STEEL
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NEWS

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MARKETS

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STEEL
June 19, 1944

What Industrialists Want

On this page in the April 17 issue we commented on the fact that most persons who were expressing opinions as to what kind of an economy this nation should have after the war were speaking, not for themselves, but for groups or classes which they assume to represent. For instance, Eric Johnston speaks for business, William Green and Philip Murray for organized labor, farm spokesmen for farmers, etc.

Would it not be refreshing, we asked, to know what the individual wants? Would it not be more enlightening to know what individual industrialists want than to know what their spokesmen think they want? Whereupon we invited readers of this page to write us frankly as to their ideas of what would be an ideal environment in which to conduct business during the postwar period.

Unquestionably the outstanding conclusion to be drawn from the replies is that the wants of individual industrialists, in so far as the postwar economy of this nation is concerned, are amazingly few and simple. Although the authors discussed markets, prices, wages, labor relations, taxes, finance and other factors of national economy, they did not ask for any specific guarantees in connection with any of these factors.

Unlike organized labor, the individual industrialist does not demand security. Unlike the farm bloc, he does not ask for price parity. Unlike the majority politicians, who plead for four freedoms for the people, the individual industrialist does not demand any specific freedoms.

His sole request is simple. Under a good democratic form of government it could be granted easily—in fact, it would be vouchsafed automatically. All he wants is a set of laws, rules or regulations affecting business which, once established are not changed by personal or bureaucratic whim or impulse, but are modified only when substantially altered circumstances warrant a change.

One writer puts it this way: "What I want is a field where the rules are written for all to see and before the game begins—where the rules are not written by or for the ones who yell the loudest, nor by the leading players, nor by the contributing sponsors, nor by the multitudes in the stands. I want to play by rules written by properly elected representatives of all the groups concerned and with a reasonably honest effort to integrate the conflicting interests of all."

All industry wants is a fair set of rules and an honest referee.

BETWEEN TWO FIRES: It is still too early to appraise the real effect of the European invasion upon activities at home. We know, of course, that with a few notable exceptions, striking employes went back to work when the news of invasion was received. In general, the American public greeted the news with relief that the period of suspense had ended, with sober anxiety as to what the cost in lives may be and with prayerful hope that this attack upon the mainland will bring victory before the year-end.

These initial effects upon national morale are encouraging, but it remains to be seen how enduring they will be. Our national political conventions are in the offing. Our internal economy is shaky with bureaucratic weaknesses. Some members of the government administration persist in keeping alive class feuds which otherwise might have died down.

(OVER)

These and other factors—chiefly political in origin—militate against the kind of national unity we should have at a time like this. We are being driven to the necessity of fighting for the preservation of our liberties at home at a time when we would like to be concentrating upon the progress of our fighting men abroad. We are between two fires. —p. 51

* * *

A TOUGH ASSIGNMENT: A new committee, called the National Foundry and Forge Shop Committee, has been created "to serve as a clearing house to deal with obstacles standing in the way of recruiting badly needed manpower for the foundry and forge shop industries and to undertake necessary measures to remove all production obstacles." The committee, composed of representatives of five federal agencies concerned with critical manpower problems, has an impressive personnel, but no foundrymen.

While wishing the new committee every success in its badly needed activities, we doubt whether it can do anything that couldn't have been done easier and more effectively by others months ago if the manpower problem had been tackled realistically in the beginning. The manpower situation now is so cluttered up with conflicting authorities, red tape, chiseling meddlers claiming license under all sorts of social and economic subterfuges, and a top-heavy structure of unnecessary bureaus that this committee—good as it is—will be powerless to do much.

A better approach would have been to oust the meddlers in the dozen or more bureaus who are responsible for the trouble. —p. 62

* * *

COSTS CUT IN HALF: A good illustration of the cumulative effect of experience, when coupled with volume production, is furnished by figures compiled by the Aircraft War Production Council, Inc. of Los Angeles.

The number of man-hours required to build a typical heavy bomber was reduced from 37,200 in January, 1943, to 16,400 a year later. Dollar cost of construction also is declining sharply. In the case of one light bomber, costs were reduced from $11 per pound of airframe weight in January, 1941, to $5.10 per pound in January, 1944.

