY

BRASS • BRONZES • COPPER • MONEL • STAINLESS

MEN of INDUSTRY



N. J. CLARKE



WENDELL F. HESS

RICHARD O. LOENGARD

N. J. Clarke has been elected senior vice president and **J. M. Schlendorf** vice president in charge of sales, Republic Steel Corp., Cleveland. Mr. Clarke has been vice president in charge of sales for Republic since September, 1930, shortly after the corporation was formed, and will be succeeded in that position by Mr. Schlendorf, who has been assistant vice president in charge of sales. Mr. Clarke started in 1897 with the Bourne-Fuller Co., successively becoming salesman and manager of the company's Pittsburgh office. In 1912 he became secretary and sales manager of the Upson Nut Co., which Bourne-Fuller had acquired. He served as a major in the ordnance department during World War I, returning to Bourne-Fuller as vice president and general manager following the war. Mr. Clarke organized and became president of the Lake Erie Bolt & Nut Co. in 1919. Mr. Schlendorf was associated with American Sheet & Tin Plate Co. from 1905 to 1915, and during the next two years was assistant purchasing agent, Willys-Overland Co. In 1917 he was named vice president in charge of sales, Central Steel Co., Massillon, O. He continued in that position when Central Steel and United Alloy Steel Corp. merged in 1926 to form the Central Alloy Steel Corp. When that company became a part of Republic Steel Corp. in 1930 he was appointed manager of sales, Alloy Steel Division, and in 1936 was made assistant vice president in charge of sales.

—o—

Fleming E. Jamieson, manager of orders, Jones & Laughlin Steel Corp., Pittsburgh, since 1913, has retired. Mr. Jamieson has been in the steel business 53 years. He joined Jones & Laughlin in 1912 and was appointed manager of orders in 1913.

—o—

Robert H. Gardner has been appointed general manager of sales, A. M. Byers Co., Pittsburgh. Mr. Gardner has been manager of the company's Washington office since 1933 except for four years during which he was manager of the company's steel pipe sales. He takes over the duties of the late **Myron J. Czarniecki. H. R. Rowland** has been named assistant general manager of sales. He has been a member of the sales department since 1915 and in 1944 was named manager of hot rolled sales.

—o—

Wendell F. Hess, professor of metallurgical engineering, Rensselaer Polytechnic Institute, Troy, N. Y., was awarded the American Iron & Steel Institute medal for 1944 for his paper, "Recent Progress in the Scientific Application of Welding to Steel," which was presented at the general meeting of the institute held May 25, 1944. Because of wartime restrictions on travel, the general meeting of the institute was canceled for 1945 and the award was made at the institute offices, New York, as reported by STEEL, July 30 issue.

—o—

John C. Sykora has been elected vice president and director of sales for all divisions of the Portable Products Corp., Pittsburgh. Mr. Sykora will have his headquarters in New York. The five units comprising the corporation are C. J. Tagliabue Mfg. Division, Brooklyn; Coldwell Lawnmower and Philadelphia Lawnmower Mfg. Divisions, Newburgh, N. Y.; Paul & Beekman Mfg. Division, Pittsburgh; Strauss Mfg. Division, Pittsburgh. Mr. Sykora formerly was vice president and sales manager, Industrial Division, Gould Storage Battery Corp., Depew, N. Y.

—o—

Roland W. Burt, until recently eastern manager of railroad sales, Joseph T. Ryerson & Son Inc., Chicago, has been appointed manager of the Tubular Products Division. Mr. Burt became associated with the company in 1923 and has served in various sales capacities.

—o—

American Society of Mechanical Engineers has announced its annual awards will be made to the following: For distinguished service in engineering and science, **William Frederick Durand,** chairman, Division of Engineering Industry, National Research Council; Holley medal to **Dr. Sanford Moss,** [illegible] eral Electric Co. for his pioneer work turbo-superchargers; **Dr. Joseph Juran,** assistant to the administrator, [illegible] eign Economic Administration, Worcester Reed Warner medal; [illegible] J. King, Battelle Memorial Institute, Melville prize medal; and **Bruce E. Mar,** Douglas Aircraft Co., the [illegible] award. Formal presentations will be made in November.

—o—

Richard O. Loengard has been [illegible] pointed president, United Chromium, [illegible] New York; **Theodore G. Coyle** and **[illegible] D. McLeese** have been named vice presidents. Mr. Coyle will continue as technical director and Mr. McLeese as [illegible] sales manager. **Kevie W. Schwartz** resigned as vice president but he will [illegible] available to the company as a consultant.

—o—

Frank H. Gordon, vice president [illegible] charge of sales, Lukens Steel Co., Coatesville, Pa., has completed 50 years of continuous service with the company.

—o—

Fred W. Eiselstein has been named [illegible] the newly created position of general [illegible] fic manager, United States Steel Supply Co., Chicago. Until recently, Mr. Eiselstein has been associated with the Office of Defense Transportation, Washington.

—o—

Richard W. Berg has been named [illegible] trict engineer for the Pittsburgh [illegible] tory, Bantam Bearings Division, Torrington Co., South Bend, Ind. Prior to joining the company in 1944, Mr. [illegible] served as melter of electric arc furnace steels with the Mesta Machine Co., Pittsburgh.

—o—

C. W. Guyatt, formerly chief industrial engineer, American Steel & Wire Co., Cleveland, has been appointed assistant to **C. D. King,** chairman of operating committees, United States Steel Corp. of Delaware, Pittsburgh. Mr. Guyatt joined the American Steel & Wire Co. in [illegible]

WILLIAM W. MALONEY

RAY E. VALENTINE

ROBERT W. MORGAN

ıdustrial engineer at Worcester, Mass., d after several promotions was made ef industrial engineer of the company 1942. He will assist Mr. King in the tablishment of production standards all U. S. Steel subsidiary manufacring companies. **Donald G. Dalton** s been appointed assistant general pat attorney for the patent bureau, Unit States Steel Corp. of Delaware. Mr. lton entered the patent department of steel corporation in 1939.

—o—

William W. Maloney, who has been s manager, American Foundryn's Association, was elected secretary eeding **Robert E. Kennedy** who has n named secretary emeritus. Mr. oney will also serve as chief administive officer of the association. **Norman Hindle** was re-elected director of the nical development program, C. E. was re-elected treasurer, and Miss rie **Reining** was re-elected assistant urer.

—o—

Carl L. Liebau, for the past 11 years e president in charge of sales, Federal alleable Co., West Allis, Wis., is taking r the duties of **W. J. MacNeill** presint and general manager, who has red. Mr. Liebau assumes responsility of the management as vice presi.

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R. A. Armstrong, for several years eral sales manager, Michigan Seamless e Co., South Lyon, Mich., has been cted vice president in charge of sales.

—o—

J. Mergenhagen recently joined the sburgh sales organization, Heppen Co., Pittsburgh. For the past eight s, Mr. Mergenhagen has been district s manager in Erie, Pa., for Braceller-Hundley Inc., Buffalo.

—o—

Gilbert Soler, superintendent of the ality control departments, Steel & be Division, Timken Roller Bearing , Canton, O., has been named assist general superintendent of the division. Starting with the company in 1931, he has served as a refractories engineer, manager of research, and prior to becoming superintendent of quality, was manager of research and mill metallurgy.

—o—

Ray E. Valentine has been appointed St. Louis agent, National Malleable & Steel Castings Co., Cleveland. Mr. Valentine, who has been with the company since 1912, has been on loan to the War Production Board, Washington, since 1943 as chief of the Malleable Iron Section.

—o—

Don Poor has been appointed advertising manager of the Ceco Steel Products Corp., Omaha, Nebr., and he will have headquarters in the company's Manufacturing Division, Chicago. For the past five years, Mr. Poor has been assistant advertising and sales promotion manager, Lyon Metal Products Inc., Aurora and Chicago Heights, Ill.

—o—

Rhoades V. Newbell has been appointed manager of the Advertising and Sales Promotion Division, Deepfreeze Division of the Motor Products Corp. at North Chicago, Ill. He formerly directed advertising for the Magnavox Co., Ft. Wayne, Ind.

—o—

Leonard Happ, who has been with the T. E. Conklin Brass & Copper Co. Inc., New York, for 34 years, has been elected assistant secretary and general manager. **William W. Doxey** was appointed assistant general manager.

—o—

B. C. Cubbage has been named eastern sales manager, Construction Sales Co. Inc., New York, and he will have his offices in Albany, N. Y.

—o—

Frederick F. Robinson, president, National Aviation Corp., New York, has been elected a director of Bell Aircraft Corp., Buffalo.

—o—

John A. Coe Sr., has resigned as chairman, American Brass Co., Waterbury, Conn., and is succeeded by **Clark S. Judd,** formerly president. **Arthur H. Quigley,** formerly executive vice president, has been elected president. **John A. Coe Jr.,** formerly vice president in charge of sales succeeds Mr. Quigley as executive vice president.

—o—

Robert W. Morgan recently was appointed chief engineer, Fedders Mfg. Co. Inc., Buffalo. Mr. Morgan will direct all the company's engineering activities.

—o—

E. W. Ferry, president, E. W. Ferry Screw Products Inc., Cleveland, was elected president of the Cleveland Athletic Club at its annual meeting. **Frank A. Michell,** SAE Steels Inc., was elected vice president.

—o—

V. S. Herrington, San Francisco, has been appointed district manager for the Transportation Division, Apparatus Department, General Electric Co.

—o—

Charles H. Hirst has been named sales manager for mining equipment and machinery, Joshua Hendy Iron Works, Sunnyvale, Calif. Mr. Hirst formerly was supervisor in the Ordnance Division.

—o—

W. S. Dawson, manager of the Wellington, O., plant, Cleveland Steel Products Corp., has been elected vice president, Romec Pump Co., Elyria, O. **V. J. Peterson,** tool room foreman, succeeds Mr. Dawson as manager.

—o—

E. A. France, son of Adam W. France, founder of the France Packing Co., Philadelphia, has been elected president and general manager. **J. C. Allen** is treasurer.

—o—

Paul C. Jones has been named field technical manager, B. F. Goodrich Chemical Co., Cleveland. Mr. Jones has been associated with the company since 1927, and has been technical representative on chemical sales.

—o—

James F. Pedder, formerly advertising manager, Frigidaire Division, General

JOHN D. TULLY

Manager of sales, rails and accessories, Bethlehem Steel Co., Bethlehem, Pa., as noted in STEEL, July 16, p. 102

WILLIAM E. BREWSTER

General superintendent, Wisconsin Steel Works Division, International Harvester Co., Chicago, STEEL, July 23, p. 98

W. H. WILLIAMS

Who has been elected president, Co Controller Co., Cleveland, as noted STEEL, July 30, p. 66

Motors Corp., is joining the newly created employee co-operation staff of the corporation. He will be director of employee information and will have his headquarters in Detroit. Mr. Pedder is succeeded as advertising manager of Frigidaire by **F. H. Peters**, manager of range and water heater sales.

—o—

S. H. Standish, general manager of the G.H.R. Foundry Division, Dayton Malleable Iron Co., Dayton, O., has been named vice president in charge of engineering. **W. J. MacNeill**, formerly president, Federal Malleable Co., West Allis, Wis., succeeds Mr. Standish as general manager of the G. H. R. Foundry Division.

—o—

L. J. Edwards has been named field manager, General Alloys Co., Boston. Mr. Edwards will supervise the company's field engineering and sales activities. S... ceeding Mr. Edwards as New Engl... district manager is **B. W. Bittner** who f... merly was assistant manager of the ... gineering department.

—o—

Leon R. Baker, European manag... Lempco Products Inc., Bedford, O., ... cently returned to the United States ... a month to renew personal contacts ... manufactures.

OBITUARIES . . .

Philip B. Gale, 71, chairman, Standard Screw Co., New York, and its subsidiaries, died at his home in Bloomfield, Conn. He became first vice president of the company in 1917, later becoming president and he was elected chairman of the board in 1930.

—o—

William H. Bryant, 54, Chicago sales manager, Joseph T. Ryerson & Son Inc., Chicago, died July 23 near Iron Mountain, Mich. Mr. Bryant had been associated with the company since 1906.

—o—

Boyd E. Keifer, 51, Cincinnati, division manager for the Timken Roller Bearing Co., Canton, O., died July 25 in Kalkaska, Mich. Mr. Keifer had been division manager for the Timken company in the Cincinnati territory for the past 18 years.

—o—

Daniel Gartling, 96, co-founder and owner, California Well Tool & Machine Works, Los Angeles, died at his home July 20.

—o—

Jacob Edge, 59, first vice president and sales manager, Downingtown Mfg. Co., Downingtown, Pa., died July 24.

—o—

John T. Booth, 67, a veteran of nearly 50 years' service with the National Malleable & Steel Castings Co., Cleveland, died at his home in that city July 29. Mr. Booth first became associated with the company in 1897, and had been a department superintendent at the Cleveland plant for 18 years.

—o—

Charles E. Rapp, 62, assistant to the vice president, Westinghouse Electric Corp. in Jersey City, N. J., died July 27.

—o—

George J. Meyer, 74, head of the George J. Meyer Mfg. Co., Cudahy, Wis., died at his home July 30.

—o—

Neil I. McArthur, 55, vice president of Great Lakes Foundry Sand Co., Detroit, died in Charlevoix, Mich., July 24.

—o—

Whitford C. Gillies, vice president, Construction Sales Co. Inc., New York, died July 28 in Albany, N. Y.

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Robert E. Hunter, 51, president, Hunter Construction Co., Youngstown, died recently in that city. He became president of the company in 1927.

—o—

Horace D. Campbell, 75, president and general manager, Campbell Heating Co., Des Moines, Iowa, died in that city recently.

—o—

Charles Kendall Foster, 77, a director of the American Radiator & Standard Sanitary Corp., Chicago, with which he had been associated for 53 years, died July 28 in New York. He joined ... American Radiator Co. in 1892 as ... assistant secretary and retired from ... tive participation in the organizatio... 1939 as executive vice president. ... also was a director of the American S... Foundries, Chicago.

—o—

Frederick Fisher, 68, president, R... Ellis Engineering Co., Chicago, died ... 30 in that city. He had been associ... with the company since 1916 and ... been active in the machine and tool ... dustry more than 30 years. Mr. Fis... was a member of the machine tool ... of the Chicago Ordnance District.

—o—

Jack H. Wilson, 49, for the past ... years sales engineer in the Cinci... office, A. Finkl & Sons Co., Chi... died July 25 in Cincinnati as result ... an automobile accident. For the ... six years, Mr. Wilson was also the ... resentative in the Cincinnati district ... Acme Machinery Division, Hill A... Co., Cleveland.

—o—

John W. Westcott, 73, secretary ... treasurer, Wagner Electric Corp., ... Louis, died July 20. He had been ass... ciated with the Wagner company ... 47 years and was elected to the boa... of directors in 1927.

—o—

John J. Hoppes, 87, president of ... Hoppes Mfg. Co., Springfield, O., ... recently in that city.

Krug Warns Coast Industrialists Not To Neglect Reconversion Plans

WPB chairman says area is entering crucial period in which full pressure of war production will be felt. Sees great industrial future for district but admonishes business leaders they will have to work out their own destiny

THE ENTIRE West Coast is entering crucial period in which the full pres- of Pacific war demands will be felt. the same time, the West must not ject plans for reconversion so as to more than the necessary postwar cations.

his was the double-barreled admoni- given recently in Los Angeles by J. Krug, chairman, War Production ard, as he neared the end of a western of industrial centers.

affirming previously stated policy reconversion, Mr. Krug put the em- on individual business initiative. seeing great industrial growth for est, he declared that people of the will have to work out their own iny and not depend upon Washington determinds" to do it for them.

Krug predicted booming business after the war for the Los Angeles as well as other centers where re- and overhauling of the gigantic erican fleet will be done. He also unprecedented prosperity for the trades which will maintain the machines to be built for homes and es. He voiced an opinion that of the persons who have settled in California will find jobs in its ing civilian industries.

Krug emphasized that present shortages in certain industrial including Los Angeles, which shown meteoric growths since the began, will not show vast improve- until chronic housing shortages minated so as to catch up with the populations.

Employment at 3-Year Low

tory employment in the Los Angeles trial area fell to 325,000 workers e, the lowest level in three years, ding to a report from the California rtment of Industrial Relations. ak of payrolls was in August, 1943, 475,000 were employed in all in- es in the area.

e number in aircraft in Los Angeles w 100,600; in shipyards, 48,100. In r, employment drops have been arable.

ures for the entire state of California the number of workers in iron and plants at 47,300 at the end of June. e are 42,300 men and women now g in the machinery industry.

e or lease of large government in- ial properties on a basis of sub- division or space shared by many businesses was discussed last week in Los Angeles at a meeting at which Parley P. Eccles, representative of the Senate Surplus Property Subcommittee, conferred with Southern California industrialists.

The conference was called by the Los Angeles Chamber of Commerce Industrial Department to suggest possibilities by which individual firms might purchase space in sections of plants too large for exclusive use by one company.

Workers Leaving Essential Jobs in Pacific Northwest

Figures released by A. F. Hardy, Washington state manpower director, reveal that 4000 war workers a month are leaving essential jobs in the Puget Sound area and returning to their homes in the East.

"This is not a net loss," he stated, "because we may have about 3000 new workers come into the area monthly. But it is like taking one step forward and falling back two."

Industrial Expansion Continues on Coast

PLANS for industrial expansion in northern California announced during the first half of this year total nearly $35 million, the San Francisco Chamber of Commerce reports.

According to the compilation, 176 new factories will be built at a cost of $26,452,400 and 153 plants will be expanded at a cost of $8,446,500. Nearly all of the projects are in the San Francisco Bay area. Most of them will not be undertaken until materials and manpower are more plentiful.

During June $505,000 was invested in new factories in Los Angeles county and 210 new jobs created thereby. In the same month, 26 existing plants were expanded at an additional investment of $1,538,000, creating 461 new industrial jobs, according to the industrial department, Los Angeles Chamber of Commerce.

Total investments in 1945 so far have been $20,500,000 in the county, which is approximately 5 per cent less than investment in like undertakings during the first six months in 1944.

New industries in the Los Angeles area include:

Ferro Enamel Corp., Cleveland, will build a branch plant at 5901 S. Riverside Drive, Los Angeles, for manufacture of porcelain enamel frit and synthetic enamel industrial paints. John A. Rumer will be Los Angeles manager. Cap-Tin Development Corp. of California, 635-645 S. San Pedro St., has begun manufacture of zippers of all types. Robert Rosenbloom is secretary-treasurer and manager. Best Screw Products Co., 11354 S. Atlantic Blvd., Lynwood, making screw machine products. Herbert W. Dane, manager.

Felbro Wire Products Co., 3013 S. San Pedro St., manufacturing lamp shades and other wire products. Kurtis Kraft, 1107 E. Colorado Blvd., Glendale, producing jigs, fixtures and aircraft parts. Postwar plans include manufacture of racing cars. Lacal, 8383 Sunset Blvd., patterns and molds, tools and machine designers; W. E. Abbott is owner.

Expansions include:

Essick Mfg. Co., 1950 Santa Fe Ave., has acquired 22,000 sq. ft. of land at 2416 E. 14th St., with 20,000 sq. ft. of floor space. Another building is planned with 12,000 sq. ft. At 2010 Santa Fe Ave., 4000 sq. ft. are being added. Company makes aircooling systems, hoists, contractors' pumps, concrete mixers, road rollers and spraying

Kinney Industries, 275 N. Avenue 19, plan 25,000 sq. ft. building on S. Flower St. A. T. Case Co., 6100 Avalon Blvd. is building 16,000 sq. ft. plant at 1532 California Ave., Monrovia, and will move there about Oct. 30. Company makes food processing units and surgical sterilizers. Coast Coil Spring Co., 11703 S. Main St., is erecting 15,000 sq. ft. building at 123 E. 58th St. Kruse Metals Mfg. Co., 1359 Channing St., constructing 14,000 sq. ft. addition at 1355 Channing St.

Ferris Screw Products Co., 3629 Medford St., is erecting 3800 sq. ft. building at 10541 Dolores Ave., South Gate. Westcraft Machine & Engineering Co., 1334 Canal St., Long Beach, is erecting 8000 sq. ft. machine shop at 1451 Canal St., Long Beach. Garland Engineering Co., 3220 Ardmore Ave., South Gate, has built 7000 sq. ft. office and machine shop at 4120 Ardmore Ave., South Gate. Vernon Pattern Works, 5107 Pacific Blvd., has built 7000 sq. ft. addition for production of dies and tools. Allen Mfg. Co., 6021 Compton Ave., erecting 6500 sq. ft. building at 84th St. and Graham Ave. Produces screw machine products, aircraft parts, hydraulic units, radio parts, etc. Capitol Brass & Aluminum Foundry, 1822 E. 58th Place, adding 3100 sq. ft. Rankin Mfg. Co., 3072 W. Pico Blvd., is occupying 8000 sq. ft. at above address for manufacture of welding rods.

WING TIPS

New Curtiss-Wright V-Tab permits maximum loading of heavy planes without consideration of weight distribution. Center of gravity need be bugaboo no longer. Permits maximum utilization of cargo and passenger space

CENTER of gravity, bugaboo of pilots and maintenance men ever since man's first powered flight, becomes a minor problem as the result of Curtiss-Wright Corp.'s development of a revolutionary trim tab device for transport aircraft. Known as the V-Tab, the invention allows maximum loading of planes without consideration of weight distribution.

Details of the V-Tab, which while adding only 10 pounds to the total weight of the Commando results in an amazing "CG" range and vastly improved airplane stability, were announced by Curtiss-Wright last week. The new device already is in operation on the C-46, military version of the Commando which will fly on many of the nation's airlines when war conditions permit. Delivery of the Wright-powered CW-20 commercial Commando will begin soon after the first of the year.

Maximum utilization of cargo and passenger space in the Commando—is the greatest boon of the V-Tab, which does not affect the airplane's speed and which operates automatically. Pilots no longer will have to trim ship while passengers walk back and forth in the cabin, and airline maintenance men will have to worry only about the total load of passengers and cargo, rather than figuring out distribution of weight by a complicated slide rule procedure.

Nor will it be necessary to shift cargo from one compartment to another while passengers have to pace restlessly back and forth at airports, a frequent occurrence today. It will no longer be necessary to "ground" passengers when there are vacant seats, because of cargo loaded so that rearward seats may not be used. The device is seen as hurdling one of the greatest barriers to "flying club cars" of tomorrow, since it assures the free movement of passengers during flight.

Pilots, especially, will benefit from the V-Tab. Both in present military operations and in the airline runs of the future, Commando crewmen will be subjected to less fatigue since the tab will keep the ship in balanced flight.

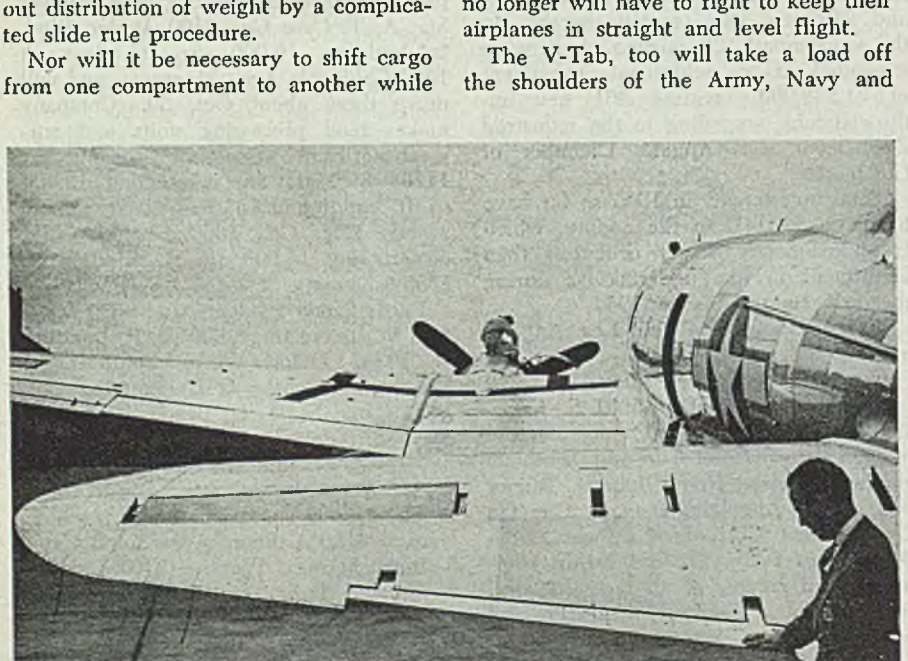
Aid Troop Carriers

Perhaps the most immediate beneficiaries of the development will be the pilots of Commandos operated by the Army's Troop Carrier Command. These men have taken a terrific beating in the past, trying to keep their giant planes in level flight and in close formation while 36 paratroopers charge down the cabin and jump out the double doors in the rear of the fuselage. With the V-Tab installation, the shift in weight and "CG" caused by movement of paratroopers will be compensated for automatically. Pilots no longer will have to fight to keep their airplanes in straight and level flight.

The V-Tab, too will take a load off the shoulders of the Army, Navy and Marine Corps men who load cargo-carrying Commandos for vital war missions. Now, it will be a question of simply how much to put aboard, rather than exactly where to place what part of the load in the cargo compartments. The same, of course, will apply to loading of airline Commandos when they go into operation. Once the Commando is loaded the V-Tab will take care of the airplane's balance in flight.

Operating with the same conventional trim controls which are standard in all transport planes, Curtiss Commandos already have achieved an unusual record in cargo and troop-carrying aircraft all over the globe. Making up the backbone of the vast sky freight fleet operating over the famed India-China Himalayan "Hump," C-46 Commandos also are daily flying thousands of miles across the Pacific for the Marine Corps as hospital planes and high-priority cargo haulers. Several months ago, they were designated as the standard aircraft for the Troop Carrier Command.

With the V-Tab installation, the Commando will prove even more a "pilot's airplane." And, completely tested under the rigorous conditions of war, it will take its place as the top twin-engined transport of the nation's airlines as soon as war conditions permit production of luxury liners of the air.



This simple control surface, indicated by Curtiss-Wright test pilot, will greatly simplify peacetime operation of airline transport planes. Operating automatically, it eliminates the necessity—as the plane's load is increased or lessened at various stops—for shifting of cargo to keep the plane in safe balance

Partial Details Revealed About Consolidated B-32

Partial details of the newest of the Army Air Forces big bombers, the long restricted Consolidated B-32, sister ship of the Boeing B-29, have been released with announcement the plane is in service against the Japanese.

Featuring heavy fire power and bomb load the B-32 was designed especially for operations in the Pacific. Although certain details are not yet available it is known to carry sizable bomb loads for long distances at speeds exceeding [illegible] mph.

It is an all-metal, high-wing, single tail monoplane with a cylindrical, semi-monocoque fuselage and a modified Davis low-drag wing with fowler type flaps. The tricycle landing gear which uses dual tires, is fully retractable and has a completely swiveling nose wheel.

Power is supplied by four double-row 18-cylinder Wright Cyclone engines of 2200 hp, each equipped with two exhaust-driven turbo-superchargers. The Curtiss 4-blade electric propellers have a diameter of 16 ft 8 in and are equipped with Curtiss automatic synchronizers. Propellers on the two inboard engines have reversible pitch blades for braking during the landing run.

Wing span of the B-32 is 135 ft; length is 93 ft 1 in; and height is 30 ft 2 in. It has a wing area of 1422 sq ft and a gross weight of approximately 100,000 lb. Overloaded it weighs 120,000 lb; empty, more than 60,000 lb.

The B-32 was developed by the C[illegible]

If you paint Zinc-Coated products

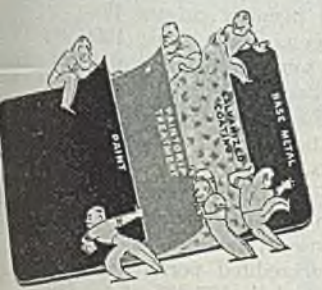
CHECK THESE 6 POINTS

Here are six questions and answers about paint characteristics on two different zinc-coated sheet steels. Checking them may help save you time and money.

			Ordinary Galvanized Steel	Armco Galvanized Paintgrip
✓	1	Does it take paint without pre-treatments?	No	Yes
✓	2	Is the full-weight zinc coating intact?	No*	Yes
✓	3	Is paint "insulated" from the zinc coating?	No	Yes
✓	4	Does the zinc surface rob paint of its oils?	Yes	No
✓	5	Will paint adhere . . . without premature peeling or flaking?	No	Yes
✓	6	Does paint resist scraping or other abrasive action?	No	Yes

*Acid etching, used as a pre-treatment for painting, destroys part of the zinc coating.

THIS TELLS THE STORY OF TRIPLE PROTECTION



...antages of ARMCO Galvanized ...NTGRIP over ordinary galvanized ...all painted products are clearly illustrated in this "peel-off" drawing.

The full-weight galvanized coating is "insulated" from the paint finish by the mill-Bonderized PAINTGRIP surface treatment. On ordinary galvanized there is no "insulation." The zinc robs paint of its oils, causes it to become brittle.

Actually it costs less to use ARMCO PAINTGRIP sheets than to use ordinary galvanized and acid-etch before painting. And PAINTGRIP keeps the paint on your products looking better longer.

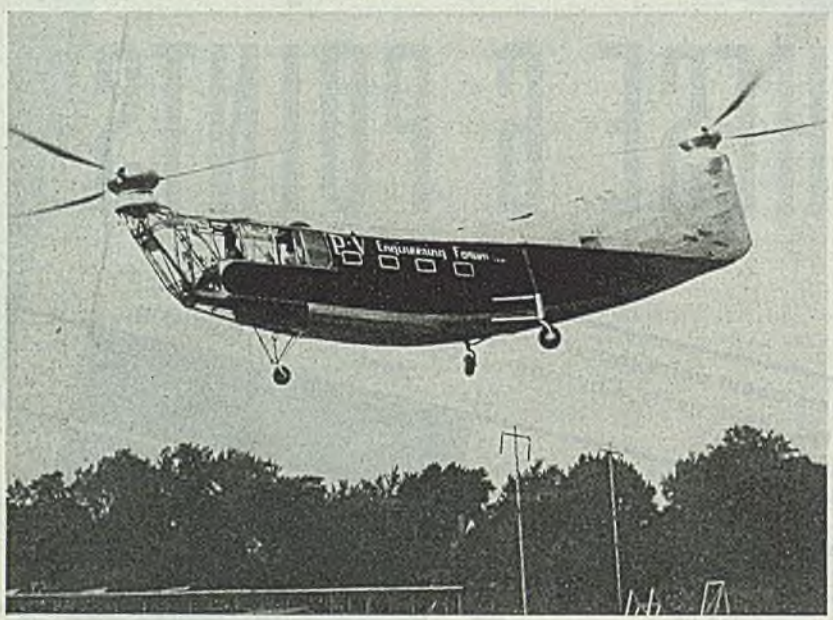
Write for the free ARMCO PAINTGRIP booklet. It gives complete information on fabricating, finishing and applications of this steel. Just address The American Rolling Mill Company, 2471 Curtis Street, Middletown, Ohio.

EXPORT: THE ARMCO INTERNATIONAL CORP.

GALVANIZED PAINTGRIP ARMCO STEEL

Special-Purpose Sheet Steels

THE AMERICAN ROLLING MILL COMPANY



NAVY HELICOPTER: The PV-3, large helicopter manufactured by the P-V Engineering Forum Inc., Sharon Hill, Pa., under direction of the Navy Bureau of Aeronautics, is shown here in test flight. The craft was designed for Navy-Coast Guard air-sea rescue and for air transport operations. It is claimed to be the first successful design using configuration of two rotors in tandem. NEA photo

solidated Vultee Aircraft Corp. in cooperation with Maj. Gen. Hugh J. Knerr's Air Technical Service Command, and was built initially at both the company's Ft. Worth and San Diego plants. Since last May, however, limited production continues at the Ft. Worth facility.

Normal crew is eight and the first of the B-32 crews to see combat are former Liberator crews, except for the aerial engineers, who had finished their operational training in the Fourth Air Force and who were converted to the B-32.

Transition training for B-32 crew members, which was begun last February, is being provided by Lt. Gen. Barton K. Yount's AAF Training Command at the Ft. Worth Army Air Field, Texas. It is the first time in World War II, incidentally, that a new tactical type of aircraft was assigned the Training Command before it was engaged in operational training. Previously the first planes off the production line, aside from those required for test purposes, were sent to one of the training air forces in the continental United States.

Jet-Propelled P-80 Clips Off 550 mph, Has Service Ceiling of Nearly 9 Miles

ADDITIONAL details of the first production-line AAF jet-propelled fighter—the P-80 Shooting Star—were revealed to the public last week with showings of the new plane, now moving swiftly toward combat operations against the Japanese.

Hurdling the 550 mph barrier, where efficiency of present conventional engine propeller combinations had begun to restrict airplane performance, "the AAF is at the bottom rung of a new ladder of progress that starts with the P-80," according to the Air Technical Service Command, Wright Field, O.

The Shooting Star, according to ATSC, will clip off 550 mph at any altitude and has a service ceiling of 45,000 ft.

The P-80 has a wing span of 39 ft and an overall length of 34 ft 6 in. From the ground to the top of its rudder it measures 11 ft 4 in. Its total empty weight is only 8000 lb, although it has an armor glass windshield and steel armor all over the front bulkhead and the back of the pilot's seat.

Engine fuel is kerosene, preferable to gasoline because it provides more energy per gallon. This energy is transformed into "pounds of thrust," which is the term used in measuring jet power instead of the more familiar word—"horsepower." The engine can be completely removed and replaced in the airplane in 20 minutes instead of the usual 8 to 9 hours!

In addition, the elimination of the propeller, ignition system, carbureter, and the complex propeller and engine controls of the conventional fighter plane simplifies manufacture and maintenance of the P-80 a hundredfold.

Lubrication of the P-80's jet engine is ridiculously simple—the shaft connecting the turbine wheel and the compressor impeller is the only moving part that requires oil at some half dozen bearings.

The jet plane operates at optimum fuel consumption at high speed in contrast with conventional fighters whose best fuel economy is secured at reduced power and speed.

Contrary to the common impression the P-80 does not come in for a landing at blinding speeds, but rather glides in on its approach at the same speeds as ordinary fighters and makes contact with the runway around 100 mph.

Pilot's Visibility Improved

Since the engine is not located in the nose, the pilot's compartment is located well forward offering a notable improvement in visibility. The ship's battery of guns are also packed in the nose which reduces gunfire dispersion.

In addition to smooth and easy flight the pilot gets another break in the P-80. It has a pressurized cabin. In the slender fuselage of the P-80, this was quite a problem. Some 14 valves, [illegible] and "muffs" had to be squeezed into an exceedingly small space. It's semi-air conditioned too—the pilot can make it hot or cold to his liking.

The P-80 is well armed, with six 50-caliber guns compactly mounted in the nose, so as to get maximum fire concentration at any distance. The guns are mounted at the bottom of the nose to preclude the possibility of the pilot being bothered by gun flashes at night or on dark days. Mounting the guns lower than the ammunition boxes harnesses the force of gravity to aid ammunition feed to the guns. The gun-sight is an electrical gyro lead computing type with a reflex optical system.

Predicts 3½ Million Pilots in 15 Years

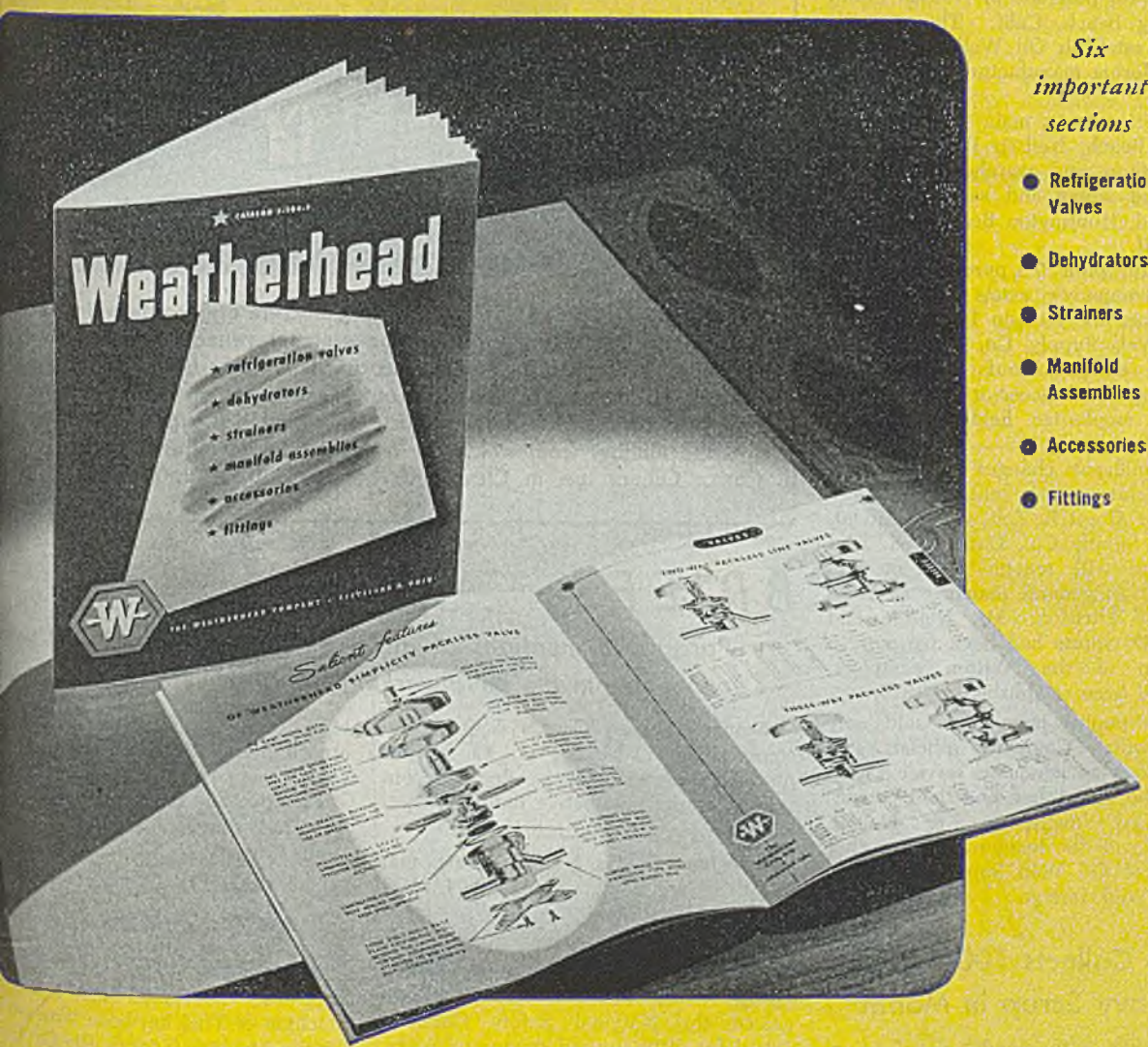
America will have a minimum of 3,500,000 licensed private fliers by 1960 if progress made since 1929 continues at the same rate during the next 15 years, William A. Mara, Bendix Aviation Corp. staff executive in charge of development relating to the personal airplane, predicts.

Since 1929, when Civil Aeronautics Administration records listed only 41[illegible] licensed private pilots, the nation's roster of accredited personal plane pilots has climbed to 107,327 at the end of 1944, Mr. Mara's report revealed. This represented an increase of 2600 per cent in 15 years.

Mara emphasized that his forecast of 3,500,000 licensed private pilots by 1960 was "extremely conservative" when all factors which will tend to accelerate development are considered.

Every refrigeration man needs this new catalog!

Designers, engineers, service-men, purchasing agents—every key department head in the refrigeration field—should have this new Weatherhead Refrigeration Catalog. It gives you at a glance detailed, illustrated data on the multitude of *improved* refrigeration parts Weatherhead engineers have designed and created for original installations and replacement work. Write or call one of our branch offices for a free copy of this 40-page catalog.



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U. S. Steel Corp. Subsidiary Will Buy Pump Firm

Acquisition will establish Oil Well Supply Co. as California manufacturer of oil field materials

OIL WELL Supply Co., subsidiary of United States Steel Corp., New York, has announced its intention to exercise an option for purchase of Neilsen Pump Co., Long Beach, Calif. This acquisition will establish Oil Well Supply Co. as a California manufacturer of oil field materials.

In addition to its main plant facilities at Long Beach, Neilsen Pump Co. has a large shop and warehouse at Taft, Calif., and stores and sales offices at Bakersfield, Huntington Beach, and Ventura, Calif.

Under the projected purchase plan the Neilsen company's assets will be organized into the Neilsen Pump Division of Oil Well Supply Co. The Neilsen company, which manufactures subsurface pumps and accessories, will continue to emphasize field service and high quality products.

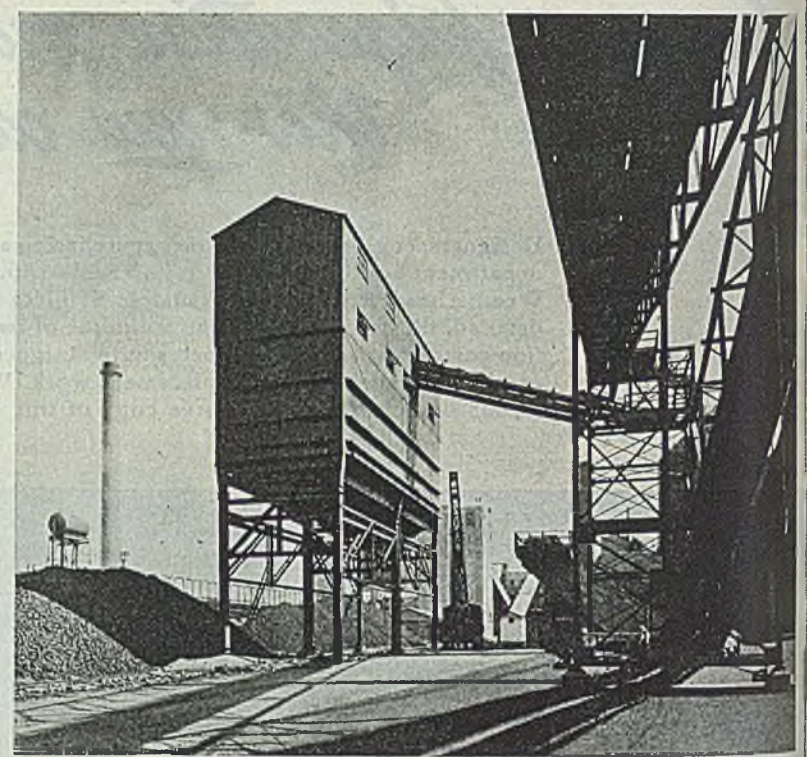
No significant changes in personnel or establishment are contemplated, according to Albert R. Zelt, vice president, Oil Well Supply Co., Dallas, Tex. Karl P. Neilsen will remain with the organization as general manager of Neilsen Pump Division. Mr. Neilsen and Edward D. Sports had been partners in ownership of the Neilsen company, which had been established in 1926.

Neilsen pumps have been sold only in California. Company officials said that as soon as adequate service facilities can be established and field personnel trained, distribution of Neilsen products will be inaugurated in other divisions of Oil Well Supply Co., both domestic and foreign.

Group Collects 1000 Tons Of Heavy Scrap in Month

More than a thousand tons of heavy melting steel scrap were added to the nation's depleted supplies in a month by a volunteer businessmen's group in an upstate New York county.

The county, Ilion, was one of those whose volunteer Industrial Center Organization Committee had been remobilized to meet the threat of dangerously low supplies of heavy melting scrap. The Ilion county group collected 1000 tons of heavy melting steel and 67 tons of cast scrap.



EXPANDED SLAG PLANT: Lightweight Celocrete aggregate will be manufactured in this recently opened government-owned plant operated by Republic Steel Corp. in South Chicago, Ill. Shown here are the storage hopper, having a capacity for about 30 carloads of the expanded slag, and part of the conveyor system. The South Chicago plant brings to five the number from which the aggregate is merchandised by Celotex Corp. Others are in Cleveland, Buffalo, Pittsburgh and Troy, N. Y.

BRIEFS . . . .

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

Bendix Aviation Corp.'s Eclipse Machine Division, Elmira, N. Y., is now producing starter drives needed in reconversion of the automotive industry.

—o—

Tate-Jones & Co. Inc. announces that its offices are now located at 804 Plaza building, Pittsburgh.

—o—

Fairbanks, Morse & Co.'s Pomona Pump Works, Pomona, Calif., has received the National Safety Council's award for distinguished service to safety.

—o—

Grinders & Fixtures Inc., Cleveland, has acquired from Cleveland Tool Engineering Co., Cleveland, all manufacturing rights to the latter company's two principal products, the circular relief grinder and universal indexing head.

—o—

Ward Leonard Electric Co., Mt. Vernon, N. Y., has appointed Wright Engineering Co., Indianapolis, as sales representative in southern Indiana, southwestern Ohio and Kentucky.

—o—

Electric Air Heater Co., Mishawaka, Ind., has changed its name to Electromode Corp.

—o—

Berger Machine & Mfg. Co., Cleveland, has taken over the production divisions, plants 2 and 3, of the Lorain Machine & Tool Co., Cleveland. Plant 1 of Lorain Machine & Tool has been taken over by Grothe Machine Tool & Die Co., Cleveland, which has no connection with the Berger company.

—o—

Geometric Tool Co., New Haven, Conn., has appointed the following distributors in Michigan: B-H Tool & Supply Co., C. L. Gransden & Co., and Ray Co., Detroit; Gransden-Hall & Co., Flint; Grand Rapids Supply Co., Grand Rapids; C. E. Hamlin & Co., Jackson; Hoover Supply Co., Kalamazoo; Precision Tool

Supply Co., Lansing; Cutting Tools & pply Co., Pontiac; and Port Huron uipment Co., Port Huron.

—o—

American Radiator & Standard Sani- y Corp.'s stamping plant at Buffalo l expand its production of civilian oducts in the postwar period. The firm hifting its automatic furnace produc- n from Elyria, O., to Buffalo.

—o—

Cooper-Bessemer Corp., Mt. Vernon, has named Northern Marine & En- e Co., Toronto, Canada, as its repre- tative in Labrador and in Ontario, ebec, New Brunswick, and Prince Ed- rd Island, Canada.

—o—

Federal Products Corp., Providence, I., manufacturer of precision measur- g instruments has established a field en- eering service department to co-op- te with users of its instruments.

—o—

Sam Tour & Co. Inc., New York, etallurgists, have been certified by the w York State Department of Labor best window cleaners' belt anchors in program to make safe all such anchors the state.

WARDS . . .

The Army-Navy "E" award for ex- cellence in manufacture of war materials s been given the following:

- ydrook Hydraulic Corp., Bowling Green, O.
- rmetel Metallurgical Corp., Vascoloy-Ramet Div., Waukegan, Ill.
- Keystone Drawn Steel Co., Spring City, Pa.
- Kemp Equipment Co. Ltd., Shell Plant Di- sion, Hattiesburg, Miss.
- National Formetal Co., Cleveland.
- Rubio Steel & Mfg. Co., Chicago.
- Rochester Mfg. Co., Rochester, N. Y.
- Schlosser Mfg. Co., Philadelphia.
- Standard Electric Time Co., Springfield, Mass.
- Stapleton, Kenly & Co., Chicago.
- Taylor Screw Co., Cleveland.
- United States Rubber Co., Providence plant, Providence, R. I.
- Western Electric Co. Inc., Lincoln shops, Lincoln, Nebr.
- O. Wilcox Mfg. Co., Mechanicsburg, Pa.

ittsburgh Firms Establish xport Sales Organization

Formation of Pittsburgh International rp. to handle export sales and distri- tion of products manufactured by tsburgh Equitable Meter Co., Pitts- rgh, and its subsidiary, Merco-Nord- rom Valve Co., Pittsburgh, has been nounced.

The new firm, whose offices will open pt. 1 in 7701 Empire State Bldg., New rk, will be directed by A. L. DiGiul- n, vice president. Prior to accepting s new position, Mr. DiGiulian was ief, Foreign Communications Section, ice of Exports, Foreign Economic Ad- inistration, Washington. In operating e new export firm he will be assisted George E. Doty, who has been asso- ciated with the Oakland, Calif., plant of Merco-Nordstrom.

J. & L. Expansion Plans Announced

A $12 MILLION tin plate expansion program is underway at Jones & Laughlin Steel Corp.'s Aliquippa, Pa., works which will increase output 50 per cent.

The company's long-range program to increase production of finished steel items at all its plants will be accelerated considerably with installation of five-stand, four-high, 42-inch cold reduction mill, already ordered from Mesta Machine Co., West Homestead, Pa., and some auxiliary equipment at the Aliquippa works. These facilities are expected to be in operation within a year.

Production of cold-rolled sheets at its Pittsburgh plant will be increased 3000 tons to 33,000 tons per month by Sept. 1 through rearrangement of facilities. The 54-inch mill at Pittsburgh will continue to supply cold-reduced steel for tin plate as needed, but when the new 42-inch mill is installed, the 54-inch mill will be relieved of the necessity to roll tin mill coils for the Aliquippa works.

Company officials state that the new tandem mill ordered will operate at a speed faster than any similar mill now in use in the industry.

Improvements at the wire mill at Aliquippa works have also been under way recently with installation of additional wire drawing blocks.

The company has also arranged for a $3 million improvement program at the Otis works, Cleveland, where sheet capacity will be increased and quality control standarized with that of the output at the Pittsburgh works. This installation will get underway in February.

New Alloy Steel Patented, Pittsburgh Firm Announces

Alloys Development Co., Pittsburgh, has announced the award to the late Dr. Byramji D. Saklatwalla of U. S. Patent No. 2,378,437 covering a new high-strength, corrosion-resistant steel possessing ductility, toughness, and good welding properties.

The steel contains essentially: Carbon, 0.14 per cent maximum; manganese, 0.50 per cent maximum; phosphorus, 0.07-0.18 per cent; chromium, 0.25-1.5 per cent; nickel, 0.25-1.5 per cent; molybdenum, 0.07-0.60 per cent; and copper, 0.18-0.75 per cent. Being low in carbon and manganese, the steel promises to provide an effective outlet for "tri-alloy" scrap in the form of a structural steel suitable for welding, the firm says.

IMPROVED PRODUCTION: Four early model gages and precision instruments that revolutionized quality control of mass production were presented to the Smithsonian Institution in Washington by Louis Polk, left, president of the Sheffield Corp., Dayton, O. Questioning Mr. Polk about the gages are Dr. Alexander Wetmore, center, secretary, Smithsonian Institution, and Lt. Gen. L. H. Campbell, chief, Army Ordnance

1945 SPECIFICATION

Clean-cut specification written by AWS and ASTM for mild steel and low-alloy electrodes permits consumers to make rigid and complete demands on manufacturers. Guide to Classification and reiteration of rule specifying single assignment of grade numbers are worthwhile additions to data

TABLE I

SUMMARY OF TEST REQUIREMENTS

Classification Number	Electrode Diameter, Inches	Current and Polarity	All-Weld-Metal Tension Test*	Usability Tests Guided-Bend Test*†	Usability Tests Fillet-Weld Test*†
E4510	1/16 to 1/8†	N.S.	N.R.	N.R.	N.R.
	5/32 and 3/16		F	N.R.	N.R.
	7/32 and 1/4		N.R.	N.R.	N.R.
	5/16 and 3/8		N.R.	N.R.	N.R.
E4520	1/16 to 1/8†	N.S.	N.R.	N.R.	N.R.
	5/32 and 3/16		F	N.R.	N.R.
	7/32 and 1/4		N.R.	N.R.	N.R.
	5/16 and 3/8		N.R.	N.R.	N.R.
E6010	1/16 to 1/8†	dc, reversed	N.R.	N.R.	N.R.
E7010	5/32 and 3/16	polarity (electrode	F	V and OH	V and OH
	7/32 and 1/4	positive)	F	F	H
	5/16 and 3/8		F	F	N.R.
E6011	1/16 to 1/8†	ac, and dc, re-	N.R.	N.R.	N.R.
E7011	5/32 and 3/16	versed polarity	F	V and OH	V and OH
	7/32 and 1/4	(electrode positive)	F	F	H
	5/16 and 3/8		F	F	N.R.
E6012	1/16 to 1/8†	dc, straight	N.R.	N.R.	N.R.
E7012	5/32 and 3/16	polarity	F	V and OH	V and OH
	7/32 and 1/4	(electrode nega-	F	F	H
	5/16 and 3/8	tive) and ac	F	F	N.R.
E6013	1/16 to 1/8†	ac and dc straight	N.R.	N.R.	N.R.
	5/32 and 3/16	polarity	F	V and OH	V and OH
	7/32 and 1/4	(electrode	F	F	H
	5/16 and 3/8	negative)	F	N.R.	N.R.
E6020	1/16 to 1/8†	dc straight polarity	N.R.	N.R.	N.R.
E7020	5/32 and 3/16	(electrode negative)	F	F	H
	7/32 and 1/4	and ac for H-fillets;	F	F	H
	5/16 and 3/8	dc either polarity or ac for flat position welding	F	F	N.R.
E6030	1/16 to 1/8†	dc either	N.R.	N.R.	N.R.
E7030	5/32 and 3/16	polarity	F	F	N.R.
	7/32 and 1/4	and ac	F	F	N.R.
	5/16 and 3/8		F	F	N.R.
E8010	1/16 to 1/8†	dc reversed	N:R.	N.R	N.R.
E9010	5/32 and 3/16	polarity (elec-	F	N.R.	N.R.
E10010	5/32 and 3/16	rode	F	N.R.	N.R.
	5/16 and 3/8	positive)	F	N.R.	N.R.
E8011	1/16 to 1/8†	ac and dc re-	N.R.	N.R.	N.R.
E9011	5/32 and 3/16	versed polarity	F	N.P.	N.R.
E10011	7/32 and 1/4	(electrode positive)	F	N.R.	N.R.
	5/16 and 3/8		F	N.R.	N.R.
E8012	1/16 to 1/8†	ac and dc	N.R.	N.R.	N.R.
E9012	5/32 and 3/16	straight polarity	F	N.R.	N.R.
E10012	7/32 and 1/4	(electrode negative)	F	N.R.	N.R.
	5/16 and 3/8		F	N.R.	N.R.
E8020	1/16 to 1/8†	dc straight po-	N.R.	N.R.	N.R.
E9020	5/32 and 3/16	larity (electrode	F	N.R.	N.R.
E10020	7/32 and 1/4	negative) and ac	F	N.R.	N.R.
	5/16 and 3/8	for H-Fillets dc either polarity and ac for flat position welding	F	N.R.	N.R.
E8030	1/16 to 1/8†	dc either	N.R.	N.R.	N.R.
E9030	5/32 and 3/16	polarity	F	N.R.	N.R.
E10030	7/32 and 1/4	and ac	F	N.R.	N.R.
	5/16 and 3/8		F	N.R.	N.R.

*—For the guided-bend and fillet-weld tests, the steel for the test assembly shall conform to either ASTM A7 or ASTM A70 steels. For testing electrodes of the E6010, E6011, E7010, and E7011 electrodes, one of the plates and backing strip of the guided-bend test assemby, and both plates of the fillet-weld test assembly shall be galvanized after edge preparation with a minimum coating of 2 oz. per sq. ft.

*†—No stress-relieving shall be performed on guided-bend test assemblies or on the specimens removed therefrom.

N.S.—Not specified

N.R.—Not required

NOTWITHSTANDING the extreme pressure of wartime business activities the joint American Welding Society—American Society for Testing Materials Committee on Filler Metal has issued a complete revision of their specifications for iron and steel arc welding electrodes. Included in the latest set of tentative specifications are tests and procedures designed to plug loopholes in the previous descriptions, thereby still further guiding the small consumer of electrodes in purchasing electrodes suited to specific application needs.

Before undertaking a detailed analysis of new points given in the 1945 specification, two added features deserve mention. First, guided bend requirements have been introduced along with a definite statement that *electrodes classified under one classification shall not be classified under any other classification.* Guided bend tests, fillet weld tests, and the foregoing statement should combine to lift the fog of confusion that existed during 1943 and 1944, when too many electrodes were claimed to meet the requirements of classes E6010, E6011, E6012, and E6013 simultaneously. The letter of the specification was met while the intent of the specification was ignored. Now the 1945 statement and test program should resolve that electrode paradox.

Electrode Classification Scheme

Second, and no less important, is the "Guide to AWS-ASTM Classification of Iron and Steel Arc Welding Electrodes." Here, in a condensed and logical exposition, is found the pattern underlying the electrode classification scheme, along with pertinent data covering chemistry, mechanical properties, coating composition, amperage, and voltage values and important code approvals. The guide gives data parallel to that reported by Harold Lawrence in STEEL, March 6 to April 24, 1944.

This analytical review of the changes made in AWS-ASTM A233 will be divided into two parts: Part I will cover new features of the specification; and Part 2 will discuss the appended guide to electrode classification. Interested

...OR Metallic Arc Welding Electrodes

By ORVILLE T. BARNETT
Production Engineer
Welding Division
Metal & Thermit Corp.
New York

...ders are urged to get copies of the new ...cification from either of the sponsoring ...ties.

...Electrodes are classified in a related ...n combining the ultimate tensile ...gth of the deposited weld metal ...h the usability characteristics of the ...trodes. Thus the grade number re...s the tensile strength of an all-weld ...al 0.505 tensile specimen prepared ...a controlled procedure together with ...ey to the type of current and welding ...itions established by the coating com...sion, with a still further subdivision ...ductility and penetration factors. Th... ...ification and guide combine to make ...e whole plan exceedingly simple.

...A reiteration of the rule specifying ...ge rather than multiple assignment of ...de numbers is worthwhile. Although ...s true that an E6011 electrode will ...sfy all of the physical requireme... ...the four grades E6010, E6011, E6012, ...d E6013, certain operating character...cs will be sacrificed if a shop adopts ...one type where use for all four ...sonably can exist. In this example, ...plicity of inventories will be attained ...the expense of increased labor and ...erial costs, for E6011 electrodes are ...wer in many applications than E6012 ...ctrodes, while the E6011 and E6013 ...des are more expensive than the ...010 and E6012 types. Cost considera...ns are explained in detail in the book- ...on *Metallic Arc Welding Electrodes* ...blished by STEEL.

...In 1943 AWS-ASTM A233 placed a ...itation of 0.04 per cent maximum on ...lphur, while the new revision removes ...restrictions on the deposit chemistry. ...is move appears to be well taken, as ...e producers of arc welding electrodes ...e forced by application considerations to exercise rigid control over the analyses of deposited weld metal. An overall balance of carbon, manganese, phosphorus, sulphur, and silicon is essential to freedom from cracks, porosity and surface holes. Individual elements can be varied according to the ideas of the electrode designer as long as the final combination produces satisfactory weld metal.

Whereas the previous specification permitted classification of electrodes on the primary considerations of tensile strength, ductility and welding positions, modified somewhat by types of current, i.e., alternating or direct current, the new approach retains the old requirements and adds specific usability tests evaluated by the guided-bend and fillet-weld tests.

The guided-bend test uses a hot-dip galvanized coating of 2 oz per sq ft minimum weight for one of the two test pieces and for the backing strip for E6010, E6011, E7010, and E7011 electrodes. By this means, the shallow penetrating electrodes of the E6012, E6013, and E7012 are screened out as the softer arc does not permit proper bonding through the galvanized coating. Particulars of the new requirements are reported in Table I.

The fillet weld test separates electrode groups according to fillet profile among the essentially flat, concave, and convex arrangements.

Test Procedures

All-weld-metal tension test specimens are universally prepared in the flat position. Guided-bend tests for all-position electrodes—remembering that the term "all-position" signifies ability to deposit weld metal in the flat, horizontal fillet, vertical and overhead positions—are mandatory in the vertical and overhead positions for $\frac{5}{32}$-in. and $\frac{1}{8}$-in. diameters. No vertical or overhead welding is recommended with diameters greater than $\frac{1}{8}$-in. The larger diameters of all-position groups and all tested diameters of the flat posi-

TABLE II

REQUIREMENTS FOR PREPARATION OF FILLET WELD TEST ASSEMBLIES

Electrode Classification Number	Diameter, Inches	Plate Size Thickness (T)	Plate Size Width (W)	Plate Size Length (L)	Position of Welding	Fillet Size, Inches
E6010	1/16 to 1/8†	N.R.*	..	..	.....	.....
E6011	5/32	1/4	3	12	V and OH	3/16 max.
	3/16	3/8	3	18	V and OH	1/4 max.
E7010	7/32	3/8	3	18	H	5/16 max.
	1/4	1/2	3	18	H	5/16 max.
E7011	5/16 and 3/8	N.R.	..	..	.....	.....
E6012	1/16 to 1/8†	N.R.	..	..	.....	.....
	5/32	1/4	3	12	V and OH	1/4 max.
E7012	3/16	3/8	3	18	V and OH	5/16 max.
	7/32	3/8	3	18	H	1/4 max.
	1/4	1/2	3	18	H	5/16 max.
	5/16 and 3/8	N.R.	..	..	...	.....
E6013	1/16 to 1/8†	N.R.	..	..	.....	.....
	5/32	1/4	3	12	V and OH	1/4 max.
	3/16	3/8	3	18	V and OH	5/16 max.
	7/32	3/8	3	18	H	1/4 max.
	1/4	1/2	3	18	H	5/16 max.
	5/16 and 3/8	N.R.	..	..	.....	.....
E6020	1/16 to 1/8†	N.R.	..	..	.....	.....
	5/32	3/8	3	18	H	5/32 min.
	3/16	3/8	3	18	H	3/16 min.
E7020	7/32	3/8	3	18	H	1/4 min.
	1/4	1/2	3	18	H	5/16 min.
	5/16 and 3/8	N.R.	..	..	.....	.....
E6030 E7030	N.R.					

†—Inclusive
*N.R.—Not required.

tion groups are evaluated by means of guided bend tests made in flat position.

Fillet-weld tests follow a similar pattern. All position electrodes are examined in the vertical and overhead positions. The 7/32 and ¼-in. diameters of the E6010, E7010, E6011, E7011, E6012, E7012, E6013, E6020, and E7020 classes have to deliver acceptable fillet dimensions in the horizontal fillet position as do the 5/32 and 5/32-in. electrodes of classes E6020 and E7020. The E6030 and E7030 groups, logically enough, have no fillet weld test requirements.

Electrodes of the E80, E90, and E100 series are tested by means of all weld metal tension tests only. Even though these alloy electrodes are used in all positions, following an identification scheme similar to that used with the E60 and E70 groups, no guided bend tests or fillet weld tests have been specified.

Testing Methods Improved

All weld metal tension tests cover the 5/32-in. and larger diameters. The ⅛-in. diameter, which formerly necessitated the use of a sub-size tensile specimen, is no longer subject to tension tests. This is an improved approach towards electrode testing, as the smaller diameters consistently give higher tensile strengths along with quite adequate ductilities. Although the ⅛-in. diameter may be used for work where mechanical properties are quite important, the smaller diameters are often restricted to sheet metal work, where little emphasis is placed on mechanical properties. It is appreciated, of course, that small diameter electrodes are selected for aireraft welding, where physical properties are of paramount importance. Here the excellent record established by the E6013 electrode types, notwithstanding the fact that this group is not generally considered to be a quality class, speaks well for the good balance of tensile strength and ductilities that obtains when light gage metal is joined with suitable small diameter electrodes. No change has been made in the tension test procedure over that used in the preceding specification, other than the elimination of the requirements for the ⅛-in. size.

The guided bend usability test must be carried out with each type of current, where both alternating and direct current are applicable to the electrode class being tested. Likewise with direct current, both polarities must be used for testing when an electrode is claimed to be acceptable with either straight or reverse polarity.

In the guided bend test, the only temperature specification is that the test assembly should be between 60° and 100° F at the time the first pass is started. No limitations are placed upon interpass temperature, as is the case with the tension test procedure.

Bend tests now include side bends, which are designed to evaluate the quality of deposit from 7/32-in. and larger electrodes. The side bends, as is true of the face bends and root bends, are tested in the standard jig familiar to the welding fraternity. All bend tests are made with the weld and plate metal in the as-welded condition. Specifically, this means that no stress relieving is to be done on the welded assembly or on the specimens cut therefrom. Again, as was true of some of the preceding tests, electrodes of 1/16 to ⅛-in. diameters inclusive need not be tested by means of the guided bend test, but instead performance of these sizes shall be considered acceptable, based upon the test results of the 5/32-in. electrodes in the same group.

Fillet weld usability tests have essentially the same requirements as the guided-bend tests, calling for all current and polarity combinations the particular classification is intended to satisfy. Table II are given completet details for making the fillet weld test assembly. These include dimensions of the plates, positions of welding, and size of fillet weld.

The fillet weld test is severe because the vertical and horizontal plates are put together in a tight fit. This procedure allows virtually no opportunity for the joint to give and will intentionally be conducive to cracks when the second of the two fillets is deposited.

Complete procedure details state that vertical welding is to be done in an upward direction. This requirement follows normal good practice in the field. To prove the quality of electrodes under these conditions, the first electrode applied in making the fillet weld must be used for its full length, allowing the usual stub end loss of no more than 2 in. Thus, any tendency of electrode performance to deteriorate as the last portion of the electrode is consumed becomes involved in the evaluation. Each electrode used should be burned to as short a stub length as will be allowed by the plate assembly dimensions.

Examination After Sectioning

Another stringent feature of this test is that temperature limitation before welding is begun on the second side, thus suggesting room temperature cooling before the second weld is deposited, maximum stress is built up from the first weld.

Upon completion of the fillet welds both sides are examined for cracks and other defects. Following this examination which permits no defects, the assembly is sectioned at a point approximately 1 in. back from the crater end of the deposit made with the first electrode on the first side of the joint. Either face is then polished and etched to ascertain deposit quality. The same specimen is scribed to check the limits on the leg lengths and convexity.

Both legs of the fillet weld must be

SELECTING WELDING ELECTRODES

Last year, STEEL presented an outstanding series of 14 articles designed to provide a working set of data which may be used as the basis for selecting the best electrode for any particular welding job. Stainless steel, hard surfacing, cast iron, nickel and nickel alloy, copper and copper alloy and aluminum electrodes are covered, along with the usual mild steel types.

These 14 articles have been assembled in a handy booklet and may be obtained at nominal cost by addressing: Engineering Department, STEEL, 1213 West 3rd Street, Cleveland 13, O.

TABLE III

ESSENTIAL DIFFERENCES AMONG BASIC ELECTRODE TYPES

	E6010	E6011	E6012	E6013	E6020-E6030
Welding Positions	All	All	All	All	Flat-Horizontal Fil
Type of Arc	Deeply penetrating, forceful, spray type	Deeply penetrating, forceful, spray type	Medium penetrating, quiet, slight spatter	Shallow penetrating, quiet, very stable, slight spatter	Medium to deep pe trating, spray typ
Type of Slag	Thin, friable, readily removed, may cover incompletely	Thin, friable, readily removed, may cover incompletely	Dense, covers completely	Dense, readily removed	Heavy, honeycombed covers completely easily removed.
Fillet Weld Profile	Flat	Flat	Convex	Convex	Flat to Concave
Type of Coating	Cellulosic	Cellulosic	Titania	Titania	Mineral
Weld on Galvanized Steel	Yes	Yes	.....	.....	Yes
X-ray Quality	Good	Good	Poor to Fair	Poor to Good	Excellent
Current	dc only	ac and dc	ac and dc	ac and dc	ac and dc
Polarity	Reverse only	Reverse preferred	Straight preferred	Straight preferred	Straight or Reverse

equal length within 1/8-in., while the maximum allowable convexity is established for each size of weld. Penetration must reach the junction of the plate edges or extend beyond. No cracking is permitted, while the fillets must be reasonably free from undercut, trapped slag and porosity. The term "reasonably free" is apt to lead to some interpretative difficulties where inspectors and producers find difficulty in setting limits for this terminology. Fortunately, the quality of modern electrodes combined with the high application skills developed in recent years should enable the production of acceptable fillets meeting the spirit of the specification. Re-test is permitted if the first specimen fails. Fillet weld tests are made in the 5/32 to 1/4-in. diameters inclusive. No tests are made of either the smaller or larger electrode sizes.

Variations In Dimensions

A change in the permissible variations in dimensions has been effected. Previously, electrodes were required to meet standard lengths plus or minus 1/8-in. The new requirement permits a deviation of plus or minus 1/4-in., which is reasonable enough as a difference of 1/2-in. in electrode lengths, assuming that the maximum variations in lengths occur, will not adversely effect welding performance when the diameter length relationships listed are set up are followed.

The former specification stated that the covering shall have sufficient electrical resistance to effectively insulate against a difference of potential of 100 volts. The 1945 discussion of this point adds "60 cycles alternating current."

Considering next the guide to AWS-ASTM classification of iron and steel arc welding electrodes, it is learned that this portion of the new specification has been moved as an appendix, consisting of seven parts. Part I is an introduction to the subject, while Parts II to VII inclusive give the primary features of the following grades: E6010, E6011, E6012, E6013, E6020, and E6030.

The details of the introduction to the 1945 specification follow in general the description given in STEEL, March 6, 1944. The introduction explains carefully the need for a complete description of operating characteristics to go hand in hand with the physical property and current data previously used as the keystone on which the classification was built.

Parts II through VII inclusive give essential data supplementing the physical property, current and welding position characteristics described in the specification proper. These salient features are tabulated in Table III to show at a quick glance the essential differences among basic electrode types.

It will be seen that welding positions, type of arc, type of slag, fillet weld profile, type of coating, ability to weld on galvanized steel, X-ray quality, current, and polarity are the indexes to electrode type classification.

In addition to the class name given to the type of coating in Table III, the specifications go on in greater detail to include the primary constituents of the coating, and describe the type of core wire.

The quality of the deposit is explained in relationship to the type of material that may be welded with each class of electrodes. For E6010 electrodes, for example, reference is made to two coating thicknesses that may be used in the 3/16-in. diameter, although present-day practice has practically adopted one coating thickness for all work. Differentiating performance in the vertical and overhead position from that in the flat and horizontal fillet position, the description of E6010 electrodes points this out by stating that the larger volume of 3/16-in. E6010 electrodes are produced with the thinner coating.

Each part gives suggested ranges of current and voltage. Although the ranges presented are narrower than those found in previous literature, they may be too broad for work of the very highest caliber.

Detailed Specifications Listed

The specification proper lists the desired physical properties of the deposited weld metal, while the appendix outlines for each type the anticipated tensile strength, yield strength, elongation, reduction of area, impact resistance, endurance limit, density, and brinell hardness.

A description of the chemical analysis of deposit is given in the appendix, since no chemical requirements now are shown in the specification itself.

Included with each summary of specific electrode classes is a comprehensive list of specification and code approvals. To make this information available in a more convenient form, such approvals are tabulated in Table IV.

The American Welding Society and the American Society for Testing Materials deserve congratulations for writing a good clean-cut specification for mild steel and low alloy electrodes. In a sense, this is a purchaser's specification in that it permits the consumers of electrodes to make quite rigid and complete demands upon the manufacturers. The comprehensive test program outlined might put a burden on a producer of electrodes if he were not regularly engaged in checking the quality of his product. If the new specification and appendix are used intelligently, purchase of any specific grade assures the consumer of getting precisely the type of welding performance he desires.

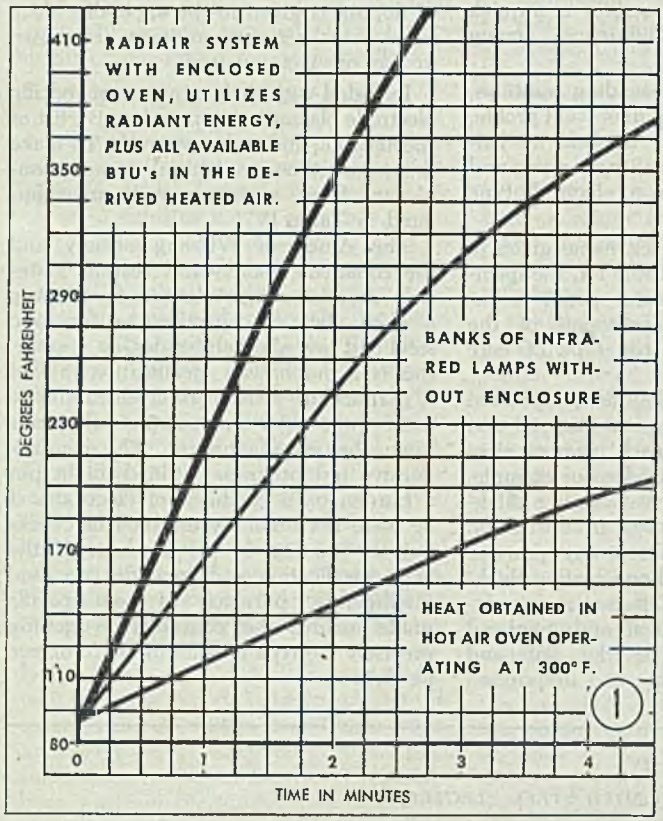
TABLE IV

SPECIFICATION APPROVALS FOR MILD STEEL ELECTRODES

Specification	E6010 57-203 Type I, Class A	E6011	E6012 57-203 Type I, Class B	E6013	E6020-E6030 57-203 Type I, Class C
U. S. Army					
Army Navy Aeronautical	AN-E-9, Class B		AN-E-9, Class A	AN-E, Class A	
American Bureau of Shipping	Approved	Approved	Approved with certain exceptions	Approved with certain exceptions	Approved
API-ASME Code for Unfired Pressure Vessels	W-520	W-520			W-520
ASME Code for Unfired Pressure Vessels	U68, U69, U70	U68, U69, U70	U69, U70	U69, U70	U68, U69, U70
Navy Dept. Bureau	46E3 (Int) Grade I Classes 1, 2, 3	46E3 (Int) Grade III Classes 1, 2, 3			46E3 (Int)* Grade II, Classes 2, 3
Hartford Steam Boiler Inspection and Insurance Co.	Approved	Approved			Approved
Lloyd's Register of Shipping	Section 4 Paragraphs 1 and 9	Section 4 Paragraphs 1 and 9	Section 4 Paragraphs 1 to 8, incl.	Section 4 Paragraphs 1 to 8, incl.	Section 4 Paragraphs 1 and 9
U. S. Coast Guard	Approved	Approved	Approved with certain exceptions	Approved with certain exceptions	Approved
British Corporation Register of Shipping and Aircraft	Approved	Approved	Approved	Approved	Approved
Building Codes of New York City, Pittsburgh, and many other municipalities	Approved	Approved	Approved	Approved	Approved

*E6020 does not meet Class 2

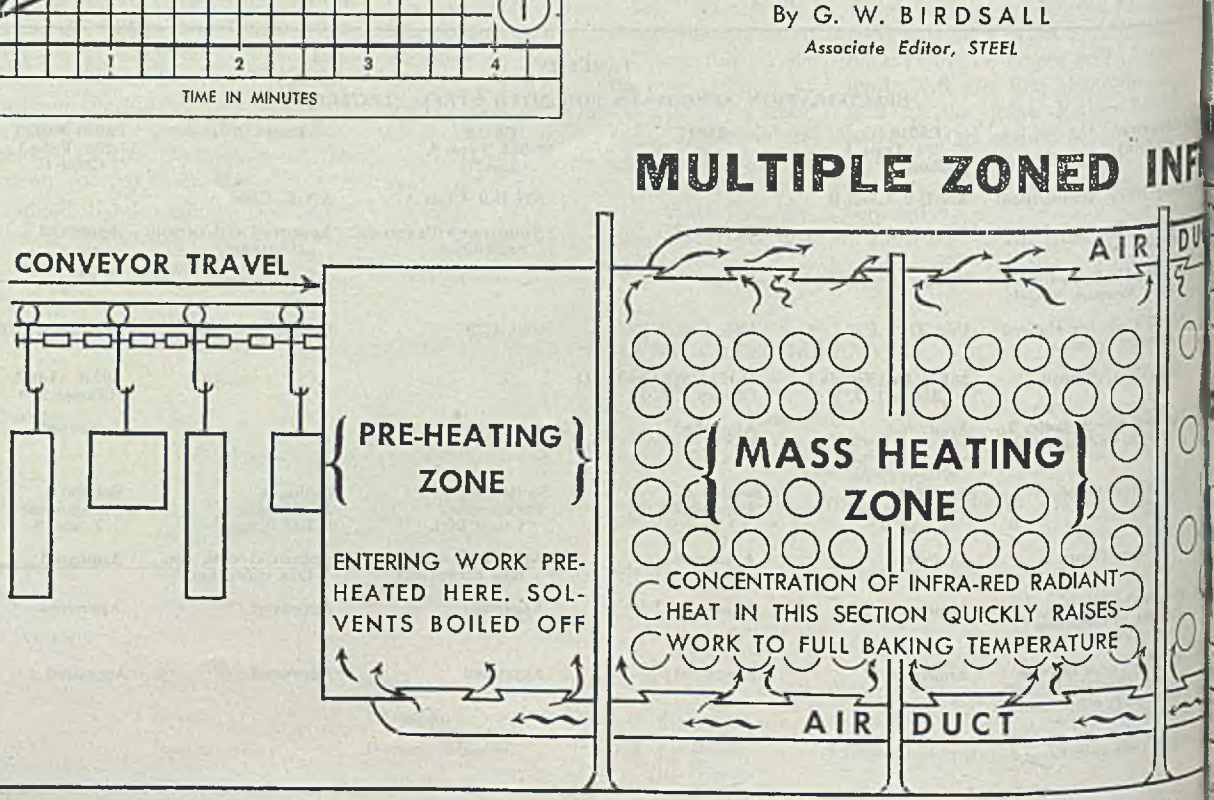
How to Get the Most from... INFRA-RED HEATING-DRYING-BAKING-



Properly applied, infra-red lamp equipment affords important advantages in speed and economy in baking finishes on metal parts; in drying them after cleaning, plating or other operations; in heating them for expanding for easy assembly and proper fit. Future of infra-red lies in realm of lower operating costs. Power consumption on one paint baking job was reduced from 600 to 278 kw, indicating possibilities in expanding range of application by cutting operating costs. Another installation triples output, saves $2880 monthly in floor space released for other operations in the plant

By G. W. BIRDSALL
Associate Editor, STEEL

MULTIPLE ZONED INF



ECONOMIES of infra-red radiant eating vs. other heating systems can-t be made apparent on a basis of appings Btu's. The user of a prop-y engineered infra-red installation will d that advantages making it a real cost-er include greatly increased produc-n; lower equipment, installation and intenance costs; greater flexibility and e of control; reduced rejects; smaller ce requirements; added safety and anliness, points out T. P. Cusack Jr., nager of the Radiant Heat Division, M. Hall Lamp Co., Detroit. He em-sizes that the difference between low d high costs depends upon the correct gineering approach to the application ifra-red heat, which he proceeds to ain as follows:

The wide publicity attending the suc-s of some of the first infra-red heat-g applications for drying and baking t in the automobile industry gave prospective users the impression t all that was required was to obtain mber of infra-red lamps and reflec-, mount them on a rack and put the to be baked between two such ets or racks. While an arrangement of this type unquestionably often fulfilled the requirements of the job at hand, as far as heating was concerned, the results were not all that would be desired and were frequently inconsistent due to varying operating conditions.

Such wrong impressions have done much to limit unduly the growth and application of infra-red heating. Because it was not thoroughly understood when first utilized, infra-red heating was believed to produce high speeds in drying and baking finishes on metal parts by heating from the "inside out". Investigations have now proved this conception of infra-red heating to be erroneous.

Instead of requiring an entirely different and separate oven for each kind of article to be heated, Mr. Cusack points out that thin and thick parts of different sizes and shapes, light and dark colored finishes and different metals can all be handled in the same unit when properly engineered.

But before investigating these and other factors affecting efficiency and operating costs, let's first see what infra-red is and how it works.

Infra-Red Is Heat: Instead of infra-red heating possessing some "magic" quality that makes it different from other methods of heating, actually it is a simple and easily understood method of delivering Btu's to the work.

Infra-red lamps are a special type, designed so that most of their energy output is in the infra-red region of the spectrum, just below that of visible light. While light also is produced by an infra-red lamp, the largest proportion of energy output is in the form of radiant heat. Of course, no physical heat is produced until the radiant energy strikes a surface that absorbs it. To use such lamps efficiently, it is necessary to understand the mechanics of heating.

There are three principal methods of transferring heat. CONDUCTION: Here molecular activity transmits the heat energy through a given mass at a given rate characteristic of the particular material. CONVECTION: In this case, the heat is transferred by a moving medium such as air, water or steam. RADIATION: Here the heat travels in wave-like emanations through space in

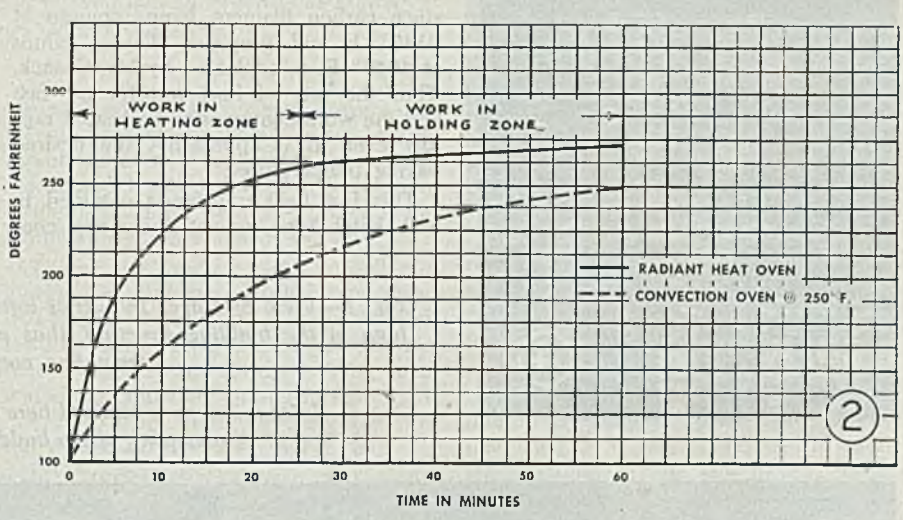
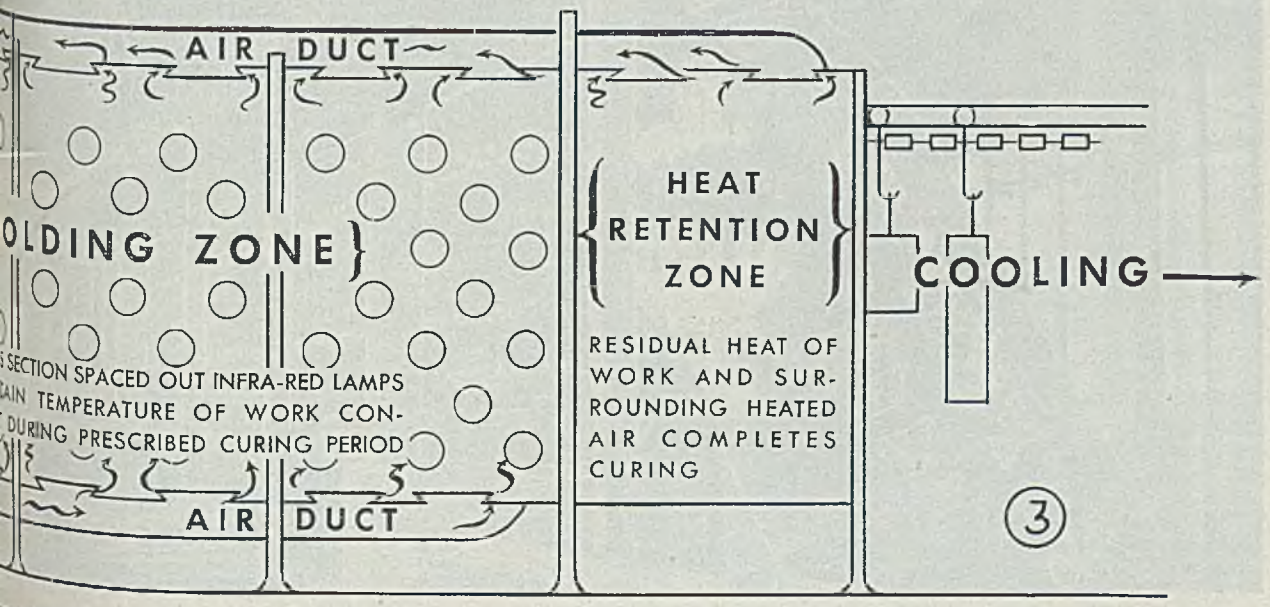


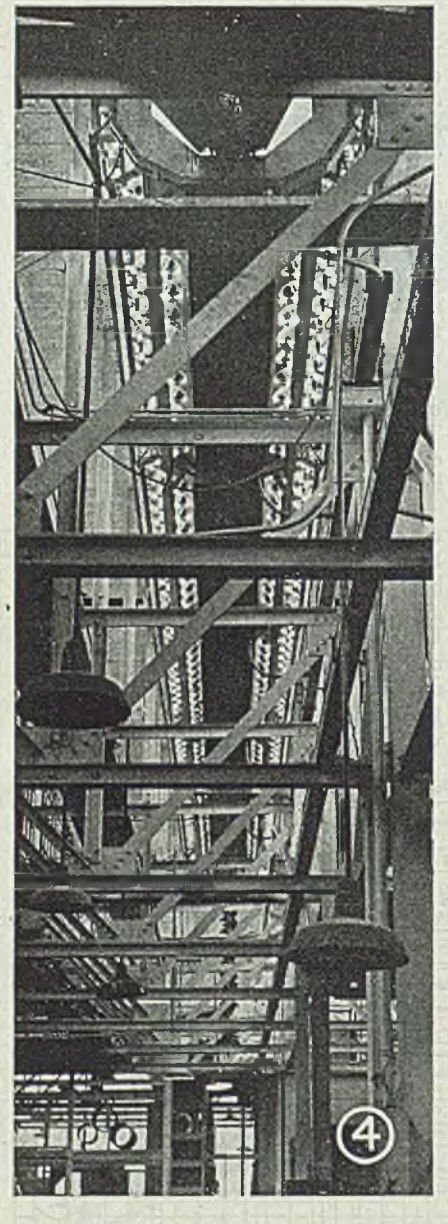
Fig. 1—Comparison of rates of heating a 0.095-in. thick steel panel show speed of open type banks of infra-red units and still greater speed when properly enclosed by a housing

Fig. 2—Demonstrating how "heating" and "holding" divide baking job into two parts in a radiant oven. Curves also show how same overall heating effect, same area under the curve, can be obtained so rapidly by infra-red

Fig. 3—Typical 4-zone infra-red oven for baking normal synthetic enamel finishes

D HEATING SYSTEM





much the same manner as visible light or magnetic forces. In correctly designed infra-red equipment, each of these methods of heat transfer must be scientifically accounted for, since all three are involved in varying degrees in any heating problem and thus affect heating efficiency.

Why Infra-Red Is Fast: Rate of heat transfer—whether by conduction, convection or radiation—depends upon the difference in temperature between the heat source and the work. In a conventional convection oven, the work is heated by air which may be only a few degrees hotter than the desired temperature of the work. Result is that as the work comes up to temperature, the rate of heat transfer slows down and practically stops as work reaches air temperature.

For this reason, a considerable period of time is usually required in a convection oven for baking metal finishes, several hours not being uncommon.

On the other hand, when heating with infra-red, the heat source is several thousand degrees hotter than the work, even after the work has reached ordinary baking temperatures of 200-300° F since carbon filament lamps operate at 3140° F and tungsten filament lamps at 4040° F, as explained by Mr. Cusack. Thus the rate of heat transfer is fast and the work continues to be heated rapidly even as it approaches the desired baking temperature.

This fast heat transfer is obtained in both batch type radiant ovens and conveyorized radiant heating systems. It this inherently rapid rate of heat tra fer that accounts for the unusual h outputs of work obtained in properly gineered radiant heating installations.

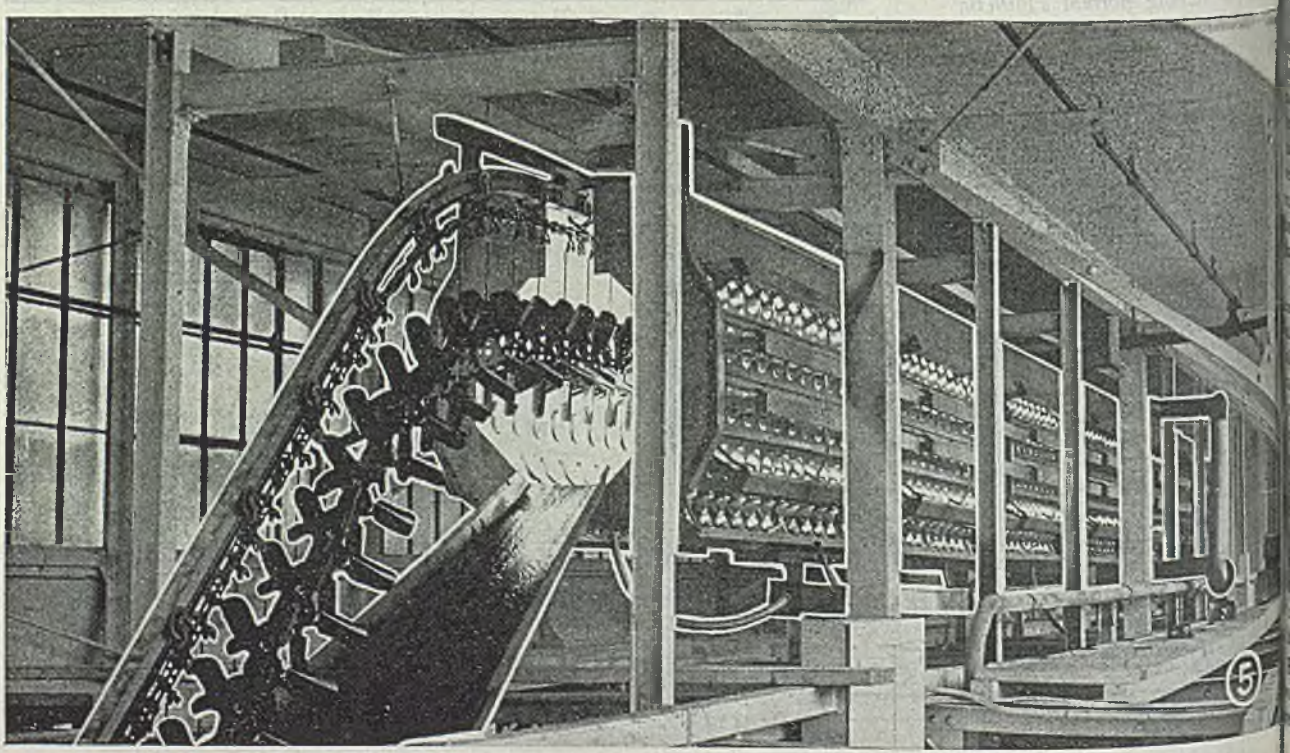
At the same time there are certa phases of heat engineering that m be understood and applied for prop utilization of infra-red heating, Mr. C sack points out. The first principle that heat is developed at the point wh the radiant energy is intercepted, t is, at the work surface. This heat, in tu is then conducted through the mass the part being heated.

For efficient operation every reas able method should be utilized to pr vent loss of surface heat. Certainly large proportion of this surface heat lost when work is hung between t open banks of infra-red lamps, becau the hot work surface heats surrounding Not being confined, the heated air ris creating natural convection currents t conduct a great number of precious B away from the work.

"Right here is the opportunity to crease the efficiency of an infra-red s tem," says Mr. Cusack, who adds, a properly engineered installation, air surrounding the work can be k at or near the desired work temperat by enclosing the entire system in a hou ing which prevents loss of valuable he ed air. Such an enclosure increases o all operating efficiency as much as per cent. The importance of maintain properly elevated air temperatures radiant heating ovens thus becomes

Fig. 4—View of Hayes Industries infra-red oven shows how it was mounted high in the building structure, thus saves $2880 monthly in floor space; at same time, output was tripled

Fig. 5—Infra-red oven is outlined here to show how it was fitted into structural framework of the building at Hayes Industries



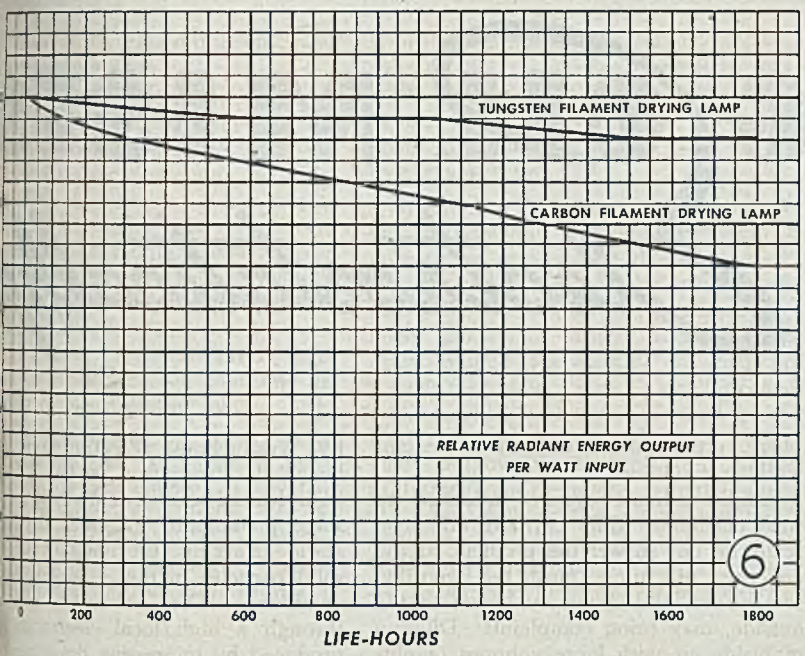


Fig. 6—*Per cent efficiency (ratio of energy output to input) for tungsten and carbon filament lamps. These curves show why tungsten lamps are preferred by many engineers*

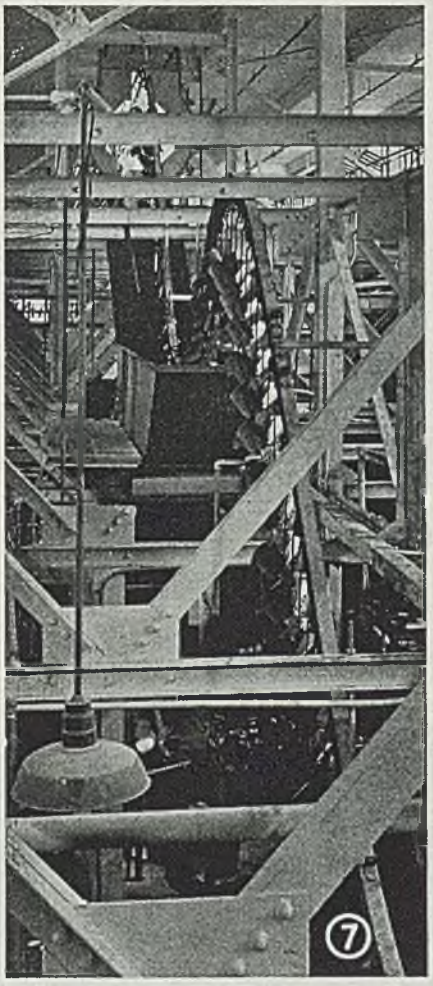


Fig. 7—*Dip tank, too, is mounted overhead in the building structure as shown here. Conveyor line carries work through tank*

ent." Fig. 1 illustrates the advan- of infra-red oven enclosures.

ch an oven enclosure will result he heated air rising to the top and g trapped there, cause stratification air at bottom, warm air in center, or at top). This in turn causes en heating, so stratification must be ated by proper circulation of the in the oven—exhausting air at the and returning it at the bottom gh ductwork to get uniform distribu- One such change of air per minute p oven efficiency 15 per cent, re- Mr. Cusack.

merely preventing loss of heated will not insure efficient drying, for blower will not do the job. Some must be provided to take out the vapors which otherwise would the oven atmosphere and pre- drying. This is done by continu- exhausting a certain percentage of recirculated in the oven and re- it with clean air.

ltiple Zone Ovens: Most econom- of radiant energy involves at two zones—a heating zone and a g zone. These are inherently sep- sections because the work to be in them is different. In the first the job is essentially a mass heating on bringing the mass up to the temperature. In the second zone, red energy is applied to the work fficient concentration to maintain mperature developed in the mass g operation. Thus, the first zone ainly a heating section; the second, ding section.

2 illustrates diagrammatically these different operations and how they e in a radiant energy oven in comparison with a convection oven. It is evident that the same paint baking conditions (same area under the curve) are obtained with infra-red in a fraction of the time, simply because required work temperatures are reached sooner.

Therefore to reduce costs, a well engineered continuous conveyor type oven will employ at least two zones (1) a mass heating zone where lamps are closely spaced together and (2) the holding zone where the lamps are spaced farther apart . . . and many units are designed with four zones as illustrated in Fig. 3.

In a typical 4-zone oven for baking normal synthetic enamel, see Fig. 3, the first or entering section is a preheating zone utilizing hot exhaust air. No infra-red lamps are used in this portion of the oven. Preheating zone fills a two-fold purpose — preheating entering work, thereby increasing overall thermal efficiency; and boiling off the highly volatile solvents.

Next, entering the mass heating zone with its concentration of infra-red lamps quickly raises work to full baking temperature. In third or holding zone, spacing out the lamps maintains temperature of work constant during prescribed curing period while heat is distributed by conduction throughout the entire mass of the parts being finished.

In the fourth or heat retention zone, no lamps are employed and the residual heat of the work and surrounding heated air completes the curing of the finish. Into this fourth zone is added the make-up air which is warmed by the residual heat of the work. Circulation of air through such a system is also diagrammed in Fig. 3.

Zone arrangement can be modified as required. For example, in the baking of certain wrinkle finishes the low-heat zone comes ahead of the high-heat zone, just the reverse of that in Fig. 3.

Since the length of time the work remains in any particular zone is a function of the conveyor speed and length of that zone, it is easy to design an infra-red oven for almost any heating cycle required.

Proper Design Cuts Operating Costs: There are a number of important factors entering into the design of a radiant oven in addition to those already mentioned (enclosure, recirculation, ventilation, zoning, proper heat cycle, etc.). It is vital that the influence of every factor entering into the efficiency of the installation be understood if the energy consumed is to be utilized to the greatest advantage. Proper consideration and balancing of these various factors has made possible some remarkable economies.

As an example of what can be achieved, one job originally estimated to consume 600 kw, through skillful engineering actually was made to operate at a power consumption of only 278 kw. That is what is meant in the previous reference to the fact that the future of infra-red depends upon the economies which can be effected by proper infra-red engineering and design. It's that kind of economies to which Mr. Cusack refers.

Infra-Red Source: Mr. Cusack pre-

(*Please turn to Page* 148)

COLLECTING OIL MISTS Electrostatically

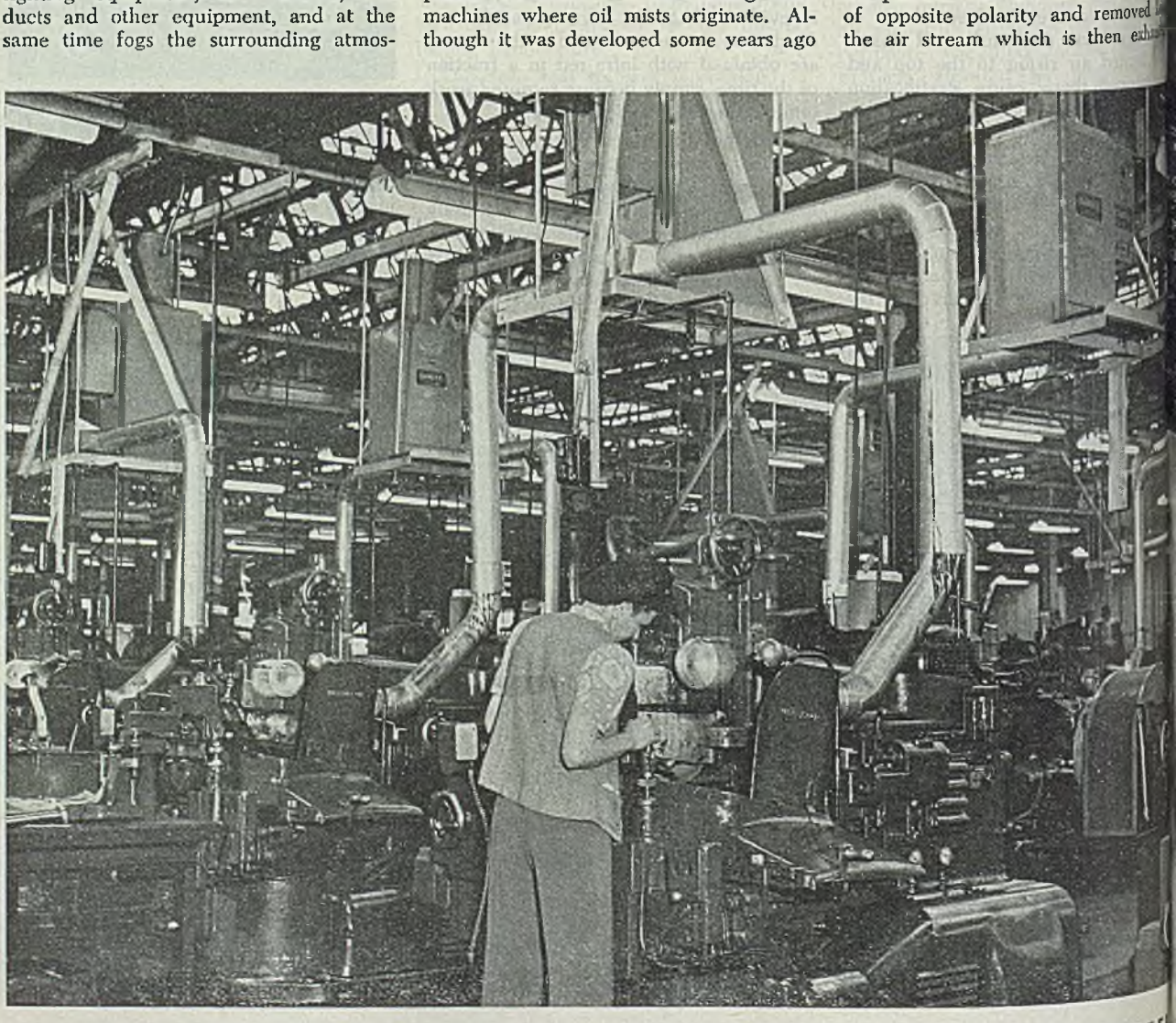
By A. H. ALLEN
Detroit Editor, STEEL

OIL smoke and mist arising from closely-packed batteries of high-speed grinding machines, such as thread grinders and gear grinders, can prove to be both a nuisance and distinct maintenance hazard.

The fine mist, resulting from the breaking up of particles of cutting oil, rises from machines and settles on overhead lighting equipment, roof trusses, bus ducts and other equipment, and at the same time fogs the surrounding atmosphere, often contributing to unpleasant working conditions.

Simple exhaust systems attached to such machines, while partially effective, really do not answer the problem, as the collected oil fumes must be deposited somewhere, and if merely blown to the outside, may bring complaints. Dilution of inside air with large volumes of outside air likewise is not satisfactory, because of the expense involved in blowing equipment as well as in heat loss in winter, plus the fact outside air itself is usually contaminated to a degree in industrial districts.

One solution which has been tried and found suitable is the installation of Precipitrons in exhaust ducts leading from machines where oil mists originate. Although it was developed some years ago by Westinghouse Electric Corp., Pi burgh, the Precipitron has been limited its industrial use. Essentially it is a tw stage precipitator in which the electr static charging precipitating of su solid particles in the exhaust stream is combined. The exhaust first pas through a high local electrostatic fie produced by impressing direct current 13,000 v on a number of fine wi This serves to charge or ionize the s particles which then pass to a neg charging uniform electrostatic fie created by a system of parallel st plates, alternate plates being grounde and the remaining plates being connec to a source of 600 v dc potential. Th the particles are drawn to the electro of opposite polarity and removed fr the air stream which is then exha



n the top of the Precipitron unit back
he room atmosphere.

he unit itself comprises two principal
nents — an ionizer - collector cell
a power pack. The cell is an all-
l unit capable of cleaning 600 fpm
0 per cent efficiency, according to
manufacturer. The power pack con-
transformers, rectifier tubes, capac-
protective current limiting resistors
indicating system to signal a short
it. The latter unit converts 115 v ac
plant lines to the necessary high
ge direct current for charging the
rodes of the collector cell.

e of particles in oil mists, dusts,
e and the like is measured by a
known as the micron, equivalent
ne-thousandth of a millimeter, or
04-in. Miscellaneous dusts, pollen
other particles larger than 1 micron
e tend to settle from the air unless it is in motion. Some heavy industrial dusts average 8000 microns in particle size, while tobacco smoke particles are as small as 0.1-micron. A 10-micron particle is about the smallest which can be seen by the naked eye.

Mechanical filters are reported effective in removing dirt particles from 5 microns up in size, but the electrostatic method will precipitate the smaller particles. The principle of the method has been known for many years and has been applied successfully in such instances as boiler stacks, smelters and cement mills, where the Cottrell precipitator is commonly used. This equipment employs voltages of from 30,000 to 100,000 and generates a high degree of ozone, making the air around them unfit for breathing. By reducing the voltage as in the case of the precipitron — 13,000 for ionization and 6000 for

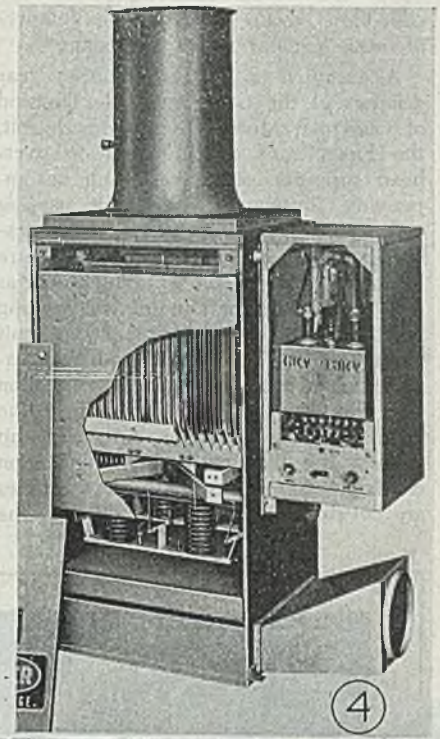
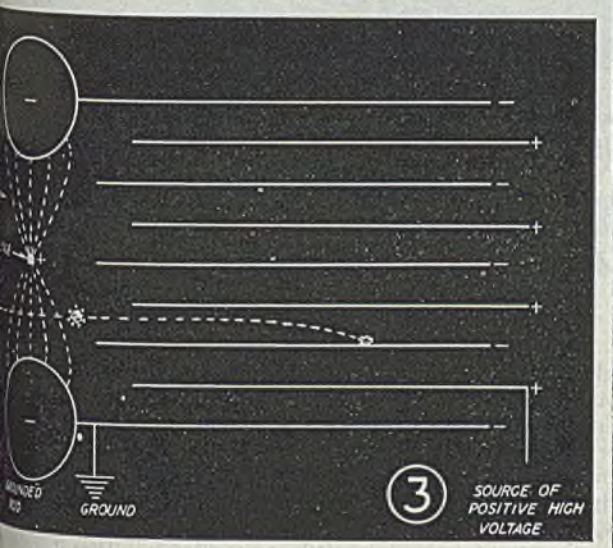


Fig. 4—Cutaway view of electrostatic dust precipitator, showing main ionizer-collector cell through which exhaust stream passes, and power pack at right to charge the collector

Fig. 3—Diagrammatic representation of how dust particles are given positive charge and then attracted to negatively charged collector plates



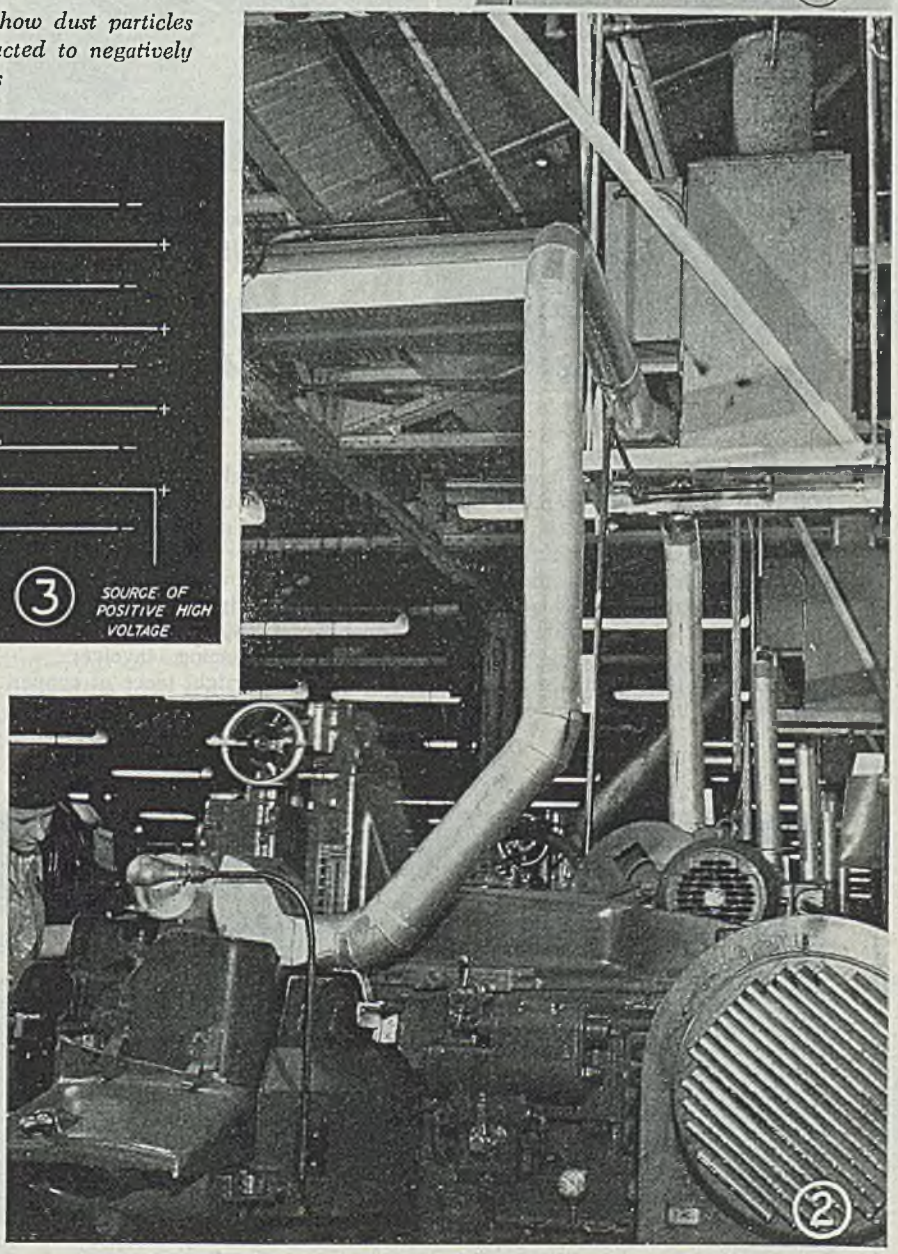


Fig. 1—Battery of gear grinders, with Precipitron units mounted overhead, each collector serving two grinders

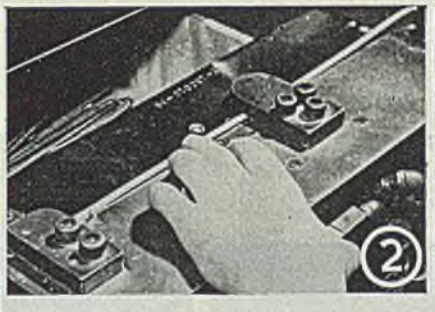
Fig. 2—Closeup of 6-in. duct system from collector to grinding, each inlet positioned close to grinding wheel to catch all fumes and particles. Motor and exhaust fan are mounted on top of collector unit

collection — the objectionable features of ozone generation are overcome.

As installed on Pratt & Whitney gear grinders at the Gear and Axle Division of Chevrolet Motor Division in Detroit, the Precipitrons are mounted on overhead supports as shown in an accompanying illustration, one unit serving two grinders. Intake ports of 6-in. exhaust ducts, covered with a grille, are located as close to the grinding wheel as is practical, the ducts themselves leading to the base of the Precipitron unit mounted above. A small axial flow exhaust fan is mounted atop the collection unit, drawing exhaust fumes from the vicinity of the grinding wheels up through the ducts and into the collection chamber. Since dust and dirt particles are covered with oil, they drain off the collection plates into a sump at the base of this equipment, from which a return pipe carries the liquid to the oil reservoirs on the respective grinders.

Chevrolet plant engineers have found the electrostatic collection method of mist collection a valuable maintenance tool. Directly over grinders without collection equipment, rising mists condense on roof trusses, necessitating frequent cleaning to avoid dripping down on to operators, machines and work in process. In time, it is believed the original cost of the unit, around $300 each, exclusive of duct systems, would be made up by maintenance savings. Casual observation of the air surrounding the batteries of grinding machines shows a considerably greater clarity than around machines not equipped with collectors. This should at least be conducive to better work conditions, although to date there has been little reaction from machine operators as to their own feeling with regard to the efficacy of the Precipitron equipment.

Chevrolet engineers indicate, however, that in future layouts of batteries of equipment of this type, they would be favorably disposed toward installation of the auxiliary equipment. One improvement, which machine tool builders might consider, would be the incorporation of intake ports for the duct system into the design of machines, so that they could be located more closely to the source of oil mists, or where the wheel contact is admittedly makeshift, there is less escape of mist from the region of the exhaust ducts.