Relatively low costs resulting from mass production methods are a key factor in this nation's industrial progress. It will be interesting to see how much the experience gained in volume production during the war will affect costs after mass production of civilian goods is resumed. —p. 70

BACK YOUR FOREMEN: In order to improve the status of foremen, the Automotive Council for War Production has issued a seven-point recommendation to its 550 company members. It urges members to (1) define clearly who is a foreman, (2) bring foremen's earnings into proper relationship with those of workers they supervise, (3) acquaint foremen with company policy, (4) protect foremen against undermining of their authority through union activity, (5) make sure labor-management committee activities do not impair foreman's status, (6) train new foremen properly and (7) develop personal leadership in lieu of dependence upon authority or rank.

These are constructive suggestions. Unfortunately in the hectic expansion of industry to meet the challenge of war, management in some companies did not appreciate thoroughly the additional strains placed upon foremen, nor did it take into account the complications arising from union organization and management-labor committee activities.

Some employers are on the spot because they neglected their foremen. The seven-point program is a good corrective. —p. 67

* * *

EXTENDS THE MARKET: Under the emergency of war, centrifugal steel casting has been given an impetus in a few short years which under normal conditions might have required a decade or more. This impetus has affected all three methods of centrifugal casting—true centrifugal casting, semi-centrifugal casting and centrifuging.

The basic difference between static and centrifugal casting lies in the pressure under which the metal is cast in the mold. In static casting the pressure is atmospheric plus that of gravity, depending upon the height of the gates and risers. In centrifugal casting, higher pressures resulting from centrifugal force are available.

No informed person would be rash enough to say that advances in centrifugal casting during the war will revolutionize postwar steel casting practice. However, it is safe to say that wartime experience with centrifugal technic has definitely carried steel castings into applications and markets which might not have been served satisfactorily by castings made in static molds. —p. 84

E. L. Shaner

EDITOR-IN-CHIEF

Happiness Ahead!

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RYERSON

Anti-invasion defenses erected by the Nazis along the coast of France took a heavy toll of Allied landing craft and equipment. Here are pictured, at low tide, some of the barriers designed to rip the bottoms out of landing vessels. At high tide these are covered by water. NEA photo

New War Production Phase Emerges

Launching of European invasion marks the beginning of a war replacement demand which will mount in volume as the battle rises in intensity. Little prospect for industrial reconversion so long as German resistance continues

NEW PHASE in war production is seen emerging in step with progress of the invasion of western Europe. It is the replacement phase.

Just as launching of the invasion marked the peak of production of capital goods for the major effort of the war, so did it mark the beginning of a war replacement demand which will mount in volume as the battle rises in intensity taking toll of equipment and supplies on a scale unheard of to date.

In the initial phases of the attack on the Normandy coast, American, British and Canadian forces did not win the beachheads without considerable loss of men and equipment. Landing craft were not run onto the beaches without loss. For example, the Germans had buried traps just off shore using railroad rails which tore holes in the landing vessels' bottoms, making them useless for further service. This equipment will have to be replaced as will the trucks, guns, tanks and other equipment lost before and after the men gained the beaches.

Design Changes Forthcoming

From this landing experience possibly may come changes in design and new developments which well may serve to intensify the war production job in many categories of equipment; and as the Allied forces move inland and encounter new problems of attack and defense it is quite possible broad changes in equipment design and production of entirely new instruments of warfare will be called for.

What this means to industry is clear. That there is little prospect for any letdown in war production so long as German resistance continues is certain. Changes in equipment design and other developments may result in substantial cutbacks in war orders which may bring about temporary plant shutdowns and labor layoffs, but at this stage of the game there is little prospect that the pressure for war goods will be relieved in any degree.

While material shortages have been pretty well licked, tight situations continue in a number of directions. Chief shortages are now understood to be in forgings and castings, while ball bearings present a particularly acute problem. Lumber also is short, and pressure is unabated for electronics and electrical equipment.