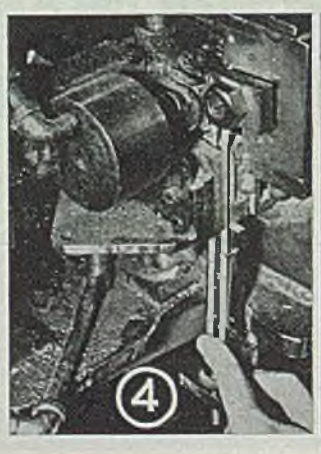


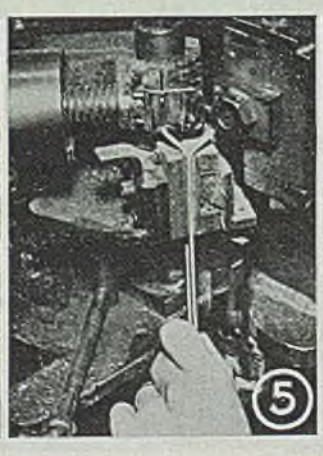
Ingenious Jigs, Semiautomatic Machines Used for

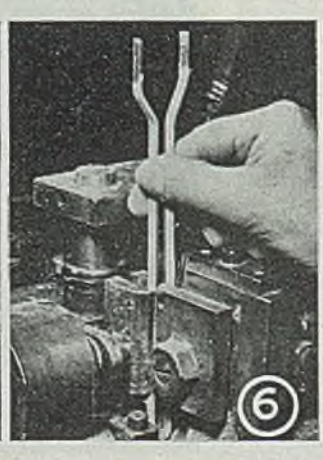
Forming Aircraft Coils

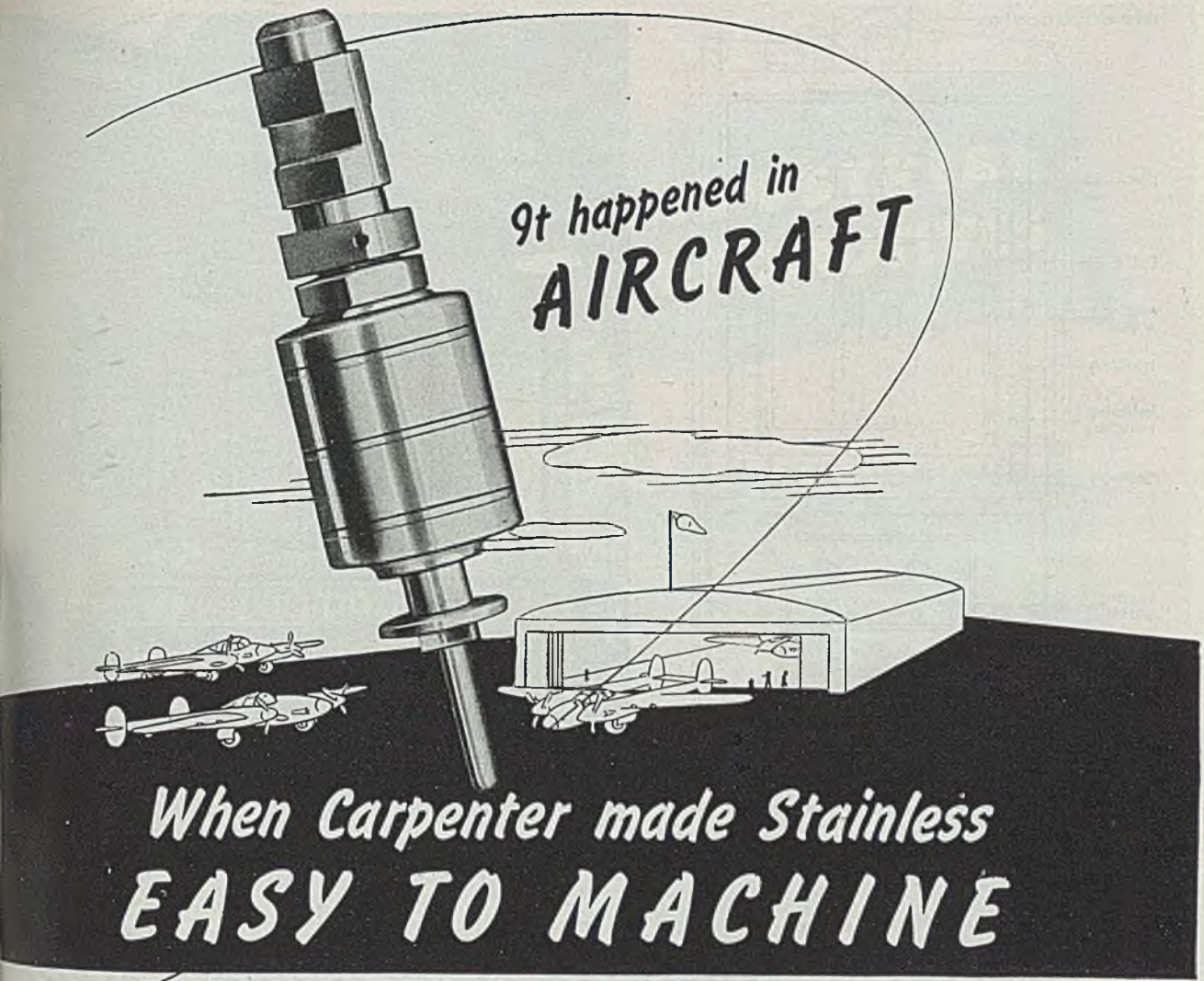
SINCE Pearl Harbor, over 6,000,000 coils for aircraft generators have been precision formed on specially developed, semiautomatic machines such as the one shown in the accompanying illustrations. This production has been made possible at Westinghouse Corp.'s Lima, Ohio, works by ingenious jigs and mechanisms such as those shown in Fig. 1. A coil starts out as a straight piece of copper, slightly larger in cross-section than a paper book match and insulated with glass fiber to withstand high temperatures. Four forming operations later it is ready for the armature. These operations, made possible by interlocked sequencing, involve:

Bending a straight piece of copper, Fig. 2, into a hairpin shaped coil, Fig. 3; forming the front end of this hairpin, Fig. 4, to fit the commutator slots, Fig. 5; forming the rear end of this hairpin, Fig. 6, to fit the rear slots, Fig. 7; and bending the front end of the bottom coil side up to a point that is level with the front end of the top coil side. Thus it is possible to place the ends side by side in the commutator slot for brazing.









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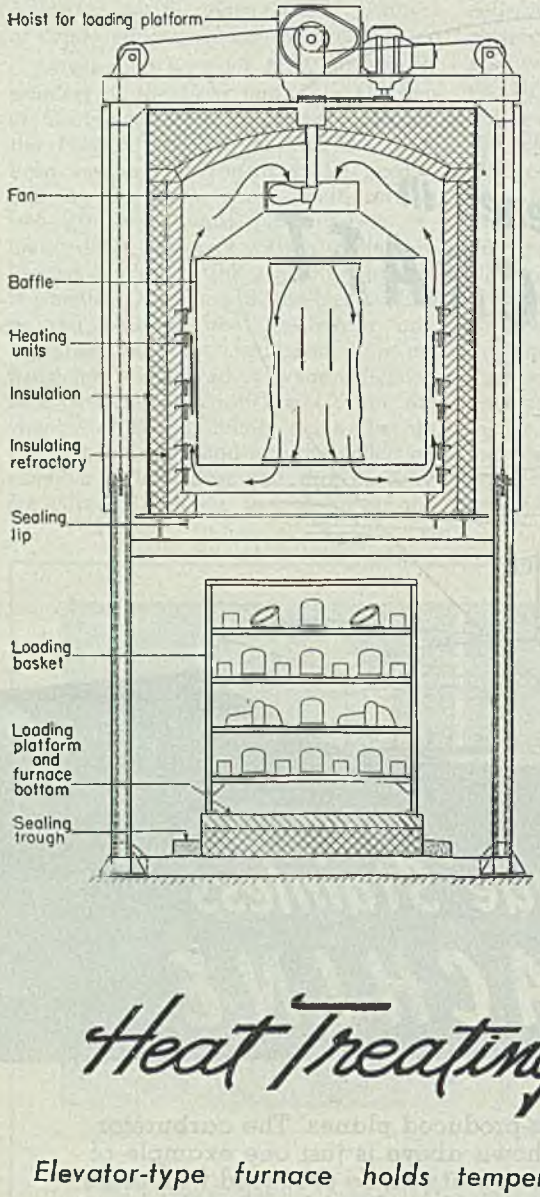

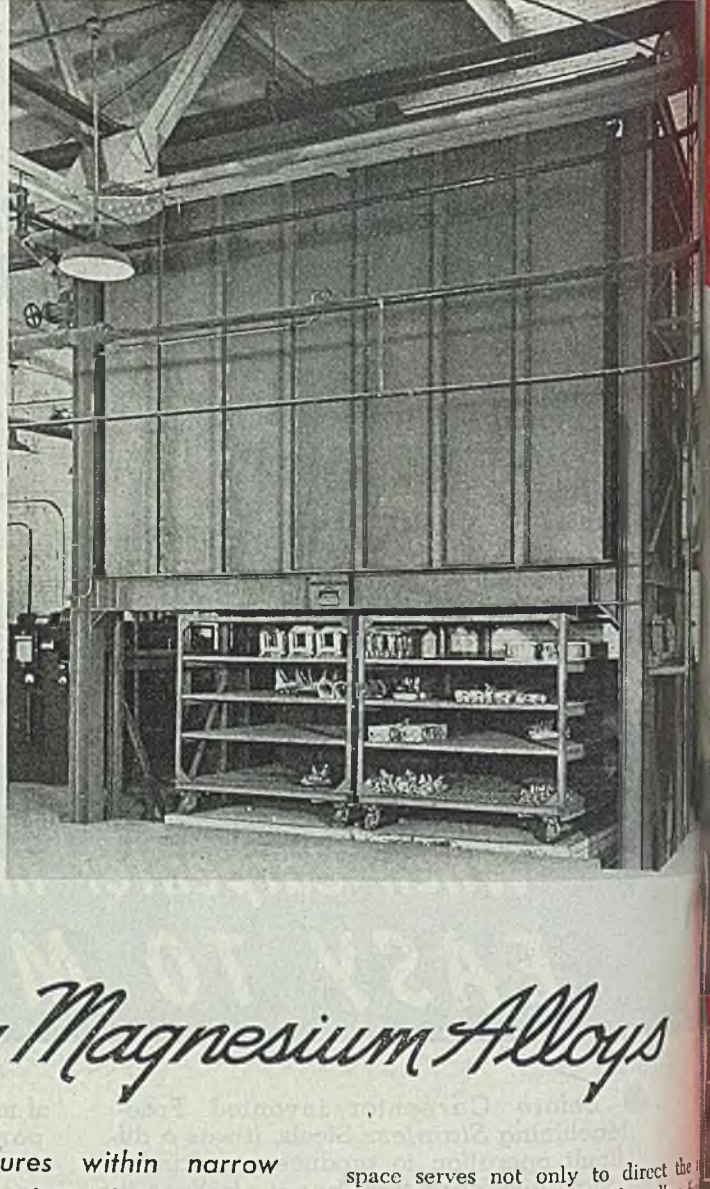

Heat Treating Magnesium Alloys

Elevator-type furnace holds temperatures within narrow range and produces parts with maximum physicals obtainable

MAGNESIUM alloys of aluminum and zinc being produced as castings for various structural parts of airplanes are important in keeping down dead weight and in increasing the useful load of aircraft.

To obtain their favorable weight ratios, it is necessary to double heat-treat the magnesium alloys. Such heat treatments require temperature regulation within plus or minus 5°F, and castings must be shielded from radiant heat so that thin sections of the alloys are not overheated. In addition, the inflammability of magnesium alloys necessitates the use of heat-treating furnaces that are equipped not only with suitable safety devices, but are so designed that they can withstand a magnesium fire in their interiors without appreciable damage to the furnace, and with complete safety to the building in which the furnaces are located.

Approximately 3 years ago, before the present large-scale production began, requirements of magnesium-alloy heat treatment were studied by the General Electric Co., Schenectady, N. Y. As a result, an elevator-type magnesium-alloy heat-treating furnace was developed. The cross-section of a typical furnace, shown at left above, shows how large-volume fans flood working space of the furnace with hot atmosphere, thus insuring good temperature uniformity. The baffle which surrounds the working space serves not only to direct the flow, but also to shield the alloy from direct radiant heat. Maximum operating temperature is 800°F.

Alloys to be treated are placed on racks like those shown at right above. This furnace has its loading platform with two partially lowered racks in lowered position. The racks are placed on the movable furnace bottom, which when raised, puts the loaded rack in position in the stream of circulating atmosphere. The furnace bottom is sealed tightly to the furnace, permitting a protective atmosphere of sulphur-dioxide to be maintained within to inhibit fires and oxidation of casting surfaces. A refractory lining and the tight seal of the furnace restrict any fire that may occur in the interior of the furnace.

TIME-TEMPERATURE EXPLORATION TEST

Time	Thermocouple 1	Thermocouple 2	Thermocouple 3
6:00 p.m.—Solution Heat on			
8:00	500	500	502
9:00	693	603	698
At Heat			
10:00	766	764	766
Midnight	762	762	762
2:00 a.m	766	766	766
4:00	766	766	766
6:00	766	766	766
8:00	766	766	766
Noon	764	764	764
2:00 p.m.	764	764	764
4:00	Heat Off		

An excerpt from a temperature-exploration test conducted by a magnesium foundry is shown in the accompanying table. Thermocouples were located at top, center and bottom of charge. Results indicate relative efficiency of this type of furnace. Experience in numerous other installations indicates that the electrically-heated, atmosphere-circulating elevator furnace provides accuracy and safety which are essential in mass production of magnesium-alloy castings.

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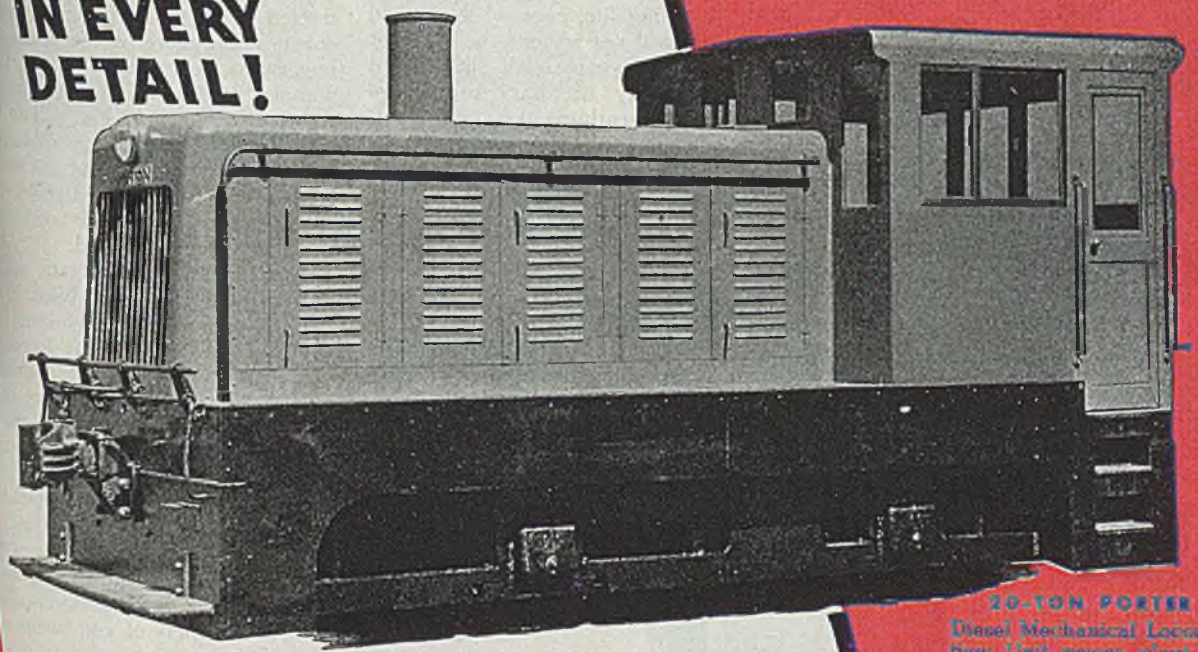

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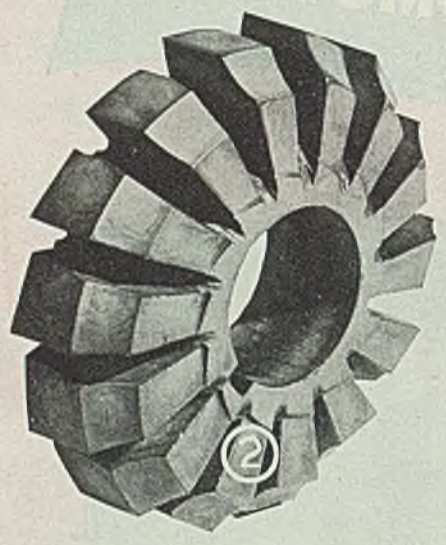
High Speed Steel Tools



HIGH-SPEED steel tools of all types—tungsten, molybdenum or cobalt — now are being heat-treated in production electric furnaces by General Electric Co., Schenectady, N. Y. No surface change occurs except a slight discoloration which becomes apparent when the tool is transferred from furnace to quench bath.

By this method, cutters of all types are made uniformly hard to the sharpest point. A testing file, even when applied with force, will not remove the point or notch the cutting edge. All cutting and grinding, usually necessary to remove oxidation or decarburization, are eliminated. Cutters and dies can be made to size before hardening with a resultant saving in material and grinding cost.

Furnaces and atmosphere producers, such as those shown in Fig. 4, afford very satisfactory results. The G-E types T and TG box furnaces are at left, and a drycolene producer is at right. Among the steel tools heat treated in these units are the cutters shown in Figs. 1, 2 and 3.

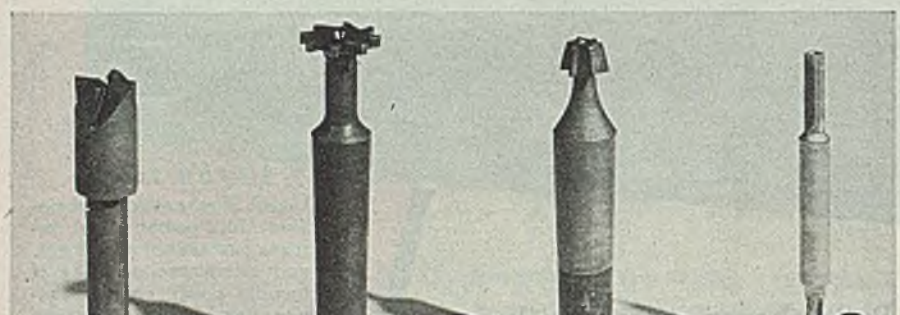
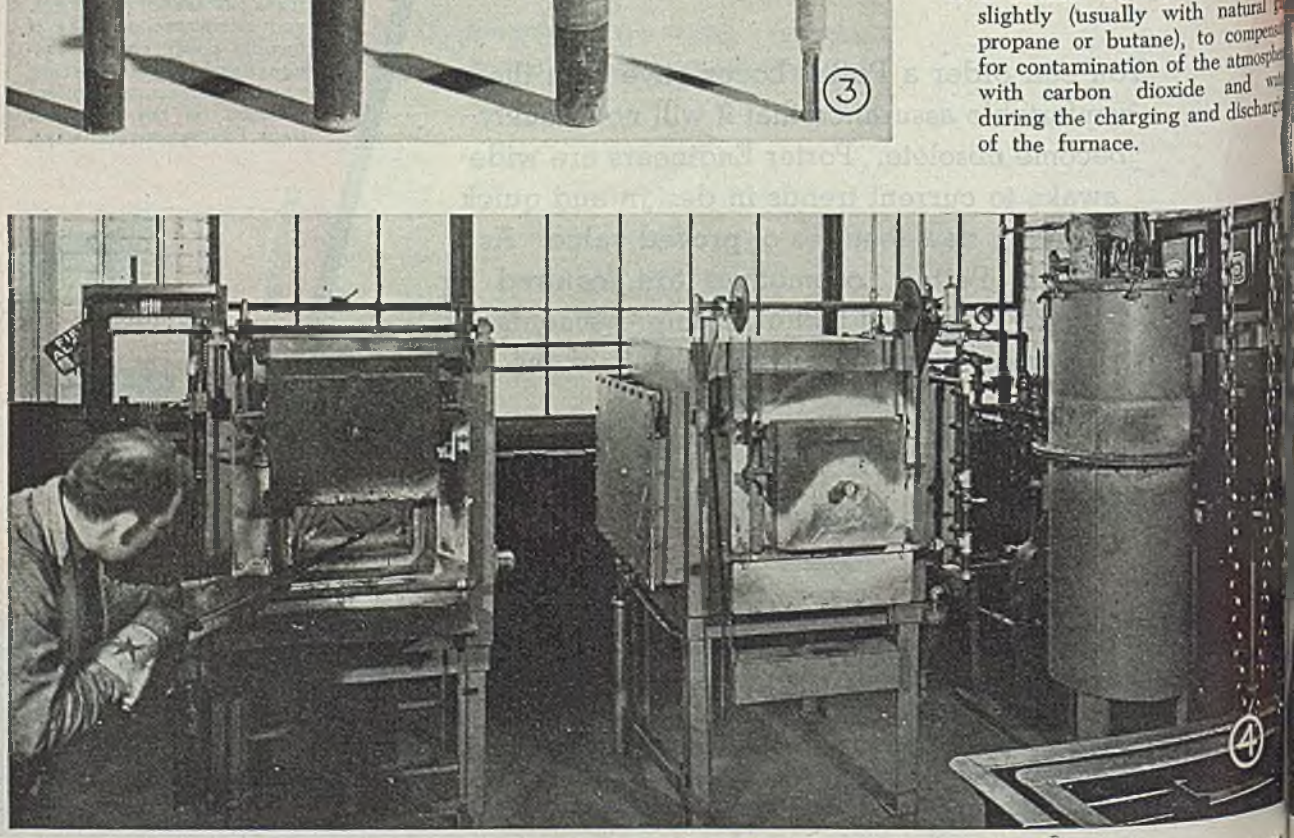
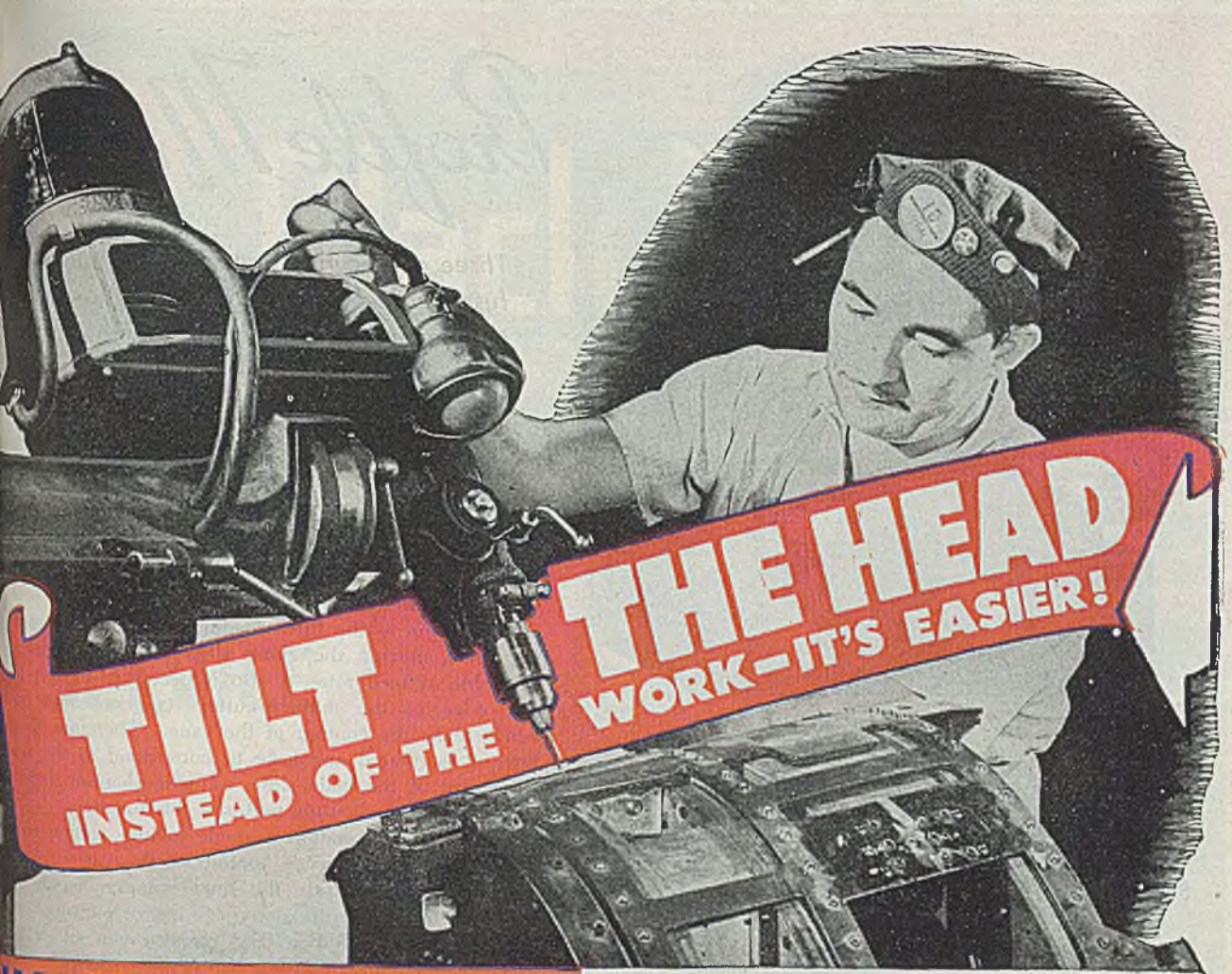


Fig. 2 shows a form-milling cutter, w clean, sharp edges, which was h treated in the type TG furnace with d colene atmosphere. A square-thread m ling cutter, heat treated in a TG furna without decarburization or oxidation, shown in Fig. 1. In Fig. 3, four type cutters made of high-speed steels, h treated in a type TG furnace with pr tective atmosphere of drycolene, sh clean surface, but their cutting edg and corners are file-hard.

The foregoing results are made po sible if conditions listed below exist.

1. If preheat and high-heat furna are gas-tight electric furnaces.
2. If atmosphere in the furnace pr tecting the steel against oxidat is practically free from the de burizing gases, carbon dioxide, a water vapor.
3. If flame curtain is completely e fective in keeping air out of t furnace when door is open, and is not so located or not so viole as to fill the heating chamber wi its products of combustion.
4. If furnace atmosphere is enriche slightly (usually with natural ga propane or butane), to compensa for contamination of the atmosphe with carbon dioxide and wa during the charging and discharg of the furnace.





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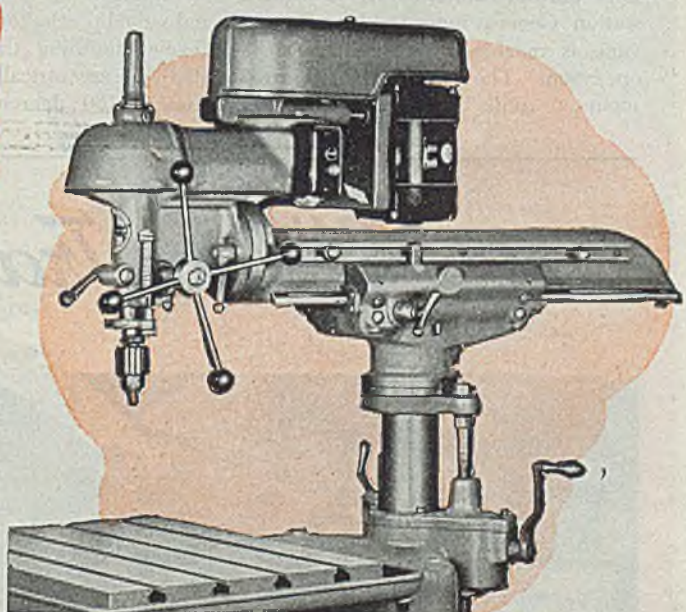

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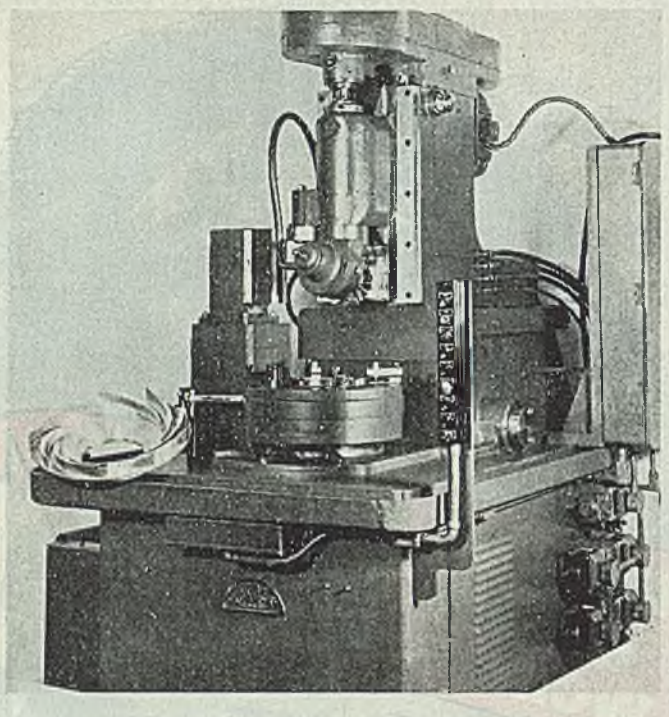


Profile Milling

Three consecutive operations on aircraft dif-fuser part expedite production and reduce to minimum costly hand-finishing operations formerly required

PROFILE millers for three consecutive operations on an aircraft diffuser part expedite production and reduce to a minimum the time-consuming and costly hand-finishing operations which would be necessary in conventional handling. The three special units used in this operation are made by Snyder Tool & Engineering Co., Detroit.

In the first operation a vertical 2-spindle end-milling machine is used to mill a 1/32-in. radius on each end of the nine diffuser vanes. Part is located and clamped on a 9-station Geneva index table. On each individual cycle, one vane is machined on both ends, nine cycles finishing this operation. The end mills used are installed on eccentrically mounted quill housing which rotates through 180 degrees.

The 2-spindle head, motor and spindle drive mecha slide into position hydraulically and are supported by guide bars.

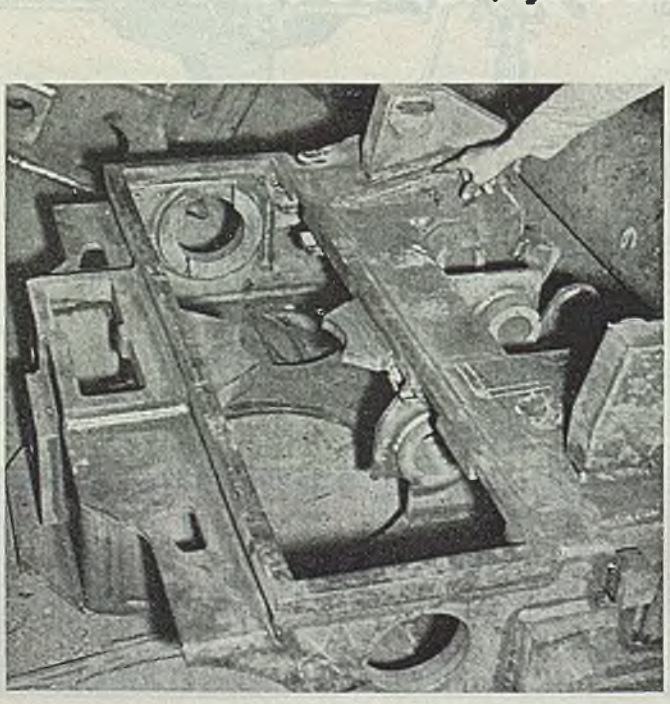
In the second operation, shown in illustration, a ver single-spindle miller is used to mill the outside contour the vanes with side milling cutters set at an angle to vertical spindle housing center line.

In addition to the three feeding motions—feeding the ter down, moving the entire slide in and out and rota the table at feed rate—it also is necessary to keep the ting edge of the milling cutters tangent to various which make the contour of the vane. Therefore, the spi housing is rotated angularly to correspond to the in-and movement of the main slide. The mechanism shown at left of the cutter housing performs this function.

In the third operation a single-spindle vertical end mi is used to mill the inside contour of the vanes. After m advance into the work, the single-spindle housing is by a cam mechanism to conform to the vane contour.

The part is rotated at feed rate through an arc, and vertical feed spindle housing also is moved in and out three cam action. All three actions of the feed mechanism feeding the cutter up and down, moving in and out and tating the part—are mechanically synchronized. The is located on a 9-station Geneva index table.

Welded Transmission Case



WELDED construction afforded economies in time and terials on a job recently undertaken by Steel Fabricators Cleveland. An intricately designed transmission case for mining machinery was made much more compact and stron by welding. This permitted the machinery to be operated smaller areas and to perform its work in mine fissures form inaccessible. The new transmission case measures appr mately 53 x 43 in. and is 15 in. high. It is said to weigh a 1000 lb less than the previous case. Because this structu subjected to abnormally heavy shock and impacts, the w ment is constructed of heavy plate sections with thickness 1¼ to 2½-in. predominating.

Individual members were cut to specifications, positioned tacked into place, and then finish welded on both sides. M joints were of the full open corner type, shaped to pro good stress distribution and permit application of the fini structure to impact loads of all types. Accompanying illustra shows a typical welded joint of this type, with 3 passes of mild steel electrode being pointed out. Inside welds of b fillet and butt type were made with ⅛-in. rod. Excess w metal is easily ground off to specifications with a power gri ing wheel.

Photo and data, courtesy Lincoln Electric Co., Cleveland.

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Black Plate

Tin Plate

Wolff Steel Service

When you're in a hurry for tin plate or black plate, you're most likely to find just what you want in the complete stocks Wolff provides — hot dipped and electrolytic tin plate, black plate, long ternes, and manufacturer's ternes in as great a range of weights and sizes as can be found anywhere in the Midwest.

When next you need tin mill products, call or write Tin Mill Sales Department. Republic 9100.

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General Office and Warehouse — 58th St. at Seeley Ave., Chicago 36, Ill.

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West Coast Steel Mill

. . . . produces many different items in modern wire mill, described here in the fourth and last article in a series detailing the facilities and practice of Columbia Steel Co. near San Francisco

By G. ELDRIDGE STEDMAN

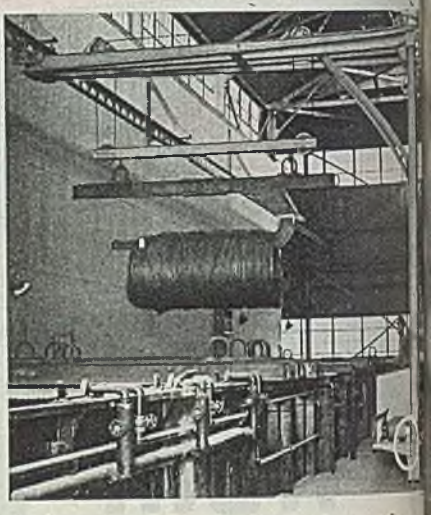


Fig. 1—Wire mill cleaning house. Single leg gantry handles the large coils

WIRE PRODUCTS produced at the Pittsburg Works of the Columbia Steel Co., some 45 miles from San Francisco, include manufacturers' wire, wire rope, strand and cable, nails, tacks and staples, springs and spring wire, woven wire fence and barbed wire. The wire, nail and wire rope mills are thoroughly modern and laid out for straight line production.

Raw material comes into the wire mill, a 1170-ft long building, from storage where the coiled rod is stored by grades and sizes after hot rolling. Cleaning and coating operations are arranged in a straight line. Coils are received on a unique system of air ejectors which push the coiled rods on to a pin hook. A single leg gantry crane thereafter picks up these pin hooks, carrying seven coils or about 4300 lb of rod, and transports them along the straight line of cleaning vats. The sequence is as follows:

Rods come first to three acid (dilute 8 per cent sulphuric), the capacity being three pins of seven each. The cycle varies from 5 to min depending upon the product. pins then are lifted out by crane passed to an automatic cold rinse high-pressure immersion type, cont by photoelectric cell. The action a spray, down-and-up immersion quiring about 20 sec.

Pins then are moved by crane to of three line tanks for light, medium heavy coating in a 2 to 12 per cent solution, depending upon finish pro requirements. This neutralizes the maining acid, prevents oxidation, vides a carrier for the lubricant drawing, and establishes the basis bright or lime finish. Finally, the carrying the coils are craned to the baker to receive a 350 to 650° F dip for a 3 to 20-min interval, depen upon the product.

Some of the coiled rods receive (ferrous hydroxide) coating before liming dip. This is done by mist to give color control and to provide carrier for the drawing lubricant.

From cleaning, the coiled rod into temporary storage or some

Fig. 2 — Continuous wire drawing is done here

Fig. 3 — Group of multiple cable stranding machines

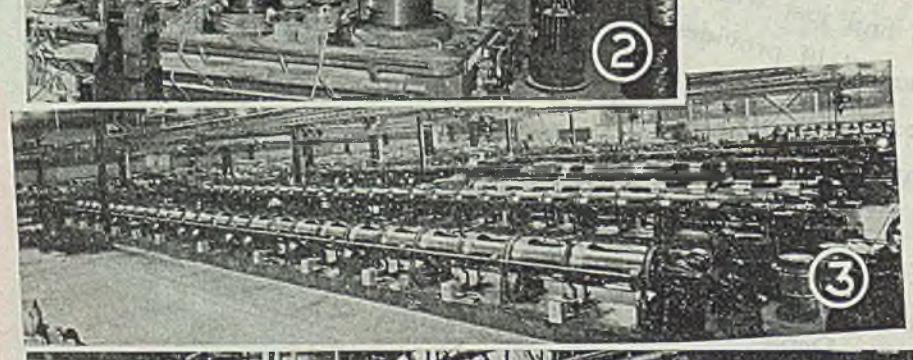
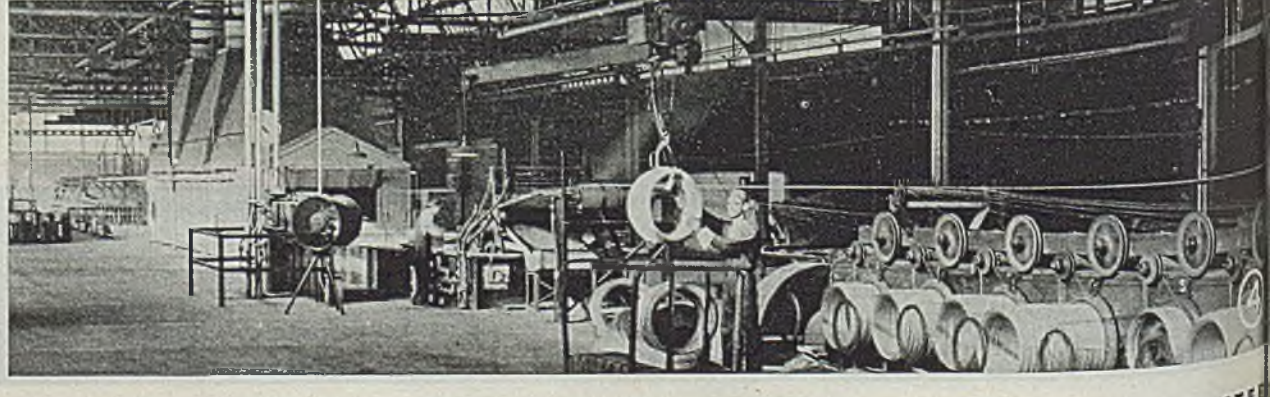


Fig. 4—Coarse wire galvanizing line. Takeup blocks at right



MOORE RAPID

Lectromelt

FURNACES

LECTROMELT

TOP CHARGE

CAPACITIES

TO 100 TONS

3 way gain with Lectromelt top charge furnaces higher production—lower costs—better metal

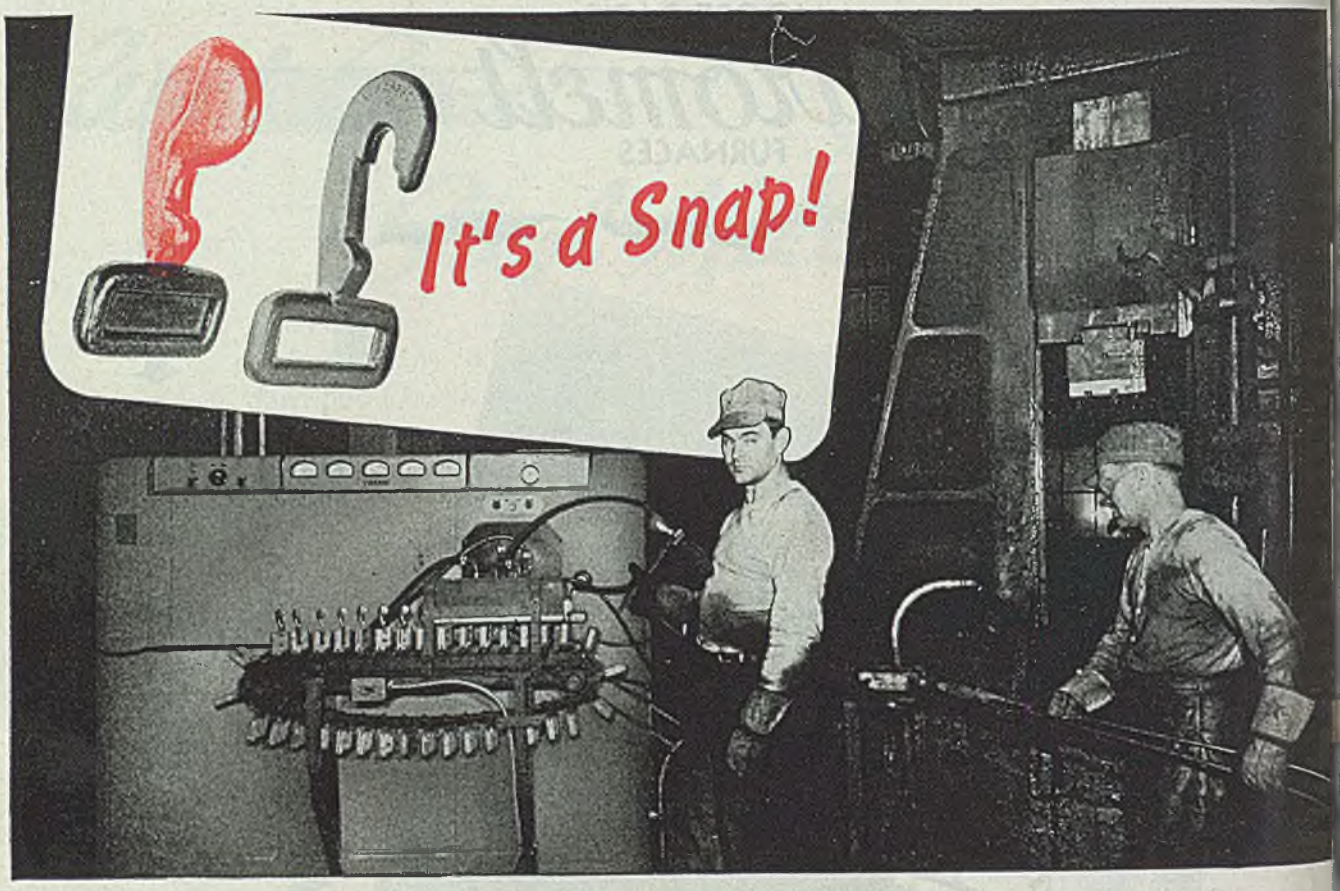
Definitely—the Lectromelt Top Charge Furnace increases production *per hour* and *per man* by reducing the dead time of charging. It is true also that quality of product is improved, as compared with other melting methods, because of absolute control of the heat that is possible from the minute the drop-bottom bucket is loaded for charging, until the furnace is tilted for the pour.

And there are other savings. The patented counterbalanced electrode arm winch control system eliminates electrode stresses to a minimum, thereby enormously reducing electrode consumption through avoidance of nipple and electrode breakage. Accurate plant records have established this fact; also, that current and refractory costs are sharply reduced.

Lectromelts are doing a great job in the war effort. They will do an equally great job in times of Peace. Capacities of 250 pounds to 100 tons provide for every requirement. Write for the catalog.

PITTSBURGH LECTROMELT FURNACE CORPORATION

PITTSBURGH..30..PENNA.



Output of Parachute Snaps boosted 2000 per day with TOCCO

LETTS DROP FORGE COMPANY, Detroit, Michigan, converted its heating for forging of parachute snaps from combustion type furnace to TOCCO Localized Induction Heating and got these results:

91% MORE OUTPUT. Formerly produced 2200 snaps per day. One TOCCO Machine heats one snap every 7 seconds—4200 per day.

PERFECT SHAPE. Formerly, when heated all over, bottom flange twisted when upper portion was forged. Scrap loss was high. TOCCO heats only portion to be forged; flange retains its shape. Scrap now is nil.

DIE LIFE INCREASED 77%. Speedy, localized TOCCO heating minimizes scale; increases die life from 18,000 to 32,000 pieces.

UNIFORM QUALITY. Guesswork eliminated. TOCCO's accurately controlled heating assures absolute uniformity of every snap.

EASY DOES IT. Formerly required two men; now one. All he does is load and unload TOCCO's work feeder. TOCCO's freedom from radiant heat and gasses improves working conditions.

Investigate TOCCO for *your* heating operations. "Results with TOCCO", free on request.

THE OHIO CRANKSHAFT COMPANY · Cleveland 1, Ohio

TOCCO

INDUCTION
HARDENING, BRAZING
ANNEALING, HEATING

flows to the shipping dock in mid-building. From this storage, the coiled rod comes to its first drawing in the straight line setup.

Housed in the drawing department are 24 continuous wire drawing machines; thirty-two 24-in. diameter double deck, bench type, motor-driven blocks; twelve 18-in. blocks, and two continuous 12-draft wet wire drawing machines; eight 14-in. bench-type blocks; and one bull block. This rather complete setup gives good production variety on sizes. All dies are tungsten carbide. All machines drawing high-carbon wire have blocks and dies which are water and air cooled. The mill prepares all its dies. All blocks have safety rings with automatic stops. All benches are equipped with safety trip levers that actuate at any body touch.

From these wire drawing machines, the coiled wire moves to three outlets: (1) To process wire for galvanizing, (2) to mill fabrication and (3) to process wire for annealing. These are in addition to the wire that is inspected, tested and shipped direct to market.

The galvanizing arrangement can produce either hard or soft galvanized wire facilitated by three frames: (1) Coarse, 12-block frame, 16 and 22-in. diameter blocks; (2) medium, 24-block frame with 16 or 22-in. diameter blocks; (3) fine, 32-block frame, 8 or 16-in. diameter blocks.

The galvanizing setup consists of lead pots for annealing; the pickle house in which the work is cleaned, rinsed and neutralized; the zinc bath and the variable-speed revolving blocks on which the wire is taken up after galvanizing. Soft wire annealing is at 1250 to 1300°. Within the galvanizing furnace, the wire temperatures are from 810 to 880° F. Variable-speed motors control the time of immersion in the zinc baths, weight of coating depending upon speed, time and length of immersion, and temperature of bath. Either bright or dull finish is produced and galvanized coatings are specified up to 1.2 oz per square foot of surface. Galvanized products are furnished in either high or low carbon.

The patenting furnace is 60-ft gas-fired open-flame type with a 20-ft lead pan, 24-block takeup. It heat treats high-carbon wire and rods. Wire leaving the furnace is approximately 1900° F and the lead pan is maintained at 900 to 1000° F. The takeup blocks are arranged horizontally. The process is particularly useful in high-carbon spring steel. The blocks are serviced by variable-speed motors having full-length bevel gears. All work from these patenting takeup blocks goes back through the cleaning cycle before drawing.

The annealing equipment of the wire mill consists of four pot type and two radiant-tube gas-fired furnaces with six bases, these having DX controlled atmosphere facilities for bright annealing. Bases are round in shape, the coils of wire being on spiders. The annealing is performed in a 6-hr cycle, being at 1350° F wire temperature; soak for 20 min with a slow cool under inner hood. Bright blue or black anneal is here produced, the annealing being either final or for further process drawing.

Finished wire from this department may go directly to market. It is delivered to the wire finishing department for weighing, bundling and inspection for shipment. All loading in the wire mill is under roof, the building being serviced throughout its middle by a single track capable of holding 14 railroad cars, loading from both track sides.

The testing equipment consists of a 10,000-lb Riehle mechanical testing unit, a 10,000-lb Olson hydraulic tensile machine, and other smaller machines. Every bundle is gaged and inspected as to finish, tensile strength, toughness (jig, crimping or torsion), elongation, and

(*Please turn to Page* 159)

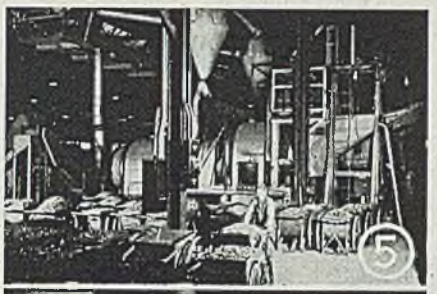
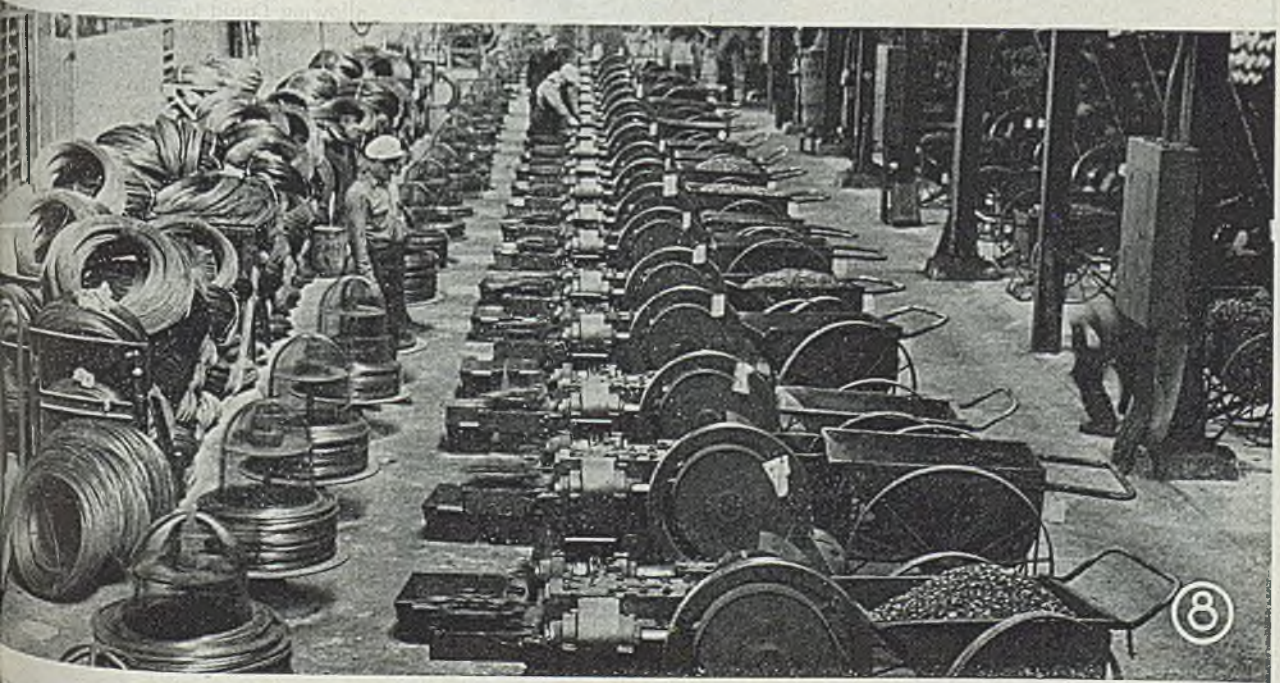


Fig. 5—Continuous cleaning machine handles 4500 kegs of nails per day

Fig. 6—Shaker tables and exit of nail cleaning line

Fig. 7—Machines for manufacturing nail kegs

Fig. 8—Machines which produce 390 nails a minute



Automatic Control Aids Aircraft Motor Operation

An automatic control for aircraft power plants combines three engine control operations into one, simplifying motor operation. Primary function of unit is to maintain power output previously selected by pilot, regardless of changes in altitude. To accomplish this, control uses many mechanical and electrical devices. When in use with turbosupercharged aircraft engines, it automatically sets the throttle, engine speed control and manifold pressure regulator, duties formerly performed by pilot.

To compensate for decreasing density of the upper atmosphere, the control regulates the turbosupercharger to increase air compression. Once power output setting is established, turbo adjustments require no further attention until a change in power plant output is desired. A single lever in the cockpit enables pilot to provide correct power plant regulation with one movement of the control.

Unit also reduces the human equation by employing mechanical means to assure constant power maintenance, resulting in smooth, uniform and efficient performance of turbo power plants. At extremely high altitudes or when otherwise necessary, unit limits maximum operating speed of the turbosupercharger to a safe value, preventing damage and insuring uninterrupted, continuous performance.

By reducing amount of control linkage and cables otherwise required from power plant to cockpit, engine control reduces lost motion and is said to provide positive, fast and smooth response from power plant. Pilot may take control away from the automatic unit made by General Electric Co., Schenectady 5, N. Y., and regulate manifold pressure and engine speed separately, enabling engine to make the most miles per gallon of gasoline.

Portable Oxygen Producer

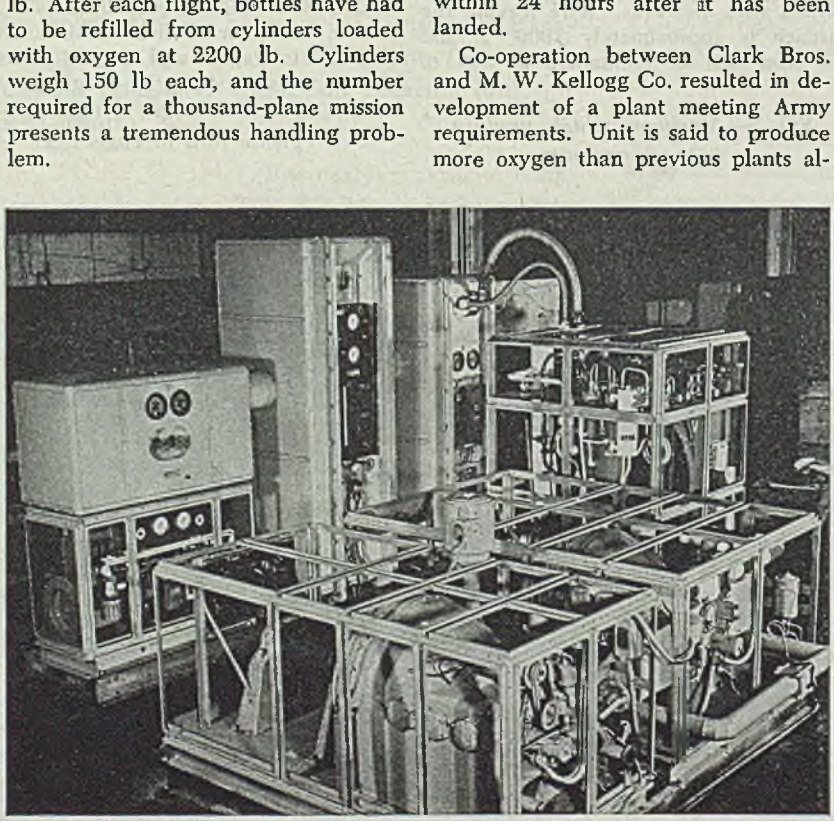
—Eliminates need for return of air forces' oxygen cylinders to base for refilling. Postwar applications anticipated

RETURN of empty cylinders for refilling and, in general, the handling of oxygen cylinders, full or empty, long has been a problem with the air forces. During the North African campaign, oxygen had to be shipped from Johannesburg, South Africa, and in the Pacific, where many bases are located on small and isolated islands, far removed from sources of supply, solution of the problem is even more difficult.

Oxygen is carried in the bombers in flight bottles at a pressure of 400 lb. After each flight, bottles have had to be refilled from cylinders loaded with oxygen at 2200 lb. Cylinders weigh 150 lb each, and the number required for a thousand-plane mission presents a tremendous handling problem.

To help solve the difficulty, Clark Bros. Co. Inc., Olean, N. Y., subsidiary of Dresser Industries, Cleveland, has produced a portable oxygen unit which can be flown to advanced bases. As shown here, it can be broken down into individual pieces, each weighing less than 3000 lb, and small enough to be loaded into the cargo hatch of a C-46 transport. With no special supplies other than those ordinarily found at such bases — gasoline, oil, and a little water — the unit can fill oxygen cylinders within 24 hours after it has been landed.

Co-operation between Clark Bros. and M. W. Kellogg Co. resulted in development of a plant meeting Army requirements. Unit is said to produce more oxygen than previous plants almost twice its weight, and a low operating air pressure of 100 lb makes it safer. Men can be trained to run it in a week. Light weight of the dry-oxygen unit was achieved by aviation type techniques of design, using light fittings and piping. Unit is powered with light-weight aviation engine.



Plant must produce, not merely oxygen, but chemically pure oxygen. It must be free from invisible water vapor that would freeze and clog oxygen lines or masks at the low temperatures of high altitudes. A compressor, operating without oil and requiring no lubrication other than that supplied by segmental carbon rings on light aluminum pistons running in highly polished chromium plated cylinders, is used. It is a high speed unit, its pistons traveling 1200 fpm.

The same principle was used in compressor charging the oxygen cylinders. Also, a small expansion engine, designed to operate on 100 lb of air pressure, is said to have over 80 per cent efficiency.

Oxygen is produced in a 6-ft cold box by liquefying ordinary air and allowing liquid to boil, so that oxygen and nitrogen vaporize separately. Temperatures of nearly 300° below zero F are required to liquefy air by this process. A device used for cooling air to low temperature is a heat exchanger designed by Dr. S. C. Collins of Massachusetts Institute of Technology. There are 24 heat exchangers in the cold box, using 11 miles of paper-thin copper ribbon 15/100-in. wide, making it possible to keep the size of exchangers down to 5 ft. If copper ribbon were not used, exchangers would have had to be thirty times as large as they are.

The company also has developed a semi-trailer model, weighing 10 tons and less than 20 ft long, which can be hauled to any front line base a heavy Army truck can reach. A number of postwar applications for both types of dry-oxygen generators are anticipated.

INDUSTRIAL EQUIPMENT

Carrying Unit

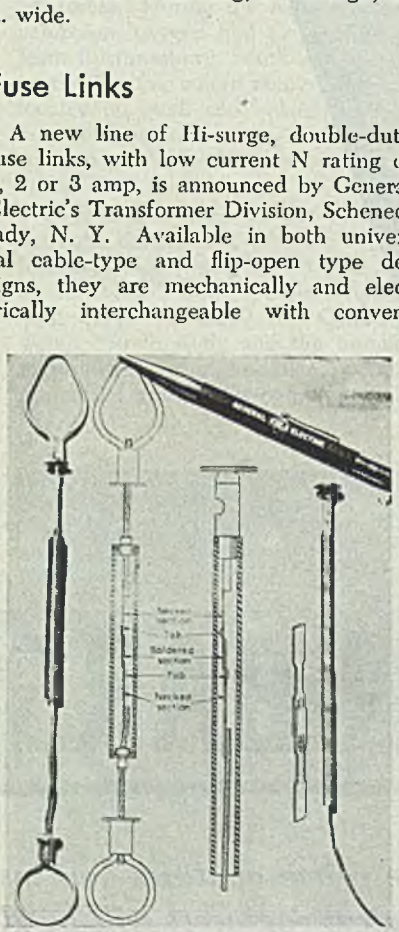
A new Multi-Purpose cart is offered by Palmer-Shile Co., 796 South Harrington, Detroit 17. This unit is suitable for hauling and dumping ashes, scrap, small parts, mixed concrete, liquids, fertilizer and other miscellaneous material. To meet varied uses, it is

designed and balanced for easy wheeling and convenient dumping.

The cart has a heavy steel body with a reinforcing flange around top edge. tubular handles extend 34 in. from the body. Legs are of heavy angle iron, and construction is all-welded throughout. It is equipped with two 24 x 2 in. steel spoke wheels. Overall measurements are 79 in. long, 30 in. high, 30 in. wide.

Fuse Links

A new line of Hi-surge, double-duty fuse links, with low current N rating of 1, 2 or 3 amp, is announced by General Electric's Transformer Division, Schenectady, N. Y. Available in both universal cable-type and flip-open type designs, they are mechanically and electrically interchangeable with conventional fuse links of same type now in use.

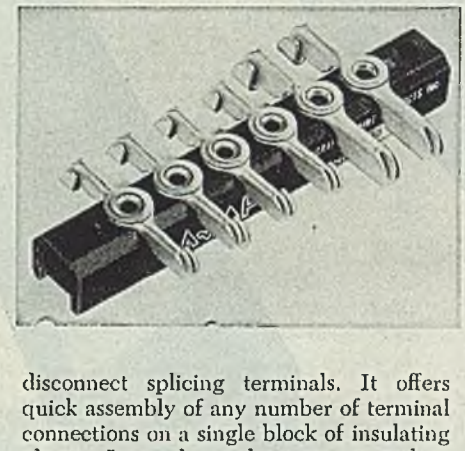


Fusible element consists of two identical punchings of a low-melting point alloy. Two punchings, each consisting of a reduced fusible section and a wider portion, are mechanically interlocked and joined with a solder of desired melting temperature. At low 60-cycle short circuit currents, heat generated in reduced sections of fusible element is conducted into wide portion until solder melts, permitting two sections to be pulled apart. At higher 60-cycle, short circuit or surge currents, reduced section melts and severs link before heat conducted into wider section can melt the solder.

Locking construction of two punchings prevent ends of soldered joint from peeling apart under tension, yet permit punchings to separate freely after solder melts. Length of restricted sections is held within limits of plus or minus 0.005-in. in manufacture and a definite amount of solder is applied in joining the punchings, so that the time current characteristics are accurately controlled for both low current and surge blowing.

Connector Strip

A connector strip, specially adapted to hangers for sectional wiring is offered by Airecraft-Marine Products Inc., 1591J North Fourth street, Harrisburg, Pa., for use with the company's solderless knife-



disconnect splicing terminals. It offers quick assembly of any number of terminal connections on a single block of insulating plastic. Integral members are riveted to plastic base. Any knife-switch connect end may be specified to accommodate any wire size from 22 to 10 inclusive and, where required, the opposite end may be made for a different wire size.

Ample space is given for access to any one connection and wire is connected by holding it vertically in contact with strip member and then pulling back. Permanent or temporary shorting connections can be incorporated between two or more adjacent terminals.

Steam Tank Heater

Brown Fintube Co., Elyria, O., introduces an immersion type steam tank heater for use with any material with viscosity that can be lowered by heating. Unit consists of a number of lengths of fintubes connected in series and inlet and outlet steam lines. The heaters ha low center of gravity. Cross handles i in positioning the heater over the c charge outlet in the car, in block heater at various depths and remov unit after car is empty. It is available two sizes: No. 642 for use with t cars and No. 442 for use with t trucks.

Trunnion Type Machine

A 2-way trunnion type machine drilling, chamfering and reaming for universal joints has been designed LeMaire Tool & Mfg. Co., Dearb Mich. The machine is capable of acco modating sizes ranging from 7/8 to

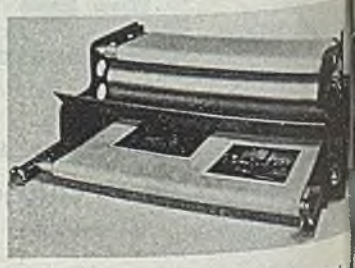
in. diameter. By reaming from two tions each tool does half the work. In dition to achieving line-reaming accu production is speeded up. Reamers driven by a special quill type sp built in trunnion with power transm from multiple head through a flex drive.

The machine consists of a manu operated 6-station trunnion mounted a fabricated base on which are mou two of the company's standard contained slide type hydraulic Change gears provide various sp speeds for the 5-spindle drill head

Cycle of operations is as follows: tion 1, load and unload; station 2, drill and chamfer; station 3, rough station 4, finish drill for reamer; st 5, semifinish ream and station 6, ream.

Photo Print Dryer

Blueprints or black and white p matte or semimatte prints, or



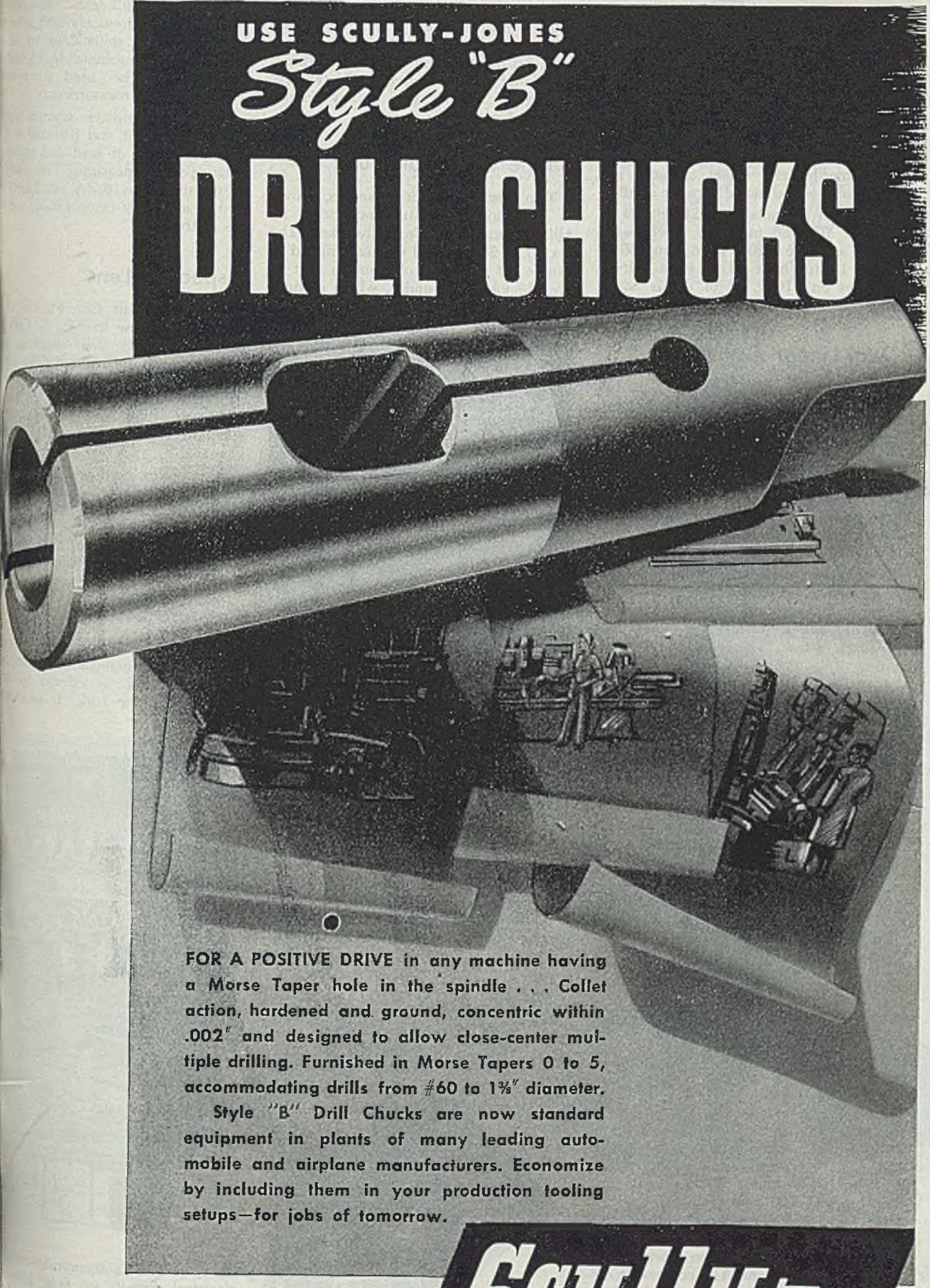
prints can be dried on the new B-S ph dryer offered by Peck & Harvey, 4 Addison street, Chicago 41. Ther

(All claims are those of the manufacturer of the equipment being described.)

USE SCULLY-JONES

Style "B"

DRILL CHUCKS



FOR A POSITIVE DRIVE in any machine having a Morse Taper hole in the spindle . . . Collet action, hardened and ground, concentric within .002" and designed to allow close-center multiple drilling. Furnished in Morse Tapers 0 to 5, accommodating drills from #60 to 1⅝" diameter.

Style "B" Drill Chucks are now standard equipment in plants of many leading automobile and airplane manufacturers. Economize by including them in your production tooling setups—for jobs of tomorrow.

Scully-Jones
AND COMPANY
1901 SOUTH ROCKWELL STREET * CHICAGO 8, U. S. A.

static control is available. Variable speed drive motors and controllers permit instantaneous speed changes over a range of 6 in. to 3½ ft a minute.

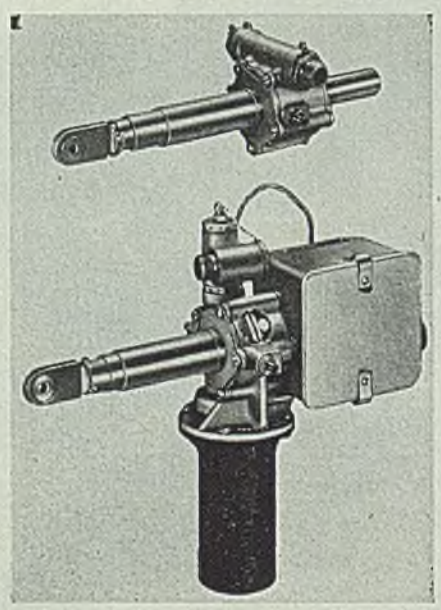
A chromium plated copper drum that finishes photos with high glossy surface is included. Specially woven seamless band, pressed steel framework are featured. Steel clad, refractory insulated Nichrome heaters, nickel contacts, and asbestos insulated nickel wire are used.

The unit is available in 26 and 44 in. widths. The 26 in. dryer, operates on 110 v, ac or dc and is 40 in. long, 28 in. wide, 13 in. high. The 44 in. dryer, operates on 110 v, ac or dc, is 58 in. long, 28 in. wide and 13 in. high.

Dual Linear Actuators

Dual operation is possible with the two new linear actuators offered by Foote Bros. Gear & Machine Corp., 5225 South Western boulevard, Chicago 9. The primary actuator is powered by 1/6-hp electric motor. The secondary actuator (motorless type) gains its power from primary by a flexible shaft coupling which synchronizes the two units.

Both actuators have a linear action of 55 in. at an extension speed of 2 sec and a retraction speed of 9 sec. Travel of screwjack is accurately controlled by limit switches and stops may be adjusted by a single screw. These two models are



capable of handling work loads up to 750 lb with a static load capacity of 2500 lb.

The 1/6-hp motor of the primary unit operates at 800 rpm from 26 v, dc at 11½ amp and is equipped with a magnetic brake for instantaneous stops and to prevent gear train from creeping due to vibration of plane. The company's Aircraft Quality gears are used in these actuators. Primary reduction spur gears, steel worm and screwjack are hardened for accuracy. Steel parts are Magnafluxed and cast aluminum housings are X-ray inspected.

Dimensions of the motorized actuator are 13 in. long, 11 in. high and 4⅛ in. wide, weight, 7 lb 1 oz. The shaft driven model is 10 11/16 in. long, 3½-in. high, 3¾ in. wide and weighs 2 lb 12 oz. The latter may be used separately by driving off of an engine or any remote source of power.

Single Unit Shakeouts

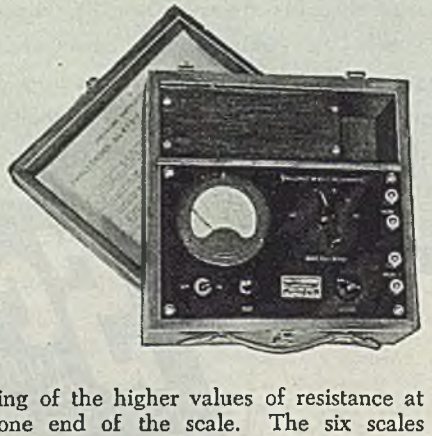
Two new single unit shakeouts, known as Foundromatic, are announced by Allis-Chalmers Mfg. Co., Milwaukee. The 8 x 10 ft, 25 ton load unit is designed to handle 90 per cent of tonnage cast in average jobbing foundry, where castings range from 500 to 50,000 lb each. The

smaller unit, 6 x 8 ft, is rated at 15 tons capacity.

The units increase capacity by use of two bearing construction. Outer bearings are eliminated, impact loads are absorbed by resilient support springs at each end of shakeout. Vibratory action is produced by the combined effect of a heavy duty eccentric shaft (offset and enlarged between the bearings) and two true running balance wheels which counterbalance the weight of the shakeout, result is a uniform circular motion throughout shakeout deck surface.

Test Set

Milliohmmeter No. 673-F, introduced by Shallcross Mfg. Co., Collingdale, Pa., has linear scales which eliminate crowding of the higher values of resistance at one end of the scale. The six scales have ranges as follows: 0-0.5-1-5-10-50 and 100 ohms full scale. This range resistance measurements bridges the g between regular milliohmmeters that used for low resistance testing and dinary ohmmeters used for relati high resistance measurements.



Instrument utilizes separate cons tions for current and potential so as minimize effect of lead and contact sistance when measuring low values uses a single No. 6 dry cell battery ca ried in a battery compartment built the instrument.

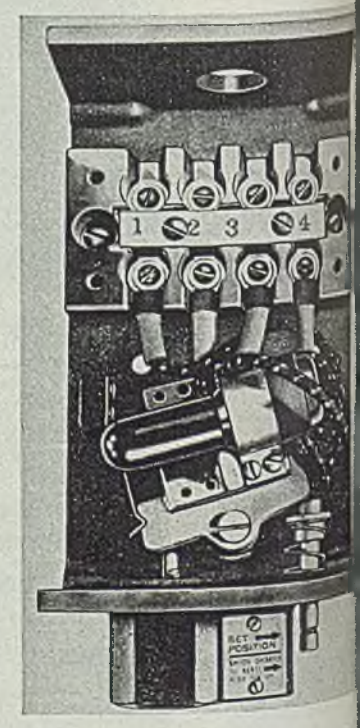
Inspection Lens

Ess Instrument Co., Ft. Lee, N. announces a new lens for its Cat's Ey inspection units for checking boil and furnace interiors and their conte while in operation. This lens, type provides a wider field of vision with reduction than is available thro standard type G lens; both are int changeable.

Cat's Eyes equipped with this ty lens will show at a glance from dis points, the flame with its characteris of color, turbulence and haze and jects inside a boiler or furnace such as tubes and articles being heat trea

Pressure Switch

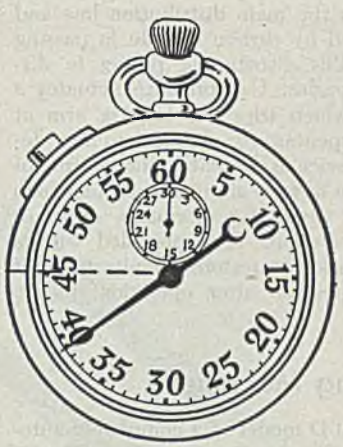
Designed for use with built-in car dioxide fire extinguishing systems, a pressure switch is offered by Wa Kidde Co., New York. It assists in



lating fire by automatically cutting electrical circuits in fans, blowers other electrical equipment when the tinguishing system operates. It is a s contained, mercury contact type swi suitable for applications which use gas air pressure.

The switch is connected by a ½

WHEN *YOUR TIME* IS A FACTOR



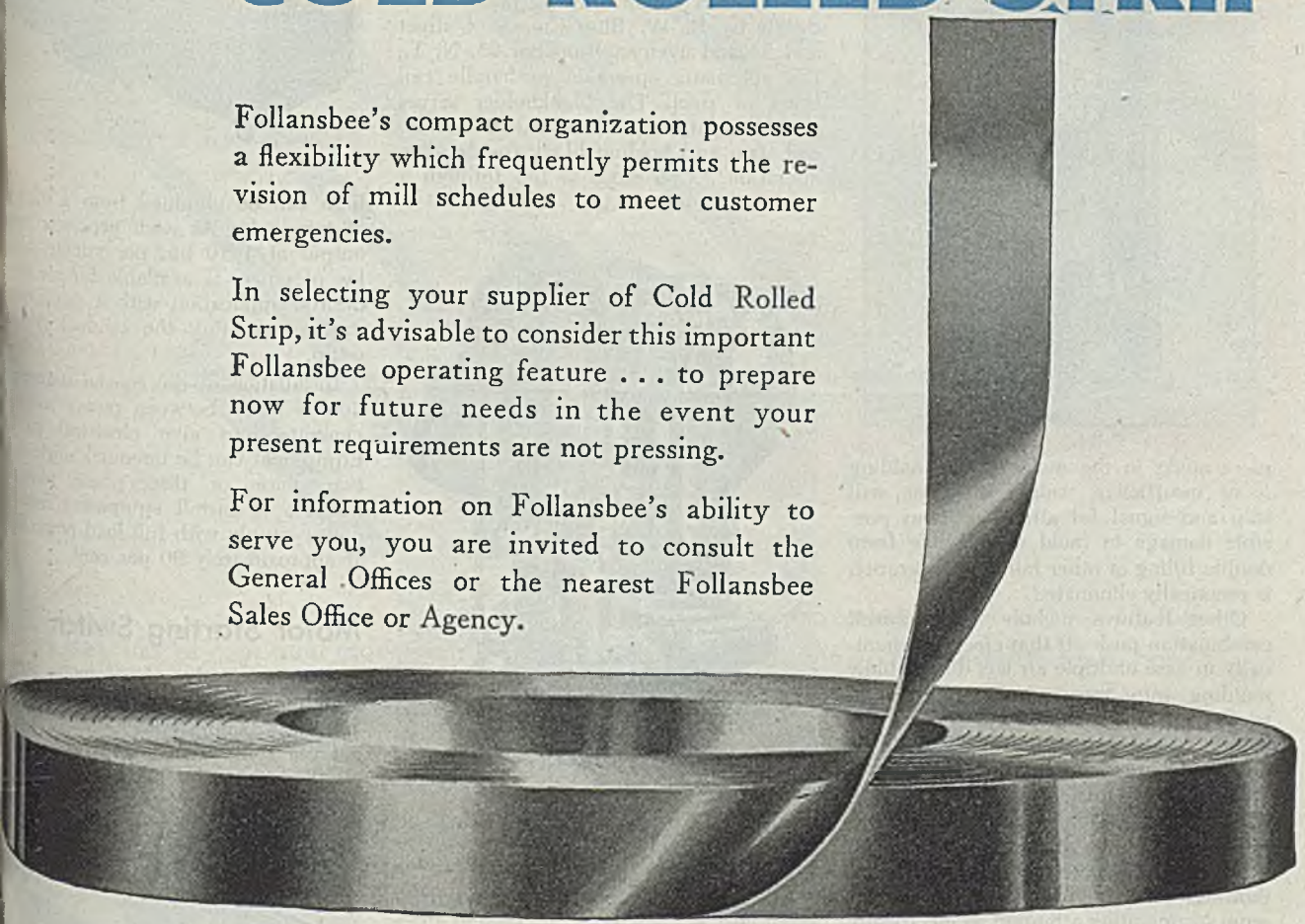
Follansbee

COLD ROLLED STRIP

Follansbee's compact organization possesses a flexibility which frequently permits the revision of mill schedules to meet customer emergencies.

In selecting your supplier of Cold Rolled Strip, it's advisable to consider this important Follansbee operating feature . . . to prepare now for future needs in the event your present requirements are not pressing.

For information on Follansbee's ability to serve you, you are invited to consult the General Offices or the nearest Follansbee Sales Office or Agency.



FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES • PITTSBURGH 30, PA.

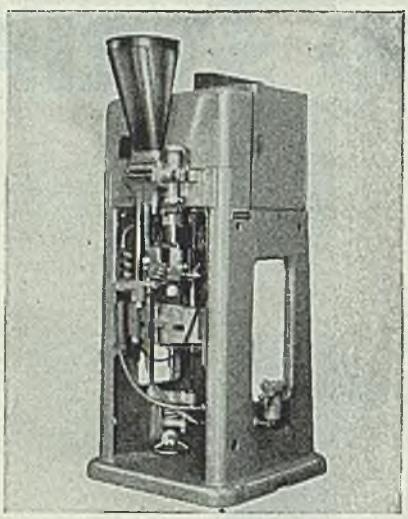
Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. *Sales Agents*—Chicago, Indianapolis, Houston, St. Louis, Kansas City, Nashville, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Can. *Plants*—Follansbee, W. Va. & Toronto, O.

ALLOY BLOOMS & BILLETS, SHEETS & STRIP • CLAD METALS • COLD ROLLED CARBON SHEETS & STRIP
POLISHED BLUE SHEETS • ELECTRICAL SHEETS & STRIP • SEAMLESS TERNE ROLL ROOFING

pipe from the main distribution line and is operated by carbon dioxide in passing through this distributing piping to discharge nozzles. Gas pressure actuates a plunger which trips the breaker arm of switch, opening or closing circuits desired. Device is available for control of two, three or four circuits, each of which may be wired for normally open or closed operation. It is provided with a manual reset to restore circuits to their original position after operation due to fire.

Molding Machine

No. 200 D model of a completely automatic molding machine is offered by F. J. Stokes Machine Co., Philadelphia 20. Improvements include a new type trap or checking device, sensitive to the fraction of a gram, which weighs the finished moldings and operates a safety cutoff to stop machine in case all molded pieces do not eject into and pass through trap. If a



piece sticks in the mold or the molding is of insufficient weight, machine will stop and signal for attention. Thus possible damage to mold or machine from double filling or other failure in operation is practically eliminated.

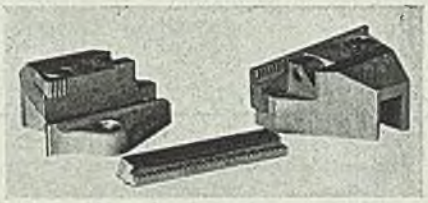
Other features include an improved combination push off that ejects mechanically in case multiple air jets do not blow molding into trap; also an improved triple-feed device that is adjusted to distribute exact quantities of molding powder where desired in mold.

Capacity of this machine is 15 tons; it molds parts with a projected area up to 14 sq. in. and diameters up to 4 in. Machine is self-contained, fully automatic, thoroughly safeguarded, requires a minimum of operating attention, is electrically heated and powered and requires 5 hp.

Chaser and Holder

Landis Machine Co., Waynesboro, Pa., has developed a new chaser and chaser holder combination which simplifies interchanging of chasers and also imparts greater rigidity and strength to combination to insure finer thread accuracy.

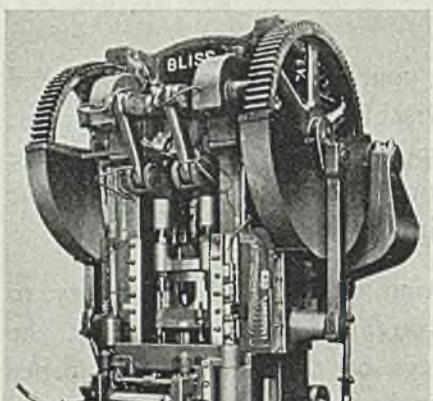
The Lanrac chaser and holder employs a rack tooth arrangement to locate the chaser in its approximate position. Chaser has rack teeth milled for its full length on off-set seating surface and rack teeth are milled on chaser clamp at end nearest



the chaser cutting edge. When interchanging chasers, chaser is placed on holder in its approximate position and clamped lightly. An adjusting screw which engages the back end of chaser clamp is then used to advance chaser and clamp as a unit to exact position. Elongated slots in chaser clamp permit sufficient lateral movement of clamp slightly greater than pitch of rack.

Automatic Toggle Press

No. 3½-B toggle drawing press, introduced by E. W. Bliss Co., 53rd street and Second avenue, Brooklyn 32, N. Y., has automatic operation to handle coil brass or steel. The blankholder serves the dual purpose of blanking disks from coil strip and holding blank for drawing operation. Coil stock is fed through a

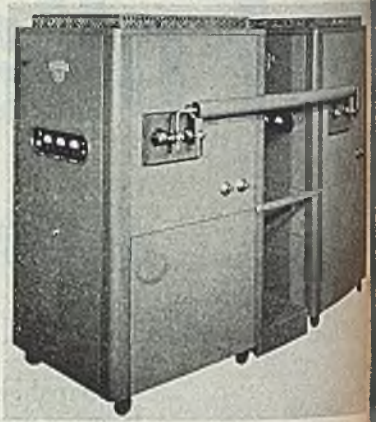


seven roll straightener to remove curvature, a precision double roll feed and a shear type scrap cutter. An automatic stock oiler is attached to the feed as stock lubrication is desirable on drawing operations. Scrap cutter is provided with spring holddown and four edged tool steel blades. Incoming feed rolls and straightening unit are mounted on a vertical pivot so that they can be swung out of the way for insertion of dies. The feed and scrap cutter are driven by elliptical gears.

Press illustrated is a No. 3½-B straight side, single crank toggle drawing press. It is built with a four piece steel tie rod frame construction. Twin driving gears are employed on the crankshaft. A two drive is furnished on the blankholder. Double gearing is provided. It is also equipped with a pneumatic friction clutch with electric pushbutton control. An air brake is furnished for stopping the flywheel. Flywheel and driveshaft are mounted on Timken roller bearings. Main bearings are bronze bushed.

Coaxial Equalizer

By use of the new coaxial equalizer Induction Heating Corp., 389 Lafayette street, New York 3, has coupled two of their standard model 1070 thermonic induction generators so that full output



both can be obtained from a single set of terminals. As each generator has a output of 1070 btu per minute, full kw of power is available for use in any desired application with a single control station operating the tandem generator setup.

Installation of the coaxial interconnection is made between power section of generators to give electrical stability. Equipment can be operated single phase two phase or three phase, making possible to install equipment from any power supply with full load power factor at approximately 90 per cent.

Motor Starting Switch

The new split phase motor starting switch offered by Motor Controls Inc., 469 East Ohio street, Chicago 11, does not use centrifugal action or draw upon

any outside form of electromagnetic action. It is activated by magnetic field of the motor. It draws power from stator through two iron poles inserted into sta-

"Pipelines that flex" for OIL...STEAM...GAS

A few of the many American Flexible Metal Hose and Tubing assemblies engineered complete with fittings or couplings for specific applications.

VIBRATION or continual movement in a connection is bound to cause trouble sooner or later . . . unless the connection is *engineered* for the job.

Illustrated are a few American Flexible Metal Hose and Seamless Tubing assemblies, each of which *is* designed to meet a specific set of conditions.

Such a connection can be developed for you . . . with the necessary resistance to pressure, temperature, chemical or abrasive action and mechanical stress.

For detailed information on the range of types and sizes of "American" products, write for Publication SS-50. Manufacturers, engineers and machine designers alike will find it a thoroughly practical guide. 45069

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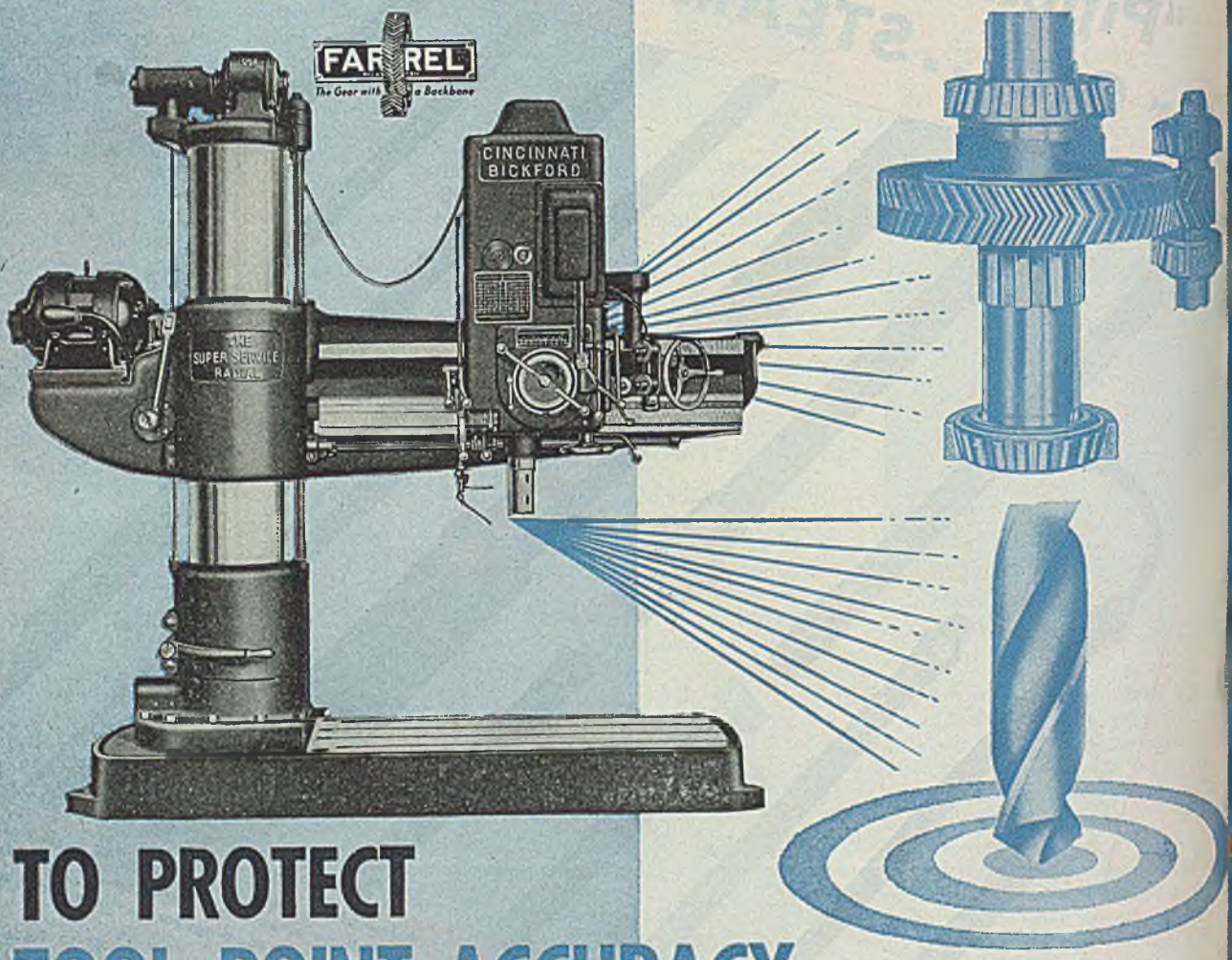
ANACONDA

American Metal Hose

AMERICAN METAL HOSE BRANCH OF THE AMERICAN BRASS COMPANY • General Offices: Waterbury 88, Conn.
Subsidiary of Anaconda Copper Mining Company • In Canada: ANACONDA AMERICAN BRASS LTD., *New Toronto, Ont.*

THEY SPECIFY "THE GEAR WITH A BACKBONE"



TO PROTECT TOOL POINT ACCURACY

In Cincinnati-Bickford Super Service Radials, Farrel-Sykes continuous tooth herringbone gears—the famous *Gear with a Backbone*—are used to transmit a smooth constant flow of power to the drill spindle.

Backbone, the place where the helices meet in sharp "V's" to form continuous teeth, provides greater strength and load-carrying capacity in minimum space. Gradual tooth engagement, with several teeth in various stages of mesh simultaneously, makes the power transfer smooth and continuous—eliminating vibration which could otherwise interfere with accuracy at the tool point.

Precision generation by the Farrel-Sykes method . . . accuracy of tooth contour and tooth spacing within close tolerances . . . uniform distribution of the load on each tooth and across the entire face . . . the balancing of axial thrusts by the opposed helices . . . are additional factors which assure correct tooth action and contribute to efficient operation and maintenance economy throughout a long life.

Wherever power transmission must be smooth and vibrationless under all conditions of load and speed, specify the *Gear with a Backbone.*

For information about Farrel-Sykes gears and gear units send for a copy of Catalog No. 438.

FARREL-BIRMINGHAM COMPANY, INC. • 344 VULCAN STREET, BUFFALO, NEW YORK

Plants: Ansonia, Derby and Stonington, Conn., Buffalo, N. Y., Sales Offices: Ansonia, Buffalo, New York, Pittsburgh, Akron, Los Angeles, Tulsa, Houston, Charlotte

Farrel-Birmingham

tor. A flyer is mounted on a shaft so that when the poles are energized, the flyer will swing into position. This swinging action makes electrical contact which engages starting winding, free of any ac vibration or arc. Cutout of the starting winding can be made to operate at usual 1450-1500 rpm or at any desired critical point of speed. A spring forces flyer away from pole pieces instantaneously when magnetic force drops.

When current is applied to a split-phase motor (from dead stop or from overload while running), there is an extremely high amperage which causes an increased magnetic force in the motor's field which activates the switch. Current, according to the momentary speed and load, controls the switch-action.

Plug Gage Collets

Colored plastic collets, green for the go plug and red for the no-go plug in cylindrical plug gages are introduced by United Precision Products Co., 3524 West Belmont avenue, Chicago 18. Both plugs are contained in the same

handle of Dublife reversible plug gages. Plastic grips plug with a secure hold and plug can not be twisted out by vise or wrench. There is no slipping of plug. Plug is removed by use of a drift. Plastic eliminates scratching and marring of plug. Weight is reduced by these collets.

Collets are dielectric, thereby adding to the protection of gage against electrical effects. The handle is designed so that either plug can be removed without disturbing the other.

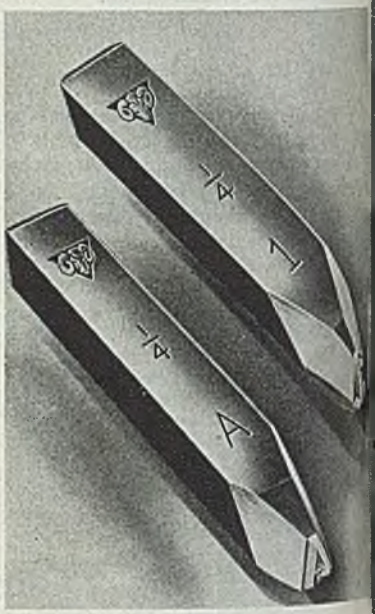
Drill Grinder

An improved model drill grinding attachment is announced by A. D. McKinney, 939 West Sixth street, Los Angeles 14. This fixture has a verticle spindle and provision for accurately grinding round shank drills in four point

angles: 49, 59, 69 and 88°. It will ho drills from 3/22 to 1 1/16 in. in diamete and will sharpen short, medium and lon twist drills from 1½ in. up to and inclu ing 11 in. in length. Recessed angl guides eliminate the need for a protracto in setting for proper point tapers. Fea angle feature gives properly ground points for clean fast work in steel, wood or plastics.

Steel Stamp

A new steel stamp, developed by Acme Marking Equipment Co., 220 West Fort street, Detroit 16, stamps clear impression without chipped



mushroomed striking head which is eliminated by a process of heat treatment and tempering. After heat treatment stamps are double drawn in temperature controlled salt baths. Made for marking letters and numbers, they are sold under the tradename of Rat Head.

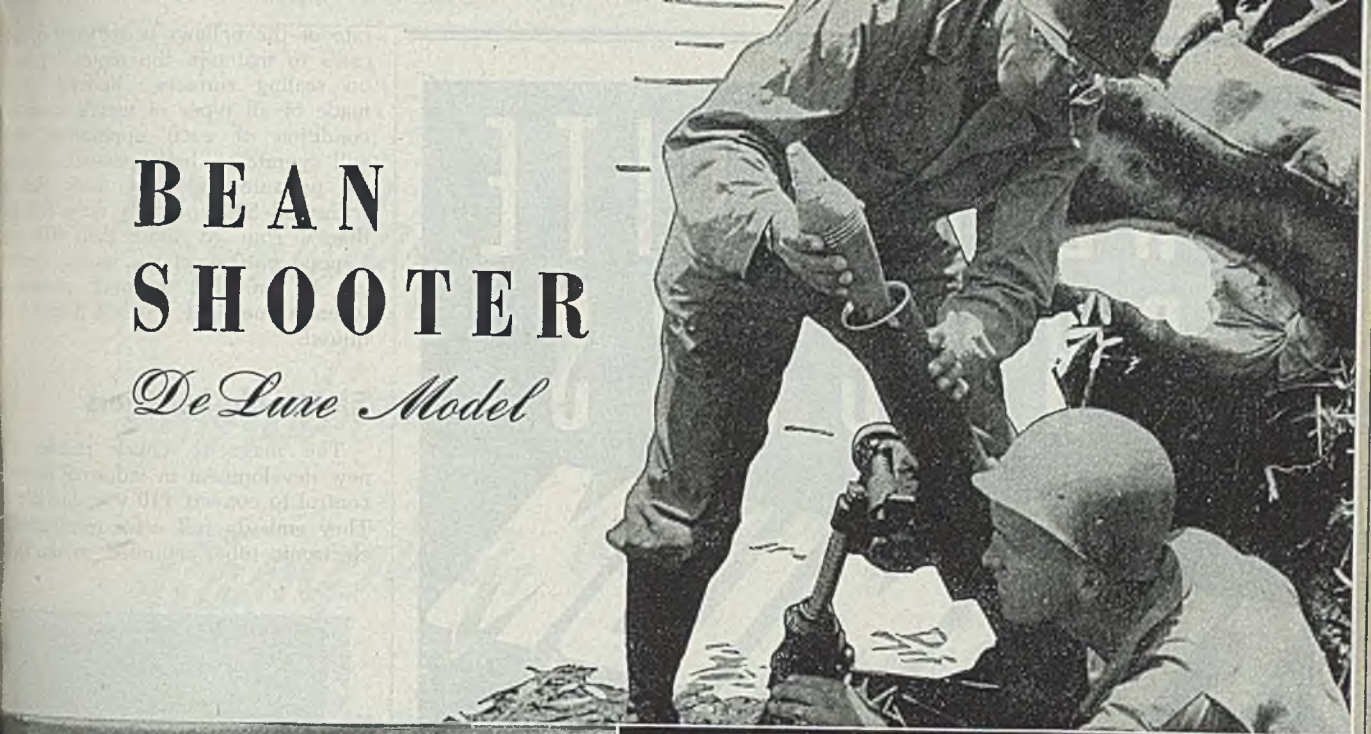
Rotating Seal

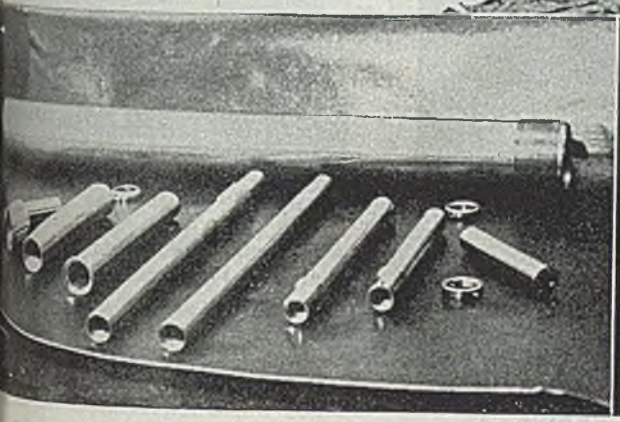
Designated as spring-life Gyro-Se a new type rotating seal has been de veloped by Cook Electric Co.,

Southport avenue, Chicago 14. No aux iliary springs are required in the appli cation of this seal as the inherent spr

BEAN SHOOTER

De Luxe Model





ABOVE—Trench mortar in action against the Japs. The Infantry's mortar crews have been of inestimable value in the Pacific area in pinning down the enemy and in breaking up his counter attacks. Signal Corps Photo.

LEFT—Ostuco Seamless Steel Tubing parts used in the manufacture of the Army's new-type 60 mm. mortar, built by Kennedy-Van Saun Mfg. and Engineering Corporation, Danville, Pa. and Read Machinery Co., York, Pa. Kennedy-Van Saun photo.

In principle, the Army's new 60 mm. Mortar M5 is a very simple weapon. Just drop a mortar shell down a piece of tubing and it bounces out again . . . like a package of forked lightning. Thanks to an ingenious sighting device and the skill of the 2-man crews who work these "muzzle-loaders," mortar fire is deadly accurate and devastating—as many a dead Jap even now must be testifying before his ancestors.

It is noteworthy that seamless steel tubing plays the major role in the construction of this weapon. It supplies, besides the barrel, an even dozen parts of the assembly. Obviously, Quality with a capital Q must go into that tubing. That's where Ostuco's quality tradition, extra-thorough testing methods and experienced skill in tube-making are contributing their share to mortar production . . . and many another war job. Ostuco's *delivery* record too has helped keep many a contract schedule *on time*. These are important facts to consider in your postwar planning. Call the office nearest you today for a discussion of your possible requirements in seamless steel tubing.

★ ★ ★

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MANUFACTURERS OF SEAMLESS AND ELECTRIC-WELD STEEL TUBING

Plant and Main Office • SHELBY, OHIO

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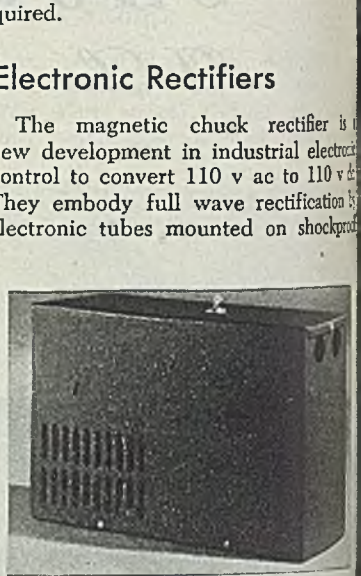
rate of the bellows is sufficient in ma cases to maintain the required pressu on sealing surfaces. Bellows can b made of all types of metals to suit th condition of each application. Sea will operate on both external and inte nal pressure and have been built t withstand 5000 psi in a range from les than 1 rpm to more than 4000 rpm Lapped finishes of the sealing membe can be provided to meet specifications wherein one light wave of flatness is re quired.

Electronic Rectifiers

The magnetic chuck rectifier is a new development in industrial electroni control to convert 110 v ac to 110 v dc They embody full wave rectification by electronic tubes mounted on shockproof



bases, precision built transformers, co densers and replaceable protection fus

EPCO No. 2 delivers 2 amp (approxi mately 250 w) at 110 v dc and EPCO No. 6 delivers 6 amp (approximately 700 w at 110 v dc. Two of the No. 6 units can be used where requirements call for 12 amp output; three can be used for 18 amp output, etc.

These devices are available from Dawe & Murphy, 5252 Broadway, Chicago 40

Step Collets

Over capacity step collets are available from Zagar Tool Inc., 23880 Lakeland boulevard, Cleveland 17, for both 1 and 2 in. collet fixtures. The 2 in. collets

No. 201, are made in 3, 4 and 5 in. head sizes; the 1 in. collets in 2, 3, 4 and 5 in. head sizes. The 2 in. collets can be used wherever a type 5-C collet is used. Heads are 1 in. thick and made of M-tempered tool steel, finish ground complete and are left in a soft condition so they can be bored to individual job.

Someday, when you need coordinated facilities for stamping, welding, fabricating, machining— think of

POLLAK MANUFACTURING COMPANY

Arlington, New Jersey

DEVELOPING • DESIGNING • MACHINE WORK • SPINNING
GAS AND RESISTANCE WELDING • STAMPING • ELECTRICAL WORK

Infra-Red Heating

(*Continued from Page* 119)

fers the use of tungsten lamps to carbo filament lamps, because their higher o erating temperature affords a more rap heat transfer. Then, too, he explai that when the carbon filament sublim (vaporizes), the carbon condenses inside of the lamp globe and there a sorbs some of the radiated energy, in tu raising lamp temperature, speeding fu ther sublimation and reducing lamp li At the same time, output of radiate energy is continually declining as m and more is absorbed by the carb deposited on the inside of the lamp, cu ting the energy available to heat t work.

Tungsten, on the other hand, sublim at a much higher temperature. Too, t tungsten lamp is filled with an inert g usually under a pressure of one atm sphere which further decelerates ag tendencies. Fig. 6 diagrammatica illustrates the result in terms of la life and efficiency (ratio of energy o put to input).

Reflector Surfaces: Radiant energy reflected in the same manner as li but it requires a different type of flective surface to obtain maximum sults. The greatest efficiency of an fra-red lamp is achieved by the use a reflector which redirects the s energy emanating from the heating la Tests show that virgin gold reflects per cent of the infra-red energy, w polished copper, polished silver processed aluminum (91 per cent) fo in that order. Thus, first infra-red re flectors were gold plated for most effi tive results.

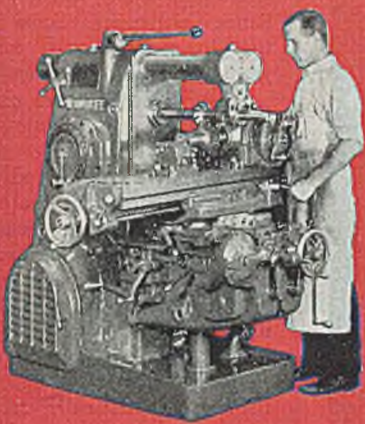
However, after a few months u the gold had a tendency to disapp and the surface to become dull. Sp cial cleaners were developed as it thought abrasive action was remov the gold plate. Even cleaning by d ping was developed to avoid any ab sive action. Yet the gold kept on disappearing. Then a gold pla unit was designed with the lamp sea in, similar to the present day sealed-be headlamp. But the gold continued disappear.

Chemical analysis disclosed that gold remained in the metal surface that it had been absorbed in the brass the reflector. It is a well-known that base metals do absorb noble me In fact, if clean gold and silver bl are held together under pressure, dividing line will gradually disappear they tend to alloy into each oth This effect was occurring in the gold pl ed reflectors—the gold was dissolv into the brass.

Polished copper and polished sil reflectors were next considered, but s surfaces are rapidly oxidized and ca not be used effectively. Aluminu however, affords an excellent and p manent reflecting surface when prop processed. The C. M. Hall Lamp C produces reflectors by vaporizing alu

STEE

WHEN MILLING HAS TO BE DONE WITH SPEED, PRECISION, PROFIT



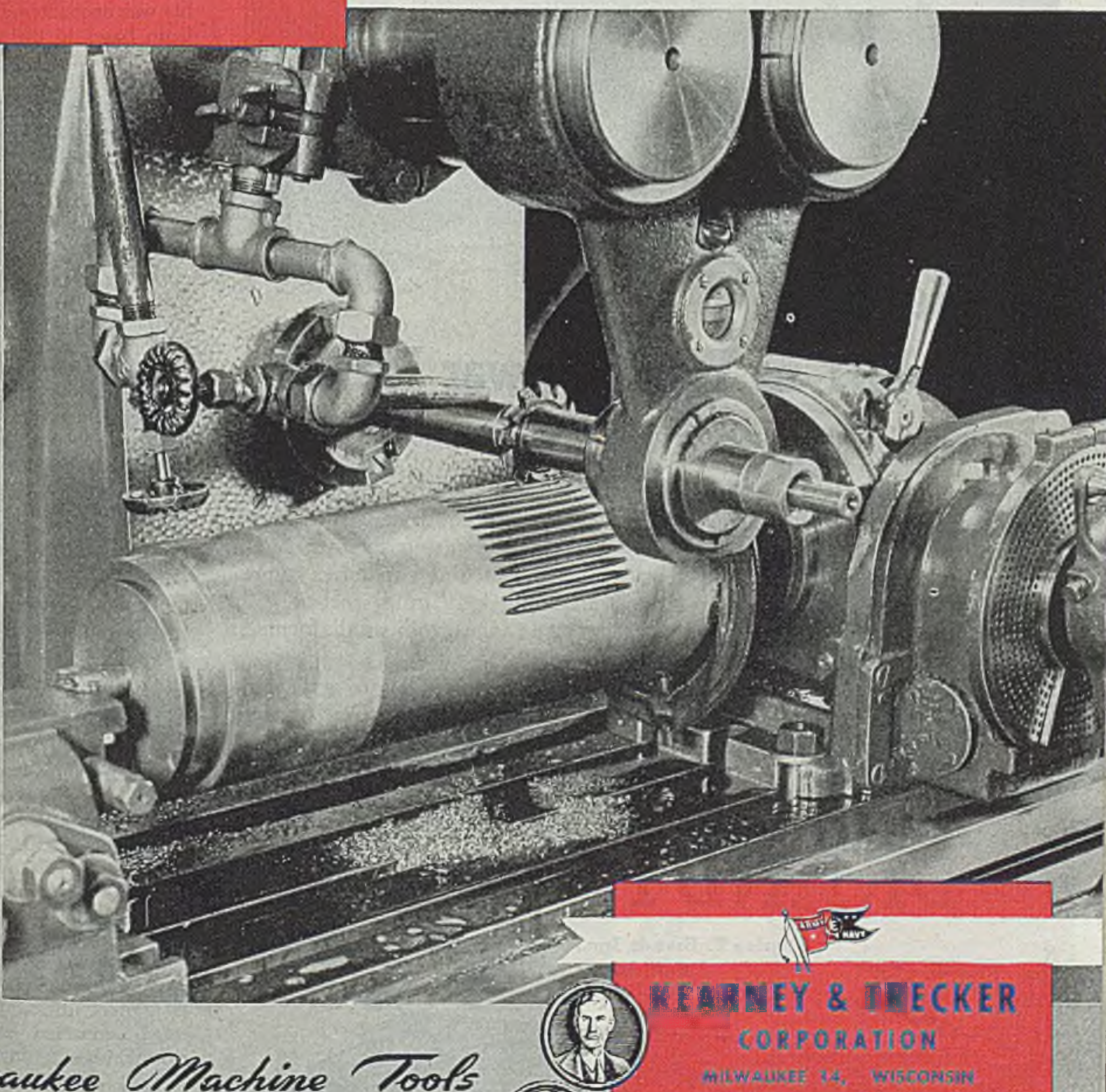
A 3K Milling Machine equipped with Model K Dividing Head and Tailstock — Gashing Slab Milling Cutter.

PUT IT ON A *Milwaukee*

In tool-room or laboratory — on the production line — wherever milling has to be done — simple routine job or "tricky" operation — put it on a Milwaukee! Experienced machine-shop men prefer to use a Milwaukee when it is available because they know that's the way to get the work done — with speed, precision, profit.

Time-tested, production-proved, modern in every detail of design and construction but free of untried features, Milwaukee Milling Machines yield the sustained performance — with precision and speed — that spell profit in milling operations.

Write for new Bulletin K10 giving detailed and descriptive information on Model 2K and 3K Milwaukee Milling Machines.



...ling a worm gear in a spindle ...ll on a 3K Universal Milling Machine. Angular 7° spacing of cut is indexed with less than one turn of the index handle ... the Model K Dividing Head.

KEARNEY & TRECKER CORPORATION
MILWAUKEE 14, WISCONSIN

Milwaukee Machine Tools

num in a vacuum and depositing it thin film on a brass or steel shell liance of the surface is then prod by developing a thin film of transp aluminum oxide which makes the liance permanent. Some of these re tors have been used continuously years with no reduction in efficie

First reflectors were parabolic in sign. Later an elliptical contour adopted to get wider distribution the radiant energy. Today, most re tors are a modified parabola being tioned in banks or groups to get heat energy pattern wanted on the

During the past few years, the manufacturers have been developing improving a lamp known as the which embodies its own reflector. cause of its improvements, this lamp been enthusiastically received and expected within a short time to el nate the need for auxiliary refle equipment. This R-40 lamp is ma 125, 250 and 375-watt sizes.

Electrical Accessories: In early diant heat equipment considerable ble was encountered by the fusing of lamp bases to the sockets. In ad wire connections oxidized and deteri ed rapidly because of being subje to oven temperatures. All copper ing materials, it was observed, readily oxidized at such temperatu reducing their current carrying cap so much that they eventually bec resistors instead of conductors of tric current.

During the course of developme was found that mounting all electr current carrying components, lamp reflectors on the outside of the wall corrected this trouble because current carrying parts and lamp soc are kept out of the heated zone. To infra-red ovens utilize prefabric standardized panels upon which the fra-red radiant heating units are mo ed. Prefabricated standardized are employed in the recirculating exhausting systems. Thus, any ove rangement desired can be constru quickly and simply by assembling prefabricated reflector panels and trical components on a frame of the quired size and shape.

One Oven—Miscellaneous Work: stead of requiring a special radiant ing oven for each size, shape and ness, Mr. Cusack points out that possible to design a single oven to dle an enormous variety of parts. one installation, 0.026-in. thick sheet al parts and ¼-in. castings, ⅛ to forgings of various sizes and colo being finished in the same oven. Va tions in color, material and type of can also be accommodated. By ploying certain optical principles by correct utilization of radiant and rived convected heat, it is possible bake finishes on any shape or size o

Tests indicate that portable banks lamps are entirely unnecessary in a rectly designed oven since distance lamps to the work is not a critical

WHY BOTH MANAGEMENT AND OPERATORS PREFER "Bumblebee" A.C. ARC WELDERS

We get better welds and more of them since we bought "Bumblebees"

- Production increases of 15% to 30% without sacrifice of quality are common.
- They consume 30% to 35% less power than D.C. welders — cut power costs.
- They provide leading kva which neutralize lagging kva caused by other equipment, relieving overloaded power lines and cutting demand charges 10% to 30%.
- Because of freedom from arc blow, deposition rates can be speeded up by increasing the amperage. This often makes it possible to use larger, longer electrodes and cut down stub end losses.
- Absence of moving parts, tough, he-man construction and top-notch insulation assure dependable, trouble-free operation — eliminate shutdowns for repairs and replacements.

It's easy to do a swell welding job with a "Bumblebee" at the other end of the cable.

- There's almost no "arc blow". You can work faster in any position and you're sure of good, sound welds every time.
- It's easy to produce sound, uniform welds in the corners and tight spots—there's less chipping out of welds.
- It's often possible to use longer and larger electrodes; there are fewer stops to put new electrodes in the holder.
- It's a simple matter to adjust the current for different kinds of work — just turn the crank.
- The current setting is always plainly visible on the big easy-to-read indicator.
- They're dependable — don't require oiling or other attention. An operator can concentrate on welding.