In steel, operations have been tending slightly downward since early in May. This reflects the continued drain of manpower to the military services coupled with operating difficulties incident to hot weather. Expectations are the ingot rate will fall further though it is not believed the drop will be as severe as had been predicted in some quarters recently.

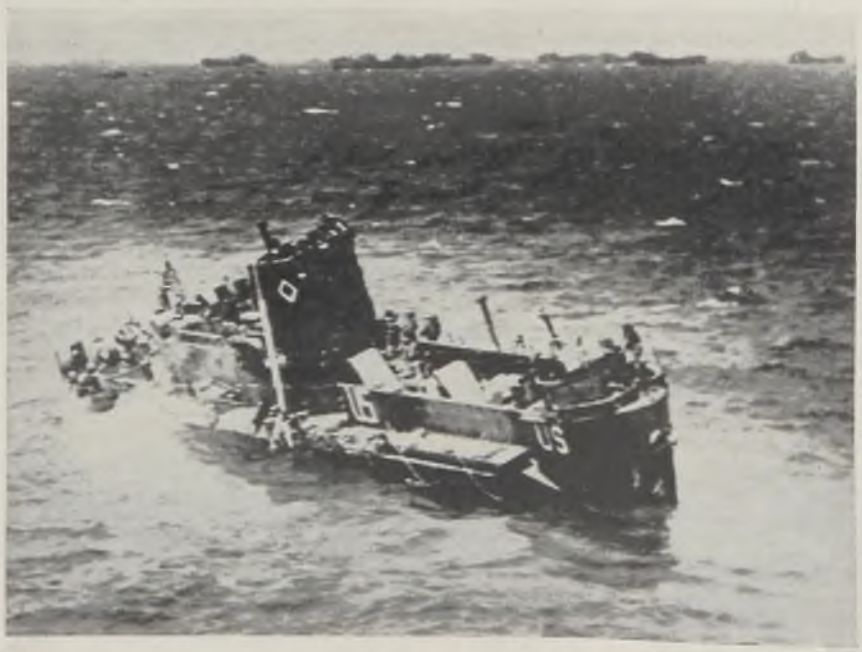
Steel plants are continuing to set new production records, despite the acute labor shortage which has maintenance

Tanks, guns, and other armored vehicles pour into France on the Normandy beaches in the face of Nazi fire from shore batteries. Those destroyed will have to be replaced, precluding any early letdown by American plants building such equipment until the success of the invasion becomes certain. Signal Corps photo from NEA

Wrecked tanks, landing craft and vehicles on a French beach tell the story of a hard-won battle—and of the need for replacements from American war factories. Radio telephoto from NEA

gangs away down and is forcing much overtime work with attendant lowered efficiency. The mills are trying to keep down the crippling effects of the labor shortage as much as possible. It was estimated in Youngstown, O., for instance, the mills could use 2000 to 3000 workers at once to avoid any breakdown this summer in output, and could absorb 5000 or 6000 additional male workers without too much trouble. Older men as well as women are continuing to go into the steel plants, as well as school students for temporary summer work. Some of the older men were those turned down as "too old" for steel mill work 10, 15 or 20 years ago. Repairs and maintenance are a particular headache for the mills due partly to reduced gangs, need for speeding in repairs to prevent any breakdown in output, reduced supplies available, and aging equipment.

Currently the steelmakers are reported in receipt of large new orders for shell steel, plates, sheets and hot-rolled bars. Tightest situation in supply appears to be in the flat-rolled products. Order cancellations are understood to be at the lowest point so far this year. Everything considered, it looks as though the steel mills will be pressed right into the closing months of the year to meet the war demands now on their books.



A few minutes after this photo was taken, the LCI (landing craft, infantry) capsized to port and sank to the bottom of the English Channel, victim of Nazi firepower. NEA photo

As a general thing, the war production program has not yet passed peak despite the numerous order cancellations which have been encountered by industry in recent months. Over the remainder of the year the war program calls for an output of some $6 billion monthly and cancellations and cutbacks in existing programs may not mean any reduction in the overall job, these largely stemming from changes necessitated by battle demands. As a matter of fact, it does not appear there will be any lessening in war requirements until the German phase of the struggle is ended and even then the tapering off, if any, will be in step with the urgency of demands from the Pacific theater, the extent of which largely will remain unknown until such time as the all-out drive against Tokyo begins. So far the war in the Pacific has resulted in bringing out many new items of equipment especially designed for that theater, these developments requiring considerable retooling and conversion of production facilities.