These are a few of the important advantages which are making "Bumblebee" welders favorites in plants everywhere. Others are described in the "Bumblebee" Catalog. Ask your nearest Airco office for a copy or write Dept. S, Air Reduction, General Offices: 60 East 42nd Street, New York 17, N. Y. In Texas, Magnolia Airco Gas Products Co., General Offices: Houston 1, Texas.

AIR REDUCTION

OFFICES IN ALL PRINCIPAL CITIES

AIRCO

WILSON "Bumblebee"

Registered U S Patent Office

A.C. ARC WELDERS

WITH THE PENETRATING, STINGING ARC

A COMPLETE LINE OF A.C., D.C. AND GAS-ENGINE DRIVEN UNITS

tor, when lamps are properly arranged. The heating of differently shaped parts is facilitated in a correctly engineered infra-red radiant heat oven by the proper use of derived convected heated air and the conductivity of the material, which make it possible to heat portions of the work that may be partially shielded from direct radiation.

Many Advantages: Radiant ovens have a number of important advantages. They can be turned on, shut off, and have their temperature changed to a new value in a matter of minutes instead of hours as with conventional units. Too, in event of a short or prolonged lag in receiving work, the oven can be turned off, thereby saving fuel. Work in oven can be allowed to remain there without possibility of spoilage. The elimination of the warm-up period is extremely important in many plants.

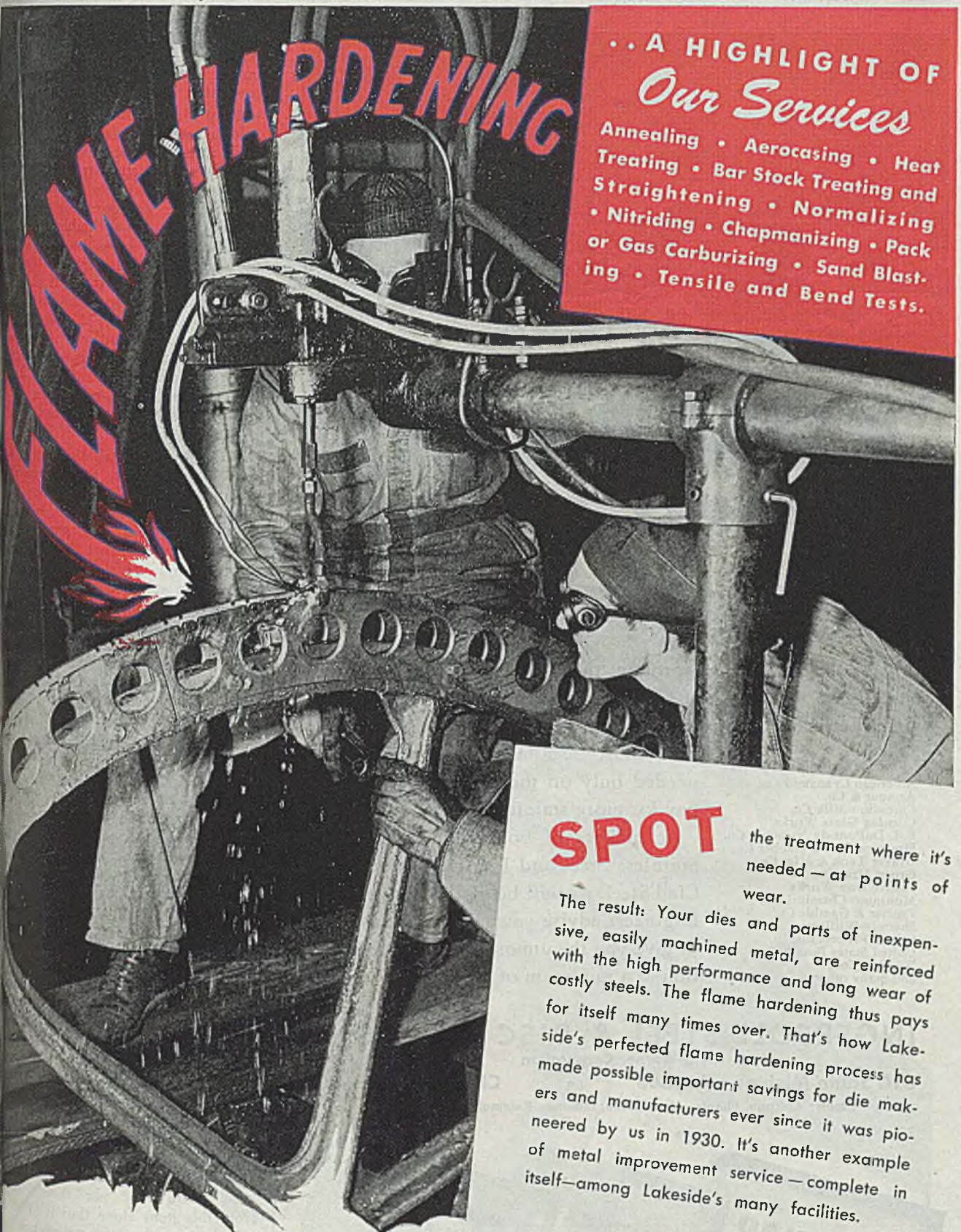
Since they are light structurally, they can often be mounted overhead or on the wall where the floor space saved for other production operations can amount to a most significant figure. Their compactness allows them to be better co-ordinated with other processing as they can be built into the production line at any point desired. See Figs. 4, 6 and 7 where a complete dipping and baking installation is mounted overhead.

They are highly flexible, can easily be re-arranged to accommodate changing production requirements. They are free from variations that cause inconsistent results. Since their operation can be observed at all times, the progress of the work can be checked continuously.

Increase Capacity of Present Equipment: Mr. Cusack reports a number of plants have obtained greatly increased output by adding an infra-red section in front of their air oven. In such an arrangement, the infra-red section is utilized as the "heating" section in Fig. 1 with the convection oven as the "holding" section. In this way, one plant increased its output from 800 units per hour to over 2300, by merely adding a comparatively low cost radiant heating section. No additional floor space was required because the infra-red heating units were built around a section of the conveyor leading from one floor up to another on which the convection air oven was located, thus using space formerly employed merely for conveying.

This use of infra-red is widely applicable to plants that now have conventional air ovens and wish to increase their capacity. It can be done at comparatively little expense and make the most efficient overall baking installation.

Triples Output, Saves $2880 a M—An excellent illustration of what radiant ovens can do is found in the fan department of Hayes Industries, Inc., Jackson, Mich. Before the war, Hayes made automobile fans for Studebaker and Willys as well as all the General Motors models and all Chrysler models except Plymouth—some 250,000 to 300,000 per month. Fans are now be-



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SPOT the treatment where it's needed—at points of wear.

The result: Your dies and parts of inexpensive, easily machined metal, are reinforced with the high performance and long wear of costly steels. The flame hardening thus pays for itself many times over. That's how Lakeside's perfected flame hardening process has made possible important savings for die makers and manufacturers ever since it was pioneered by us in 1930. It's another example of metal improvement service—complete in itself—among Lakeside's many facilities.

Phone HEnderson 9100 for detailed information concerning all your steel treating needs

MTI MASTER CRAFTSMEN METAL TREATING INSTITUTE

THE LAKESIDE STEEL IMPROVEMENT CO.

5418 Lakeside Avenue CLEVELAND, OHIO Phone Henderson 9100

made for General Motors, Yellow Tr... & Coach, White and others. Pos... output of 350,000 units monthly is co... templated.

Here H. B. Strickling, superintende... informs us that fans are made fr... sheet steel by first slitting to width ... quired, subsequently trimmed to len... Flat pieces next are beaded, partiti... forming the contour; then formed ... correct pitch on a double-crank pre... bolt and shaft holes pierced in a s... gle operation; blades riveted together ... a press; then trued up to get all blades ... same plane. After balancing, the ... chine operator hangs the fan on a ho... of the monorail conveyor which carr... it through a degreaser and up to ... roof where it goes through a dip ta... and into the infra-red oven; then ... out to the shipping department for pa... ing.

Prior to the installation of the infr... red oven, however, a much more co... plicated series of operations was ... volved. While the same enamel w... used, drying in a large gas-fired A-ty... oven was so slow that the enamel te... ed to slough or slide down one si... causing an unbalanced condition w... required trimming and balancing AF... baking. To protect the raw metal e... posed by trimming, the fan blade ... then could only be brushed with e... and allowed to air dry. Also, the ... hole tended to fill up, requiring a re... ing operation after baking.

This original setup required one m... to load the conveyor, a second to re... work from the monorail and place it ... the oven conveyor; a third to re... the fans from the oven. Now, the ... ancing machine operator places the ... on the conveyor as part of his work ... only one man is required in the finish... operation itself, to unload the c... veyor.

Another important gain was the el... nation of a serious fire hazard wh... existed previously because the h... gas-fired oven was located close ... 1000-gal tank of inflammable enam... This was replaced with a 400-gal ... positioned to entirely eliminate all ... hazards. See Fig. 7.

A number of other important savi... have been obtained in this installation... The A-type oven formerly used occu... a floor area of 24 x 12 ft, was 20 ft ... at top. Conservative estimate is ... floor space in this plant is worth ... per square foot per month. Sa... from this item alone thus is $9880 ... month since the infra-red oven is ov... head, uses no floor space. Dip tank ... is overhead, producing another imp... tant saving in floor space. Actual ... all saving in production costs is 17 ... cent.

High Output: Production requi... ments called for the finishing of 7000 fa... in 9 hours. Against former produc... of 770 fans per hour, the infra-red o... produces 2000 pieces of work per h... almost triple the former output.

Radiant oven is 54 ft long, consi...

New high-solids lacquer . . .

The new high-solids lacquers can give twice the covering power of old-style lacquers . . . enable operators to complete more pieces in a given time . . . because they provide far thicker coatings when dried. Each coat now does the work of two! The answer is more solids, less solvent. Yet, despite the new finishing speeds and economies afforded, their durability and appearance are not sacrificed. For production line finishes on metal, wood, fabric, glass, rubber, leather, paper, plastics—use high-solids lacquers and save!

LIKE GIVING EACH SPRAY OPERATOR TWO GUNS

ASK YOUR LACQUER SUPPLIER for complete details and application data on these new time-and-money-saving lacquers, as they become available. Hercules does not make high-solids lacquers, but concentrates on the production of the highest quality nitrocellulose from which they are made.

CL-53A

HERCULES

Cellulose Products Department

HERCULES POWDER COMPANY INCORPORATED

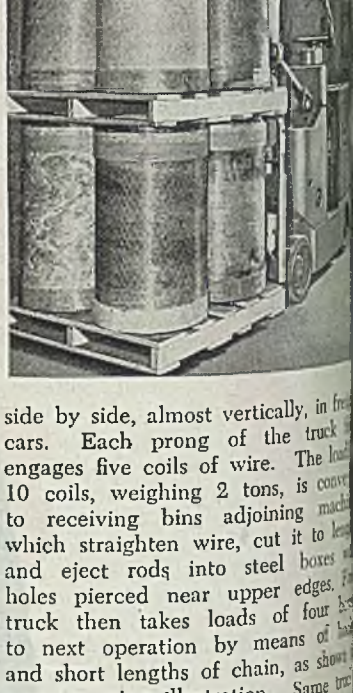
930 Market St., Wilmington 99, Del.

1800 kw, handles fans for jeep, tra tank and passenger car engines with sizes ranging from 12 to 26 in. in dia ter—four, five or six blades. Oven u type R-40 250-w infra-red lamps.

Finish applied is a black baking ena el with a film thickness of abo 0.005-in. Conveyor carries work thro oven at a speed of 6 fpm, with o riers spaced 9 in. apart. Oven opera at a temperature of 400°F.

Fork-Type Trucks Facilitate Wire Handling

Handling a daily average of 250,0 lb of unfinished wire in coils, as w as other raw materials and finished p ucts, has been expedited in the plan a welding rod manufacturer by use of fork-type industrial trucks, according Elwell-Parker Electric Co., Cleve When received, coils of wire are stack



side by side, almost vertically, in fre cars. Each prong of the truck engages five coils of wire. The loa 10 coils, weighing 2 tons, is conve to receiving bins adjoining machi which straighten wire, cut it to leng and eject rods into steel boxes holes pierced near upper edges. truck then takes loads of four box to next operation by means of ha and short lengths of chain, as shown accompanying illustration. Same truc also are used for carrying packa rods on pallets or skids and transpo them to cars or storage.

—o—

A hydraulic cylinder calculator computing the different factors in draulic cylinder applications easily quickly is offered by Hanna Engin ing Works, 1765 Elston avenue, C cago 22. It is said to eliminate the for multiple tables, graphs, charts data, giving instantly and accura required values based upon other v in the same scale. Nineteen dif operations may be performed on scales, including cylinder size, pres cylinder speed, size of pump, valves and motor.

HELPFUL LITERATURE

Veteran Employment

American Veterans Association, Inc.—6-page folder entitled "JOBS for the War Veteran" outlines responsibility placed upon industry to provide suitable jobs for disabled ex-soldiers. Specific solutions to many problems involved in hiring these men are outlined.

Alloy Heat Treatment

Peter A. Frasse & Co.—Data chart No. D 3 gives comprehensive analysis of heat treating procedures for standard SAE and AISI steels, including NE types. It summarizes proper annealing, normalizing, hardening, reheating and drawing temperatures, with recommended practice shown for each alloy listed.

Gears

Boston Gear Works—66-page illustrated bulletin AQA is entitled "Aircraft Quality Gears." Quality comparison, material specifications, gear design, classification, accuracy and other engineering data are given on complete line of gears.

Lubricant

Lubriplate Brothers Refining Co.—28 page illustrated Service Handbook-1945 Edition gives specifications of Lubriplate lubricants for all types of industrial applications. Advantages, applications and data on oil and grease types are presented.

Precision Gages

General Products Corp.—Two illustrated folder bulletins are descriptive of model B-1 comparator-comparator unit and dial indicator snap gages, respectively. Details are given regarding design, operation and uses of these precision instruments.

Springs

American Locomotive Co., Railway Steel-Spring Div.—12-page illustrated bulletin No. 18 entitled "Springs" cites case studies of design considerations involved in constructing helical compression, volute, helical extension, helical torsion, disk, special flat and other types. Design data and physical properties are listed.

Blast Cleaning

American Foundry Equipment Co.—24-page illustrated catalog No. 74 explains purpose and operation of Airless Wheelabrator airless wheel blast cleaning equipment. Diagrams and tables are used to show features of this equipment which uses wide range of steel shot and grit abrasive for various types of cleaning operations.

Brass Rods

American Brass Co.—24-page illustrated publication No. B-14 describes Anaconda rods for screw machine products. Leaded and free cutting brass, Everdur, phosphor bronze, Tobin bronze, commercial bronze, nickel silver, copper and other alloy rods are listed. Properties, machining data, production cost factors, composition and other engineering information are presented.

Face Shields

Bullard-Campbell Co. — 4-page illustrated folder "The Hundred Series" describes line of safety face shields. Four different headgears are available, each with choice of three thicknesses and three sizes of cellulose acetate window or three sizes of 24-mesh screen window for heat protection, and fiber front for grinding and welding.

Actuating Unit

Minneapolis-Honeywell Regulator Co.—4-page illustrated folder No. 120 describes new power unit which is designed to extend range of uses of air-operated controllers. It is actuated directly from air loading pressure of air-operated controller and employs hydraulic principles to control heavy valves and dampers.

11. Power Lift Truck

Automatic Transportation Co.—4-page illustrated condensed catalog folder No. 1001 gives details of Transporter electric propelled lift truck of platform or fork type for handling industrial materials. All controls are incorporated in handle and truck is easily manipulated.

12. Gages & Indicators

B. C. Ames Co.—56-page illustrated plastic-bound catalog No. 53 and price list covers gages and dial indicators for measuring, size control and general testing. These precision instruments and testing equipment are available in wide range of capacities for all types of checking operations.

13. Water Works Equipment

American Well Works—Six illustrated bulletins Nos. 246, 247, 248, 252, 255 and 256 are descriptive of two-stage centrifugal pumps, deep well turbine pumps, double suction pumps, iron and carbon dioxide removal units, flocculation and mixing equipment and Flocsettler water conditioning equipment, respectively.

14. Fire & Safety Aids

General Detroit Corp.—48 page illustrated catalog No. 20 describes complete line of fire fighting, first aid, industrial maintenance, safety and alarm equipment for commercial and industrial applications. Reference material is presented to aid in selection of equipment for any given hazardous condition.

15. Rectifiers

Fansteel Metallurgical Corp.—12-page illustrated bulletin No. RDP-107 is engineering manual and specification book on standard elements of selenium rectifiers. Principles, properties and construction of wide range of sizes and types of units are described.

16. Socket Wrenches

Apex Machine & Tool Co.—106-page plastic-bound illustrated catalog No. 18 gives specifications and other data on complete line of socket wrenches for production purposes. Plain sockets, socket adapters, straight wrenches, Allen drivers, universal sockets and adapters, and universal wrenches are listed. Sizes and types are available for practically any requirement.

17. Cutting Tools

Crobalt, Inc.—4-page illustrated bulletin on Powersteel cutting tools gives dimensional and application data on these alloy tool bits which are hardened and ground, ready for use. Standard sizes and list prices of square and rectangular bits are given.

18. Power Transmission

Dodge Mfg. Corp.—20-page illustrated bulletin No. A-242 is supplement to "Power Transmission Catalog No. 42." Additions to line include pillow blocks, flange bearings, rolling grip friction clutch and cut-off couplings. Price changes and corrections are included.

19. Distribution

Graybar Electric Co.—28-page illustrated bulletin "Tomorrow's Electrical Distribution—Via Graybar" tells how company applies modern wholesaling and merchandising methods to distribute electrical equipment. National network of sales offices and warehouses is explained.

20. Production Facilities

A. W. Hecker—28-page illustrated spiral-bound bulletin "Men and Machines for Engineering, Tool Building and Production" describes engineering, design and production facilities of this company which specializes in making tools, jigs, fixtures and machine parts.

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21. Magnetic Ingot Iron

American Rolling Mill Co.—24-page illustrated bulletin "ARMCO Magnetic Ingot Iron for DC Applications" explains properties of this material which is adaptable for electrical and magnetic applications ranging from magnetic cores of cyclotrons to telephone and telegraph wires. Fabrication, machining, welding and other data are included.

22. Variable Speed Drive

American Pulley Co.—4-page illustrated bulletin No. SJ-44 presents design and application data on Speed-Jack drives. These variable speed transmission units are adaptable for drivers rated at up to 1 horsepower.

23. Pyrometer Controllers

Bristol Co.—16-page illustrated bulletin PB1226 describes Pyromaster pyrometer controllers of electric type. Microact controllers, proportioning controllers and current input controllers are covered. Typical applications, wiring diagrams and other data are presented.

24. V-Belts

Diamond Rubber Div., B. F. Goodrich Co.—4-page illustrated folder on Diamond wire grommet V-belts explains construction of these power transmission units and outlines their usefulness in handling difficult transmission problems.

25. Bearing Application

New Departure Div., General Motors Corp.—24-page illustrated New Departure engineering service data book is part I of series on fundamentals of ball bearings. Entitled "Bearing Application", this manual deals with principal ball bearing types and fundamentals of mounting.

26. High Frequency Heating

American Type Founders—4-page illustrated bulletin describes ATF Hi-Frequency converter for induction heating applications. Available in 15 and 30-kilowatt capacities, these units are adaptable for brazing, soldering, hardening, annealing, melting and normalizing.

27. Lathe Converter

Master Mfg. Co.—78-page illustrated catalog No. 10 is combination operating and maintenance manual and spare parts catalog on Master lathe converters which include basic milling units, internal and external grinding heads, 90-degree milling head, internal keyseater, arbors, dividing head and other accessories. With these attachments, wide range of machining operations can be performed on lathe.

28. Nonmagnetic Steel

American Manganese Steel Div., American Brake Shoe Co.—32-page illustrated bulletin No. 1144-NM is entitled "Non-Magnetic Applications for Amsco Manganese Steel." Properties and typical uses of this material are covered.

29. Gear Finishing

Colonial Tool Co., Ltd.—8-page illustrated bulletin No. E-45 describes specialized line of rotary and rack type gear finishing cutters, laps, burnishers and master checking gears. Information is given to assure selection of correct tool for specific type of work.

30. Drum Dryers

Louisville Drying Machinery Co.—8-page illustrated bulletin No. 250 describes General American drum dryers for removing moisture from liquid materials to obtain dry products. Dimensions of various units are listed.

31. Flash Welding

American Welding & Mfg. Co.—4-page illustrated folder entitled "Flash Welding—A Solution to Assembly of Forged Parts" describes advantage of this method. Typical assemblies are shown.

32. Chemical Products

Hercules Powder Co.—48-page illustrated bulletin "Labors of War for Peace" contains series of full-color reprints of advertisements which review products developed by company and which have profound effect on living conditions and on industrial progress.

33. Hose Clamps

George K. Garrett Co.—4-page illus... bulletin No. 110 shows typical applica... Diamond Multi-Clamps for automotive, ... draulic, pneumatic, aviation and general ... hose connection service. Sizes and prices listed.

34. Color in Industry

Pittsburgh Plate Glass Co.—24-page ... trated bulletin "Color Dynamics" ex... scientific utilization of energy in color to ... mote efficiency in industry. Selection of ... color for various parts of machines and ... out industrial plants to minimize fatigue ... accidents is outlined. Applications to mach... walls and ceilings, floors and aisles ar... scribed and shown.

35. Hydraulic Valves

Galland-Henning Mfg. Co.—16-page ... trated bulletin No. 88-A describes ... Nopak valves for control of air, water, ... oil pressures up to 250 pounds per square ... and hydraulic valves for pressures up to ... pounds per square inch. Models are shown ... all types of control application.

36. Industrial Brushes

Fuller Brush Co.—62-page industrial ... log No. 10 describes line of brushes for ... tenance and other purposes in ... plants. Brooms, floor brushes, ... scrub brushes, bench brushes, whisk brooms ... other types are listed.

37. Welded Assemblies

Ampco Metal, Inc.—4-page illustrated ... letin No. 67 describes facilities of compan... producing assemblies made of bronze ... castings or extruded parts welded with Arg... Trode aluminum bronze weld rod. Typical ... assemblies are shown.

38. Magnesium Castings

Superior Bearing Bronze Co.—4-page ... trated bulletin "Magnesium Castings" ... facts for design engineers and production ... on design and application of products em... ing this metal. Comparative properties ... magnesium and other structural metals ... tabulated.

39. Gas Analysis Apparatus

Burrell Technical Supply Co.—96-page ... trated catalog No. 80 contains complete ... on gas analysis apparatus. Included is techn... section which serves as manual for gas ana... All apparatus is described and details are ... sented on proper use of equipment.

40. Electric Products

BullDog Electric Products Co.—84-page ... trated condensed catalog No. 451 presents ... tails on complete line of safety switches, ... panels, wire and cable duct, lighting ... fuse panels, switchboards, circuit breakers ... similar electric products.

41. Heat Treating

Claud S. Gordon Co.—8-page illustr... broadside on "McKee Eclipse Heat Tre... Equipment" describes pot furnace atmos... type burners, oven and shop furnaces, ... melt units and other heat treating and ... liary combustion equipment.

42. Soundproof Phone Booth

Burgess Battery Co.—4-page illustr... bulletin No. 149 describes Acousti-Booth ... phone booth which provides zone of quiet ... telephoning in noisy locations. Industrial ... No. 204 is of steel construction and is design... for use in steel mills, foundries, machine sh... metal working plants and other locations wh... noise of equipment and machines frequ... makes telephoning from open telephone ... possible.

43. War Products

American Machine & Metals, Inc.—12-... illustrated booklet "1944 in Review" ... story of operations of company in produc... of implements of war and machinery and ... to be used in manufacture of weapons, ... munition, medicines, food, clothing and ... equipment and supplies used by armed ...

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West Coast Steel Mill

(*Continued from Page* 133)

ding upon a mandrel as specified. ch loaded car of wire is tagged as to e, grade and coil number for identifi- ion with original tests. Finished wire this point may be galvanized, bright ding, spring, rope, gravel screen, or ght basic wire, some of the latter for d and bolt use.

About 1400 types of nails generally are de. The Pittsburg Works wire mill oduces 1200 varieties of them, indicat- the tremendous diversity of work at umbia Steel. The range of nails pro- d is from ⅞-in. diameter by 8-in. n to 22-gage (0.028-in.) diameter by n. There are 189 nail machines with ed range from 115 to 600 rpm. All newer machines (about 100) have ividual motor drives.

After cutting, the nails are delivered the nail finishing department for the oval of whiskers, cleaning and pack- The cleaning equipment is most tem.

Each cleaning unit consists of a me- ical loading skip hoist, a wet clean- drum in which the nails are cleaned a hot caustic solution and their kers removed through the tumbling m, and drying drums heated to ° F and containing sawdust. These ns discharge onto a small shaker ere the sawdust is removed by vacuum ers, and thence to a large shaker where the nails are shaken down ers for space saving. The system is ed by continuous conveyor — as n as one batch is removed from the drum, it is reloaded with another. normal batch is 40 kegs of 100 lb

Nails Carried By Conveyor

If the nails are to be cement coated, y are taken by separate conveyor the small shaker to the coating m, and thence back to the large ker table for packing. After the nails been loaded in kegs, they are placed a power-driven conveyor and deliv- to the exact weighing scales. The t is then placed on the keg, and by ther conveyor they are fed to the ng machine and loaded onto the steel e holding 25 to 30 kegs. Removed these by an electric high lift fork after head nailing, the kegs move storage, each pallet being double ed and racked five high.

Columbia Steel has placed kegmaking production line basis. Staves, heads the steel chimes are bought outside, hoops for the kegs being made in plant. The components are as- led by hand on setup benches and ed on a conveyor. Chimes are placed ach end of the keg, the wire hoops installed around the body and the is automatically fed into the trussing hine for exact placement of chimes hoops.

The keg is automatically discharged

from trussing to another conveyor [illegible] delivered to the nailing machine [illegible] four nails and eight staples are [illegible] matically driven. This machine [illegible] two staples and one nail in a [illegible] operation, four times around the [illegible] production being 3120 kegs per 8 [illegible] The machine cuts and drives the staple in the same operation. It is electric powered, the keg being inserted on [illegible] anvil. Rotation is automatic. When [illegible] ished, kegs are automatically conveyed to mezzanine storage and from there automatically redelivered to the [illegible] cleaning line on another conveyor [illegible] required.

Blue nails are sterilized at 600° [illegible] These are used principally by lathers [illegible] tackers where they must be sterile so [illegible] the user will "mouth" them. This sterilization is accomplished in the b[illegible] furnace, serviced by skip hoist. From it, work goes into a cooling drum on a conveyor and on to the keg filling mechanism.

Nails Made By Hot Rumbling

Galvanized nails are made by [illegible] rumbling. This equipment consists of a furnace with a rotating shell having internal vanes for direction of agitation. This hot-rumble shell is charged with cold nails and rumbled while heated with flake zinc and flux (sal ammoniac). Shells for this purpose are made in the company's foundry. The nail charge is 300 lb. The rotation is horizontal. The cycle is 10 to 12 min. After coating the nails are discharged on to a conveyor belt running into flowing water and from there to a drying drum with sawdust. They are finally discharged onto the shaker table where the sawdust is removed by vacuum suction and then after the nails are kegged. The flux zinc is prepared at the galvanizing station in an independent furnace direct from pig spelter.

The wire mill maintains a small package department for brads, tacks and [illegible] head nails, making packages from 100 down to 2-oz packages.

The capacity of the local nail [illegible] house is 250,000 kegs, Columbia [illegible] being the largest producer of nails on the West Coast. The demand in this section is heavy because of the large requirements in crating vegetables and [illegible] The wire specialty department of the mill consists of facilities for straightening and cutting; making woven wire fence, poultry and fish trap netting, barbed and twisted wire, and springs.

The wire rope mill, housed in a 100 [illegible] building, went into production in [illegible] Here are produced many varieties of wire rope from the smallest of [illegible] diameter 7 x 7-construction aircraft [illegible] to a maximum of 3-in. diameter 6 x [illegible] construction steel wire rope. Constructions such as 6 x 7, 6 x 19, 6 x 37 (bright and galvanized), track cables, [illegible] galvanized strands, sounding line, [illegible] stone sawing strand are typical of the output of this mill.

Production flow is to receive the [illegible]

A few simple rules to conserve carbide tools

FIRTHITE FIELD SERVICE POSTERS are available for display in your plant

The conservation of carbide tools through proper handling and correct usage is essential not only in war time but at any time for best production results and low operating costs.

These Firthite field service posters will help remind your plant operators in simple, easy-to-take, understandable manner, of the right way to make carbide tools do their utmost.

Fill in and mail the coupon for your set of these free, 17" x 22", four-color posters.

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by plant rail delivery to weighing to storage on steel skips and hence to spooling. There are seven spooling benches. Five have nine blocks, one has ten, one has three blocks, the purpose of which is to place the wire on the appropriate spool for the machine upon which the wire is to be stranded. The range of wire spooling is from 0.0065 to a maximum of 0.260-in. diameter.

After being filled, the spools are placed on gravity runways and are delivered to the stranding machines. Each spooling bench is driven individually with an electric motor with facilities for starting and stopping the individual blocks. A distributor bar on each bench controls the feed. The automatic 9-block spooling benches can be controlled at the bench or at the swifts. Each spooling bench is equipped with two overhead 600-lb electric hoists, one being used for placing coils on the swifts, the other to raise or lower the empty spools to and from the spooling bench. Electric buttwelders are used to pin wires together.

Machines Operate in Tandem

Large diameter 6 x 19-construction ropes are stranded on one of two 31-wire horizontal planetary-type strand... When rope constructions having more than 25 wires per strand are needed, the two 25-wire planetary machines are coupled together in tandem. Ropes of track strands having a maximum diameter of 3 in. may be stranded on this equipment.

For stranding smaller diameter ropes the mill is equipped with 14 tubular type, horizontal stranders. Individual 500 to 1000-lb capacity hoist are installed over the above equipment. Strands are so located that upon completion of the stranding operations the spools require but little handling to transport them to the closing machine (layers).

The mill is equipped with an 18-vertical planetary layer having cradles, which is used for laying 6-strand ropes of 1⅛ to 3 in. diameter. Six and eight-strand ropes from ⅝ to 1¼ diameter are laid in a 15-ton horizontal layer having nine cradles. Special ropes are laid on a 7-end horizontal machine having a 40-capacity. All 6 and 8-strand ropes from ⅜ to ½-inch diameter, inclusive, are laid in a 9-cradle horizontal tubular machine which is used as both a stranding machine and layer.

After the strands have been laid into rope at the layers the finished rope, which has been automatically spooled on wooden reels during the laying operation, is moved by overhead crane to the shipping department, from where it is shipped by rail or truck to its destination. The wire housing department, is equipped for cutting the rope, re-reeling, and splicing. Wire rope slings of all types are made to customer's order.

A modern reelmaking shop is located next to the warehouse, for producing

Pouring a double Thermit weld in fabricating a ship stern frame.

A Lesson from a VICTORY SHIP

Thermit welding's speed and effectiveness have been utilized in fabricating separately cast sections of the huge stern frames of Victory ships built for the U. S. Maritime Commission.

The application is one of the shipyard success stories of the war. It provides a worthwhile lesson for foundries and those who produce heavy machinery and equipment. Thermit welding of smaller castings, forgings and flame-cut shapes into large units, has many advantages. These include: minimizing the possibilities of flaws likely to occur in very large castings, saving pattern work and simplifying handling and shipping.

The Thermit process is also used extensively for the repair of large crankshafts, pinions, rolls, machine frames and other heavy parts, with considerable savings in production time and replacement costs.

Write for a copy of "Thermit Welding" or consult Metal & Thermit Corporation, 120 Broadway, New York 5, N. Y., Albany, Chicago, Pittsburgh, So. San Francisco, Toronto.

Thermit Welding

wooden reels upon which the rope spooled prior to shipping. In addition fully equipped machine shop is maintained in the rope mill for making repairs. Major repairs are made in larger centrally located machine The quality of the wire rope and products is constantly checked in testing laboratory.

Dynamometer Tests Airplane Tires and Brakes

A dynamometer for testing airplane tires and brakes has a total weight more than 250 tons and took more than 1½ years to construct and install. Most of the electrical equipment to operate this machine, made by Adamson Machine Co., Akron, O., is manufactured by Westinghouse Electric Corp., Pittsburgh,

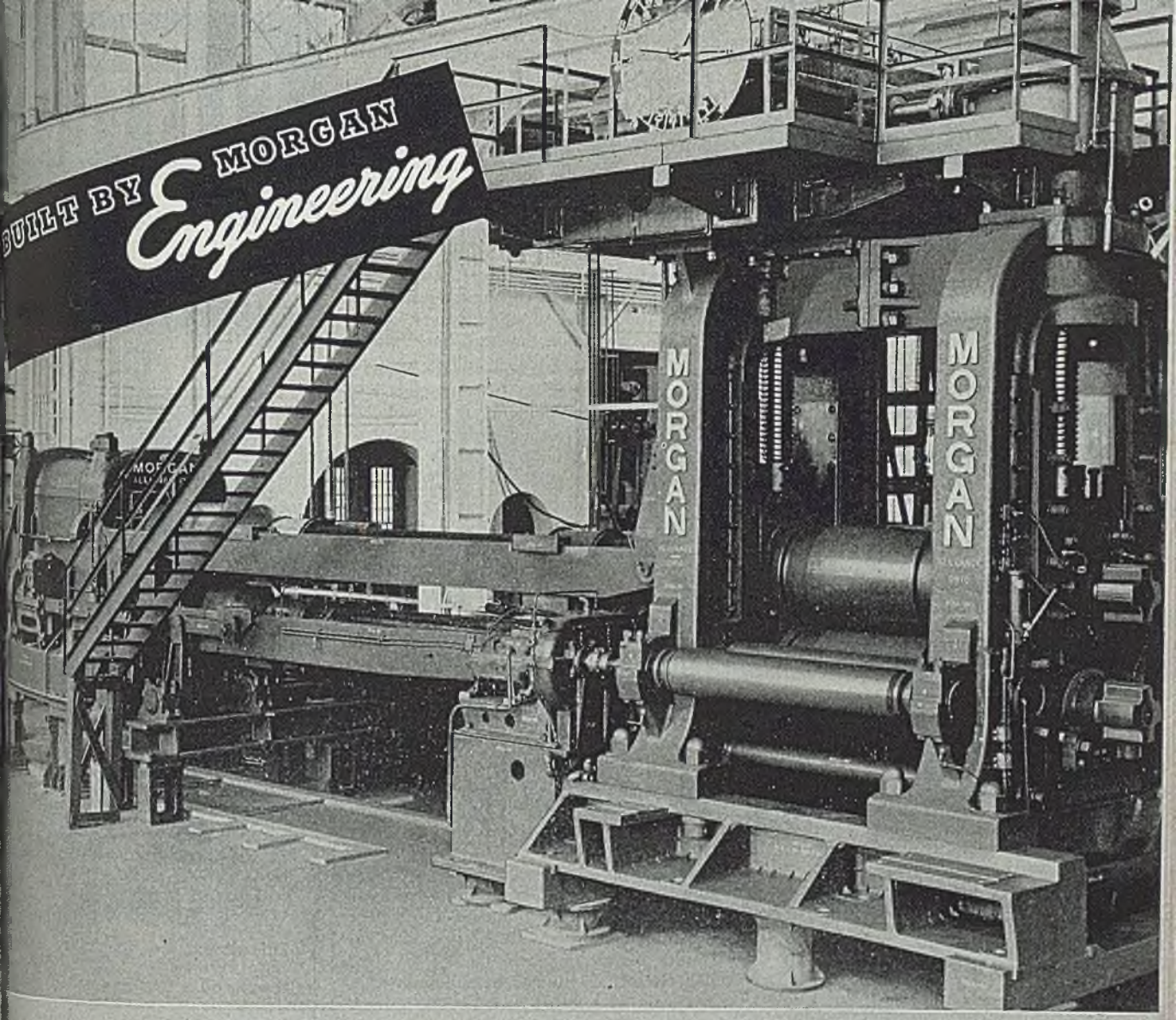
The heart of this equipment, a 15-ton wheel, is called an inertia wheel due to its resistance to change. On the front and rear of the wheel is a moving axle for an airplane wheel, so connected with compressed air cylinders that each can be smashed into the inertia wheel with terrific force.

Outside the caged chamber in which the tests are conducted a large amount of electrical equipment goads the inertia of the immense wheel and sets it spinning at its rapid pace. Directly driving the axle on which the wheel is mounted is a 400 hp dc motor. It spins for a period of about 30 minutes to get the circular mass moving at a speed of 308 rpm. At this speed, engineers estimate, the wheel, if freed from its moorings, would crash through a steel and brick structure which surrounds it and roll on for several miles, flattening trees and houses and anything else in its path.

This tire and brake testing machine was designed as an accurate simulation of airplane landing conditions. Since the speed of the huge inertia wheel indicates the forward speed of the airplane as it comes in for a landing. The force with which the tire and braking wheel are smashed against the inertia wheel approximates the drop of a landing plane. The simulation on this laboratory tester is projected into the future, and the test on tires and brakes is more severe than tests under actual landing conditions.

Under the concrete floor of the craft laboratory which supports the inertia wheel are tunnels carrying water, oil pipes and air lines. Removable floor plates reveals a room with huge tanks of compressed air as well as other equipment subsidiary to the operation of the tester. The 8-ton steel shaft carrying the inertia wheel was forged and X-rayed for possible flaws and given a series of tests.

Electrical equipment to give control to the equipment it motivates surrounds the caged dynamometer. Alternating current operates a 450 hp motor driving a 300-kw generator which changes



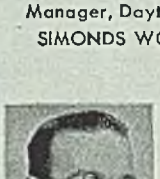
MORGAN "36" TWO-HIGH BLOOMING MILL

Above is shown a Morgan 36" Two-High Blooming Mill on erecting floor. Housings are one piece steel castings of the closed top type. Top roll balance is of the counterweight type. Top roll lift sufficient for rolling 42" wide slabs. Manipulator is of the overhead type, compact and accessible. Tables are of heavy design, equipped with anti-friction bearings.

With this Mill was furnished Auxiliary Equipment as follows — Front and Rear Tables with Manipulator — Approach Table — Ingot Buggy — Runout Tables — Slab Shear with Gauge — Crop Hoist — Pushers — Conveyor — Skid Bed and Furnace Tables.

Grinding Questions Answered

By ALLEN STEELE
Manager, Dayton Grinding Wheel Division
SIMONDS WORDEN WHITE COMPANY



Presented as a practical aid in the solution of many common grinding problems. Readers are invited to send in their own grinding questions, without obligation. All questions will be answered by mail or in this column.

Continued from Previous Issues

24 Q. *"How many different kinds of coolants are there? It seems to me there is a new one every day."*

A. There are a great many different brands of grinding fluids or coolants and no doubt all of them differ in one way or another. Basically, however, all grinding fluids can be classified somewhere within the following types: (1) Plain water; (2) plain soap solutions; (3) straight mineral oils; (4) plain water and sodium carbonate; (5) emulsions of oil and water; (6) emulsions of paste compounds.

25 Q. *"What is meant by the term 'outboard roller support' method in infeed centerless grinding?"*

A. The term outboard roller support method in infeed centerless grinding is applied to work where the piece is longer than the width of the wheels and is ground but a short distance from the ends. The protruding end of the work is supported by the means of rollers which are generally outside the machine. These rollers are called "infeed roller work rests" and are considered a part of the fixture. The operation cycle is the same as for ordinary infeed grinding.

nating to direct current to operate the 400 hp motor connected with the shaft of the inertia wheel.

Behind this operation a Rot-o-trol regulator determines power needs for continuous acceleration and regulates the electrical drive so as to provide a constant accelerating force. It can be used for regenerative braking, a process in which motors are connected to become generators acting to retard the speed of the inertia wheel. It also automatically keeps voltages in the motor and generator the same so that power, once cut off, can be connected back again while the inertia wheel is still in motion.

Large panels of switchgear give operating engineers fingertip control of the equipment. Other panels show engineers the ability of the brake to stop the bomber and the wire to withstand wear and tear.

This equipment with its 16-ft. inertia wheel is said to be capable of testing tires and braking wheels even larger than those in common use today.

Lightweight Plastic Bands Support 30-Ton Plane

A few pounds of Lucite methyl methacrylate resin will support as much as 30 tons of aircraft, according to the manufacturer, E. I. du Pont de Nemours & Co. Inc., Wilmington 98, Del. Circular bands of the product, 3 in. in diameter, ¼-in. thick, and 3 in. wide, were designed by the San Bernardino, Calif. Air Technical Service Command to protect intricate mechanisms of landing gear on stored planes. Bands consist of two half-circles of Lucite, held together in assembly by a wrap lock.

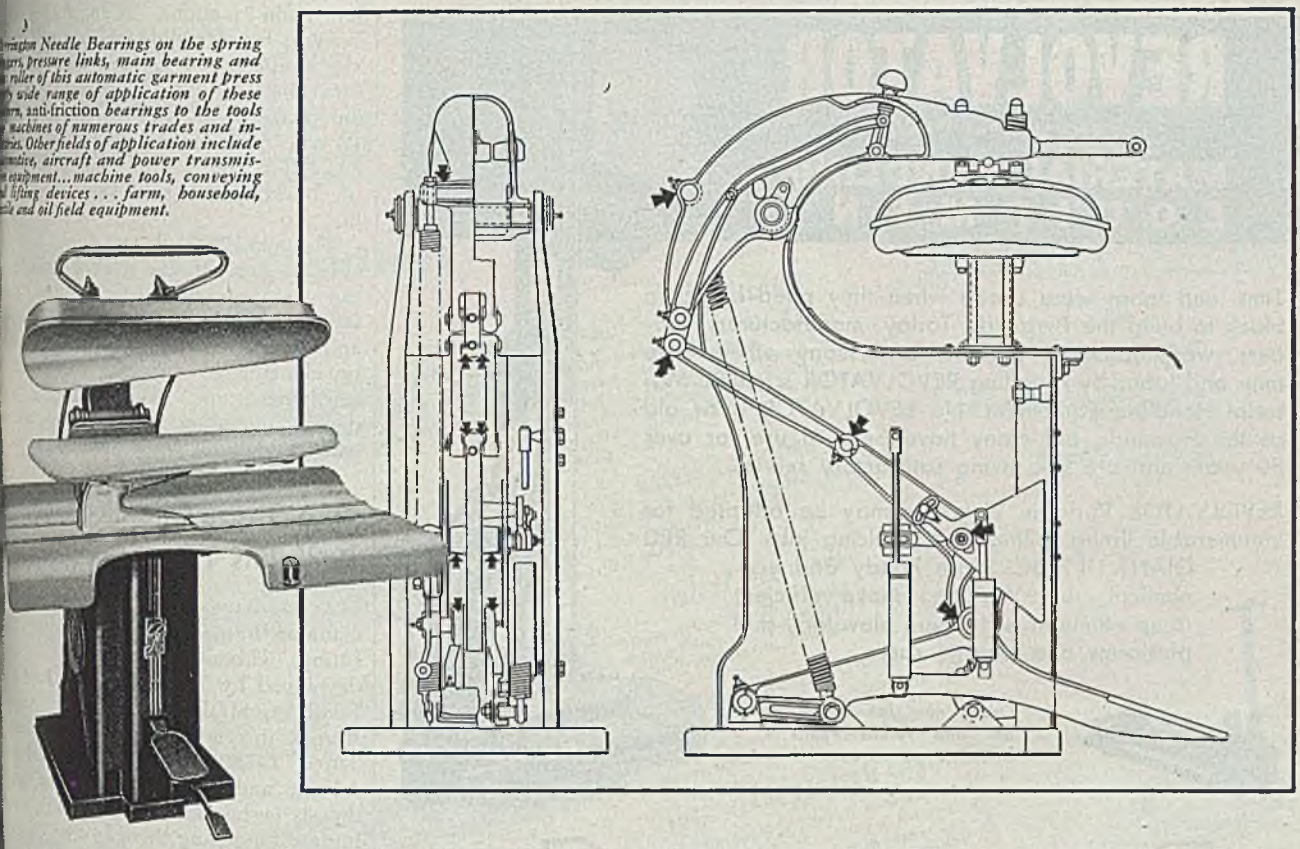
Clamped around the plunger of the landing gear strut, band acts as a stop, supporting the weight of the plane and preventing the hydraulic piston from resting against the cylinder head as hydraulic pressure of landing gear is deflated. This prevents damage to the piston and cylinder and jamming of packing. Strength of the plastic is said to assure its holding up the weight of the plane and its transparency to permit checking of hydraulic fluid.

Electric Equipment Improves Mining Operations

Electric mining equipment is being manufactured by General Electric Co., Schenectady, N. Y., for Maumee Collieries Co.'s new open pit coal mine near Jasonville, Ind. Totaling the equivalent of approximately 7000 hp, this operating machinery will be installed in one of the world's largest draglines and will make possible open cut mining at a depth of from 40 to 70 ft.

Equipment includes amplidyne control, with two heavy-duty, multiunit motor-generator sets, arranged for variable-voltage operation, supplying power

rrington Needle Bearings on the spring ers, pressure links, main bearing and roller of this automatic garment press wide range of application of these rs, anti-friction bearings to the tools machines of numerous trades and in-ries. Other fields of application include motive, aircraft and power transmis-equipment... machine tools, conveying lifting devices . . . farm, household, k and oil field equipment.



orrington Needle Bearings Help Increase Operating Efficiency of Power Garment Presses

Indicative of the wide range of efficiently-lubricated Torrington Needle Bearings in uses for modern equipment are several interesting applications on the laundry and dry-cleaning machinery made by the Prosperity Company, Inc.

On the leverage mechanism of the automatic press shown above, for example, ten compact, high-capacity Torrington Needle Bearings are used to assure smooth, friction-free speed of operation . . . reduce power and maintenance requirements . . . provide *the anti-friction efficiency that helps machines do more work at less cost in time, effort—and money.*

In the highly competitive markets ahead, the profits will go to those who build, sell or operate equipment with such advantages as Torrington Needle Bearings offer. You should know the full story of those advantages in terms of *your* product. Our new Catalog 32 illustrates and explains them in full. May we mail you your copy today?

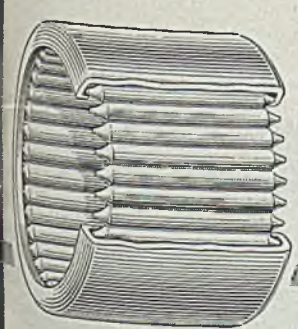
•

THE TORRINGTON COMPANY

Established 1866

TORRINGTON, CONN. • SOUTH BEND 21, IND.

New York Boston Philadelphia Detroit Cleveland Seattle Chicago San Francisco Los Angeles Toronto London, England



TORRINGTON NEEDLE BEARINGS

for main motions. Capacity of t Bucyrus-Erie dragline which it will op ate is illustrated by the fact that excavator can dig 140 ft deep and dump about 360 ft from where it s It will have a 25-yd drag bucket an 180-ft boom, and combined wei of bucket and full load is 130,0 lb.

The 2,410,000-lb machine will b able to step off 7½ ft at a stride, zig zag between working locations, and step at any angle, and travel over so and irregular ground. Direction m be changed by swinging the machin revolving frame. While dragline is digging operation, walking shoes will carried high on the mammoth frame.

Two-Stage Chemical Metho Reclaims Torch Burner Tips

A two-stage chemical method for claiming burner tips and welding to fittings without manual labor has be developed by Turco Products Inc., 61 South Central avenue, Los Angel Burner tips and fittings are soaked Turco L-780, a liquid material w solvent and penetrating actions, wh digests carbon and gum deposits, s ing and loosening them so that they be freely rinsed away. Material is n corrosive to copper and brass, is n inflammable, and mixes readily w water. It is used at room temperatu in an ordinary steel tank or contain Overnight soaking is said to be sufficie to loosen and soften carbon and d After soaking, parts are rinsed clean a vigorous air and water spray.

Although physically clean, parts of oxidized and tarnished due to the h heat to which equipment is exposed. dip in Turco Brass Dip, a safe, detarni ing liquid, removes film, leaving m clean and bright. Dip is made in a ce mic crock or container. A small amou of material will clean several hundr burner tips and fittings. Turco Br Dip also passivates the surface, mak it corrosion resistant between cleani periods. Literature describing this p cess in detail is available from the co pany.

Use of Soaps in Ore Concentration Described

U. S. Patent 2,364,778, granted E. H. Brown and F. X. Tartaron, il trates the value of soaps in froth-fl tion methods for concentrating ores describes methods of concentrating fi ly divided oxidized iron ores in wh the gangue ingredient is principa quartz. This consists of treating an aq ous pulp of such an ore with an anio collecting agent. Included in suita agents for this purpose are soaps i in fatty acids or resin acids. Co-oper ing agents, like lime and acid-treat starch solutions, also are used. Ore p thus treated is subjected to froth-fl tion and the silica-containing froth is

STE

The CLEVELAND CHAIN Line

Welded and Weldless Chain

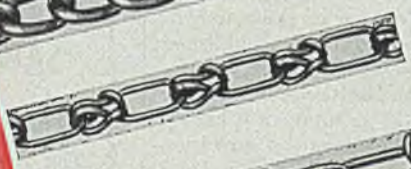
HONEST VALUE in Quality Dependability Economy

PROOF COIL & BBB CHAIN
Electric welded in sizes 3/16 to 5/8". Heavier sizes fire welded. Natural finish . . . For greater strength we recommend Super Steel Chain and Sterling Dredge Iron Chain for Sling Chains.

LIBERTY COIL CHAIN
Twist Link. Electric welded. Bright finish. 9 sizes . . . Packed 100 feet in a carton.

LIBERTY COIL CHAIN
Straight Link. Electric welded. Bright finish. 9 sizes, No. 6 to 7/0. Packed 100 feet in a carton.

LIBERTY MACHINE CHAIN
Twist or Straight Link . . . Twist link supplied unless otherwise specified. Electric welded. Bright finish. 9 sizes.



LOCK WEAVE PATTERN CHAIN
A flat, flexible, strong wire chain. Range of 9 sizes . . . Ideal for conveyors, rolling doors in use over sprockets. Finishes: Bright, Bright Galvanized and Hot Galvanized.

BUCKEYE PATTERN CHAIN
Also known as Brown Pattern. The most popular type weldless steel wire chain . . . Made in 10 sizes. Finishes: Bright, Electro Galvanized, Hot Galvanized or any plate.

SAFETY CHAIN
Made of Steel or Brass. 3 standard sizes, .018 to .028 gauge. Finishes: Bright, Bright Galv. and Coppered.

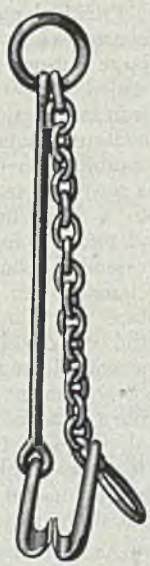
COLD SHUTS
Plain
...dard drop-forged cold ... commonly used for ... repairs, also for ...ing hooks, rings, etc. ...er one size larger than ... Natural finish.

SLIP & GRAB HOOKS
...p-forged from steel; regularly sup... self-colored; also available in ...shed finish when desired.

REPAIR LINKS
For joining chain temporarily. May be closed cold or welded. Regularly furnished bright. Packed in cartons.

STYLE C BARREL CHAINS
Adjustable for lifting barrels in either vertical or horizontal position.

← Center ring is used at top for lifting barrels in horizontal position.



End Ring is used at top for lifting barrels in vertical position.

The Cleveland Chain & Mfg. Co. Cleveland, Ohio

THE BRIDGEPORT CHAIN & MFG. CO., BRIDGEPORT, CONN.
SEATTLE CHAIN & MFG. CO., SEATTLE, WASH.
ROUND CALIFORNIA CHAIN CORP., LTD., SO. SAN FRANCISCO, CALIF.
ROUND CALIFORNIA CHAIN CORP., LTD., LOS ANGELES, CALIF.

moved, producing in the pulp residue a concentrate rich in oxidized iron.

Electric Current Control Protects Arc Welders

A safety control for arc welders, invented by electrical engineers of Michigan City, Ind. plant of Pullman-Standard Car Mfg. Co., automatically reduces open circuit voltage of the electrode, which creates welding arc, from 110 to 24 v when welding contact is broken. Open circuit voltage of welding equipment is isolated from electrode holder as soon as operator breaks the arc or welding spark. A control voltage of 24 v is automatically impressed on electrode cable when electrode again contacts work so that the welding transformer is connected to the electrode, and welding proceeds.

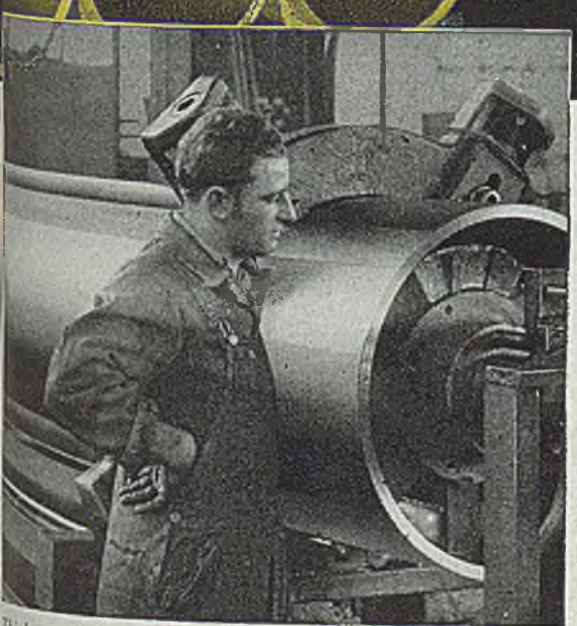
Contour Developer Facilitates Model Making

Making plastic models or molds of contour parts is facilitated by mechanical equipment developed on the West Coast and is used for replacing methods requiring a high degree of skill, according to Production Information, published by Automotive Council for War Production, War Products Division, New Center Building, Detroit 2. Equipment is known as the Contour Developer, a precision tool which helps to translate data from layouts or lofts into a physical representation of part contours. It also is used in developing mockups. Work can be done directly from drawing or layout without wood models or templates and without making accurate measurements, as all dimensions or contours are scaled directly from drawing. This method offers a saving in time compared to former methods.

Principal piece of equipment involved consists of a base surface plate with a large cut-out and with edges accurately scaled to permit proper positioning of frames containing a series of adjustable contour points. Layout or photographic reproduction of metal loft is located on a set-up table, and drawing is referenced to a base line by two angle surface plates. On top of the drawing the frame assembly containing contour points is clamped into position against angle surface plates. Contour points are set to the contour line by the operator with a movable angle surface plate. A feature of equipment is that movable angle can have attached to its face a strip of metal the exact thickness of the sheet used for the finished product, so resulting plaster model for a die will be compensated for metal thickness.

As each contour line is developed, the frame representing that line is placed on the base surface plate in correct position and locked into place. Spacing of frames and of contour points normally is at 2½ in., corresponding to the usually used increments, the 10-in. lines

PHYSICALLY FIT
...for Toughest Service



This large centrifugally cast cylinder, is being precision finished in the Shenango-Penn machine shop which is equipped with a wide range of modern machine tools for the fine finishing of castings, large and small. Above—Large sleeves ready for shipment.

because they're cast centrifugally by SHENANGO-PENN

"CAST centrifugally by Shenango-Penn" has plenty of meaning to users of rolls, roll covers, bushings, bearings, sleeves, liners and other tubular parts. It means castings with higher tensile strength, greater density, uniform grain structure and a welcome freedom from porosity, blowholes, sand inclusions and other structural defects. It means machinery and equipment parts that will outwear and outperform ordinary castings of the same analysis by a wide margin . . . and at a lower cost per part.

Find out just what these factors can mean in *your* case. Send for the free Bulletin 143. It tells the whole story and contains helpful technical data.

SHENANGO-PENN MOLD COMPANY
458 W. THIRD STREET, DOVER, OHIO
Executive Offices: Pittsburgh, Pa.

SHENANGO-PENN

ALL BRONZES • MONEL METAL • ALLOY IRONS

used on layouts and loft boards. C... spacing, down to approximately ... can be obtained by auxiliary points ... tween the main contour points.

When frame and contour points ... in position, large washers are drop... over the contour points and a metal ... or screen laid over them. Screen ser... as a foundation for a layer of mode... clay. Modeling clay is roughl/ f... leaving the spherical contour points p... truding about 1/32-in. through ... The only skill or care required at ... stage is to make sure that mode... clay is faired properly between ... points so that desired contours can ... established at the next stage in ... plaster.

Plaster or Hydrocal then is poured ... to clay mold and, after it has shru... a base is attached to plaster cast. B... fore removing cast from mold, cen... lines are scribed in the plaster and ... curacy of the base itself can be check... and controlled. Cast is removed fr... the mold and put on the fairing ta... Indented impressions caused by protr... ing points are daubed with a contrast... color to guide in fairing operation... Plaster is faired by using spoke sha... or thin metal splines until only very s... dots of paint remain, showing where ... or contour points came in contact w... plaster. Splines and thick crayon ... used in a manner similar to the bl... and scraping operation used in finish... other surfaces. Plaster scrapes off m... ily, leaving a hard, smooth precision ... face.

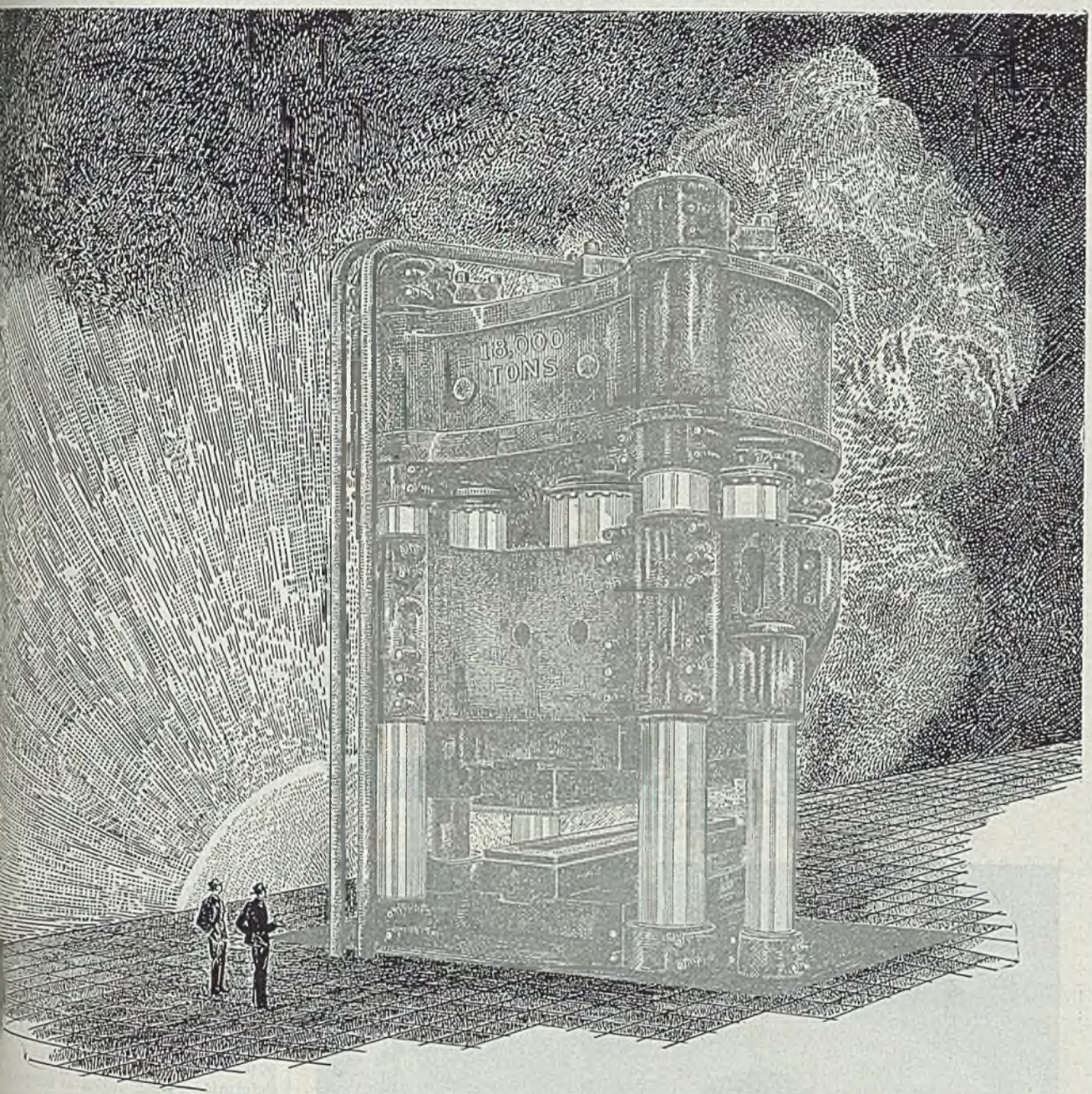
Precision Tools Machine Valves Rapidly

Precision machine tools for machi... aircraft valves rapidly and economic... maintaining close limits and fine qual... are manufactured by Ex-Cell-O Co... Detroit 6. Vol. 20, No. 1, of *Tool T...* the company's house organ, cont... illustrations of various operations ... formed by these machine tools on va... including: Turning the cup-shaped ... file on top of heads of aircraft ... valves; precision turning the locating ... on top of the head on hollow-head ... craft valves prior to closing in stem ho... turning the dome-shaped profile on ... of aircraft exhaust valve heads—hollo... head type; form grinding on a hollo... head sodium filled aircraft engine ... haust valve; and grinding valve spring ... tainer grooves out of solid stem.

Large Brass Forgings

Brass forgings, said to be the lar... ever produced, are being manufactu... by Titan Metal Mfg. Co., Bellefonte, ... Huge presses, transported to Belle... on specially built railroad cars and ... able of exerting a 2500-ton pressure, ... forge hot pressed brass parts weig... as much as 100 lb each. Among ... tures of the brass forgings are: Impro... physical properties, good surface ... ditions, close tolerances, and free... from porosity.

STE...



ing on the horizon—the largest die forging
in the world, now in process of installation at
an-Gordon. When this press is completed at
end of this year, magnesium and high strength
inum alloy forgings larger than any yet made
be available. This press will be operated by
an-Gordon Products Corporation, a wholly
ed subsidiary of Wyman-Gordon Company for
account of Reconstruction Finance Corporation
which owns the press, and will be available to aircraft manufacturers in particular and to industry generally for experimentation in and for the development and production of light metal forgings. This means to our aircraft industry reduced weight which, in turn, means increased pay-load and greater performance for American planes . . . And for industry in general—complete range of magnesium and aluminum forgings.

WYMAN-GORDON
PRODUCTS CORPORATION
WORCESTER, MASSACHUSETTS, U. S. A.

NEW PRODUCTS

Coolant—Super-Cut coolant for [illegible] mond wheels clings to diamond surf[illegible] and forms a film, preventing hot [illegible] from being imbedded between diam[illegible] teeth. Thus wheels can clean with[illegible] loading or glazing and can cut free [illegible] cool. It can be applied by pump, w[illegible] or drip feed in sufficient quantity [illegible] keep diamond surface wet. Indust[illegible] Abrasives Inc., 3724 West 38th str[illegible] Chicago 32. ST402

—o—

Explosion-Proof Motor—Totally [illegible] closed fan cooled unit meets Und[illegible] writer's Laboratories specifications [illegible] Class 1, Group C installations—wh[illegible] surrounding atmosphere is charged [illegible] ethyl ether vapor. Century Electric C[illegible] St. Louis 3. ST 337

—o—

Broaches—Solid tungsten carb[illegible] broaches, available in diameters 0.93[illegible] 1 in., moderate lengths. Willeys C[illegible] bide Tool Co., 1340 West Vernor Hi[illegible] way, Detroit 1. ST 330

—o—

Lubricant—Lap-Lube causes [illegible] particles to react on lapping grains [illegible] powder to speed action and impart [illegible] lustrous finish to metals. For use [illegible] carrier for all lapping agents and [illegible] honing and polishing. Aids in grin[illegible] operations. Protective Coatings Inc., [illegible] 56, Detroit 27. ST 353

—o—

Heat Measurement — "Stick" [illegible] pounded of material which melts at [illegible] determined heat indicates temperatur[illegible] welding, heat treating, and other fab[illegible] cating operations. Especially suited [illegible] overhead, vertical or inclined surfa[illegible] Tempil Corp., 132 West 22nd stre[illegible] New York 11. ST 333

—o—

Rust-Inhibiting Oil—Witco Oil [illegible] tects metal stampings after pressing [illegible] while in storage or transit and acts [illegible] bond for paint or enamel. Withstan[illegible] baking heat up to 250° F and [illegible] maintains a film on interior of shell. M[illegible] be used for all types of steel stampin[illegible] forgings and castings. Mitchell-Bra[illegible] Laboratories, Bridgeport, Conn. ST [illegible]

—o—

Boring Bars—Available with sepa[illegible] cutters in sets of four: [illegible] x 5, ¼ x 6, [illegible] 7, ½ x 8 in. For use without bushin[illegible] or adapters, require no special cha[illegible] or holders, grip tool bit so that bo[illegible] or threading to bottom of hole is poss[illegible]

STEE[illegible]

IASS PRECISION AND SIMPLICITY

The key to Mass Precision is simplicity—simplicity of design in every part and in the complete assembly; simplicity of design in tools, jigs and fixtures; simplicity of methods for every step in production; simplicity of gaging.

Simplicity is not easy to achieve. Many manufacturers, for the past 40 years, have depended on Nichols to build assemblies that require precision tolerances. Equipment, methods and experience are the factors that qualify Nichols to produce such assemblies in volume at prices that meet competition.

A study of your requirements may show that Nichols can do the same for you. A free copy of "Mass Precision" is yours for the asking.

W. H. NICHOLS & SONS, 48 WOERD AVE., WALTHAM, MASS.

"Accurate" *Nichols*

PRECISION ENGINEERING AND MANUFACTURING FACILITIES FOR MASS PRODUCTION

without interference from setscrews or bolts. Robert H. Clark Co., 9330 Santa Monica boulevard, Beverly Hills, Calif. ST 335

—o—

Acid-Proof Apron—Of treated fabric impregnated with plastic, 35 x 47 in., weighs 1¾ lb, criss-cross shoulder straps, can be washed or dry-cleaned. B. F. Goodrich Co., Akron, O. ST 336

—o—

Relay—A keying relay of simplified and rigid construction and utilizing a minimum of parts is said to hold adjustments. It is lightweight and all parts are readily accessible for inspection or adjustment. Struthers-Dunn Inc., 1321 Arch street, Philadelphia 7. ST 340

—o—

Dry Drawing and Annealing Compound—For deep drawing brass and steel, compound, No. 268, is applied as a waxy, aqueous emulsion in either a drum or spray type mechanical washing machine at an operating temperature of 175 to 185° F. Plasteel Corp., 3900 West Jefferson, Ecorse 18, Mich. ST 342

—o—

Oil Concentrate—Gibraltar diesel fuel oil concentrate prevents corroding and sticking of injector nozzles and gives cylinder lubrication where ordinary oil fails. It mixes without agitation with any regular type fuel oil. Hood Refining Co., 253 North Hamilton avenue, Greensburg, Pa. ST398

—o—

Skin Protector—Sealskin, a compound which forms a durable, invisible waterproof coating over the skin, acts as a preventive against infection, and most dyes, stains, and grime may be washed off with soap and water without removing coating. Dept ST2, Cadet Laboratories, Worcester 5, Mass. ST 386

—o—

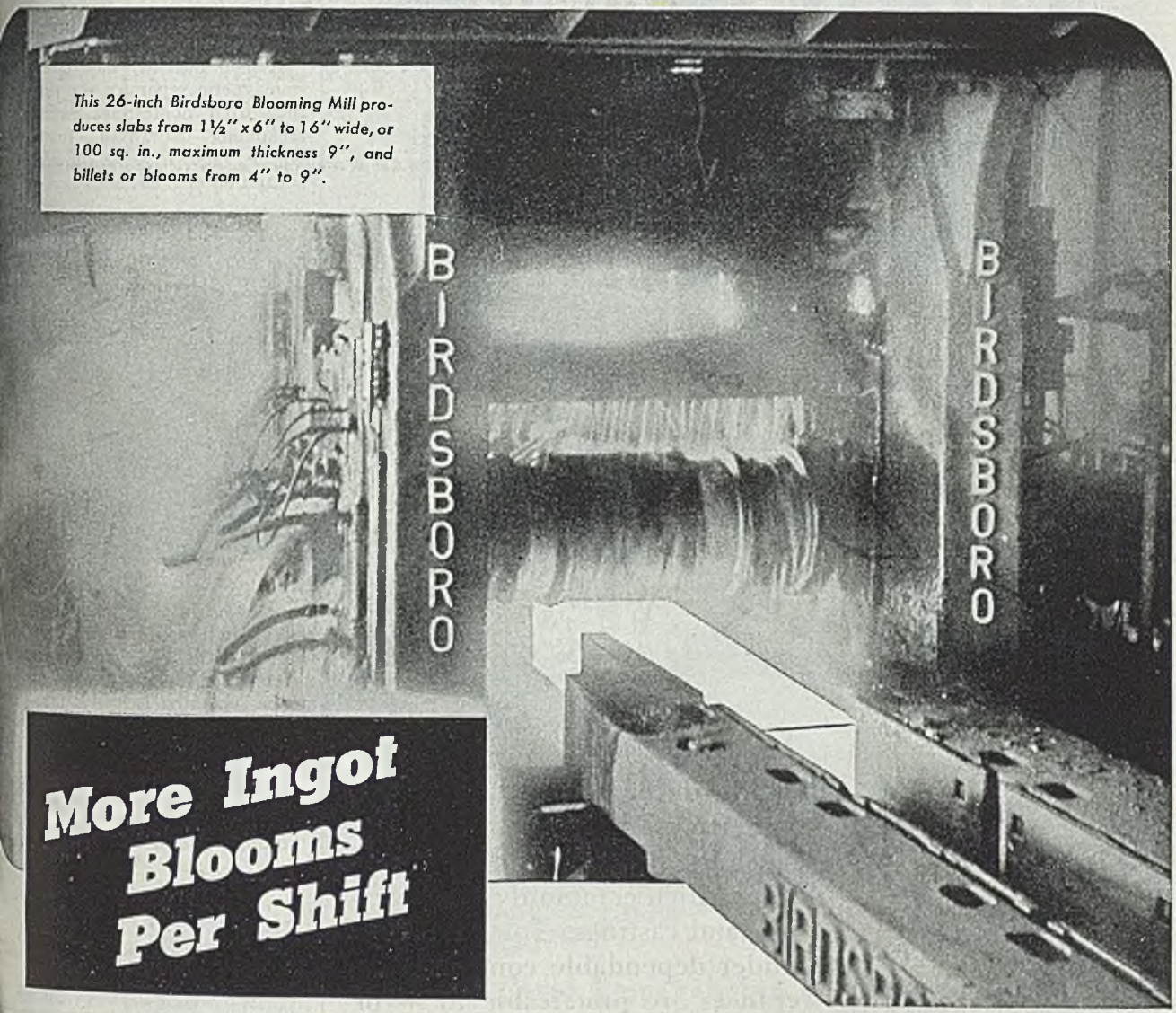
Fire Resistant Chemical — Fi-Retard liquid reduces danger of fire in foundry molds by making wood fire-resistant. It is applied by dipping molds in liquid. Chemical solution is absorbed into the wood and does not change mold dimensions. General Detroit Corp., 2270 East Jefferson avenue, Detroit 7. ST 385

—o—

Noncorrosive Flux — Zenith Super Flux for soldering electrical connections also is recommended for soldering copper, cadmium plated brass and steel, black steel, and to facilitate tinning of soldering tips. It is applied by brush or dipping. Polan Industries, Huntington 19, W. Va. ST400

—o—

Safety Goggle—Aids workers in keeping eyes focused on job. Features an eyecup providing maximum eye protection, increased ventilation and greater comfort. Cups are shaped separately to fit contour of right and left eyes. American Optical Co., Southbridge, Mass. ST 338



This 26-inch Birdsboro Blooming Mill produces slabs from 1½" x 6" to 16" wide, or 100 sq. in., maximum thickness 9", and billets or blooms from 4" to 9".

More Ingot Blooms Per Shift

with Birdsboro Rapid Two-High Reversing Blooming Mill . . .

for blooming ingots of mild, tool, non-corrosive, automotive, aircraft and special purpose steel

to square, round and rectangular blooms and slabs

with the proper reductions required by the various grades of metals

within time limits the rolling temperatures permit.

Special features of this Birdsboro Rolling Mill—quick reversing, fast screw-down and rapid manipulation—provide the exceptional speed that is demanded by war-pressed production. Yet their low installation cost, low maintenance cost and low power consumption assure the economy that will be needed after Victory is achieved.

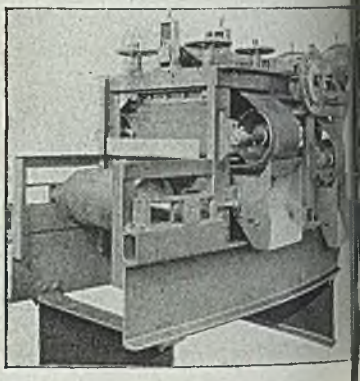
If yours is a rolling problem—of either the present or future—it will pay you to consult Birdsboro.

BIRDSBORO STEEL FOUNDRY AND MACHINE COMPANY, Birdsboro, Pa.

BIRDSBORO
STEEL MILL EQUIPMENT

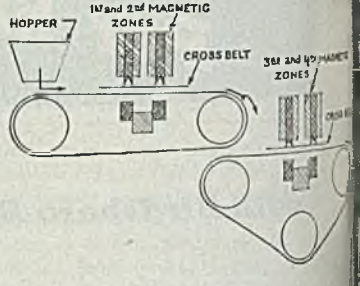
Separator Removes Iron Fuzz, Reclaims Abrasives

A high intensity dual cross belt electromagnetic separator for removing iron fuzz from nonferrous borings and for reclaiming abrasives from grinding wheels, shown here, affords complete separation of nonferrous borings, insuring



production of high grade iron-free iron from scrap and protects extrusion dies, cutting tools, etc., from slivers of iron.

Diagram, below, shows how material to be separated is loaded into a hopper from which it is distributed uniformly onto the first main belt by a reciprocating feeder. When material passes through the first and second magnetic zones, magnetic particles are lifted by the upper magnets and pushed up by

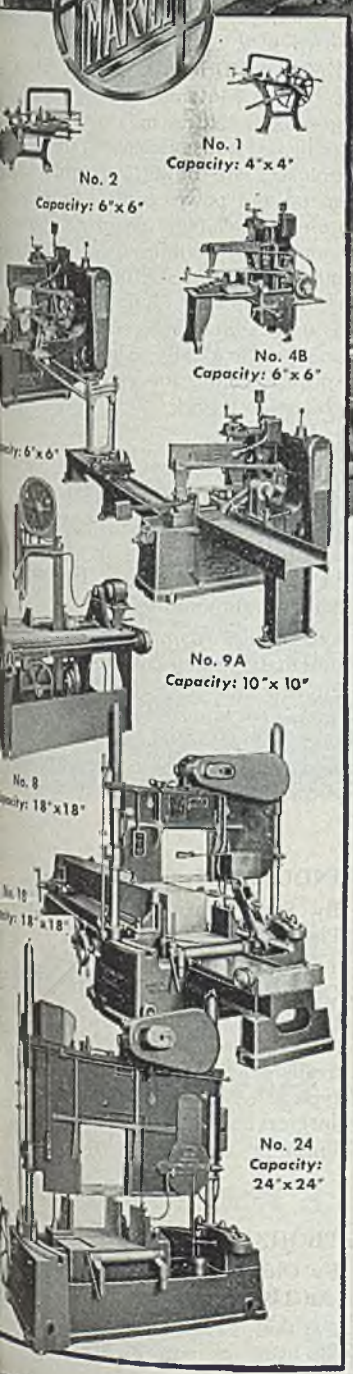


lower ones. In this way they are held fast to the under surface of the first cross belt, which carries them beyond the magnetic influence to be discharged at the side. First main belt discharges onto the second main belt, at which point material is turned over. It then is subjected to another magnetic treatment in the third and fourth magnetic zones. Resulting separation is said to be for practical purposes 100 per cent effective, according to Dings Magnetic Separator Co., 509 East Smith street, Milwaukee 7.

—o—

A 44-page catalog, No. L-45-A, on diesel-electric locomotives, giving specifications on both narrow and standard gage locomotives ranging from 30 to 300 tons, is available from H. K. Porter Co., Inc., Pittsburgh 22. It also contains engineering and construction data, as well as necessary information for selecting the proper type of locomotive.

MARVEL SAWS



Steel Warehousing Company, Chicago, Features Prompt Delivery

Pieces or lengths cut from bars, tubes or structural shapes can be delivered promptly by this steel warehouse, because they have the MARVEL Saws to handle any cut-off job. Three No. 9A MARVEL Automatic Bar Feed Saws (capacity 10" x 10") which automatically feed, measure and cut-off identical lengths or slices (as gear blanks) from single or nested bars at terrific speed. The fastest hack saws built—these automatic saws require no more operator attention than an automatic screw machine. They are extremely accurate, too, and can be stopped any time in a quantity run, a miscellaneous cut made, and automatic operation resumed by simply re-engaging the bar push-up.

Structural shapes up to 18" and large bars of equal diameters are saw-cut on the No. 18 MARVEL universal Roll Stroke Hack Saws. Cuts are accurately "square" and clean with practically no burrs. This modern saw which is completely armoured to stand the rough handling unavoidable where large work is done, introduces the new roll-stroke principle which enables it to cut-off the toughest steel in the largest sizes rapidly and with extremely long blade life.

For quick reference see our section in Sweet's File - Mechanical Industries, or write for catalog.

ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

5700 BLOOMINGDALE AVENUE **CHICAGO 39, U. S. A.**

Eastern Sales Office: 225 Lafayette St., New York 12, New York

New Literature

SPECTROMETER

By North American Philips Co. Inc., [illegible] East 42nd street, New York 17.
(An 8-page illustrated booklet.)

Contains a description of the spectrometer for industrial research by H. Friman of the Naval Research Laborator[illegible] It gives details of the theory underlyi[illegible] X-ray powder diffraction, how the Nor[illegible] co Spectrometer works, its performan[illegible] and applications, with illustrations, di[illegible] grams and curves. Booklet also cove[illegible] tubes, circuits and losses and explai[illegible] "flip-flop" counting action.

—o—

TRANSMISSIONS

By Drive-All Mfg. Co., 3400 Coit[illegible] avenue, Detroit 14.
(A 40-page catalog, with illustrations [illegible] drawings.)

Entitled "Drive-All 'Drives Them All'" [illegible] catalog contains descriptions, pho[illegible] graphs, and drawings of applications [illegible] ndustrial transmissions. Transmissions [illegible] brackets are built to provide individu[illegible] speed and power control to machines [illegible] quiring a change of speeds, are used [illegible] conveyors, agitators, blowers, mixi[illegible] machines, food and other processing ma[illegible] chines, laundry equipment, etc., as well as on machine tools, and control each ma[illegible] chine individually. Shifting lever sel[illegible] speeds needed for various types of ma[illegible] chines and work.

—o—

AUTOMATIC GLUE POT

By Kindt-Collins Co., 12651 Elmwood avenue, Cleveland 11.
(A 2-color leaflet, No. B-4, with illu[illegible] trations and graphs.)

Contains a description of the Mo[illegible] automatic electric glue-pot, 2-qt ca[illegible] city, including specifications. Among [illegible] vantages claimed for it are: It maintain[illegible] uniformly low temperature; requires [illegible] replacement of fluid; there are no ma[illegible] controls; and use of inserts is eliminate[illegible]

—o—

INDUSTRIAL SERVICE

By Sam Tour & Co. Inc., 44 Trin[illegible] Place, New York 6.
(A 2-color illustrated folder.)

Outlines service and facilities of the co[illegible] pany's metallurgists, engineers and co[illegible] sultants, and shows views of laboratori[illegible] available for research. It also lists t[illegible] type of assignments undertaken in met[illegible] lurgical and chemical engineering, sur[illegible] finishing, corrosion, physical metallu[illegible]

—o—

PROJECTION WELDING

By Ohio Nut & Bolt Co., Berea, O.
An 11-page folder.)

Entitled "Projection Welding," [illegible] discusses its part in field of resistan[illegible]

Preformed wire rope

VES REPLACEMENT 3 WAYS

Since preformed wire rope lasts longer, obviously it reduces frequency of replacing the rope itself. Not quite so obvious, but equally important, is the ease with which preformed wire rope adjusts itself to different uses. Because of its ready adaptability—its resistance to rotating in sheave grooves and its better spooling qualities—preformed postpones the replacement of machine parts or shut-downs for repairing. A third way in which preformed wire rope saves replacement is with the men on the job. As preformed rope is safer to handle it reduces lost-time accidents. Make certain your next wire rope is preformed.

ASK YOUR OWN WIRE ROPE MANUFACTURER OR DISTRIBUTOR

welding and its applications in connection with headed and threaded products. Manual also offers information regarding djustments with respect to heat, pressure and time necessary in obtaining the perfect weld; how and why development and use of electronically controlled machines have facilitated making adjustments; and economies effected and bonding and fastening results obtained in assembly and subassembly part of industrial production. Progress has been aided y development of special weld bolts, nuts and other products.

—o—

ELECTRONIC EQUIPMENT

By Walker-Jimieson, radio and electronic distributors, 309 South Western avenue, Chicago.

(A 36-page, 2-color catalog, illustrated.)

Contains data on advanced types of electronic instruments, devices and tools, and descriptions of products such as industrial X-ray machines, electronic comparator, test equipment including signal generators, tube testers, and multitesters, photoelectric devices, die-less duplicating tools, plastic sectional wiring systems, etc.

—o—

PROPELLER PUMP

By Fairbanks, Morse & Co., Pomona Pump Division, Pomona, Calif.

(A 6-page, 2-color bulletin, AQB500.1, illustrated.)

Illustrates construction of the Niagara propeller pump, with low lift and large capacity, gives specifications and lists several applications.

—o—

INSULATING BRICK

By Harbison-Walker Refractories Co., Farmers Bank building, Pittsburgh 22. (Folder.)

Entitled "Five Insulating Brick of Prime Importance to Refractories Users," folder contains information on development of insulating fire brick to achieve proper balance between the interrelated properties of strength and thermal efficiency. Attainment of light weight without sacrifice of mechanical strength necessary to insure minimum loss through breakage is explained.

—o—

HOME WIRING

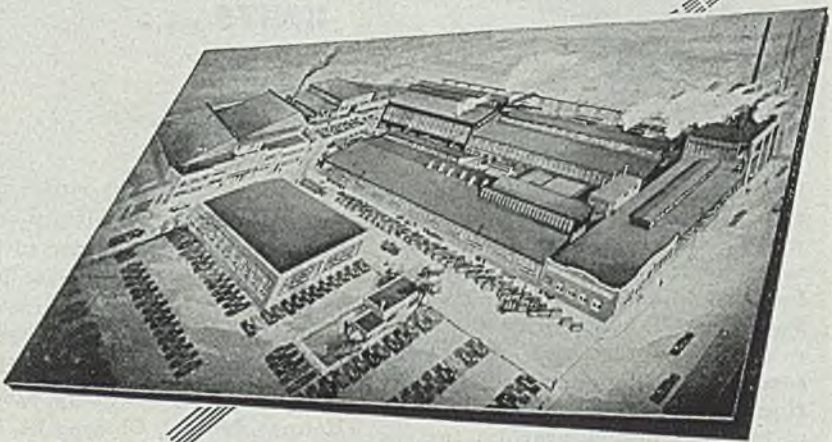
By Industrial Relations Dept., Westinghouse Electric Corp., 306 Fourth avenue, Pittsburgh 30.

(A 120-page handbook, B-3510, with diagrams and illustrations, $1 each.)

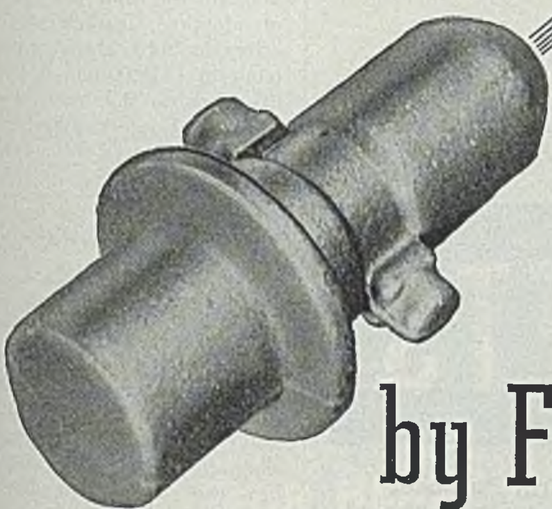
A home wiring handbook for simplifying planning of modern wiring systems for homes within the popular price range. Homes are divided into four groups of varying gradations in electrification. Complete details are covered for each group, including recommended electrical equipment (fixed and portable), outlets needed for each room, circuits required, control centers, feeders and service entrance, type of circuit protection, signal systems, tele-

One purpose . . .

the IMPROVEMENT of Metals



Here the most modern forging and heat treating equipment is being utilized, under the direction of highly skilled executives and technicians, to obtain volume production of forgings for the war effort, and to make available for the peace to come high quality forgings for every industrial use.



Collet Forging

by Forging

Unusual wartime production required the development of forging techniques and procedures by which numerous so-called "impossible-to-forge" designs were successfully forged. These notable advancements in forging techniques are now available to make forgings practical for many more applications in all types of equipment. In forgings you can obtain strength and toughness in the exact degree required to meet a specific service condition. The IMPROVEMENT OF METALS BY FORGING develops maximum metal quality. Consult a Steel Improvement Forging Engineer about how to utilize fully the fibre-like flow line structure of wrought metals to assure dependable performance for a part or a product. Backed by over 31 years of forging production experience, a Steel Improvement Forging Engineer can guide you to a successful application of forgings and possible reductions in the cost of machining and processing.

...ence Data Booklet ... many new ideas ... forgings and their ...ications in many ...erent types of equip... Copies available ...ngineers, metallur... and executives.

DROP FORGINGS

THE STEEL IMPROVEMENT & FORGE CO.

942 East 64th Street CLEVELAND, OHIO

phone and radio. Book will be kept to-date with revision sheets mailed to chasers in the event that changes in National Electric Code affect it.

—o—

BRONZE ALLOYS

By Ampco Metal Inc., Milwaukee 4. (Illustrated bulletin, No. 59.)

Contains photomicrographs, data physical properties and chemical positions of the Ampcoloy series bronze alloys with controlled analy Ampcoloy alloys include aluminum bronze, high lead bronze, tin bronze, manganese bronze, beryllium copper, high conductivity alloys. Series is duced to quality standards, with meeting government specifications.

—o—

HOB CONTOUR CHECKER

By Michigan Tool Co., 7171 East Nichols road, Detroit 12. (Bulletin No. 464-45.)

Describes Model 464 Sine-Line type checker for contours of hobs rang up to 6 in. OD with a maximum length 8½ in. Checker is said to assure that hobs for the same job will produce g of identical characteristics by locat errors in hobs, checking contour of teeth to 1/10,000-in. A sine-bar is to eliminate the necessity of having number of interchangeable angle bl for different pressure angles.

—o—

MERCURY ARC CONVERTERS

By Allis-Chalmers Mfg. Co., Milwaukee (An 8-page, 3-color bulletin, No. with illustrations and graphs.)

Offers information on standard mercury arc converters for use in induction heating operations in the 500-2000-cycle quency range. A drawing and wiring diagram of a typical installation shows how the company supplies essential paratus for complete induction heating installations, including coils, furnaces and cubicles. Excitron converter has conversion efficiency of 90 per cent better as frequency changer equipment, and units are built to supply power for induction heating in blocks of 500, and 1000 kw and higher. Graphs and photographs compare unit to old equipment used for induction heating with differences between old and new methods of heating and melting summarized.

—o—

CHAIN BELT

By Chain Belt Co., Milwaukee 4. (A 4-page, 2-color folder, No. 461, illustrated.)

Illustrates and describes new flat-top conveyor chain and gives construction details. Rex table top chain belt has application in food handling and bottling or capping processes, and also is said to be useful to manufacturers of small parts.

FORGED FLAT SPRINGS
. . . . MADE IN ANY DESIGN FOR HEAVY DUTY APPLICATION

Muehlhausen's ability to produce forged flat springs in large quantities, and to any special design, has given product engineers greater latitude in developing improved war matériel—and provided greater speed in producing it.

This is the result of Muehlhausen's complete hot forming facilities — huge presses, controlled-atmosphere furnaces, quenching tanks as big as swimming pools, a control laboratory for testing and checking—all housed in a separate, complete plant, specially designed for volume production of heavy springs.

Don't let the improvement of your product be hampered by spring problems. Consult Muehlhausen engineers and get the benefit of their experience. Muehlhausen's ability to produce unusual springs may help you do things never before thought possible. *Send for Free Die Spring Bulletin.*

MUEHLHAUSEN SPRING CORPORATION
Division of Standard Steel Spring Company
11. Michigan Avenue, Logansport, Indiana

MUEHLHAUSEN
SPRINGS
EVERY TYPE AND SIZE

Book Notes

Great Lakes Red Book For 1945 Is Ready

Great Lakes Red Book; paper, 172 pages, 3 x 4¾ inches; published by Penton Publishing Co., Cleveland 13, for $1.

Of vestpocket size, this volume contains a complete port directory, shipyard directory, dimensions and capacity of bulk freighters for the 1945 Great Lakes season. More than 1500 vessels available for service are listed, giving management, chief operating personnel and in case of bulk freighters technical data such as keel length, beam, depth, distance between hatches and carrying capacity at 20-foot draft.

An alphabetical list makes it easy to find the name of owner, captain or engineer of each ship. This directory is the recognized authority on Great Lakes fleets.

Refutes New Deal Concept Of Economic Maturity

The Bogey of Economic Maturity, by George Terborgh; cloth, 263 pages, 6 x 9 inches; published by Machinery & Allied Products Institute, 221 North LaSalle street, Chicago, for $3.

The author, an economist formerly connected with the Brookings Institution, discusses thoroughly the theory of economic maturity, developed by Dr. Alvin H. Hansen of Harvard University and used by the New Deal as justification for its deficit financing.

This theory cites four causes of an alleged shortage of investment opportunities, including decline of population growth, passing of the frontier, dearth of great new industries and increasing importance of depreciation reserves. The author of this study analyzes these at length and dismisses them as substantially harmless.

The conclusion is that there is no reason to expect chronic oversaving and economic debility because of these factors, there is no warrant for expecting a need for continuous government deficits as an economic stimulus.

Canadian Trade Index Available To Subscribers

Canadian Trade Index; cloth, 846 pages, 6½ x 10 inches; published by Canadian Manufacturers' Association Inc., Toronto, Ont., for $6.

The 1945 edition of this annual publication contains a thoroughly revised list of all Canadian manufacturers having more than local distribution and an export section giving basic information regarding government services, foreign trade controls, methods, financing, price quotations, export costs, Empire tariff preferences and a list of overseas supply missions in Canada and the United States. It also includes a French index of products. Special editions contain French and Spanish and French and Portuguese indexes.

Among changes in the 1945 edition are 241 additional firm names, 96 changes in name, 216 changes of address or location, 80 new classifications. The object of the publication is to provide buyers and sellers an authoritative directory of all products manufactured in Canada and names of firms making them. The index contains an alphabetical directory of more than 8000 Canadian manufacturers, with addresses, branches, export representatives, trademarks and brands; a directory of Canadian manufacturers classified according to products; a directory of exporters of agricultural products and allied lines.

Statistics of Metals

Metal Statistics, 1945, cloth, 800 pages, 4 x 6 inches, published by American Metal Market, 18 Cliff street, New York, for $2.

A mine of statistical information on ferrous and nonferrous metals, this volume is the 38th annual edition and follows the same plan as previous issues. A number of new tables have been included in the 1945 edition and widen the scope of its coverage.

Tables cover production, sales and prices of most of the metals, as well as scrap, fuels and ores.

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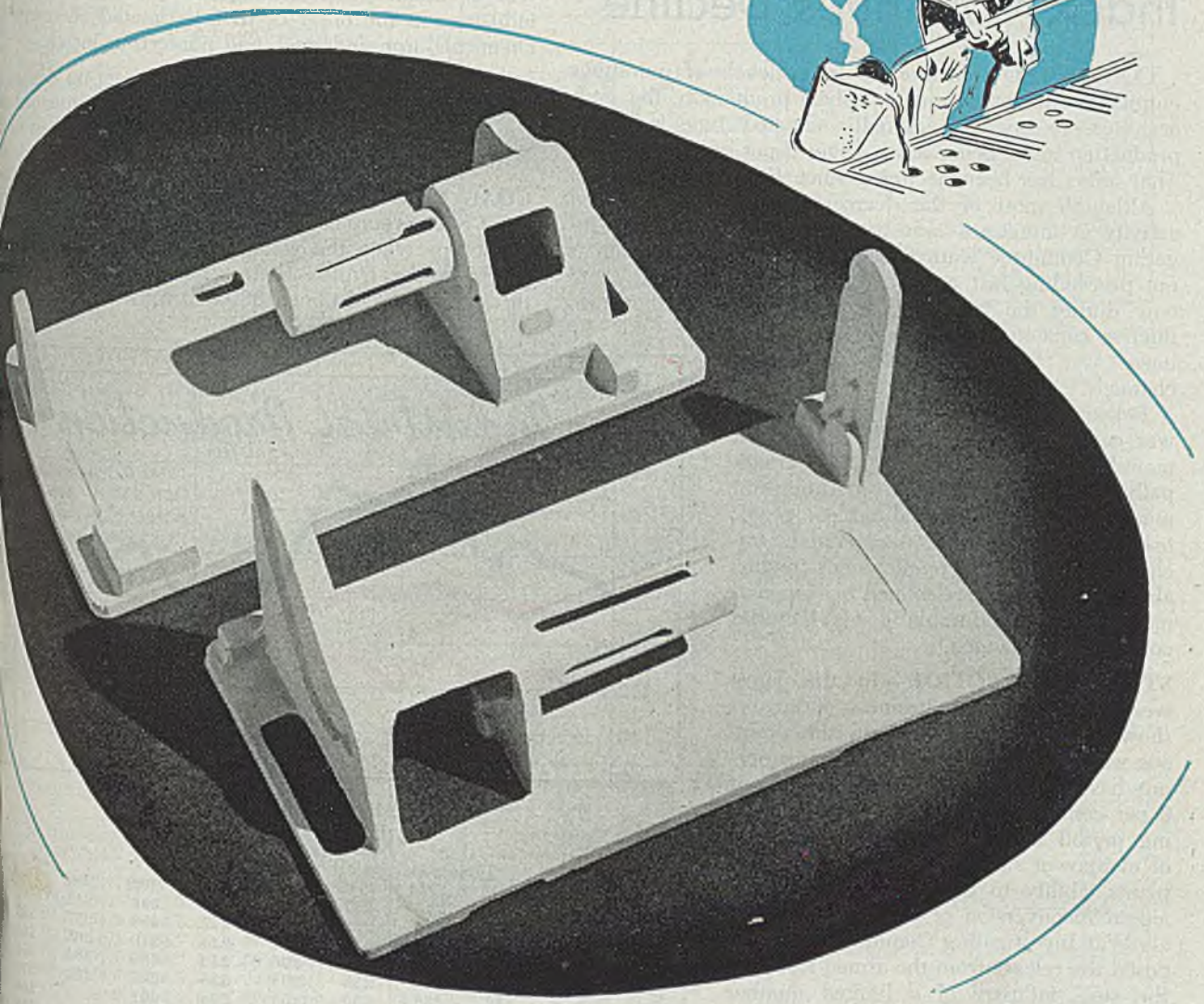
Core Increases Transformer Capacity

A 10 to 20 per cent increase in transformer short-time overload capacity with little sacrifice in voltage regulation and total losses at normal load is accomplished by using fewer turns (possible because the wound Hipersil core permits a smaller window), reducing the copper-to-iron ratio losses. This results in a unit tailored to wartime conditions according to Westinghouse Electric Corp., Pittsburgh, Pa.

The coil, when baked with a heat reactive varnish, becomes a solid mass of great mechanical strength, protecting it against short-circuit stresses. The varnish is penetrating, low in acid, and oil resistant. Standard mountings, fittings, high and low-voltage connectors and other details are as specified by the EEI-NEMA distribution standardization.

A line of replacement high-voltage bushings, with modern disconnecting features and flashover co-ordinated to occur outside the case, also has been developed. These designs consist of bushing and lead assembly provided with an anti-siphon feature. They may be mounted in the tank by means of a special flange and spring arrangement. An old transformer rebuilt with these modern coils and coils and replacement bushings is said to give the utilities an up-to-date unit in many respects.

They started in sand...



...now they're permanent-mold castings, being produced by Alcoa for Dictaphone

A lightweight machine was an innovation, public acceptance unknown, when Dictaphone first decided to use aluminum for these parts. Alcoa, therefore, started producing the parts as sand castings; it's much easier and less expensive to make design changes in patterns than in metal molds.

The lightweight Dictaphone took hold quickly. Quantities soon reached the range where it was more economical to produce parts as permanent-mold castings. Molds were made and Alcoa went into production. Today, Dictaphones are playing an important part in speeding military and civilian paper work.

If you're wondering about ways of helping your production, it should pay to consult Alcoa on the use of light metal permanent-mold castings. Write ALUMINUM COMPANY OF AMERICA, 2112 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA FIRST IN ALUMINUM

ALCOA ALUMINUM

THE BUSINESS TREND

Industrial Production Index Continues Decline

CONTINUED transition to lower levels of munitions output is reducing overall industrial production, the Federal Reserve Board's seasonally adjusted June industrial production index being down about 2 per cent from May. That index has been declining since February.

Although most of the decrease results from reduced activity in munitions industries, the Senate War Investigating Committee warned that industry's reconversion is not proceeding fast enough to protect the civilian economy during the transition period, and urged that productive capacity not needed for the Japanese war be speeded into peacetime channels.

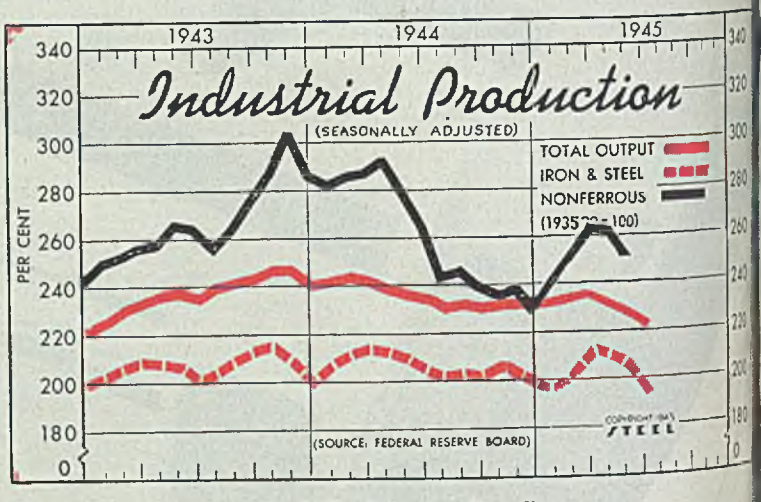
Reflecting some transition from a full war economy toward a peacetime basis, manufacturing of durable goods, principally war needs, declined in June but manufacturing of nondurable goods, mainly civilian items, remained unchanged. Likewise, employment in durable goods industries declined but employment in the nondurable goods factories continued unchanged.

STEEL PRODUCTION—In the latest week, most of the business indicators show moderate declines from the previous week. While current steel ingot output has been holding steady it is about 6 per cent below that of the corresponding period of last year, largely because of manpower shortage. To improve steel plants' ability to be of greatest possible aid in reconversion of industry, the Senate War Investigating Committee has proposed the release from the armed forces to the steel industry of a limited number of men.

ELECTRICITY—Manufacturing and extracting industries, including government plants such as arsenals, ordnance plants and Navy yards, estimate that in 1945 they will use more electric energy than was produced for all purposes in any year prior to 194[illegible] Production in 1939, the peak year prior to 1940, totaled 161.3 billion kilowatt-hours while industrial use in 1945 will be about 161.7 billion kilowatt-hours. First three industries in the order of their estimated energy use are chemicals, iron and steel, and nonferrous metals.

STRUCTURAL STEEL—Reflecting pent-up demand for construction, June bookings of fabricated structural steel for bridges and buildings not only are the highest for any 1945 month but are the highest since July, 1942.

COAL PRODUCTION—While heated discussions continue over proposals to ship coal from the United States to Europe when the worst coal shortage of the war in pends in the United States, bituminous coal output for the latest week declined 380,000 tons.



Federal Reserve Board's Production Indexes
(1935-39=100)

	Total Production			Iron, Steel			Nonferrous	
	1945	1944	1943	1945	1944	1943	1945	1944
January	234	243	227	197	208	204	240	281
February	236	244	232	202	212	208	257	285
March	235	242	235	210	214	210	265	286
April	231	239	237	206	213	209	264	292
May	226	237	238	204	210	208	251	279
June	222	235	236	193	204	201	...	264
July	...	231	240	...	202	204	...	243
August	...	232	242	...	203	210	...	245
September	...	231	244	...	202	214	...	239
October	...	232	247	...	206	215	...	236
November	...	232	247	...	201	209	...	239
December	...	232	241	...	198	200	...	229
Average	...	236	239	...	206	208	...	260

FIGURES THIS WEEK

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)	90.5	90	92	9[illegible]
Electric Power Distributed (million kilowatt hours)	4,435	4,385	4,353	4,38[illegible]
Bituminous Coal Production (daily av.—1000 tons)	1,937	2,000	1,961	1,9[illegible]
Petroleum Production (daily av.—1000 bbls.)	4,930	4,944	4,903	4,6[illegible]
Construction Volume (ENR—Unit $1,000,000)	$41.1	$50.1	$46.5	$41.[illegible]
Automobile and Truck Output (Ward's—number units)	16,105	18,080	19,115	19,[illegible]

*Dates on request.

TRADE				
Freight Carloadings (unit—1000 cars)	$91†	$82	$94	9[illegible]
Business Failures (Dun & Bradstreet, number)	22	12	14	1[illegible]
Money in Circulation (in millions of dollars)‡	$26,926	$26,901	$26,628	$22,35[illegible]
Department Store Sales (change from like week a year ago)‡	+14%	+15%	+21%	+[illegible]

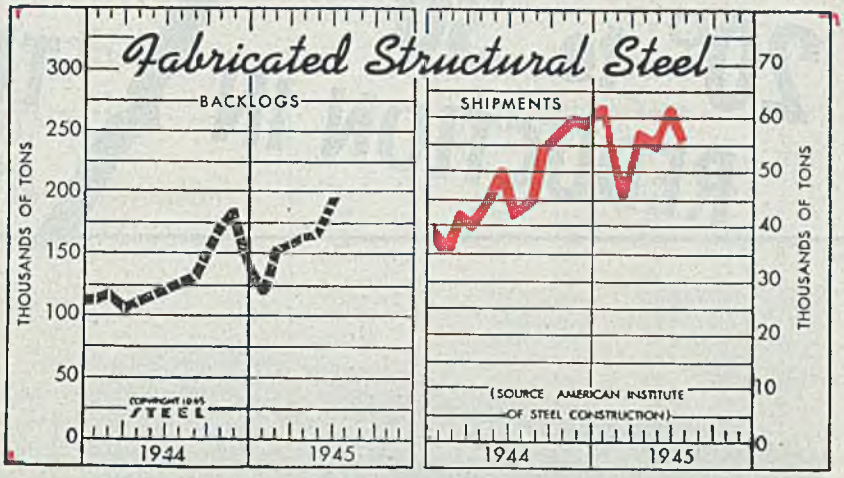
†Preliminary. ‡Federal Reserve Board.

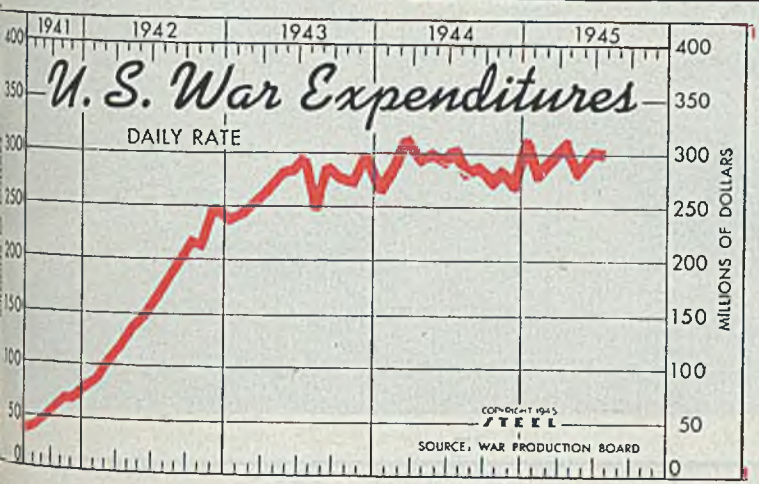
Fabricated Structural Steel

(1000 tons)

Shipments 1945	Shipments 1944	Shipments 1943	Backlogs 1945	Backlogs 1944	Backlogs 1943
n. 54.5	35.2	91.9	124.4	113.1	339.1
b. 47.4	42.9	90.8	151.6	117.6	321.0
r. 57.6	41.4	94.0	153.3	106.3	299.8
y. 55.7	44.5	86.6	162.5	111.2	272.5
n 62.2	50.7	78.9	165.7	116.3	220.6
e 55.9	43.0	68.4	195.2	122.7	207.1
r ...	45.3	56.8	....	125.4	201.8
g ...	55.2	50.2	....	130.4	195.6
t. ...	57.5	51.8	....	151.1	208.1
l ...	61.6	80.1	....	174.4	274.0
r. ...	59.4	42.7	....	184.2	134.6
r. ...	61.3	39.6	....	142.5	113.0

Source: American Institute of Steel Construction. Figures represent members' reports





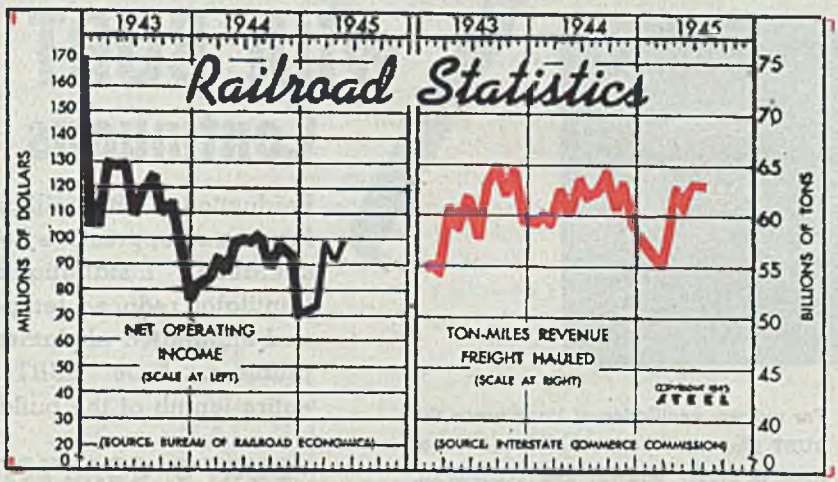
War Expenditures

(millions)

	1945 Monthly Expenditures	1945 Daily Rate	1944 Monthly Expenditures	1944 Daily Rate
Jan.	$7,519	$278.4	$7,416	$285.2
Feb.	6,965	290.2	7,808	312.3
March ...	8,318	308.1	7,948	294.4
April ...	7,045	281.8	7,493	299.7
May	8,166	302.5	7,918	293.3
June	7,885	303.4	7,957	306.0
July	....	....	7,355	282.9
Aug.	....	....	7,798	288.8
Sept.	....	....	7,104	273.2
Oct.	....	....	7,447	286.4
Nov.	....	....	7,095	272.9
Dec.	....	....	7,835	313.4
Total ...	....	....	91,174	Ave. 292.2

Statistics of Class I Railroads

Net Operating Income 1945 (millions)	Net Operating Income 1944	Net Operating Income 1943	Ton-Miles Revenue Freight 1945 (billions)	Ton-Miles Revenue Freight 1944	Ton-Miles Revenue Freight 1943
....$73.0	$84.9	$105.3	56.8	60.5	55.1
.... 73.2	84.5	105.8	55.3	59.3	54.4
.... 99.9	92.5	129.7	62.9	62.7	61.2
.... 91.9	87.7	128.7	61.6	60.4	59.1
.... 99.9	98.5	129.5	64.6	64.0	62.1
.....	99.8	109.0	63.6	62.0	58.0
.....	98.6	127.8	...	62.8	63.7
.....	101.4	132.3	...	64.5	65.1
.....	89.1	110.3	...	61.0	62.5
.....	97.3	113.1	...	63.5	65.0
.....	91.6	96.4	...	59.4	59.9
.....	69.8	76.9	...	57.3	60.6
.....	$93.1	$113.5	...	61.5	60.6



ANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
ank Clearings (Dun & Bradstreet—millions)	$10,552	$11,850	$12,745	$9,961
ederal Gross Debt (billions)	$262.0	$261.8	$256.9	$209.1
ond Volume, NYSE (millions)	$25.0	$28.8	$46.0	$36.8
tocks Sales, NYSE (thousands)	4,374	5,229	11,234	4,153
oans and Investments (billions)†	$64.0	$64.2	$63.0	$57.3
nited States Government Obligations Held (millions)†	$47,267	$47,338	$46,334	$42,424

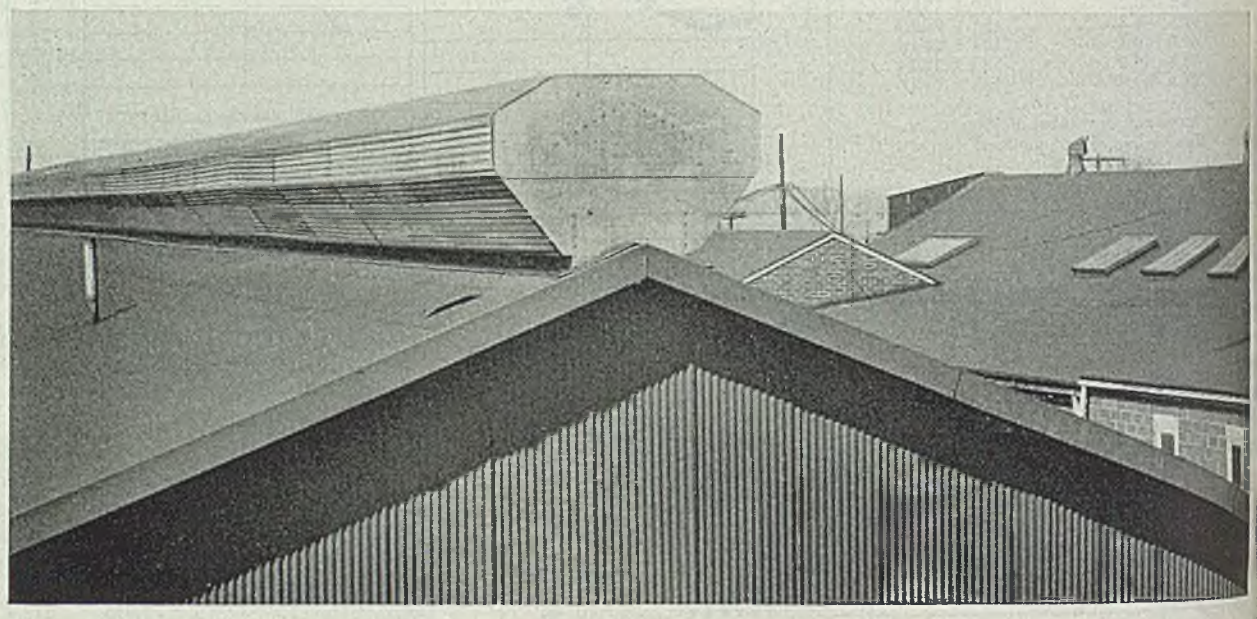
†Member banks, Federal Reserve System.

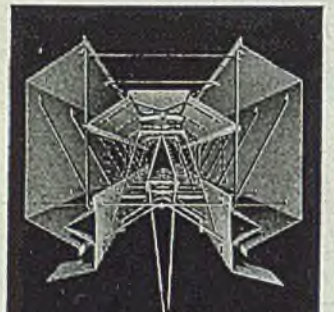
ICES

TEEL's composite finished steel price average	$58.27	$58.27	$58.27	$56.73
ll Commodities†	105.6	105.6	105.9	103.9
ndustrial Raw Materials†	117.7	117.6	118.6	113.8
anufactured Products†	101.9	101.9	102.0	101.1

†Bureau of Labor Statistics Index, 1926 = 100.

20° to 30° REDUCTION IN TEMPERATURE at Working Levels





with BURT MONOVENT Continuous Ridge Ventilator

Production of vital military parts at this plant was impaired by fumes and oppressive heat from their forging and heat-treating operations. Installation of a BURT Monovent Continuous Ridge Ventilator reduced temperatures at working levels 20° to 30° and eliminated all fumes—completely solved their ventilating problem. A 36" BURT Monovent was used here, along the entire length of the building—189 feet.

For uniform ventilation of large areas the BURT Monovent Continuous Ridge Ventilator is highly efficient and economical. Designed to install along the roof ridge, it harmonizes with roof lines for better appearance than unit ventilators. It is weatherproof, simple to operate and requires almost no maintenance. The BURT Monovent is serving in installations from 1 foot to 1,000 feet in length—from 4" to 72" throat sizes. It may be the answer to your ventilating problem.

BURT engineers will be glad to help you lay out plans and submit specifications without obligation. See Sweet's or write for detailed information.

BURT'S *COMPLETE* LINE HAS THE ANSWER TO YOUR VENTILATING PROBLEMS

The BURT line includes fan, gravity, revolving head and continuous ridge type ventilators. Recommendations are made without bias, for the types that best answer your problems. BURT Ventilators are designed and engineered from the experience of more than half a century of manufacturing ventilators — production know-how that guarantees a high quality product that delivers maximum performance at minimum cost.