Over and above the materials and equipment supply problems, ranks the labor situation. With news of the invasion came a noticeable drop in strikes and work stoppages but it remains to be seen whether the invasion will prove a sufficient "shot in the arm" to keep future work disruptions at a minimum.

Meanwhile, the overall shortage of labor in war industry continues, though considerable controversy as to the adequacy or inadequacy of manpower supply exists. It is indicated in governmental quarters, however, that there will be no easing off in the pressure on workers to get jobs in war industry. If anything, manpower needs should tighten over the remainder of the year with at least 1,500,000 additional men being drained from the potential labor force into the Army and Navy. This means that there is little prospect of industry re-

cruiting workers in the younger age brackets. One prospect for relief for employers lies in release of medical discharges from the armed forces. This reservoir will swell steadily over coming months.

As a general thing it is felt in official quarters that the nation now has adequate facilities and manpower to do the war production job. The chief difficulty to date, it is claimed, has been the government's inability to gear manpower sufficiently close with facilities to attain fullest production efficiency. Production for replacements, will demand closer gearing than heretofore, since replacements cannot be delayed under any circumstances if attained objectives of the military are to be held and advanced. Some quick adjustments in the labor force are certain to be necessary to meet the changing needs of the war and the government is pointing its program in the direction of a fluid labor force which will permit the shifting of available workers from community to community as the need for men arises.

To meet the challenge now presented, the War Manpower Commission on July 1 effects a system of controls which will aim to channel all available male labor into war plants. The new program will be carried out by the local offices of the WMC, being tailored by these offices to fit the needs of the individual communities. There are seven steps involved in the new program. The first an accurate determination of labor demand in the community; second, relative degree of production urgency is to be determined; third, individual needs of employers in regard to the number of workers must be established and each employer will be given an employment ceiling; fourth, a system of channeling workers to proper employers will be effected to be known as the priority referral system. Under it employment will be only through the United States Employment Service, which will refer workers to the plants holding top priority level. Workers will not be able to seek employment at anything but top ranking priority plants until such plants have reached employment ceilings, after which the next plants in line have a call on the workers' services. The fifth step includes a study of individual employers to determine why they are not able to maintain working forces up to ceiling levels. The sixth and seventh steps are remedial measures, No. 6 seeking to bring production into balance with manpower, either by cutting down on new orders or by outside recruiting of workers, and No. 7, being decentralization of operations upon decision of the local committees.

In the replacement production phase it is clear industry will be confronted with an even more difficult problem than was the case when the pressure was on for capital goods. In a sense a confused situation impends, new orders for goods clashing with cancellations and cutbacks, with no lessening in overall needs. Contract termination and cancellation promise to be particularly disturbing. Since the outbreak of the war some 22,000 army contracts involving $14 billion have been canceled or terminated. Of these, however, less than a half billion dollars represented actual expenditures. As the war goes into its closing phases it is likely cutbacks will become increasingly numerous and industry is advised to prepare at once to handle these terminations quickly if it is to come out of the struggle with a whole skin. War contractors are being asked to appoint termination officers who can act for the company.

Industry, as a general thing, feels that requirements of the Pacific war will be much less pressing than those of the European. Consequently, it is believed substantial quantities of steel and other raw materials will become available for civilian industry once the Germans are defeated. However, the fact no one can tell how long the German phase will continue (some experts predict this fall) complicates thinking on the subject of reconversion. Partial reconversion after the fall of Germany, in the opinion of some government authorities, will present the most difficult problem. Extent of war and civilian demands at that time cannot be measured now. The economy, however, must be prepared to swing over as quickly as possible to civilian production, so that the readjustment to peace can be attained with minimum disturbance. As a general thing relatively little reconversion of industry can be looked for during the period of total war. When Germany goes down the process of turning back will get under way in earnest, culminating in the major task of adjusting the economy back to peace when the Japanese call it quits.