THE BURT MFG. CO.
ROOF VENTILATORS • OIL FILTERS
EXHAUST HEADS
403 S. High St., Akron 11, Ohio

SEND FOR CATALOGS
Burt Engineers are glad to help on plans

teel Demand, Production old in Face of Cutbacks

Conditions better than foreseen at end of European war . . . Heavy war needs continue . . . Unrated orders form postwar cushion

HILE overall pressure for steel is easier, heavy requirements still burden mill books and operating rates have reached summer without having gone more than a trifle below 90 cent of capacity with prospects promising for continued demand for months ahead.

ade leaders last spring, after the fall of Germany, predicted major dip in steel ingot production would come not later July or early August and would not go lower than 85 per while Japan remained fighting. This prediction is more borne out by present conditions. Cancellations are being ed more freely but there also is much new tonnage, ially considering the volume of unrated work awaiting ching.

ell demand has been maintained in much better degree expected and while the small ammunition program is off edly requirements of a number of larger projectiles, rockets me types of bombs are still heavy. As long as shell needs easonably sustained steel production is not likely to meet rp dip.

siderable activity continues in other war work, involving ally bars and shell forgings but sheets, strip, shapes, tub- in better degree than expected even in plates, in spite decline in shipbuilding. Recently 84,000 tons of plates quite unexpectedly placed with western mills for August for a Navy program, details of which have not been d. With equal suddenness 40,000 tons of shapes for the program were placed for August production, 25,000 tons mill and 15,000 tons to another.

ated tonnage is accumulating, though less rapidly than y summer, because of better appreciation of difficulty ting definite delivery promise. Even in plates unrated tonnage has not been easy to place as had been expected. One eastern platemaker estimates that unrated plate bookings this quarter will not be more than 20 per cent of the total, if it reaches that level.

DISTRICT STEEL RATES

Percentage of Ingot Capacity Engaged in Leading Districts

	Week Ended Aug. 4	Change	Same Week 1944	1943
Pittsburgh	87.5	None	91	100
Chicago	94.5	−0.5	100.5	98
Eastern Pa.	87	+1	94	93
Youngstown	90	None	95	98
Wheeling	91.5	None	92.5	94
Cleveland	75.5	−15	93.5	94
Buffalo	83.5	−7	90.5	90.5
Birmingham	95	None	95	95
New England	86	None	80	97
Cincinnati	94	+2	82	89
St. Louis	68	None	87	89
Detroit	83	None	86	87
Average	89.5	−1	97	98

*Based on steelmaking capacities as of these dates.

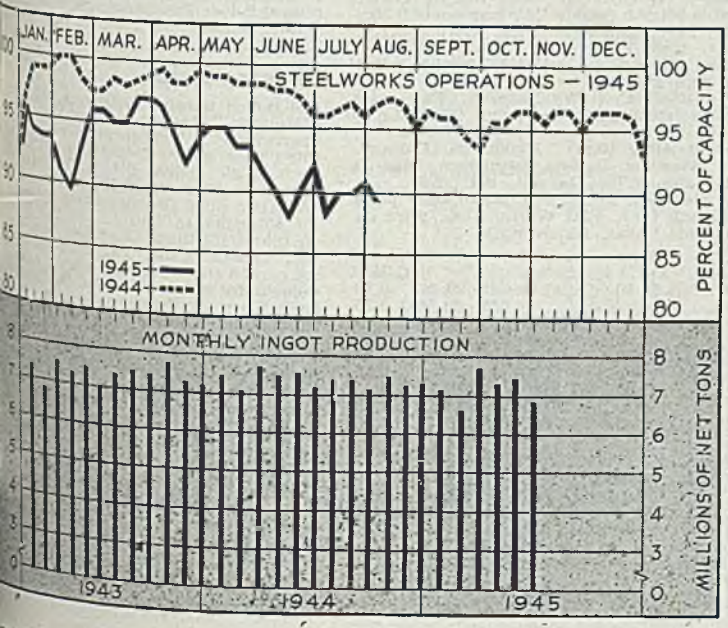
With few changes in operating rates in various districts, a strike cutting production by a large interest at Cleveland caused the estimated national operating rate to drop 1 point to 89½ per cent of capacity. Cleveland rate dropped 15 points to 75½ per cent. Other losses were 7 points at Buffalo to 83½ and ½-point at Chicago, to 94½. The only offsets were a rise of 1 point at eastern Pennsylvania, to 87 and 2 points at Cincinnati, to 94. Other districts showed no change, as follows: Pittsburgh 87½; Youngstown 90; St. Louis 68; Wheeling 91½; Birmingham 95; New England 86; Detroit 83.

To correct the inequality caused by the recent advance of $2 per ton on hot-rolled carbon bars without an equivalent increase on cold-finished, Office of Price Administration has allowed the ceiling on cold-finished to be raised $2 per ton. However, this is accompanied by elimination of certain extras which were charged previously. This is the first compensatory price action taken by OPA on steel products since government price control was effected. OPA also has permitted warehouses to pass along this increase on cold-finished bars to their customers.

Pig iron supply has been sufficient for current needs, although no surplus is being produced. Hot weather and lack of workers limits foundry consumption though much business is being offered which can not be booked.

Scrap scarcity continues and some steelmakers are operating close to the end of their supply, with difficulty in obtaining sufficient shipments to carry on from day to day. As a result of limited supply of preferred grades for steelmaking heavier demand is being placed on borings and turnings.

Average composite prices of steel and iron products are unchanged, at ceiling prices. Finished steel average composite is $58.27, semifinished steel $37.80, steelmaking pig iron $24.05 and steelmaking scrap $19.17.



COMPOSITE MARKET AVERAGES

	Aug. 4	July 28	July 21	One Month Ago July, 1945	Three Months Ago May, 1945	One Year Ago Aug., 1944	Five Years Ago Aug., 19
Finished steel	$58.27	$58.27	$58.27	$58.27	$57.73	$56.73	$5
Semifinished Steel	37.80	37.80	37.80	37.80	36.45	36.00	3
Steelmaking Pig Iron	24.05	24.05	24.05	24.05	24.05	23.05	
Steelmaking Scrap	19.17	19.17	19.17	19.07	19.13	19.17	1

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. Steelmaking Scrap Composite:—Average of No. 1 heavy melting steel prices at Pittsburgh, Chicago and eastern Pennsylvania. Finished steel, net tons; rest gross tons.

COMPARISON OF PRICES

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

Finished Material

	Aug. 4, 1945	July, 1945	May, 1945	Aug., 1944
Steel bars, Pittsburgh	2.25c	2.25c	2.20c	2.15c
Steel bars, Philadelphia	2.57	2.57	2.49	2.47
Steel bars, Chicago	2.25	2.25	2.17	2.15
Shapes, Pittsburgh	2.10	2.10	2.10	2.10
Shapes, Philadelphia	2.215	2.215	2.215	2.215
Shapes, Chicago	2.10	2.10	2.10	2.10
Plates, Pittsburgh	2.25	2.25	2.22	2.10
Plates, Philadelphia	2.30	2.30	2.26	2.15
Plates, Chicago	2.25	2.25	2.22	2.10
Sheets, hot-rolled, Pittsburgh	2.20	2.20	2.20	2.10
Sheets, cold-rolled, Pittsburgh	3.05	3.05	3.05	3.05
Sheets, No. 24 galv., Pittsburgh	3.70	3.70	3.65	3.50
Sheets, hot-rolled, Gary	2.20	2.20	2.20	2.10
Sheets, cold-rolled, Gary	3.05	3.05	3.05	3.05
Sheets, No. 24 galv., Gary	3.70	3.70	3.65	3.50
Bright bess., basic wire, Pittsburgh	2.75	2.75	2.64	2.60
Tin plate, per base box, Pittsburgh	$5.00	$5.00	$5.00	$5.00
Wire nails, Pittsburgh	2.90	2.90	2.82	2.55

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$36.00	$36.00	$34.50	$34.00
Slabs, Pittsburgh, Chicago	36.00	36.00	34.50	34.00
Rerolling billets, Pittsburgh	36.00	36.00	34.50	34.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	2.15	2.15	2.05	2.00

Pig Iron

	Aug. 4, 1945	July, 1945	May, 1945	A
Bessemer, del. Pittsburgh	$26.19	$26.19	$26.19	$2
Basic, Valley	24.50	24.50	24.50	
Basic, eastern del. Philadelphia	26.34	26.34	26.34	
No. 2 fdry., del. Pitts., N.&S. Sides	25.69	25.69	25.69	
No. 2 foundry, Chicago	25.00	25.00	25.00	
Southern No. 2, Birmingham	21.38	21.38	21.38	
Southern No. 2 del. Cincinnati	25.30	25.30	25.30	
No. 2 fdry., del. Phila.	26.84	26.84	26.84	
Malleable, Valley	25.00	25.00	25.00	
Malleable, Chicago	25.00	25.00	25.00	
Lake Sup., charcoal del. Chicago	37.34	37.34	37.34	
Gray forge, del. Pittsburgh	25.19	25.19	25.19	
Ferromanganese, del. Pittsburgh	140.33	140.33	140.33	14

Scrap

Heavy melting steel, No. 1 Pittsburgh	$20.00	$20.00	$20.00	$
Heavy melt. steel, No. 2, E. Pa.	18.75	18.75	18.56	
Heavy melting steel, Chicago	18.75	18.75	18.75	
Rails for rolling, Chicago	22.25	22.25	22.25	
No. 1 cast, Chicago	20.00	20.00	20.00	

Coke

Connellsville, furnace, ovens	$7.50	$7.50	$7.00	
Connellsville, foundry ovens	8.25	8.25	7.75	
Chicago, by-product fdry., del.	13.35	13.35	13.35	

STEEL, IRON RAW MATERIAL, FUEL AND METALS PRICES

Following are maximum prices established by OPA Schedule No. 6 issued April 16, 1941, revised June 20, 1941, Feb. 4, 1942 and May 1945. The schedule covers all iron or steel ingots, all semifinished iron or steel products, all finished hot-rolled, cold-rolled iron or steel products and any iron or steel product which is further finished by galvanizing, plating, coating, drawing, extruding etc., although only principal finished basing points for selected products are named specifically. Seconds and off-grade products are also covered. Exceptions applying to individual companies are noted in the table. Finished steel quoted in cents per pound.

Semifinished Steel

Gross ton basis except wire rods, skelp.

Carbon Steel Ingots: F.o.b. mill base, rerolling qual., stand. analysis, $31.00.
(Empire Sheet & Tin Plate Co., Mansfield, O., may quote carbon steel ingots at $33 gross ton. f.o.b. mill Kaiser Co. Inc., $43, f.o.b. Pacific ports.)

Alloy Steel Ingots: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon; uncrop, $45.

Rerolling Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Sparrows Point, Birmingham, Youngstown, $36; Detroit, del. $38; Duluth (bll) $38; Pac. Ports, (bil) $48. (Andrews Steel Co., carbon slabs $41; Continental Steel Corp., billets $34, Kokomo, to Acme Steel Co.; Northwestern Steel & Wire Co., $41, Sterling, Ill.; Laclede Steel Co., $34 Alton or Madison, Ill.; Wheeling Steel Corp. $36 base, billets for lend-lease, $34, Portsmouth, O., on slabs on WPB directives. Granite City Steel Co. $47.50 gross ton slabs from D.P.C. mill. Geneva Steel Co., Kaiser Co. Inc., $58.64, Pac. ports.)

Forging Quality Blooms, Slabs, Billets: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, Youngstown, $42. Detroit, del. $44; Duluth, billets, $44; forg. bil. f.o.b. Pac. ports, $54.
(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., Kaiser Co. Inc., $64.64, Pacific ports.)

Open Hearth Shell Steel: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Youngstown, Birmingham, base 1000 tons one size and section; 3-12 in., $52; 12-18 in., excl., $54.00; 18 in. and over $56. Add $2.00 del. Detroit; $3.00 del. Eastern Mich. (Kaiser Co. Inc., $76.64, f.o.b. Los Angeles.)

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, $54, del. Detroit $56, Eastern Mich. $57.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Sparrows Point, Youngstown, $36. (Wheeling Steel Corp. $37 on lend-lease sheet bars, $38 Portsmouth, O., on WPB directives; Empire Sheet & Tin Plate Co., Mansfield, O., carbon sheet bars, $39, f.o.b. mill.)

Skelp: Pittsburgh, Chicago, Sparrows Point, Youngstown, Coatesville, lb., 1.90c.

Wire Rods: Pittsburgh, Chicago, Cleveland, Birmingham. No. 5—$\frac{9}{32}$ in. inclusive, per 100 lbs., $2.15 Do., over $\frac{9}{32}$—$\frac{47}{64}$-in., incl., $2.30; Galveston, base, 2.25c and 2.40c, respectively. Worcester add $0.10; Pacific ports $0.50 (Pittsburgh Steel Co., $0.20 higher.)

Bars

Bars

Hot-Rolled Carbon Bars and Bar-Size Shapes under 3": Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham base 20 tons one size, 2.25c; Duluth, base 2.35c; Mahoning Valley 2.32½c; Detroit, del. 2.35c; Eastern Mich. 2.40c; New York del. 2.59c; Phila. del. 2.57c; Gulf Ports, dock 2.62c; Pac. ports, dock 2.90c. (Calumet Steel Division. Borg-Warner Corp., and Joslyn Mfg. & Supply Co., may quote 2.35c, 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.
(Sweet's Steel Co., Williamsport, Pa., may quote rail steel merchant bars 2.33c f.o.b. mill.)

Hot-Rolled Alloy Bars: Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem, base 20 tons one size, 2.70c; Detroit, del., 2.80c.
(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	$0.10	4100	(.15-.25 Mo) 0.70
			(.20-.30 Mo) 0.75
2300	1.70	4300	1.70
2500	2.55	4600	1.20
3000	0.50	4800	2.15
3100	0.85	5100	0.35
3200	1.35	5130 or 5152	0.45
3400	3.20	6120 or 6152	0.95
4000	0.45-0.55	6145 or 6150	1.20

*Add 0.25 for acid open-hearth; 0.50 electric.

Cold-Finished Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base 20,000-29,999 lbs., 2.75c; Detroit 2.80c; Toledo 2.90c. (Keystone Drawn Steel Co. may sell outside its usual market area on Proc. Div., Treasury Dept. contracts at 2.65c, Spring City, Pa., plus freight on hot-rolled bars from Pittsburgh to Spring City, New England Drawn Steel Co. may sell outside New England on WPB directives at 2.65c, Mansfield, Mass., plus freight on hot-rolled bars from Buffalo to Mansfield.)

Cold-Finished Alloy Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base 3.35c; Detroit del. 3.45c; Eastern Mich. 3.50c.

Reinforcing Bars (New Billet): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Sparrows Point, Buffalo, Youngstown, base 2.10c; Detroit del. 2.25c; Eastern Mich. and Toledo 2.30c; Gulf ports, dock 2.50c; Pacific ports, dock 2.55c.

Reinforcing Bars (Rail Steel): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Buffalo base 2.15c; Detroit, del. 2.30c; Eastern Mich. and Toledo 2.30c; Gulf ports, dock 2.50c.

Iron Bars: Single refined, Pitts. 4.40c; double refined 5.40c; Pittsburgh, staybolt, 5.75c; Haute. single ref., 5.00, double ref., 6.25c.

Sheets, Strip

Sheets, Strip

Hot-Rolled Sheets: Pittsburgh, Chicago, Youngstown, Cleveland, Birmingham, Buffalo, Sparrows Pt., Middletown, base 2.20c; Granite City, base 2.30c; Detroit del. 2.30c; New York Mich. 2.35c; Phila. del. 2.37c; New York 2.44c; Pacific ports 2.75c.
(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 2.50c on hot carbon sheets, nearest eastern basing point.)

Cold-Rolled Sheets: Pittsburgh, Chicago, Cleveland, Gary, Buffalo, Youngstown, Middletown, base, 3.05c; Granite City, base 3.15c; Detroit del. 3.15c; Eastern Mich. 3.20c; New York 3.39c; Phila. del. 3.37c; Pacific ports 3.50c.

Galvanized Sheets, No. 24: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Youngstown, Sparrows Point, Middletown, base 3.70c; Granite City, base 3.80c; New York del. 3.92c; Phila. del. 3.87c; Pacific ports 4.25c.
(Andrews Steel Co. may quote galvanized sheets 3.75c at established basing points.)

Corrugated Galv. Sheets: Pittsburgh, Chicago, Gary, Birmingham, 29 gage, per square 3.60c.

Culvert Sheets: Pittsburgh, Chicago, Gary, Birmingham, 16 gage not corrugated, copper alloy 3.60c; Granite City 3.70c; Pacific ports 4.25c; copper iron, 3.90c; pure iron 3.65c; coated, hot-dipped, heat-treated, No. 24, Pittsburgh, 4.25c.

Sheets: 10-gage; Pittsburgh, Chi- ... Gary, Cleveland, Youngstown, Middle- ... base 2.85c; Granite City, base 2.95c; ... del. 2.95c; eastern, Mich. 3.00c; Pa- ... ports 3.50c; 20-gage; Pittsburgh, Chicago, ... Cleveland, Youngstown, Middletown, ... 3.45c; Detroit del. 3.55c; eastern Mich. ... Pacific ports 4.10c.

...ral Sheets No. 24:

	Pittsburgh Base	Pacific Ports	Granite City
...grade	3.30c	4.05c	3.30c
...ure	3.65c	4.40c	3.75c
...rical	4.15c	4.90c	4.25c
...	5.05c	5.80c	5.15c
...	5.75c	6.50c	5.85c
...former			
...	6.25c	7.00c	.....
...	7.25c	8.00c	.....
...	7.75c	8.50c	.....
...	8.55c	9.30c	.....

...lled Strip: Pittsburgh, Chicago, Gary, ...d, Birmingham, Youngstown, Middle- ... base 1 ton and over, 12 inches wide ... 2.10c; Detroit del. 2.20c; Eastern ... 2.15c; Pacific ports 2.75c. (Joslyn Mfg. ... quote 2.30c, Chicago base.)

...olled Strip: Pittsburgh, Cleveland, ...town, 0.25 carbon and less 2.80c; Chi- ...base 2.90c; Detroit, del. 2.90c; Eastern ... 2.95c; Worcester base 3.00c.

...dly C. R. Strip: Pittsburgh, Cleveland, ...town, base 3 tons and over, 2.95c; ... 3.05c; Detroit del. 3.05c; Eastern ... 3.10c; Worcester base 3.35c.

...ered Spring Steel: Pittsburgh, Cleve- ... add 20c for Worcester; .26-.50 ... 2.80c; .51-.75 Carb., 4.30c; .76-1.00 ... 6.15c; over 1.00 Carb., 8.35c.

Terne Plate

...ate: Pittsburgh, Chicago, Gary, 100-lb. ... $5.00; Granite City $5.10.

...c Tin Plate: Pittsburgh, Gary, 100- ... box, 0.50 lb. tin, $4.50; 0.75 lb. tin

...d Black Plate: Pittsburgh, Chicago, ...ase 29 gage and lighter, 3.05c; Granite ... 3.15c; Pacific ports, boxed 4.05c.

...ernes: Pittsburgh, Chicago, Gary, No. ...orted 3.80c; Pacific ports 4.55c.

...aring Ternes: (Special Coated) Pitts- ... Chicago, Gary, 100-base box $4.30; ... City $4.40.

... Ternes: Pittsburgh base per pack- ... sheets: 20 x 28 in., coating I.C. 8-lb. ...15-lb. $14.00; 20-lb. $15.00; 25-lb. $16; ...17.25; 40-lb. $19.50.

... Steel Plates: Pittsburgh, Chicago, Cleveland, Birmingham, Youngstown, ... Point, Coatesville, Claymont, 2.25c; ...York, del. 2.44c; Phila., del. 2.30c; ... 2.49c; Boston, del. 2.57-82c; Pacific ...ports, Gulf ports, 2.60c.

... City Steel Co. may quote carbon ... 2.35c f.o.b. mill; 2.65c f.o.b. D.P.C. ...ser Co. Inc., 3.20c, f.o.b. Los Angeles. ... & Steel Co. 2.50c f.o.b. basing ... Geneva Steel Co., Provo, Utah, 3.20c, ... ports.)

...ates: Pittsburgh, Chicago, 3.50c; ...s, 4.15c.

...h Alloy Plates: Pittsburgh, Chi- ...atesville, 3.50c; Gulf ports 3.95c; ... 4.15c.

...on Plates: Pittsburgh, 3.80c.

... Shapes: Pittsburgh, Chicago, Gary, ... Buffalo, Bethlehem, 2.10c; New ... 2.27c; Phila., del. 2.215c; Pacific ...

... Iron Co., Phoenixville, Pa., may ... steel shapes at 2.35c at estab- ...ing points and 2.50c, Phoenixville, ... Sheffield Steel Corp., 2.55c f.o.b. ... Geneva Steel Co., 3.25c, Pac. ports; ... Inc., 3.20c f.o.b. Los Angeles).

...et Piling: Pittsburgh, Chicago, Buf- ...

Products, Nails

...burgh, Chicago, Cleveland, Birm- ...(except spring wire) to manufac- ... carloads (add $2 for Worcester, $1 ...

..., bessemer wire 2.75c
...wire 3.35c
...burgh Steel Co., 0.20c higher.)

...ucts to the Trade:
... and Cement-coated wire nails, ...staples, 100-lb. keg, Pittsburgh, ... Birmingham, Cleveland, Du- ...$2.30, galvanized, $2.55; Pac. ... $3.40 and $3.05
... fence wire, 100-lb., Pittsburgh, ... Cleveland 3.20c
...d fence wire, 100 lb., Pitts- ... Chicago, Cleveland 3.55c
...re 15½ gage and heavier, per 67c
...r, 80-rod spool, Pittsburgh, Chicago, ..., Birmingham, column 70; twisted ...wire, column 70.

...ar Goods

... 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

Steel In.	Blk.	Galv.	Iron In.	Blk.	Galv.
⅛	56	33	½	24	....
¼ & ⅜	59	40½	¾	30	10
½	63½	51	1-1¼	34	16
¾	66½	55	1½	38	18½
1-3	68½	57½	2	37½	18

Lap Weld

Steel In.	Blk.	Galv.	Iron In.	Blk.	Galv.
2	61	49½	1¼	23	3½
2½-3	64	54½	1½	28½	10
3½-6	66	54½	2	30½	12
7-8	65	52½	2½, 3½	31½	14½
9-19	64½	52	4	33½	18
11-12	63½	51	4½-8	32½	17
			9-12	28½	12

Boiler Tubes: Net base prices per 100 feet f.o.b. Pittsburgh in carload lots, minimum wall, cut lengths 4 to 24 feet, inclusive.

O.D. Sizes	B.W.G	—Seamless— Hot Rolled	Cold Drawn	—Lap Weld— Steel	Charcoal Iron
1"	13	$ 7.82	$ 9.01	.....	.....
1¼"	13	9.26	10.67	.....	.....
1½"	13	10.23	11.72	$ 9.72	$23.71
1¾"	13	11.64	13.42	11.06	22.93
2"	13	13.04	15.03	12.38	19.35
2¼"	13	14.54	16.76	13.79	21.63
2¼"	12	16.01	18.45	15.16	.....
2½"	12	17.54	20.21	16.58	26.57
2¾"	12	18.59	21.42	17.54	29.00
3"	12	19.50	22.48	18.35	31.38
3½"	11	24.63	28.37	23.15	39.81
4"	10	30.54	35.20	28.66	49.90
4½"	10	37.35	43.04	35.22	.....
5"	9	46.87	54.01	44.25	73.93
6"	7	71.96	82.93	68.14	.....

Rails, Supplies

Standard rails, over 60-lb., f.o.b. mill, gross ton, $43.00. Light rails (billet), Pittsburgh, Chicago, Birmingham, gross ton, $45.00.
*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, $46 net ton, base, Standard spikes, 3.25c.

*Fixed by OPA Schedule No. 46, Dec. 15, 1941.

Tool Steels

Tool Steels: Pittsburgh, Bethlehem, Syracuse, base, cents per lb.; Reg. carbon 14.00c; extra carbon 18.00c; special carbon 22.00c; oil-hardening 24.00c; high car.-chr. 43.00c.

Tung.	Chr.	Van.	Moly.	Pitts. base per lb.
18.00	4	1	.	67.00c
1.5	4	1	8.5	54.00c
....	4	2	8	54.00c
6.40	4.15	1.90	5	57.50c
5.50	4.50	4	4.50	70.00c

Stainless Steels

Base, Cents per lb.—f.o.b. Pittsburgh

Type	Bars	Plates	Sheets	H. R. Strip	C. R. Strip
CHROMIUM NICKEL STEEL					
302	24.00c	27.00c	34.00c	21.50c	28.00c
303	26.00	29.00	36.00	27.00	33.00
304	25.00	29.00	36.00	23.50	30.00
308	29.00	34.00	41.00	28.50	35.00
309	36.00	40.00	47.00	37.00	47.00
310	49.00	52.00	53.00	48.75	56.00
312	36.00	40.00	49.00	.....	.....
*316	40.00	44.00	48.00	40.00	48.00
†321	29.00	34.00	41.00	29.25	38.00
‡347	33.00	38.00	45.00	33.00	42.00
431	19.00	22.00	29.00	17.50	22.50
STRAIGHT CHROMIUM STEEL					
403	21.50	24.50	29.50	21.25	27.00
**410	18.50	21.50	26.50	17.00	22.00
416	19.00	22.00	27.00	18.25	23.50
††420	24.00	28.50	33.50	23.75	36.50
430	19.00	22.00	29.00	17.50	22.50
‡‡430F	19.50	22.50	29.50	18.75	24.50
440A	24.00	28.50	33.50	23.75	36.50
442	22.50	25.50	32.50	24.00	32.00
443	22.50	25.50	32.50	24.00	32.00
446	27.50	30.50	36.50	35.00	52.00
501	8.00	12.00	15.75	12.00	17.00
502	9.00	13.00	16.75	13.00	18.00
STAINLESS CLAD STEEL (20%)					
304	.....	§§18.00	19.00	.....	.....

*With 2-3% moly. †With titanium. ‡With columbium. **Plus machining agent. ††High carbon. ‡‡Free machining. §§Includes annealing and pickling.

Basing Point Prices are (1) those announced by U. S. Steel Corp. subsidiaries for first quarter of 1941 or in effect April 16, 1941 at designated basing points or (2) those prices announced or customarily quoted by other producers at the same designated points. Base prices under (2) cannot exceed those under (1) except to the extent prevailing in third quarter of 1940.

Extras mean additions or deductions from base prices in effect April 16, 1941.

Delivered prices applying to Detroit, Eastern Michigan, Gulf and Pacific Coast points are deemed basing points except in the case of the latter two areas when water transportation is not available, in which case nearest basing point price plus all-rail freight may be charged.

Domestic Ceiling prices are the aggregate of (1) governing basing point price, (2) extras and (3) transportation charges to the point of delivery as customarily computed. Governing basing point is basing point nearest the consumer providing the lowest delivered price.

Seconds, maximum prices: flat-rolled rejects 75% of prime prices, wasters 75%, waste-wasters 65% except plates, which take waster prices; tin plate $2.80 per 100 lbs.; terne plate $2.25; semifinished 85% of primes; other grades limited to new material ceilings.

Export ceiling prices may be either the aggregate of (1) governing basing point or emergency basing point (2) export extras (3) export transportation charges provided they are the f.a.s. seaboard quotations of the U. S. Steel Export Co. on April 16, 1941.

Bolts, Nuts

F.o.b. Pittsburgh, Cleveland, Birmingham, Chicago. Discounts for carloads additional 5%, full containers, add 10%

Carriage and Machine

½ x 6 and smaller .... 65½ off
Do., ⅝ 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 with nuts separate 71-10 off; with nuts attached 71 off; bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.

Nuts

Semifinished hex	U.S.S.	S.A.E.
7/16-inch and less	62	64
½-1-inch	59	60
1⅛-1½-inch	57	58
1⅝ and larger	56	

Hexagon Cap Screws

Upset 1-in., smaller .... 64 off
Milled 1-in., smaller .... 60 off

Square Head Set Screws

Upset, 1-in., smaller .... 71 off
Headless, ¼-in., larger .... 60 off
No. 10, smaller .... 70 off

Piling

Pittsburgh, Chicago, Buffalo 2.40c

Rivets, Washers

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham

Structural 3.75c
7/16-inch and under .... 65-5 off
Wrought, Washers, Pittsburgh, Chicago, Philadelphia, to jobbers and large nut, bolt manufacturers l.c.l. .... $2.75-3.00 off

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

By-Product Foundry

Wise county, furnace	7.25- 7.75
Kearney, N. J., ovens	12.65
Chicago, outside delivered	12.60
Chicago, delivered	13.35
Terre Haute, delivered	13.10
Milwaukee, ovens	13.35
New England, delivered	14.25
St. Louis, delivered	†13.35
Birmingham, delivered	10.50
Indianapolis, delivered	13.10
Cincinnati, delivered	12.85
Cleveland, delivered	12.80
Buffalo, delivered	13.00
Detroit, delivered	13.35
Philadelphia, delivered	12.88

*Operators of hand-drawn ovens using trucked coal may charge $8.00, effective May 26, 1945. †13.85 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 28.00c
Solvent naphtha 27.00c
Industrial xylol 27.00c

Per lb. f.o.b. works

Phenol (car lots, returnable drums) 12.50c
Do., less than car lots 13.25c
Do., tank cars 11.50c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls., to jobbers 8.00c

Per ton, bulk, f.o.b. port

Sulphate of ammonia $29.20

WAREHOUSE STEEL PRICES

Base delivered price, cents per pound, for delivery within switching limits, subject to established extras.

	Hot rolled bars	Structural shapes	Plates	Floor plates	Hot rolled sheets (10 gage base)	Hot rolled bands (12 gage and heavier)	Hot rolled hoops (14 gage and lighter)	Galvanized flat sheets (24 gage base)	Cold-rolled sheets (17 gage base)	Cold finished bars	Cold-rolled strip	NE hot bars 8600 series
Boston	4.044[1]	3.912[1]	3.912[1]	5.727[1]	3.774[1]	4.106[1]	5.106[1]	5.224[14]	4.744[14]	4.244[11]	4.715	6.012[23]
New York	3.853[1]	3.758[1]	3.768[1]	5.574[1]	3.590[1]	3.974[1]	3.974[1]	5.010[12]	4.613[14]	4.203[21]	4.774	.....
Jersey City	3.853[1]	3.747[1]	3.768[1]	5.574[1]	3.590[1]	3.974[1]	3.974[1]	5.010[12]	4.613[14]	4.203[21]	4.774	.....
Philadelphia	3.822[1]	3.666[1]	3.605[1]	5.272[1]	3.518[1]	3.922[1]	4.272[1]	5.018[15]	4.872[25]	4.172[21]	4.772	5.816[23]
Baltimore	3.802[1]	3.759[1]	3.594[1]	5.252[1]	3.394[1]	3.902[1]	4.252[1]	4.894[1]	4.852[25]	4.152[21]	.....	.....
Washington	3.941[1]	3.930[1]	3.796[1]	5.341[1]	3.596[1]	4.041[1]	4.391[1]	5.196[17]	4.841[20]	4.141[21]	.....	.....
Norfolk, Va.	4.065[1]	4.002[1]	3.971[1]	5.465[1]	3.771[1]	4.165[1]	4.515[1]	5.371[17]	4.965[21]	4.265[21]	.....	.....
Bethlehem, Pa.°	.....	3.45[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Claymont, Del.°	.....	.....	3.45[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Coatesville, Pa.°	.....	.....	3.45[1]	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buffalo (city)	3.35[1]	3.40[1]	3.63[1]	5.26[1]	3.35[1]	3.819[1]	3.819[1]	4.75[15]	4.40[10]	3.85[21]	4.669	5.60[23]
Buffalo (country)	3.25[1]	3.30[1]	3.30[1]	4.90[1]	3.25[1]	3.81[1]	3.50[1]	4.65[15]	4.30[10]	3.75[21]	4.35	5.60[23]
Pittsburgh (city)	3.35[1]	3.40[1]	3.40[1]	5.00[1]	3.35[1]	3.60[1]	3.60[1]	4.75[12]	4.40[24]	3.85[21]	.....	.....
Pittsburgh (country)	3.25[1]	3.30[1]	3.30[1]	4.90[1]	3.25[1]	3.50[1]	3.50[1]	4.65[12]	4.30[24]	3.75[21]	.....	.....
Cleveland (city)	3.35[1]	3.588[1]	3.40[1]	5.188[1]	3.35[1]	3.60[1]	3.60[1]	4.877[13]	4.40[24]	3.85[21]	4.45[21]	5.60[23]
Cleveland (country)	3.25[1]	.....	3.30[1]	.....	3.25[1]	3.50[1]	3.50[1]	.....	4.30[24]	3.75[21]	4.35[21]	.....
Detroit	3.450[1]	3.661[1]	3.609[1]	5.281[1]	3.450[1]	3.700[1]	3.700[1]	5.000[12]	4.500[24]	3.900[21]	4.659	5.93[23]
Omaha (city, delivered)	4.115[1]	4.165[1]	4.165[1]	5.765[1]	3.865[1]	4.215[1]	4.215[1]	5.608[19]	5.443[24]	4.543[12]	.....	.....
Omaha (country, base)	4.015[1]	4.065[1]	4.065[1]	5.665[1]	3.765[1]	4.115[1]	4.115[1]	5.508[19]	.....	.....	.....	.....
Cincinnati	3.611[1]	6.391[1]	3.661[1]	5.291[1]	3.425[1]	3.675[1]	3.675[1]	4.825[12]	4.475[24]	4.111[21]	4.711	6.10
Youngstown, O.°	.....	.....	.....	.....	.....	.....	.....	4.40[13]	.....	.....	.....	.....
Middletown, O.°	.....	.....	.....	.....	3.25[1]	3.50[1]	3.50[1]	4.65[10]	.....	.....	.....	.....
Chicago (city)	3.50[1]	3.55[1]	3.55[1]	5.15[1]	3.25[1]	3.60[1]	3.60[1]	5.231[15]	4.20[24]	3.85[21]	4.65	5.75[23]
Milwaukee	3.637[1]	3.687[1]	3.687[1]	5.287[1]	3.387[1]	3.737[1]	3.737[1]	5.272[15]	4.337[24]	3.987[21]	4.787	5.987[23]
Indianapolis	3.58[1]	3.63[1]	3.63[1]	5.23[1]	3.518[1]	3.768[1]	3.768[1]	4.918[15]	4.568[24]	4.08[21]	4.78	6.08[23]
St. Paul	3.76[2]	3.81[2]	3.81[2]	5.41[2]	3.51[2]	3.86[2]	3.86[2]	5.257[15]	4.46[24]	4.461[21]	5.102	6.09[23]
St. Louis	3.647[1]	3.697[1]	3.697[1]	5.297[1]	3.397[1]	3.747[1]	3.747[1]	5.172[15]	4.347[24]	4.131[21]	4.931	6.131[23]
Memphis, Tenn.	4.015[5]	4.065[5]	4.065[5]	5.78[5]	3.965[5]	4.215[5]	4.215[5]	5.265[15]	4.78[24]	4.43[21]	.....	.....
Birmingham	3.50[1]	3.55[1]	3.55[1]	5.903[1]	3.45[1]	3.70[1]	3.70[1]	4.75[15]	4.852[24]	4.64	5.215	.....
New Orleans (city)	4.10[4]	3.90[4]	3.90[4]	5.85[4]	4.058[4]	4.20[4]	4.20[4]	5.25[20]	5.079[10]	4.70[21]	5.429	.....
Houston, Tex.	3.75[3]	4.25[3]	4.25[3]	5.50[9]	3.763[5]	4.313[6]	4.313[3]	5.313[26]	4.10[10]	3.75[22]	.....	.....
Los Angeles	4.40[4]	4.65[4]	4.95[4]	7.20[4]	5.00[4]	4.95[4]	6.75[4]	6.00[12]	7.20[6]	5.683[22]	5.613	5.85[23]
San Francisco	4.15[7]	4.35[7]	4.65[7]	6.35[7]	4.55[7]	4.50[7]	5.75[7]	6.35[16]	7.30[15]	5.433[21]	7.333	8.304[23]
Portland, Oreg.	4.45[27]	4.45[27]	4.75[27]	6.50[27]	4.65[27]	4.75[27]	6.30[27]	5.75[15]	6.60[15]	5.633[15]	.....	.....
Tacoma	4.35[6]	4.45[6]	4.75[6]	6.50[6]	4.65[6]	4.25[6]	5.45[6]	5.95[15]	7.60[15]	5.883[21]	.....	.....
Seattle	4.35[6]	4.45[6]	4.75[6]	6.50[6]	4.65[6]	4.25[6]	5.45[6]	5.95[15]	7.05[15]	5.883[21]	.....	.....

°Basing point cities with quotations representing mill prices, plus warehouse spread.
NOTE—All prices fixed py Office of Price Administration in Amendments Nos. 10 to 33 to Revised Price Schedule No. 49. Deliveries outside 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 b… [18]—one to six bundles; [19]—100 to 749 pounds; [20]—300 to 1999 … [21]—1500 to 39,999 pounds; [22]—1500 to 1999 pounds; [23]—… 39,999 pounds; [24]—400 to 1499 pounds; [25]—1000 to 1999 … [26]—under 25 bundles. Cold-rolled strip, 2000 to 39,999 pounds. [27]—300 to 4999 pounds.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (Natural) Lower Lake Ports

Old range bessemer	$4.75
Mesabi nonbessemer	4.45
High phosphorus	4.35
Mesabi bessemer	4.60
Old range nonbessemer	4.60

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.
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 discharging; dry basis; subject to penalties if guarantees are not met.)

Indian and African

48% 2.8:1	$41.00
48% 3:1	43.50
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	43.50

Rhodesian

45% no ratio	28.30
48% no ratio	31.00
48% 3:1 lump	43.50
Domestic (seller's nearest rail) 48% 3:1	52.80

less $7 freight allowance

Manganese Ore

Sales prices of Metals Reservev Co., cents per gross ton unit, dry, 48%, at New York, Philadelphia, Baltimore, Norfolk, Mobile and New Orleans, 85.0c; Fontana, Calif., Provo, Utah, and Pueblo … 91.0c; prices include duty … ported ore and are subject … miums, penalties and other … sions of amended M.P.R. … effective as of May 15 … basing points which are … of discharge of imported … nese ore is f.o.b. cars, ship … dock most favorable to the …

Molybdenum

Sulphide conc., lb., Mo. cont., mines ……

NATIONAL EMERGENCY STEELS (Hot Rolled)

(Extras for alloy content)

Designation	Chemical Composition Limits, Per Cent: Carbon	Mn.	Si.	Cr.	Ni.	Mo.	Basic open-hearth Bars per 100 lb.	Basic open-hearth Billets per GT	Electric Bars per 100 lb.
NE 8612	.10-.15	.70-.90	.20-.35	.40-.60	.40-.70	.15-.25	$0.65	$13.00	$1.15
NE 8720	.18-.23	.70-.90	.20-.35	.40-.60	.40-.70	.20-.30	.70	14.00	1.20
NE 9415	.13-.18	.80-1.10	.20-.35	.30-.50	.30-.60	.08-.15	.75	15.00	1.25
NE 9425	.23-.28	.80-1.20	.20-.35	.30-.50	.30-.60	.08-.15	.75	15.00	1.25
NE 9442	.40-.45	1.00-1.30	.20-.35	.30-.50	.30-.60	.08-.15	.80	16.00	1.30
NE 9722	.20-.25	.50-.80	.20-.35	.10-.25	.40-.70	.15-.25	.65	13.00	1.15
NE 9830	.28-.33	.70-.90	.20-.35	.70-.90	.85-1.15	.20-.30	1.30	26.00	1.80
NE 9912	.10-.15	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.20	24.00	1.55
NE 9920	.18-.23	.50-.70	.20-.35	.40-.60	1.00-1.30	.20-.30	1.20	24.00	1.55

Extras are in addition to a base price of 2.70c, pe r pound on finished products and $54 per gross … semifinished steel major basing points and are in cent s per pound and dollars per gross ton. No prices … on vanadium alloy.

Pig Iron

ices (in gross tons) are maximums fixed by OPA Price Schedule No. effective June 10, 1941, amended Feb. 14, 1945. Exceptions indicated notations. Base prices bold face, delivered light face. Federal tax freight charges, effective Dec. 1, 1942, not included in following prices.

	Foundry	Basic	Bessemer	Malleable
...town, Pa., base	$26.00	$25.50	$27.00	$26.50
...frank, N. J., del.	27.53	27.03	28.53	28.03
...klyn, N. Y., del.	28.50	....	....	29.00
...ora, Pa., base	26.00	25.50	27.00	26.50
...ingham, base	‡21.38	‡20.00	26.00	.....
...more, del.	26.61	.....	.....	.....
...on, del.	26.12	.....	.....	.....
...go, del.	25.22	.....	.....	.....
...nnati, del.	25.06	23.68	.....	.....
...eland, del.	25.12	24.24	.....	.....
...ck, N. J., del.	27.15	....	.....	.....
...delphia, del.	26.46	25.96	.....	.....
...Louis, del.	25.12	24.24	....	....
...k, base	25.00	24.00	26.00	25.50
...n, del.	26.50	26.00	27.50	27.00
...ester, del.	26.53	.....	27.53	27.03
...ago, del.	27.08	....	28.08	27.58
...n, base	25.00	24.50	25.50	25.00
...aukee, del.	26.10	25.60	26.60	26.10
...agon, Mich., del.	28.19	....	....	28.19
...ead, base	25.00	24.50	25.50	25.00
...n, Canton, O., del.	26.39	25.89	26.89	26.39
...e, base	25.00	24.50	25.50	25.00
...saw, Mich., del.	27.31	26.81	27.81	27.31
...n, base	25.50	25.00	26.00	25.50
...Paul, del.	27.63	27.13	28.13	27.63
...n, base	25.00	24.50	26.00	25.50
...n, Mass., base	26.00	25.50	27.00	26.50
...n, del.	26.50	26.00	27.50	27.00
...e City, Ill., base	25.00	24.50	25.50	25.00
...Louis, del.	25.50	25.00	....	25.50
...n, O., base	25.00	24.50	.....	25.00
...mouth, del.	25.44	25.61	.....	26.11
...Island, Pa., base	25.00	24.50	25.50	25.00
...burgh, del.				
...n & So. sides	25.69	25.19	26.19	25.69
...Utah, base	23.00	22.50	....	....
...ville, Pa., base	25.00	24.50	25.50	25.00
...ns Point, base	26.00	25.50	....	....
...ture, del.	26.99	....	....	....
...n, Pa., base	....	25.50	....	26.50
...ead, Pa., base	26.00	25.50	27.00	26.50
...chkin, del.	26.84	26.34	....	27.34
...n, O., base	25.00	24.50	25.50	25.00
...ren, O., base	25.00	24.50	25.50	25.00
...ield, O., del.	26.94	26.44	27.44	26.94

...de, silicon 1.75-2.25%; add 50 cents for each additional 0.25% ...r portion thereof; deduct 50 cents for silicon below 1.75% on ...ron. ‡For phosphorus 0.70% or over deduct 38 cents. §For ...Brooks, Pa., add .55 to Neville Island base; Lawrenceville, Home-...Keesport, Ambridge, Monaca, Aliquippa, .84; Monessen, Monon-...City .97 (water); Oakmont, Verona 1.11; Brackenridge 1.24.

...Add 25 cents per ton for each 0.50% manganese or portion ...over 1.00%.

...differentials: Under 0.50%, no extra; 0.50% to 4.74% incl., $2 ...for each additional 0.25% nickel, $1 per ton.

High Silicon, Silvery

6.00-6.50 per cent (base)	$30.50		
6.51-7.00	$31.50	9.01- 9.50	36.50
7.01-7.50	32.50	9.51-10.00	37.50
7.51-8.00	33.50	10.01-10.50	38.50
8.01-8.50	34.50	10.51-11.00	39.50
8.51-9.00	35.50	11.01-11.50	40.50

F.o.b. Jackson county, O., per gross ton, Buffalo base prices are $1.25 higher. Prices subject to additional charge of 50 cents a ton for each 0.50% manganese in excess of 1.00%.

Electric Furnace Ferrosilicon: Sil. 14.01 to 14.50%, $45.50; each additional .50% silicon up to and including 18% add $1; low impurities not exceeding 0.05 Phos., 0.40 Sulphur, 1.0% Carbon, add $1.

Bessemer Ferrosilicon

Prices same as for high silicon silvery iron, plus $1 per gross ton. (For higher silicon irons a differential over and above the price of base grades is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Charcoal Pig Iron

Northern

Lake Superior Furn.	$34.00
Chicago, del.	37.34

Southern

Semi-cold blast, high phos., f.o.b. furnace, Lyles, Tenn.	$28.50
Semi-cold blast, low phos., f.o.b. furnace, Lyles, Tenn.	33.00

Gray Forge

Neville Island, Pa.	$24.50
Valley base	24.50

Low Phosphorus

Basing points: Birdsboro, Pa., $30.50; Steelton, Pa., and Buffalo, N. Y., 30.50 base; 31.74, del., Philadelphia. Intermediate phos., Central Furnace, Cleveland, $27.50

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.

Exceptions 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. Mystic Iron Works, Everett, Mass., may exceed basing point prices by $1 per ton.

Refractories

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

Fire Clay Brick

Super Duty

Pa., Mo., Ky.	$68.50

First Quality

Pa., Ill., Md., Mo., Ky.	54.40
Alabama, Georgia	54.40
New Jersey	59.35
Ohio	47.70

Second Quality

Pa., Ill., Md., Mo., Ky.	49.35
Alabama, Georgia	40.30
New Jersey	52.00
Ohio	38.15

Malleable Bung Brick

All bases	63.45

Silica Brick

Pennsylvania	54.40
Joliet, E. Chicago	62.45
Birmingham, Ala.	54.40

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	32.90
Wire cut	30.80

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 base price any grade $30.) war chemicals.

Ferroalloy Prices

...anese (standard) 78-82% ...ton, duty paid, $135; add ...packed c.l., $10 for ton, ...ton, f.o.b. cars, Balti...delphia or New York, ...is most favorable to buy...ble or Rockwood, Tenn.; ...Tennessee Products Co. is ...Birmingham, Ala., where ...field Steel & Iron Co. ...$1.70 for each 1%, or ...ontained manganese over ...under 78%; delivered Pitts...1@ 33.

...anese (Low and Medium ... per lb. contained man...eastern zone, low carbon, ...23c; 2000 lb. to c.l., ...dium, 14.50c and 15.20c; ...low carbon, bulk, c.l., ...2000 lb. to c.l., 24.40c; ...14.80c and 16.20c; west...carbon, bulk, c.l., 24.50c, ...to c.l., 25.40c; medium, ...and 17.20c; f.o.b. shipping ...freight allowed.

...ese: 19-21% carlots per ...Palmerton, Pa., $36; 16-...25.

...e Manganese: 99.9% plus, ...lots, per lb. 37.6 cents.

...n Metal: 97% min. chromi...max. .50% carbon, eastern ...per lb. contained chromium ...79.50c, 2000 lb. to c.l. ...ral, 81c and 82.50c; west...5c and 84.75c; f.o.b. ship...freight allowed.

...dium: 50-60%, per lb. ...columbium in gross ton ...ntract basis, R.R. freight ...eastern zone, $2.25; less-...$2.30. Spot prices 10 cents ...higher.

...: High carbon, eastern ...ack, 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.

Silcaz Alloy: (Sil. 35-40%, cal. 9-11%, alum. 6-8%, zir. 3-5%, 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, 10.75, 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 tons, $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 $1.80, less, $2.30, eastern zone, freight allowed, per pound of metal; $1.809 and $2.309 Central, $1.849 and $2.349, 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; .066, .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. ½ 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.

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 to 98% manganese, max. 2% iron), per lb. of metal, eastern zone, bulk, c.l., 36c 2000 lb. to c.l., 38c, central, 36.25c, and 39c; western 36.55c and 41.05c; 95 to 97% manganese, max. 2.50% iron, eastern, bulk, c.l., 34c; 2000 to c.l., 35c; central 34.25c and 36c; western, 34.55c and 36.05c; f.o.b. shipping point, freight allowed.

Ferrotungsten: Spot, carlots, per lb. contained tungsten, $1.90; 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 gross 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 $155; 3-5% carbon $157.50.

Carbortam: Boron 0.90 to 1.20% net ton to carload, 8c lb. f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Bortam: Boron 1.5-1.9%, base price 45c lb., less ton lots 50c lb.

Ferrovanadium: 35-55%, contract basis, per lb. contained vanadium, f.o.b. producers plant with freight allowances; open-hearth grade $2.70; special grade for highly-special grade $2.90.

Zirconium Alloys: 12-15% zirconium, remainder iron, per lb. of alloy, eastern contract, carlots, bulk, 4.60c, packed 4.80c, less than carlots 4.80c, less tons 5c, carloads per gross ton $102.50; less-ton lots $107.50; ton lots $108; less-ton lots $112.50. Spot ¼c per ton higher.

Zirconium Alloy: 35-40% zirconium, contract basis, carloads in bulk per lb. of alloy, 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. 5.75c; ton lots 6.50c. Spot ½ cent higher.

Simanal: (Approx. 20% each Si., Mn., Al.) Contract, frt. allowed to St. Louis rate, per lb. 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. Niagara Falls 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 issue of Sept. 4, 1944, issue of STEEL. 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	14.00
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	13.81
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. Hvy. 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. Hvy. 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	14.00-14.25
Short Shovel Turnings	16.00-16.25
Mixed Borings, Turn.	14.00-14.25
Cast Iron Borings	15.00-15.25
Low Phos.	21.75

DETROIT:

(Dealers' buying prices)

Heavy Melting Steel	$17.32
No. 1 Busheling	17.32
Hydraulic Bundles	17.32
Flashings	17.32
Machine Turnings	10.50-11.00
Short Shovel Turnings	11.50-12.00
Cast Iron Borings	10.50-11.00
Low Phos Plate	19.32-19.82
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	
Shoveling Turnings	
Rerolling Rails	
Steel Car Axles	
Steel Rails, 3 ft.	
Steel Angle Bars	
Cast Iron Wheels	
No. 1 Machinery Cast	
Railroad Malleable	
Breakable Cast	
Stove Plate	
Grate Bars	
Brake Shoes	
(Cast grades f.o.b. shipping	
Stove Plate	

CINCINNATI:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	
No. 2 Heavy Melt. Steel	
No. 1 Comp. Bundles	
No. 2 Comp. Bundles	
Machine Turnings	
Shoveling Turnings	
Cast Iron Borings	
Mixed Borings, Turnings	
No. 1 Cupola Cast	
Breakable Cast	
Low Phosphorus	
Scrap Rails	
Stove Plate	

LOS ANGELES:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	
No. 2 Heavy Melt. Steel	
No. 1, 2 Deal. Bundles	
Machine Turnings	
Mixed Borings Turnings	
No. 1 Cast	

SAN FRANCISCO:

(Delivered consumer's plant)

No. 1 Heavy Melt. Steel	
No. 2 Heavy Melt. Steel	
No. 1 Busheling	
No. 1, No. 2 Bundles	
No. 3 Bundles	
Machine Turnings	
Billet, Forge Crops	
Bar Crops, Plate	
Cast Steel	
Cut Structural, Plate, 1", under	
Alloy-free Turnings	
Tin Can Bundles	
No. 2 Steel Wheels	
Iron, Steel Axles	
No. 2 Cast Steel	
Uncut Frogs, Switches	
Scrap Rails	
Locomotive Tires	

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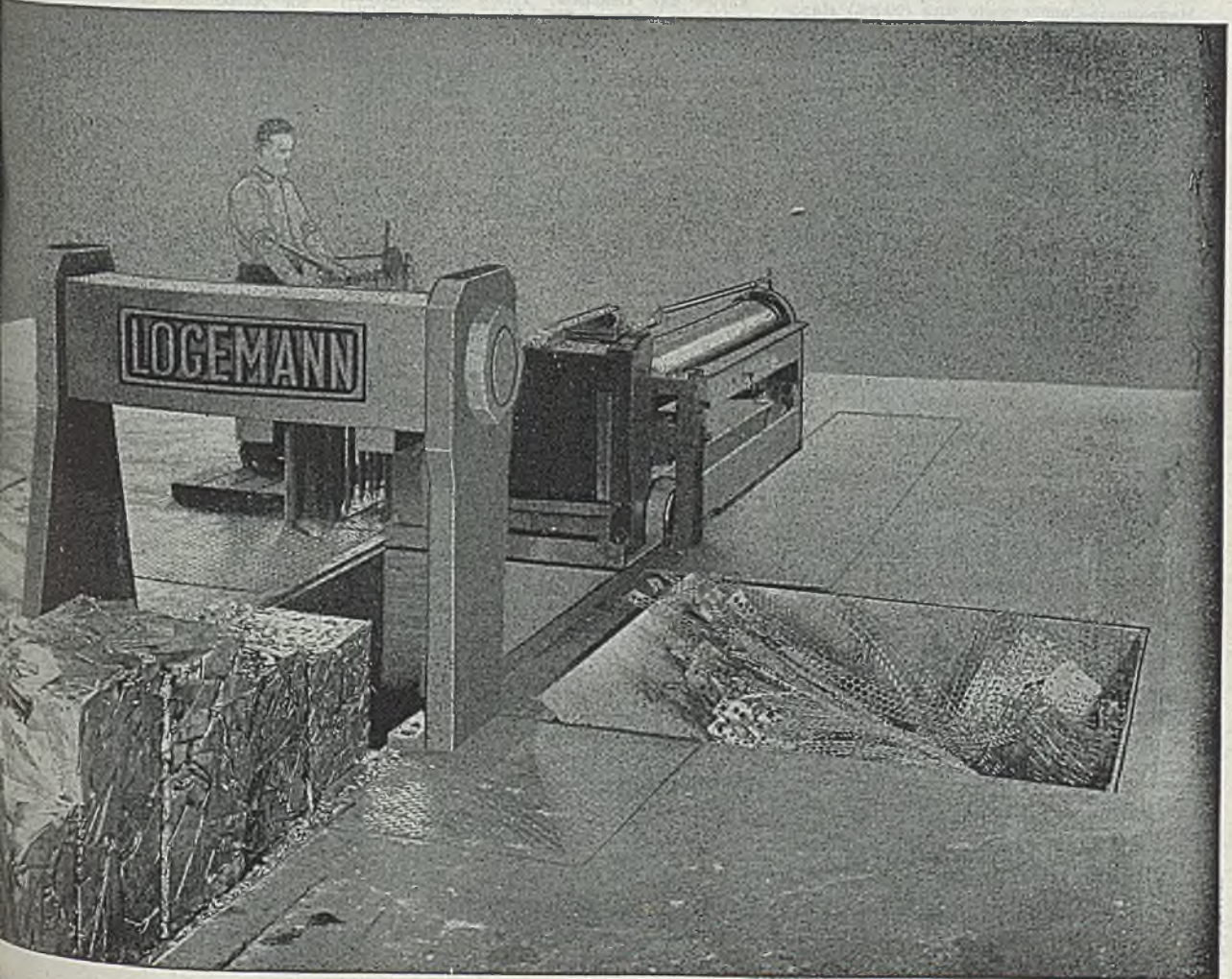


NONFERROUS METAL PRICES

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 allowance; 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 carlots. 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, 6.40c, corroding, 6.45c, 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 (92¼% plus) 10.00c; steel deoxidizers in notch bars, granulated or shot, Grade 1 (95-97¼%) 11.00c, Grade 2 (92-95%) 9.50c to 9.75c, Grade 3 (90-92%) 8.50c to 8.75c, Grade 4 (85-90%) 7.50c to 8.00c; any other ingot containing over 1% iron, except PM 754 and hardness, 12.00c. Above prices for 30,000 lb. or more; add ¼c 10,000-30,000 lb.; ½c 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. Prices 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, 2½c 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: OPA ceiling prices per 76-lb. flask f.o.b. point of shipment or entry. Domestic produced in Calif., Oreg., Wash., Idaho, Nev., Ariz., $191; produced in Texas, Ark. $193. Foreign, produced in Mexico, duty paid, $193. Open market, spot, New York, nominal for 50 to 100 flasks; $158 to $163 in smaller quantities.

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. 44.75c 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% 26.50c.

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% 20.40c, 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.

Seamless Tubing: Copper 21.37c; yellow brass 22.23c; commercial bronze 90% 23.47c; red brass 80% 22.80c, 85% 23.01c.

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% 29.57c, 95% 29.78c; red brass 80% 28.65c, 85% 28.86c.

Copper Wire: Soft, f.o.b. Eastern mills, carlots 15.37½c, less-carlots 15.87½c; 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 Cyanide: 96%, 200-lb. drums 1[illegible] 10,000-lb. lots 13.00c f.o.b. Niagara Falls.

Nickel Anodes: 500-2999 lb. lots; cast 47.00c; rolled carbonized 47.00c; rolled, depolar[illegible] 48.00c.

Nickel Chloride: 100-lb. kegs or 275-lb. [illegible] 18.00c lb., del.

Tin Anodes: 1000 lbs. and over 58.50c; 500-999 59.00c; 200-499 59.50c; 100-199 60.[illegible]

Tin Crystals: 400 lb. bbls. 39.00c f.o.b. Ca[illegible] selli, N. J.; 100-lb. kegs 39.50c.

Sodium Stannate: 100 or 300-lb. drums 3[illegible] del.; ton lots 33.50c.

Zinc Cyanide: 100-lb. kegs or bbls. [illegible] f.o.b. Niagara Falls.

Brass Mill Allowances: Prices for less 15,000 lbs. f.o.b. shipping point. Add ¼ 15,000-40,000 lbs.; 1c for 40,000 lbs. or [illegible]

Scrap Metals

	Clean Heavy	Rod Ends
Copper	10.250	10.250
Tinned Copper	9.625	9.625
Yellow Brass	8.625	8.375
Commercial bronze		
90%	9.375	9.125
95%	9.500	9.250
Red Brass, 85%	9.125	8.875
Red Brass, 80%	9.125	8.875
Muntz metal	8.000	7.750
Nickel Sil, 5%	9.250	9.000
Phos. br., A, B, 5%	11.000	10.750
Herculoy, Everdur or equivalent	10.250	10.000
Naval brass	8.250	8.000
Mang. bronze	8.250	3.000

Other than Brass Mill Scrap: Prices [illegible] material not meeting brass mill specifi[illegible] and are f.o.b. shipping point; add ¼ shipment of 60,000 lbs. of one group and for 20,000 lbs. of second group shipped same car. Typical prices follow:

(Group 1) No. 1 heavy copper and wire 1 tinned copper, copper borings 9.75c; copper wire and mixed heavy copper, [illegible] tuyeres 8.75c.

(Group 2) soft red brass and borings [illegible] num bronze 9.00c; copper-nickel and [illegible] 9.25c; car boxes, cocks and faucets 7.75c; metal 15.50c; babbit-lined brass [illegible] 13.00c.

(Group 3) zincy bronze borings, [illegible] condenser tubes, brass pipe 7.50c; Muntz condenser tubes 7.00c; yellow brass manganese bronze (lead 0.00%-0.40%) [illegible] (lead 0.41%-1.0%) 6.25c; manganese borings (lead 0.00-0.40%) 6.50c, (lead 1.00%) 5.50c.

Aluminum Scrap: Prices f.o.b. point of ment, truckloads of 5000 pounds or over, regated solids, 2S, 3S, 5c lb., 11, 14, [illegible] to 3.50c lb. All other high-grade [illegible] lb. Segregated borings and turnings, [illegible] alloys, 2, 2.50c lb. Other high-grade [illegible] 3.50, 4.00c lb. Mixed plant scrap, all [illegible] 2, 2.50c lb. borings and turnings one cent than segregated.

Lead Scrap: Prices f.o.b. point of ship[illegible] For soft and hard lead, including cable deduct 0.55c from basing point prices for fined metal.

Zinc Scrap: New clippings 7.25c, old zinc f.o.b. point of shipment; add ½-cent for [illegible] lbs. or more. New die-cast scrap, [illegible] grilles 4.95c, add ½c 20,000 or more. [illegible] zinc dross, die cast slab 5.80c any [illegible]

Nickel, Monel Scrap: Prices f.o.b. [illegible] shipment; add ½c for 2000 lbs. or [illegible] nickel or cupro-nickel shipped at one [illegible] 20,000 lbs. or more of Monel. Clean (dealers) allowed 2c premium.

Nickel: 98% or more nickel and not over copper 26.00c; 90-98% nickel, 26.00c per nickel contained.

Cupro-nickel: 90% or more combined and copper 26.00c per lb. contained plus 8.00c per lb. contained copper; 90% combined nickel and copper contained nickel only.

Monel: No. 1 castings, turnings 15.00c; clipping 20.00c; soldered sheet 18.00c.

Sheets, Strip . . .

Sheet & Strip Prices, Page 192

No easing is apparent in the tight sheet and strip situation, cancellations having had little effect on nearby deliveries. Mills are booked full to the end of the year and beyond, hot-rolled pickled being quoted for April in some instances. The situation is as congested as in plates in 1942 and no relief is in sight. War requirements still are heavy because in the Pacific war, where climatic conditions dictate steel containers for much materiel.

New York — New business continues to increase somewhat. There is still good demand for unrated tonnage but difficulty in obtaining assurance as to delivery is discouraging consumers. Consequently there is not as much of this demand as a few weeks ago. Pressure continues, though, for over-runs and tonnage made available through cancellations where processing has been completed or partly completed, as this can be obtained ex-allotment and with assurance of delivery.

Mill leading sellers are booked well into next year on hot-rolled pickled sheets, some quoting April and beyond. On the other hand, certain producers can specify shipment in November and December on plain hot-rolled and also cold-rolled sheets, although some mills are booked well into next year on all of these latter products. Galvanized sheets for consumer account are difficult to obtain much before next March. Demand is far above normal demand for polished stainless steel sheets, as reflecting the fact that certain producers are quoting polished material for delivery several months beyond unpolished stainless steel. For instance, one seller is booking late October and November on polished stainless and late in second quarter of next year on polished stainless. Electrical sheets are in strong demand with deliveries running around March and April in several instances regardless of the amount of silicon. Other projects continued heavy demand for motor equipment, fractional horsepower motors, and similar uses.

Pittsburgh — Delivery on galvanized and other sheet items is currently as long as was the case for plates during 1942. Some of the present larger war requirements in sheets are for ammunition containers and for drums and pails. Because of climatic conditions in the Pacific, ammunition requires special protection. Drums and pails are required for similar reasons, the air force, for instance, needs more of them for packing of parts components. The Quartermaster Corps has recently issued a special request for requirements of 160,000 five-gallon drums each month for the next six months for packing liquid DDT and other insecticides. Request for 42,000 tons of additional steel for production of steel drums by members of the Steel Shipping Container Advisory Committee was denied by WPB, due to the critical supply. The overall situation with regard to steel drums is now being reviewed by a WPB task committee with the view of determining fourth quarter requirements. The metal strapping industry has been allocated 129,000 tons of carbon steel, largest tonnage ever given the industry and reflects the growing demand for packaging war materiel in this manner to conserve lumber and paperboard, shipping space and saving in manpower in loading and unloading supplies.

Chicago—Despite the fact that opinion is general that the sheet and strip situation has eased somewhat, chiefly because WPB has taken a hand in an attempt to bring order out of confusion, mills in this district virtually find no change in their position. Books are filled with rated tonnage for the balance of the year and into 1946, and cancellations are negligible. Many consumers, feeling that the Japanese war is near an end, are beginning to press mills for delivery commitments on unrated tonnage. Feeling of sheetmakers here is that the situation in this area is tighter than in any other section of the country, due probably to the fact that Chicago has diversified manufacturing and has been carrying an unusual portion of the war load, some of which is now being completed or cut back.

St. Louis — Increasing manpower shortage, in spite of layoffs in other heavy industries, continues to put sheet deliveries further behind. Sheet output is less than at any time since the war peak. Three DPC blast furnaces at Granite City Steel Co. works are down from lack of labor. More than 10,000 tons of rated sheets and strip are piled, awaiting finishing. Substantial new CMP sheet orders are reported. Many unrated orders have been received but not scheduled. Galvanized sheet deliveries have been extended four months in the past 30 days, light galvanized now being promised for June, 1945, and heavy in December. Hot-rolled sheets are promised for March, cold-rolled for April and tin mill products for February.

Cincinnati — The tight situation in sheets is unrelieved, and it may well be that sheets ultimately will prove the bottleneck in many items on reconversion. Backlogs on rated orders are extended. Schedules show some tonnage in December for cold-rolled, but on hot-rolled April is the earliest delivery now promised. Galvanized is available in December, long ternes in January. Meanwhile, reconversion tonnage continues to pile up, possibly enough to keep mills at capacity for a year.

Boston — Incoming rated volume of narrow cold-rolled strip is below shipments and the approximate current rate of cancellations. Slight inroads are being made toward backlog reductions, presaging some openings for unvalidated tonnage in late fourth quarter, although the total will depend on the ratio of new rated orders and cancellations during the balance of this quarter. Spot openings are few, readily filled, and include scattered lots of alloys with some mills. Cancellations thus far involve a relatively higher ratio of high-carbon for rifle clips, belt links and landing mat springs, narrowing the spread with low-carbon. Cancellations on sheets are light in this area, also new buying in the rated category. Inquiry for unvalidated tonnage has also slackened, attributed to coverage already made and better appreciation of forward position of mill schedules as to likelihood of delivery against this type of commitment.

Cleveland — Sheetmakers in this district continue loaded with orders, covering capacity for the remainder of the year, with heavy carryover from second quarter keeping schedules continuously behind. Cancellations continue but are light as far as current business is concerned, applying mainly to remote deliveries. Unrated orders continue to be received but are not scheduled, as rated orders fill entire capacity. Occasional orders are given preference rating and displace others to provide space for material in greater need.

Philadelphia — Sheet backlogs, in common with other steel products, are somewhat less extended. Some producers are booked well into next year on both hot and cold-rolled, while others now can promise plain hot-rolled sheets as early as October and November. One large seller recently quoting hot-rolled pickled sheets for March now can accept this grade for January. Various requests by consumers for suspensions of early deliveries, so as to bring inventories within limits set by WPB, have been rejected by mills as the tonnage already is being processed or on the point of being so. This has placed consumers in a difficult position, for if they were to cancel the tonnage outright they might not be able to get back on mill schedule for some time.

Birmingham — Sheet demand is active, practically no cancellations have been received and mill backlogs continue heavy for all grades, deliveries being well extended and showing little improvement from cutbacks.

Steel Bars . . .

Bar Prices, Page 192

Conditions in the steel bar market are tightening and this product now ranks next to sheets and strip in heavy demand. Most producers are well booked through the year and on some grades and sizes can promise no delivery short of next year. Increase in price of cold-finished bars, to compensate for the recent advance on hot-rolled, affords some relief to cold finishers, but elimination of some processing extras more than offsets the advantage.

Pittsburgh — The $2 increase in base prices for cold-finished bars, effective Aug. 6, will be more than offset by reductions in strain drawing and special treatment extras on furnace treated items. Most of these extras are required in military specifications on shipments for the shell and other war programs. However, the increase in base prices reinstates the normal spread between hot-rolled and cold-finished bars, which is particularly important at this time when the industry is in the midst of a partial reconversion to a competitive civilian goods economy. It is pointed out that practically all tonnage shipped on civilian goods orders do not require the special treatment extras necessary under military specifications. Cold-drawers state that the increase in base prices will compensate them in part for the increase of $2 on the mill price of hot-rolled carbon bars and $3 on wire rods, effective May 23. No price adjustment was made on alloy cold-finished bars, as the mill price on hot-rolled alloy bars was not increased in May.

Cold-drawers are booked into December and January on larger sizes, but openings in schedules are noted as early as late September on smaller items with some interests. Liquidation of rated orders has been orderly and on a moderate

not up to expectations. Bookings of unrated tonnage recently have not been as large as generally believed, with many customers hesitating to proceed at this time in placing orders on a large scale for civilian goods. However, the automotive industry is a major exception to this buying policy. No rated tonnage of any consequence has been scheduled yet, and on the basis of current cancellations little will be shipped until November.

Chicago — Barmakers, who have been in a fairly comfortable position, now report that new business and demand have pushed this product into a situation

strip in criticalne.s. This applies particularly to carbon grades; alloys are tighter than in recent months but still are well below capacity. Bar demand is well distributed and the growing tightness cannot be attributed to any individual segments of industry. As to forging grade bars, drop forgers have backlogs ranging five to six months, mainly on rated orders.

New York — In spite of certain cutbacks and cancellations, most sellers of hot carbon bars are booked well toward the end of the year, and on hot-top quality well into 1946. Certain producers are quoting April and May on larger

cold-drawn carbon bars, 2 inches larger, fall in December and January due in large measure to the rocket gram. In general, however, shipping are not as extended, and certain tech openings are affording some relief consumers. Except in alloy bars, unrated tonnage stands a chance of ing delivered before late in the year

St. Louis — Barmakers here are 90 per cent or more on CMP tonnage Few contracts have been canceled mid-June and production is expected to steady until the war's end. Unrated orders are not being sought as mills tate to promise delivery. Greatest sure is on all sizes of flat bars and rounds, two inches and over. Merchant rounds can be promised for September and flats for December.

Boston—On most sizes and grades ricated in this area bar deliveries are proving in carbon grades, while hot-top alloys are available in September, drawn also showing slight improvement Some unrated volume in the latter being booked, but new buying is recovering from cutbacks, notably mills, although warehouses are active. Normally a substantial of bars required here are distributed by warehouses and the trend is toward a return to that practice. Textile chinery, miscellaneous equipment ers and forge shops maintain part wartime volume by increased civilian activity, but the void in small arms rine hardware, chain and other war mand is not being filled. Some auto bile tonnage is going to forge shops quarter.

Philadelphia — Reflecting continued heavy shell requirements producers hot-top quality steel are quoting into next year, in some cases as late April on sizes of 2 5/16-inch and On ordinary hot-rolled carbon bars ducers quote November through January Some spot openings appear earlier they are filled promptly. Hot alloys are freely available in September, even unrated tonnage not in such volume to round out schedules.

Steel Plates . . .

Plate Prices, Page 193

Gradual decline in demand for plates continues, but cancellations have affected current schedules greatly few openings appear. Considerable mand will come out over several months for large car and locomotive orders rently being placed. Some unrated nage may be shipped during September and later this year.

New York—As sellers are in position to accept unrated tonnage, plate ness here is holding up fairly well bers are still pressing for tonnage particularly for ship construction and pairs. Incidentally, some new boat construction is under way and is contributing to demand. plate sellers are booked solidly into ber, with some fairly well scheduled November.

The Navy has placed 84,000 tons plates for August rolling 50,000 to Geneva Steel Works, Geneva, 9000 tons to Fontana and the remainder to mills further east.

Pittsburgh — A downward trend plate production schedules is indi

increasing demand for railroad
ght cars and locomotives, and large
requirements for the Navy. Most
the latter tonnage, about 130,000
has been scheduled on western mills
August delivery, and therefore will
directly affect mill schedules here.
orders for locomotives include 303
the Army; however, slightly over
those on order for Russia have
canceled. Reduction in plate
ot in recent months has permitted
eeling of a substantial quantity of
steel into critically needed sheet and
production. Producers expect to
some unrated tonnage during Sep-
er, for wide and narrow sheared
s are now available for September
n and October shipment can be
n universal plates. Volume of
ries for unrated tonnage has made
ther increase in recent weeks, but
the extent reported for sheets,
nd other steel products.

cago — Plate load on mills, while
ing gradually month by month,
s few openings. Despite cancel-
and cutbacks in war production,
situation is little affected and
tonnage occupies rolling schedules
t solidly for remainder of the year.
platemaker, who is producing a
erable volume of bomb plate, has
nstructed by WPB to reduce its
output of this item approximately
tons, but at the same time was
that the opening be not filled
further word.

Louis — Plate production in this
is down to 5000 to 6000 tons per
with prospects it will go down
0 within 60 days. Demand has
ed to an extent that warehouses
deliveries best of all products.
schedules are in November.
uers in this area are mainly for
Commission ship repair needs.

ton — What has happened to plate
in New Englad is told in ship-
ployment. From peak, 103,000
en dropped from payrolls at eight
ards, including Navy establish-
nd those building combat ves-
o are closing this month, Beth-
lingham and Walsh-Kaiser, at
ence, R. I. This has directly af-
many fabricating shops under
tracts, although the impact on
veloped some time ago. For
er delivery, including unrated
buying is not brisk.

ingham — Plate mills are work-
capacity, though much absentee-
ks back production to some ex-
Most demand is for war essen-
though pressure is lighter than
eding months.

t . . .

Wire Prices, Page 193

on — Prospects for delivery on
high-carbon fine wire specialties
late fourth quarter are fading,
lume of new unrated orders sus-
at a higher rate than expected in
instances. Here and there open-
appear for low carbon requiring
mmum of processing, for delivery
but on the whole shipment of
this quarter will be under ex-
ions. Patenting and annealing,
loaded, are choke points. There
ne easing in the overall situation

wire and some sizes of rope for stranding. Full advantage in signal wire cancellations is hampered by uncertainty as to delivery wanted on the balance, making for uncertainty as to filling space in these sizes. Oil-tempered wire continues tight and is generally in December. For valve spring wire pressure is from the automotive industry. Although cut back, material for precision mechanical springs is still mainly for war requirements, 85 per cent approximately, and no delivery is definite on unrated orders.

Buffalo — Little capacity is available for unrated wire business. Sellers report a comprehensive checkup reveals war work still commands practically all present output. One producer, however, managed to turn out a small tonnage of low carbon wire.

Tin Plate . . .

Tin Plate Prices, Page 193

Chicago — District tin plate production took a sharp drop late in July when several hundred workers in the tin mill of Inland Steel Co. struck July 22 and remained away from their jobs for a week. This work stoppage made a bad situation worse, for shortage of manpower already was preventing the company from meeting its recently increased production directive. District mills are booked solidly until year's end on tin plate. Box car supply fluctuates from week to week, but in the past month

has not seriously held back shipments of finished plate to consumers.

Pittsburgh — The three new electrolytic lines at Carnegie-Illinois' Irvin works continue to operate above capacity, with July output probably exceeding the record established during June, when production averaged 114 per cent of capacity. At the Corporation's Gary, Ind., works, however, only one of the three electrolytic lines is in operation. Average rate of electrolytic production at U. S. Steel Corp.'s other plants is around 50 per cent of capacity. No specific program has developed that will make more pronounced the shift from hot-dipped tin plate to greater use of electrolytic. However, revision of order M-81 is under consideration, due to the immediate need to conserve pig tin supplies, and important changes in tin coating regulations governing certain type containers may be put into effect next quarter.

Mill tin plate shipments are still behind schedule, as a result of the moderate carryover tonnage, and it is improbable that the deficit can be made up this quarter. Although 1945 is not likely to be a spectacular year for crops, steady pressure for early shipment against third quarter schedules is noted from can manufacturers. Current signs point to a third quarter output of 933,000 tons of tin mill products, and little change is indicated for fourth quarter. Export shipments for the three months ending Sept. 30 will be the lowest for any quarter during the war.

Rails, Cars . . .

Track Material Prices, Page 193

New York — Domestic freight car inquiry continues to expand, with the Chicago & North Western now inquiring for 800 seventy-ton gondolas, likely to be in the market soon for 1 box cars. The Southern Pacific has increased its pending list from 1800 to 3550 freight cars, while the Louisville & Nashville is expected to step up its inquiry from 2000 to 3000. The Baltimore & Ohio may increase its present inquiry for 2000 to 4500.

Meanwhile, the Illinois Central has placed 1800 freight cars with its own shops, and the Clinchfield, 300 with the Vernon Car Mfg. Co., Mt. Vernon, Ill., leaving 1050 yet to be reported as placed. Western Maryland has ordered on 40 covered cement hopper cars with the American Car & Foundry Co., New York, and the Chesapeake & Ohio, 30 passenger train cars to Edward G. Budd Mfg. Co., Philadelphia. Cincinnati has purchased 25 street cars from the St. Louis Car Co., St. Louis.

Actively pending at present, according to reliable trade estimates, are about 15,000 freight cars. In addition, orders to 6700 domestic cars are under tentative contemplation. Also approximately 680 passenger cars are actively pending.

Domestic freight cars now being ordered are largely for delivery in first half of next year, as orders already on schedule leave little material available for additional work this year.

Action is still suspended on 30[illegible] freight cars for France and 6700 for India. Various other lists are pending for export, including approximately 1000 cars in the aggregate for Chile, Brazil and Mexico, and several hundred cars for Brazilian railroads, according to trade reports.

Featuring locomotive demand, the award of 303 forty-two-gage 2-8-2 type locomotives, for the United States Army, Baldwin Locomotive Works, Philadelphia, has been awarded 181; American Locomotive Co., New York, 76; Davenport-Besler Corp., Davenport, Iowa, 46.

While 290 out of 500 locomotives for Russia have been recently completed, American builders have substantial backlogs. They are working on 700 for France with the order expected to be completed by the end of this year; 190 for the United Nations Relief & Rehabilitation Administration; also a number for Belgium and India.

As schedules now stand, American Locomotive has 100 for Russia, 40 for UNRRA, 260 for France, 80 for Belgium and 76 forty-two-gage for the United States Army; Baldwin, 110 for Russia, 260 for France, 181 forty-two-gage for United States Army and 60 locomotives for India; Lima Locomotive Works, Lima, O., 180 for France, 60 for UNRRA; and Davenport, 46 for United States Army.

Structural Shapes . . .

Structural Shape Prices, Page 193

Increased demand for structural shapes is adding to mill backlogs and delivery promises are being extended, now that

four months. Contractors are back- about figuring on projects as deliv- is likely to be in cold weather when struction is difficult. However, an easing number of contracts is being Some unrated tonnage may be able late in third quarter, under ent conditions.

York — Featuring structural ds are 1100 tons for a power plant Consolidated Edison Co., Astoria, Island, and 1000 tons for a Dairy- League building, Manhattan, both ges going to the Utica Structural Co., Utica, N. Y. Other work in- s 270 tons for a factory building Congoleum Nairn Inc., Kearny, N. J., d with the Katchen Iron Works, k, N. J., this being in addition 5 tons noted recently as placed with lehem Fabricators, Bethlehem, Pa., nother building for this company. icago — Fabricators are being d to figure a multiplicity of small medium-sized jobs. However, the y are of postwar character, which, gh having approval of WPB, will e given benefit of priority assist- Since fabricators cannot promise en if they become successful bid- they are reticent to submit prop- s. Engineering and estimating are small and insufficient to han- work on other than the most at- e projects

tsburgh — There is little prospect substantial unrated tonnage being ed until late this quarter, as mill backlogs are extended into Sep- r and beyond. Structural mills ead little opportunity to increase ction because raw steel made avail- from the steady decline in plate ments has been absorbed by in- d output of sheets, strip and other war steel needs. There is good rd of considerable improvement ay in some construction materials mponents toward the close of this On the basis of this favorable out- ere has been a substantial increase ne of inquiries for alterations and for store buildings and small mprovement. However, most of mediate postwar construction in- s bridges and highway work. In- n railroad car construction over mainder of this year is a major in the current structural outlook.

falo — An increased volume of al projects, many still in the draw- board stage, are creating new in- Noted are a number of non- projects, probably inspired by grad- ease of materials by WPB. Nu- s bridges are included. The State Public Works Planning Commis- n approved an additional $3,309,- in county postwar projects. Ingalls Works, Verona, Pa., has received 00-ton contract for a new building the Harrison Radiator Division of eral Motors Corp., Lockport, N. Y.

adelphia — Shape deliveries now generally in November, on wide as well as standard sections. The West Coast Navy program, involv- 4,000 tons for August rolling, is re- d in this further tightening.

forcing Bars . . .

Reinforcing Bar Prices, Page 193

. Louis — Inquiries for reinforcing are increasing as building controls ease. Contracts for several structures are to be let soon, involving 2000 to 3000 tons. Delivery schedules on reinforcing bars, rated and unrated, are September and later.

Chicago — Activity on reinforcing steel jobs ranging 100 tons and over is running light, no awards having come to light in the past week and only one new inquiry being current. The latter is a diagnostical hospital for U. S. Veterans Administration to be built in Elgin, Ill., with bids Aug. 8. A tonnage estimate is not yet available. Reinforcing suppliers are devoting most of their time to a multiplicity of small jobs involving little tonnage but requiring considerable engineering attention. Many of the jobs have WPB approval but must be handled without a priority on steel. Supply of steel being low and no immediate improvement in prospect, reinforcing interests attempt to be selective in what they take on.

Pig Iron . . .

Pig Iron Prices, Page 195

Conditions in the pig iron market are decidedly tight, although sufficient iron has been supplied melters to meet current needs. However, reserves are small and a slight increase in melt would cause distress. In some areas car shortage interferes with shipments. Export inquiries are receiving little attention because of limited supply.

Pittsburgh — Fact that some steel

producers have been forced to get additional pig iron from outside sources and inadequate foundry scrap, have combined to increase the overall demand for merchant iron. However, the consumption of merchant iron during July showed a seasonal decline. Demand this month is expected to absorb all output. Production continues limited by manpower shortage and to a greater extent by low coking coal supply and strikes. Iron stocks at producing points and foundries are declining somewhat as consumption is currently slightly in excess of production.

New York — Warm weather and vacation influences are expected to maintain pig iron melt in this district at about the same level as for July, when operations were down somewhat from the preceding month. In view of stringency in iron, continued lull would prove welcome to most producers. Export inquiries are still coming out, but are receiving little consideration under the circumstances.

Buffalo—Shortage of scrap has further tightened the pig iron market as the two leading mill producers have all blast furnaces back on basic iron. One mill, in desperate need of scrap, turned its sixth blast unit to basic iron after a short period of merchant production. A big part of the latter was reported for shipment to New England consumers. Sellers are striving to get sufficient cars to meet pressing demands from other areas. Sellers attribute the recent car shortage to an increased number of open gon being diverted from iron to grain.

St. Louis — Pig iron remains with practically all production still der CMP. Lack of sufficient labor caused banking of one of Koppers ed's two blast furnaces, with no prosp of early resumption. Sellers have ble meeting requirements and press is reported as great as at any time ing the war. Little iron is avail to civilian buyers. Manpower short is estimated at 10 per cent, slightly ter than a week ago.

Philadelphia — Pig iron supply been eased somewhat by resumption a 1400-ton furnace at Bethlehem, after suspension of 30 days for repa Also contributing to better balance supply and demand is somewhat lig foundry melt, with likelihood that l shortage, hot weather and vacations continue to restrict production in Aug But above all, manpower is the great limiting factor, with foundries genera complaining of lack of molders.

Chicago — Despite the fact that foundries in Chicago and Fox River ley remain idle for the second consec tive week because of the strike of proximately 1500 workers, iron dem has not eased as much as might b been expected. This situation, shortage of men in operating shops c stitute a definite hold-down on prod tion of castings. But further deteriora tion in blast furnace activity and effort of melters to build up inventor to the allowed 30-day level contin to keep iron tight. Interlake Iron Co has blown out Federal "B" stack Aug for relining. The other five idle are dergoing relining, repairs or rebuild

Boston — Although pig iron supp ample for current melt and 30-day ventory there is no margin and strain on Buffalo district furnaces tinues. Likelihood of increased nage from integrated furnaces in near future is fading and resumpti of blast by the district furnace is certain in view of the expected pinch. More concern is expressed to future requirements. Several consumers, increasing reconversion ules, continue handicapped by foun labor shortage and are subcontract extensively.

Scrap . . .

Scrap Prices, Page 196

Tightness continues in scrap, many melters operating on small serve and vainly seeking further sup Prices are at ceiling and strong springboard and all other extras b paid. Fears for supply for winter are expressed. Lack of labor inter with yard processing and loading.

Philadelphia — With one large consumer exerting less pressure for nage the scrap market is slightly eas However, prices still are firm and duction of shipyard scrap and turnings not as heavy. In certain grades, notab in low phos, demand appears heavier than in recent weeks, a situation emphasized by decline in production of plate scrap.

Pittsburgh — Flow of scrap to sumers in this district is well below mal. Scrap interests are becoming m concerned over adequacy of scrap s plies for late fall and winter. Scrap increasingly difficult to get, with

ed lists only a fraction of normal tonnage, and production scrap steadily diminishing. Dealers and brokers are having difficulty filling contracts, with the former experiencing no relief from the manpower shortage. A few instances are reported of mills paying in excess of the $1 freight equalization on, with heavy melting steel and turnings. All grades remain at ceiling.

Buffalo — Despite talk of war order cutbacks and cancellations, strength has been more pronounced in the scrap market. No new business of any consequence was placed during the week as dealers continued to ship against recently placed large orders. Dealers, however, demand ceiling prices for practically all items. Ceilings were asked for turnings following reports that Pittsburgh and Valley consumers were placing orders with midstate sellers at top prices plus full springboard. Bolstering dealers' sentiment and the market is the depleted stockpile of a top consumer, which is operating almost on a hand-to-mouth basis. Another boatload of 5000 tons has arrived from the Duluth area.

Cincinnati — Consumer interest in iron and steel scrap has been revived after what had all appearances of a pre-war, summer lull. One district mill, out of the market for many weeks, re-entered with a purchase of open-hearth scrap in a move to maintain its stockpiles. Strength in nearby districts on borings and turnings, combined with a slackening in local output, sent prices up 50 cents to $1. Some specialties, for which prices were found scarce recently, are in better demand.

St. Louis — Scrap supply continues to lack of better grades pushing turnings and borings to their ceiling, with few takers at that level. Two large users are easing out of the market, awaiting outcome of the war and, in one case, a Defense Plant Corp. decision on three government-owned furnaces. One have been shut down, reducing the mill's scrap needs 50 per cent or more. Mill reserves are reported at over 30 days. Contract cutbacks have not slowed broker orders. Dealer shipments are slow, labor being short. Only heavy melting steel is in greatest demand.

Chicago — Now that all grades of carbon scrap are back at ceiling prices interest of consumers centers in getting facilities desired. Factory material is the turning, a reflection of war contract cutbacks, especially noticeable in borings and turnings. At the same time, dealers' yards are accumulating less and manpower scarcity holds back its processing. Country scrap fails to appear in considerable volume. Steel mill receipts are believed to be close to current melting requirements, with prospects that these may drop off to threaten the balance. Insufficient hot metal, because blast furnaces down for repairs, forces heavier scrap consumption.

Boston — Demand for scrap is strong with ceiling prices, including borings and turnings, with supply of shipyard and industrial scrap lower. Overall production of turnings is well under half what it was the first of the year. Demand for low phos and foundry grades is also strong and some consumers are building up reserves of cast where possible. Prices on unprepared scrap are lower.

Cleveland — The situation in steel and iron scrap is tight and all prices are at ceiling. Melters are taking all material made available by dealers and all are having trouble obtaining as much as they need. Supply is relatively small and difficulty is met in preparing collections, because of short labor supply.

Luria Bros. To Open Scrap Plant at Toledo

Luria Bros. Co., Inc., large dealer in steel and iron scrap, is opening a wholesale scrap plant on the Maumee river at Toledo, O., it is announced by Jack Levand, Ohio district manager. Robert H. Clymer, Reading, Pa., vice president of yards and operations, announces the plant is planned to be ready for operation about Sept. 1 and the supervisory personnel will be named later.

The plant will handle incoming and outgoing boat scrap by its rail and water connections, dealing only in wholesale scrap. Modern equipment is being installed and the dock will have capacity for storage of 100,000 tons of scrap. This plant will serve all Ohio customers of the company.

The entire Office of Price Administration schedule of prices at Toledo is based on movement across this dock and the situation is such that freight rates and established prices make it competitive with Cleveland dealers. One reason for this move is that two large Cleveland consumers are making expan-

sion plans that will enlarge scrap consumption there.

Luria Bros. Co. Inc. has 11 offices, the main office being at Reading, Pa. It operates eight plants, two in Pittsburgh and one each at Ecorse, Detroit; Donaghmore, Lebanon, Reading, Modena, Pa.; East Chicago, Ind. The Toledo plant will be the ninth plant. Other expansion plans are under consideration to enlarge service to the company's customers.

Canada . . .

Toronto, Ont. — While there has been some curtailment in buying in the Canadian steel market as a result of the holiday season, overall demand has not slackened. Inquiries continue in good volume with most associated with civilian requirements. There has been considerable tapering in demand on war account, while at the same time a number of large war orders have been canceled. Despite these conditions there has been no actual easing in supply as far as major items are concerned and on most new bookings producers are unable to give definite delivery promise.

Announcement has just been made by C. D. Howe, minister of munitions and supply, of lifting of steel control on distribution of steel from warehouses. The order just rescinded limited the amount of steel which any customer could purchase from warehouse for purposes other than war and highly essential civilian production, to ten tons of carbon steel and two tons of alloy steel during each calendar quarter.

Steel in Europe . . .

London — (*By Radio*) — Industry in Great Britain welcomes the five-year plan for modernization but the immediate outlook is uncertain. August business is restricted by the holiday season. Shortage of manpower continues to limit production.

Iron Ore . . .

Iron Ore Prices, Page 194

Lake Superior iron ore loaded at upper lakes ports in July totaled 11,372,[illegible] gross tons, compared with 12,908,972 tons in July, 1944, according to records of the Lake Superior Iron Ore Association, Cleveland. Season shipments to Aug. 1 totaled 40,396,868 tons, against 45,285,902 tons to the same date last year. The new Canadian port at Port Arthur, Ont., put in service during the month to handle Steep Rock ore, loaded 131,[illegible] tons. Decline in ore loadings is attributed to increased use of carriers transporting grain from the head of the lakes.

As Aug. 1 is practically the middle of the season of navigation, indications point for movement of close to 80,000,000 tons for the season, compared with the 170,538 tons transported in the entire season in 1944.

Warehouse . . .

Warehouse Prices, Page 194

Pittsburgh — Shipments out of warehouse stock during July maintained the active pace of preceding months, with some interests reporting an increase of 5 per cent in sales. No lessening in warehouse steel demand is indicated over the next two months. However, when war contract cancellations begin to appear in heavy volume, much of the present demand on warehouse stocks will return to normal mill sources. Further decline in distributors' stocks occurred during July, with sheet showing the largest decline. However, most items are in fairly good balance with current requirements.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2000 tons, Harrison Radiator Division of General Motors Corp., Lockport, N. Y., to Iron Works Co., Verona, Pa., John W. Cooper Co. Inc., Buffalo, general contractor.

5200 tons, assembly plant, Robertson, Mo., Ford Motor Co., to American Bridge Co., Pittsburgh; bids June 20.

1100 tons, extension to cellophane plant, Clinton, Iowa, for E. I. du Pont de Nemours Co. Inc., to Clinton Bridge Works, Clinton, Iowa; bids June 20.

1100 tons, power plant, for Consolidated Edison Co., Astoria, Long Island, through Kaye Construction Co., Brooklyn, general contractor, to the Utica Structural Steel Co., Utica, N. Y.

1000 tons, Dairymen's League building, Manhattan, New York, through Karl Koch, contractor, New York, to Utica Structural Steel Co., Utica, N. Y.

960 tons, bridge requirements, various locations, for Atchison, Topeka & Santa Fe railroad, 780 tons to Bethlehem Steel Co., Bethlehem, Pa., 90 tons to American Bridge Co., Pittsburgh, and 90 tons to Jones

Ryerson & Son Inc., Chicago; bids July 10.

00 tons, addition, Link-Belt Co., Indianapolis, to Joseph T. Ryerson & Son Inc., Chicago; Carl M. Guepel, Indianapolis, contractor.

55 tons, bridges, 209 tons in Saline county, Mo., and 100 tons in Gentry county, Mo., for state highway commission, to Kansas City Structural Steel Co., Kansas City, Kans.; C. E. Maxwell & Son, Columbus, Kans., contractor; bids June 15.

tons, addition to Transite pipe building, Waukegan, Ill., for Johns-Manville, to American Bridge Co., Pittsburgh.

tons, manufacturing building, Columbia Pipe & Supply Co., Chicago, to American Bridge Co., Pittsburgh; Algot B. Larson, Chicago, contractor; bids June 4.

tons, factory building, Congoleum Nairn Inc., Kearny, N. J., through Turner Construction Co., to the Katchen Iron Works, Newark, N. J.; this is in addition to another building, involving 265 tons, recently noted as placed with Bethlehem Fabricators, Bethlehem, Pa.

tons, Cleveland Cliffs Iron Co., Ishpeming, Mich., to Worden-Allen Co., Milwaukee.

tons, Baltimore & Ohio freight terminal, Eleventh avenue and 24th Street, Manhattan, New York City, to Bethlehem Fabricators, Bethlehem, Pa.

STRUCTURAL STEEL PENDING

tons, barrel racks for North American Warehouse Co., Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa., through McCloskey & Co., Philadelphia.

tons, warehouse and enameling building, American Stove Co., St. Louis; bids July 15.

tons, beam and girder bridges, Cameron County, Tex., for state highway department.

tons, five factory buildings, C. B. Hill Co., Trenton, N. J.; bids Aug. 7.

tons, billet conditioning building, Alan Wood Steel Co., Conshohocken, Pa., to Belmont Iron Works, Philadelphia.

tons, parts building, Ford Motor Co., Denver; bids Aug. 2.

tons, factory building, American Coating Mills Inc., Elkhart, Ind.; bids June 19.

tons, factory building, F. L. Jacobs Co., Detroit, Ill.

tons, crane runway, Philadelphia Navy yard.

REINFORCING BARS . . .

REINFORCING BARS PLACED

tons, building, Bureau of Census, Suitland, Md., to Bethlehem Steel Co., Bethlehem, Pa., through Charles H. Tompkins, contractor.

tons, Mystic station, Boston Edison Co., Boston, to Bethlehem Steel Co., Bethlehem, Pa., through Thomas O'Connor, contractor.

tons, Harrison Radiator Division of General Motors Corp., Lockport, N. Y., to Truscon Steel Co., Buffalo.

REINFORCING BARS PENDING

tons, bulkhead, Norfolk & Western Railroad, Lamberts Point, Va.

tons, U. S. Veterans hospital, Rutland Heights, Mass.

tons, highway bridge, Arlington, Va.

tons, tunnel for General Electric Co., Syracuse, N. Y.

tons, state hospital, Byberry Grounds, Philadelphia.

PLATES . . .

PLATES PLACED

tons, Great Northern Railroad, St. Paul, to American Bridge Co., Pittsburgh.

RAILS, CARS . . .

RAILROAD CARS PLACED

Chesapeake & Ohio, 30 passenger train cars, to Edward G Budd Mfg. Co., Philadelphia.

Cincinnati, 25 street cars, to St. Louis Car Co., St. Louis.

Clinchfield Railroad Co., 300 fifty-ton steel box cars, to Mt. Vernon Car Mfg. Co., Mt. Vernon, Ill.; this leaves 1050 freight cars yet to be reported as placed.

Illinois Central, 1800 freight cars; to own shops.

Western Maryland, 40 seventy-ton covered cement hopper cars, to American Car & Foundry Co., New York.

RAILROAD CARS PENDING

Baltimore & Ohio, now inquiring for 2000, may increase its list to 4500, according to trade reports.

Chicago & Northwestern, 800 seventy-ton gondolas, bids asked; inquiry for 1300 box cars is expected to be issued momentarily.

Louisville & Nashville, now inquiring for 2000 freight cars, is expected to be in the market shortly for an additional 1000.

Southern Pacific, 3550 freight cars, including 1800 recently reported as pending; list now comprises 1600 box, 550 general service gondolas, 200 tight bottom gondolas, 250 seventy-ton hoppers and 150 seventy-ton covered hoppers.

LOCOMOTIVES PLACED

United States Army, 303 forty-two-gage 2-8-2 type steam locomotives, 181 going to Baldwin Locomotive Works, Philadelphia; 76 to American Locomotive Co., New York; and 46 to Davenport-Besler Corp., Davenport, Iowa.

Virginian, five 2-8-4 type steam locomotives, to Lima Locomotive Works, Lima, O.

Number of Foundries in U. S. and Canada Increases

(*Concluded from Page 90*)

exclusively, while 1245 represent departments of plants also making ferrous castings. A large number of the "exclusive" group make more than one type of nonferrous casting, in many cases combining brass and aluminum, or aluminum and magnesium. Canada had a sharp jump in number of nonferrous producers from 278 to 358, nearly 29 per cent.

Brass and bronze castings dominate the nonferrous group in the United States with 2329 producers of this type, although aluminum is a close second with 2210 sources. The magnesium total is 89 foundries. The permanent mold casting process has experienced further growth since 1943, this type of casting being furnished by 336 foundries in the United States and 35 in Canada, compared with 258 and 29, respectively, two years ago. Producers of centrifugal castings number 187 in the United States and 20 in Canada.

California shows the largest percentage growth in total number of plants since 1943—from 331 to 392, or 18.5 per cent—and now is tied with Illinois as the fourth leading foundry state in number of establishments. The California gain occurred principally in nonferrous foundries, reflection of the state's aircraft industry, and places it fourth among all states and only 20 below Pennsylvania, the leader, in total producers of that type. California's 215 producers of aluminum castings are exceeded in number only by New York's 222, and it is practically tied with Michigan and Ohio for top ranking in number of magnesium foundries.

Pennsylvania still is the nation's leading foundry state, although its margin over second-place Ohio has been cut slightly. Ranking of the remaining eight leading states is: New York, California and Illinois (tied), Michigan, Indiana, Massachusetts, Wisconsin and New Jersey. This group accounts for 3425 foundries, or 68 per cent of the country's total, practically the same percentage as in 1943. Next to California, New Jersey and Wisconsin showed the largest percentage increases of the leading states in total number of foundries compared with 1943, their gains being 8.7 and 8.1 per cent respectively.

Cities having the largest number of foundries rank as follows: Chicago 170, Los Angeles 151, Cleveland 110, Detroit 102, New York 95, Milwaukee 72, Philadelphia 67, Boston 61, Cincinnati 56, Toronto 53, St. Louis 51, Buffalo 45. Pittsburgh proper has 35 foundries, although its immediate suburbs include an additional 28 plants. San Francisco and Oakland combined have 55 foundries, while Minneapolis and St. Paul have 64.

CONSTRUCTION AND ENTERPRISE

OHIO

AKRON—George F. Eddy, 1969 South Main street, will build a machine shop addition 18 x 67 feet, to cost about $3000.

ALLIANCE, O.—American Steel Foundries, 410 North Michigan avenue, Chicago, and 1001 East Broadway, Alliance, will build a plant addition and install paint spraying system, to cost about $29,000.

CANTON, O.—Timken Roller Bearing Co. has WPB authorization for construction of one-story 91 x 200-foot general electric repair shop, to cost $131,100.

CLEVELAND—Oliver Corp., formerly Cleveland Tractor Co., East 193rd and Euclid avenue, has received WPB approval for a one-story 160 x 181-foot plant addition, to cost $709,300.

CLEVELAND—Bo-Sal Products Inc. has been incorporated with $50,000 capital to manufacture precision machine parts, by Joseph Bozotl, president, and Earl R. Salisbury, treasurer, and will be established at 3[illegible] Clark avenue.

CLEVELAND—Anchor Machine Products Co., 1646 Doan avenue, will build a one-story 187 x 204-foot plant addition.

CLEVELAND—Fisher Body Division of General Motors Corp., Edward J. Gleason, resident manager, East 140th and Coit road, will start work soon on a one-story 108 x 3[illegible]-foot die shop at 13821 Coit avenue, to cost about $90,000.

CLEVELAND—McGean Chemical Co., Ralph L. McGean, vice president and general manager, 1106 Republic building, will start work on construction of a second-story machine shop addition 50 x 50 feet, at 2910 Harvard avenue, to cost about $10,000.

CLEVELAND — Addressograph-Multigraph Corp., 1200 Babbit road, Euclid, O., will build a one-story plant addition 60 x [illegible] feet, and install scales, sprinkler system, conveyors, etc., at cost of about $256,592.

CLEVELAND—Green Ball Bearing Co., J. Dever, vice president, 1965 East 66th street, has leased 10,000 feet of additional floor space and will install $30,000 worth of machinery.

MANSFIELD, O.—Ohio Welding & Boiler Repair Co has been incorporated with $25,000 capital by William L. Kann Jr., and associates. Henkel & Gongwer, Farms Bank building, are agents.

NILES, O.—Lamp department General Electric Co., Cleveland, has WPB authorization for building 100 x 288 feet, at Niles, for manufacture of sealed beam lamps.

PETROLEUM, O.—General American Transportation Corp., East Chicago, Ind., has WPB authorization for building 70 x 3[illegible] feet and leanto 20 x 300 feet, for use as machine shop, at Petroleum, to cost about $247,360.

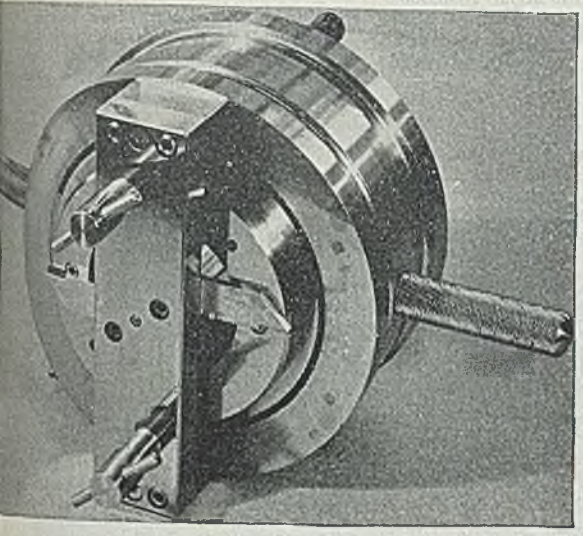
SALEM, O.—Salem Stamping & Mfg. Co., subsidiary of Schnell Tool & Die Co., 631 W. State street, has been incorporated to manufacture stamping and metal machine parts.

SANDUSKY, O.—Union Chain & Mfg. Co. will build a one-story addition of 10,000 square feet for pattern shop and lunch room, to cost about $25,000. Project awaits WPB material priorities permission.

WARREN, O.—Copperweld Steel Co. has WPB authorization for an addition 21 x 305 feet and to install equipment, to cost $57,39[illegible]

NEW YORK

BUFFALO—American Radiator & Standard Sanitary Corp., 1803 Elmwood avenue, will expand production of stampings in the postwar [illegible]



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PENNSYLVANIA

BETHLEHEM, PA—Bethlehem Steel Co., has WPB authorization for construction of an addition to its plant at Johnstown, Pa., and installation of boring and turning equipment, etc. Also authorized to construct building at Johnstown to house and service machine tools, to cost about $187,000.

CORRY, PA.—Raymond Mfg. Co. has received WPB approval for a three-story plant addition and replacement of elevator, transformers, switchboards, etc. to cost $301,770.

PITTSBURGH—Carnegie-Illinois Steel Corp. has WPB authorization for installation of additional facilities, heating furnace, conveyors, timing units, etc., at Dravosburg, Pa., for manufacture of tin plate products, costing $6,410,000

MICHIGAN

DETROIT—LaSalle Sales & Mfg. Co., 424 Book building, has been incorporated with 25,000 shares preferred and 100 shares common, no par value, to deal in tools, dies and jigs, by Carl L. Skidmore, 4250 Cornwall drive, Berkley.

DETROIT—Standard Fabricating Co. Inc. has been incorporated with $500,000 capital to deal in iron, steel and metal products, by David E. Roberts, 2230 Buhl building.

FLINT, MICH.—C. N. Monroe Mfg. Co., 23325 Dort Highway, has been incorporated with $200,000 capital to do a general manufacturing business, by Clarence N. Monroe, 1312 East Court street, Flint.

HIGHLAND PARK, MICH.—Airco Engineering & Mfg. Co., 14300 Oakland avenue, has been incorporated with 2500 shares no par value to do a general manufacturing and engineering business, by Benjamin Schaffer, 11845 LaSalle boulevard.

ILLINOIS

FAIRFIELD, ILL.—Chefford Master Mfg. Co., Benjamin Frankel, president, will build a manufacturing plant to cost $250,000.

MARYLAND

BALTIMORE—Flynn & Emerich Co., with machine shop at 301 North Holliday street and foundry at Grantley avenue and Western Maryland railroad, will build a one-story addition 40 x 121 feet to its foundry, for cleaning and shipping departments. A core room addition was completed early this year.

BALTIMORE—Baltimore Foundry & Machine Corp., Charles and Wells streets, is building a one-story machine shop addition 48 x 80 feet. Company is controlled by McConway & Torley Corp., Pittsburgh, which last fall bought the plant of the Kennedy Corp. and changed its name to the above. Equipment of plants of the Harrison Bolt & Nut Co., Harrison, N. J., and Aetna Forge & Rivet Co., Pittsburgh, will be installed here as soon as conditions permit.

BALTIMORE—Armor Tred Tire Corp., 1600 Patapsco avenue, has let contract for a one-story plant 58 x 158 feet at 1900 Patapsco avenue, to which it will remove its operations. Fred H. Hesse is president and E. A. Finke is general manager.

BALTIMORE—E. I. du Pont de Nemours & Co. plans an important plant expansion for postwar construction, at 2001 Benhill street, Curtis Bay, Md. Plans to produce titanium oxide and similar materials.

BALTIMORE—Seaboard Asphalt Products Inc. will rebuild its burned plant in Fourth avenue, East Brooklyn, Md.

DELAWARE

WILMINGTON, DEL.—Delaware Power & Light Co., Sixth and Market streets, has plans for a gas chamber to cost about $800,000. United Engineers & Constructors Inc., 1401 North Arch street, Philadelphia, are engineers.

MISSSOURI

ST LOUIS—Omar Tool Co., 2350 Palm street, has let contracts for a machine shop addition at 2547 Herbert street, one-story, 49 x 58½ feet, to cost about $7500. Cay G. Weinel, 7220 Dorset street, University City, St. Louis county, is architect.

ST. LOUIS—Ritepoint Co., 1116 South Grand boulevard, manufacturer of pens, etc., has let contract to Fred Daues & Sons, 3117 Pine street, for a one-story 150 x 190-foot plant and office building at 4350 South Kingshighway, to cost about $100,000.

ST. LOUIS — Barry-Wehmiller Machinery Co., 4660 West Florissant avenue is seeking priority on materials for a building expansion program to cost about $250,000. Paul W. Wehmiller is vice president.

ST. LOUIS—National Bearing Metals Division of American Brake Shoe Co., 2930 Manchester avenue, has bought a tract of 98,100 square feet, adjoining the present American Brake Shoe Co. plant.

MINNESOTA

LAKE CITY, MINN.—Gillette & Eaton Inc., W. C. Cheney, general manager, has let contract to Fred M. Olson for two one-story additions to foundry and machine shop, 50 x 107 and 24 x 50 feet, for manufacture of steel pistons and sleeve castings.

MINNEAPOLIS—H. V. Johnston Culvert Co. is remodeling building at 4724 North Mississippi drive for factory to manufacture corrugated metal culverts.

MINNEAPOLIS—G. S. W. Co., 1310 East Franklin avenue, manufacturer of farm equipment, has let contract for a one-story plant 50 x 100 feet, in St. Louis Park.

MINNEAPOLIS—Monomelt Co. Inc., manufacturer of type metal systems, has let contract for a one-story plant addition.

MINNEAPOLIS—Acme Foundry Co., 3161 Hiawatha avenue, has let contract for a one-story foundry addition.

MINNEAPOLIS—General Metalware Co., 1401 Central avenue, manufacturer of sheet metal products, has let contract for a one-story plant addition.

ROCHESTER, MINN.—Walters-Conley Co. plans construction of a one-story plant addition 77 x 84 feet.

ST. PAUL—Brown & Bigelow, war contractors and manufacturers of novelties, await WPB approval for plant conversion and expansion to cost about $5,200,000, including new equipment costing about $2 million, conversion of four buildings costing $1 million, enlargement of main plant costing $1 million and equipment conversion $200,000.

NORTH DAKOTA

BEACH, N. DAK.—Northern Pacific railroad, Northern Pacific building, St. Paul, will let contracts soon for a 500-ton coaling station, including drier house, hoisting machinery, etc., to cost about $120,000.

ELLENDALE, N. DAK.—Fred Hillius has started construction of a one-story machine shop 50 x 90 feet.

IOWA

CHEROKEE, IOWA—Joseph Schissel has bought site for plant to manufacture power lawn mowers.

MASON CITY, IOWA—International Minerals & Chemical Corp., 61 Broadway, New York, plans erection here of a fertilizer plant to cost over $100,000, with equipment.

MONTANA

LIVINGSTON, MONT.—Park Electric Co-operative Inc. will receive bids Aug. 4 for 99.8 miles of power line in Park, Gallatin and Sweet Grass counties. Toivo Karkainen, Helena, Mont., is engineer.

CALIFORNIA

HOLLYWOOD, CALIF.—Fonda Machine Co., 8460 Santa Monica boulevard, West Hollywood is building an addition 20 x 48 feet, to cost about $6500.

LOS ANGELES—California Cornice Steel & Supply Co., 1601 Naud street, has building permit for alterations and improvements to plant, to cost about $3000.

LOS ANGELES—Drake Steel Supply Co. has building permit for plant building at 2633 Century boulevard, Florence District, 70 x 280 feet, to cost about $42,000.

LOS ANGELES—Pacific Pipe Line Construction Co. is building a plant addition at 8722 Juniper street, to cost about $3100.

LOS ANGELES—Coast Sperline Tool Co., 8122 South Compton avenue, is building an addition 38 x 60 feet, to cost about $4[illegible].

SAN DIEGO, CALIF.—Plans are completed and bids taken for additional facilities at plant of Ryan Aeronautical Co at 2701 Harbor Drive, to cost about $40,000.

OREGON

INDEPENDENCE, OREG.—City has commissioned R. H. Corey, Portland, Oreg., engineer, to prepare plans for proposed sewage disposal plant and sewer extensions, estimated to cost about $50,000.

PENDLETON, OREG.—Walter R. Vanbus, 512 NW Eighth avenue, plans construction of a machine shop for precision work on motor vehicle repair.

WASHINGTON

LONGVIEW, WASH.—Anderson Blowpipe & Mfg. Co., Seattle, has contract to replace and improve dust collecting system at local plant of Weyerhaeuser Timber Co., approved by WPB.

SEATTLE—Rovan Mfg. Co. has been incorporated with $100,000 capital to deal in machinery, by H. C. Vanvalkenburg, 4[illegible] East Pine street, and associates.

SEATTLE—Georgia Foundry Co. has been incorporated with $10,000 capital by A. Seidelenbacher, 448 Ravenna boulevard, and associates.

SEATTLE—Todd-Pacific Shipbuilding Co. has let contract to General Construction Co. for installation of additional facilities at Plant 1, machine shop, totaling about $30,000, including monitored bridge craneway addition.

SEATTLE—Seattle Gas Co. plans installation of six 15,000-gallon steel storage tanks at 2001 Northlake avenue.

DPC Authorizes Plant Expansion, Equipment

Defense Plant Corp. has authorized purchases (figures are approximate) for the following expansions and equipment:

Continental Transportation Lines Inc., Pittsburgh, $85,000 to provide transportation facilities, at request of Office of Defense Transportation.

Harris Motor Lines Inc., Charlotte, N. C., $55,000, to furnish motor transport equipment, at request of Office of Defense Transportation.

Pacific Intermountain Express, Salt Lake City, Utah, $300,000 increase in commitment, making overall commitment $700,000, at request of Office of Defense Transportation.

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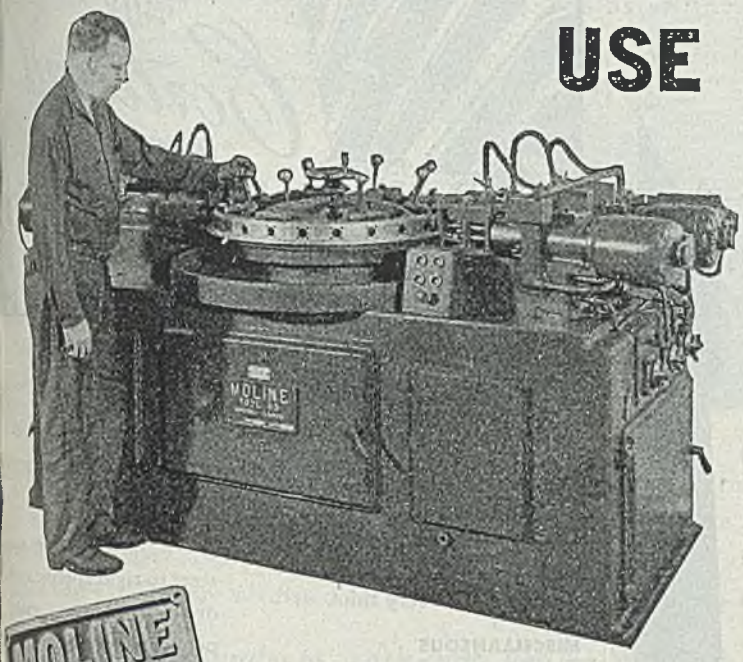

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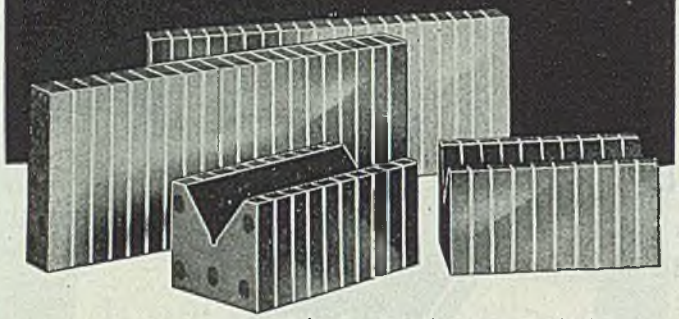

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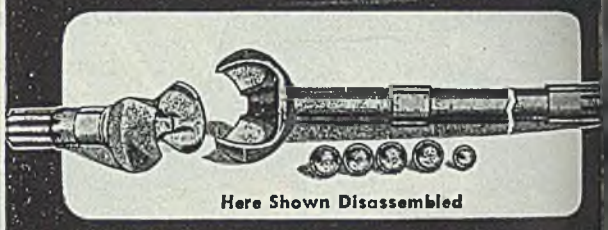

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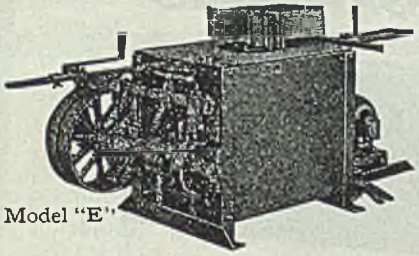

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