Present, Past and Pending

■ LARGE TANK CAR PROGRAM ANNOUNCED

CHICAGO—Program for construction of 400 new high-pressure type tank cars for transportation of liquified petroleum gases by rail and for conversion of 600 standard type 10,000-gallon tank cars to low pressure type equipment was announced here last week by ODT Director Johnson.

■ STOVE PRODUCTION PROGRAM BROADENED BY WPB

WASHINGTON—Large companies now will be permitted to resume production of stoves, having been concentrated in small plants for the past two years, if it does not interfere with war work.

■ REPUBLIC PLANS TO PUT ON NEW PLANT SOON

CHICAGO—Republic Steel Corp. plans to place its new DPC plant in full operation within a few days. Company is testing the 36 and 32-inch rolling mills. Coke ovens and by-product plant await only sufficient workers. Ovens have been under heat for some time. The blast furnace will go in when the coke bank has been built up.

■ CONSIDER COLD-ROLLED SHEET OUTPUT BOOST

WASHINGTON—Possible increase in production of cold-rolled sheets without a corresponding decrease in output of hot-rolled was discussed by the Sheet and Strip Industry Advisory Committee, WPB, last week.

■ NAVY CANCELS BUDD ORDER FOR 175 STEEL CARGO PLANES

PHILADELPHIA—The Navy has canceled an order for 175 stainless steel cargo planes known as the Conestoga, on schedule at the Bustleton, Pa., plant of E. G. Budd Mfg. Co., Philadelphia. This follows a recent cancellation for 600 planes on order for the Army and leaves the company with a newly equipped plant and orders for only 25 planes.

■ MAY PLATE SHIPMENTS DROP BELOW 1943 RATE

WASHINGTON—Plate shipments for May totaled 1,132,000 tons compared with 1,141,197 tons for the like 1943 month.

■ OLIVER IRON & STEEL MODERNIZING GARLAND PLANT

PITTSBURGH—Oliver Iron & Steel Corp. is modernizing the Garland Mfg. Co. plant in West Pittsburgh, Pa., to fill a big Army shell contract. More than $1,000,000 in government-financed machinery will be installed.

■ AUTO FIRMS DELIVER $18.5 BILLION WORTH OF WAR GOODS

DETROIT—Deliveries of war material by the automotive industry during the period from September, 1939, to June 1, 1944, totaled $18.5 billion, according to Automotive Council for War Production.

■ ORDNANCE NEEDS TO TAX CAP SCREW CAPACITY

WASHINGTON—Increased ordnance requirements will tax the capacity of the cap screw industry, an advisory committee meeting advised WPB last week. Present backlogs average six months.

Industry Concludes Presentation Of General Case Before WLB Panel

Counter demands against union to be made by producers June 20, after which both union and industry will have opportunity for rebuttal. Full board will hear final summations after panel makes recommendations on facts

PRESENTATION of the general case of the basic iron and steel producing companies in answer to the 14 demands of the United Steelworkers of America-CIO has been concluded before a panel of the War Labor Board in Washington. Hearings were recessed until June 20 when the Steel Case Research Committee will present counter demands of the producers against the union. Following this phase of the case will come at an undisclosed date the presentation of the union's rebuttal, to be followed by counter rebuttal by the companies, and introduction of such evidence as the individual companies may wish to offer.

Upon conclusion of the hearings, the panel will present its facts to the War Labor Board, before which the representatives of the companies and the union will summarize their cases before the board reaches any conclusion.

Case Six Months Old

The steel wage case, now more than six months old, was started on Dec. 1 when representatives of the steelworkers' union gathered in Pittsburgh and decided to ask for termination of their contracts with some 500 steel producers and more or less related companies. On Dec. 4, notice was served on the 500 companies and within a few days the union requested the War Labor Board to enter an interim agreement providing that any contractual revisions be made retroactive. To this proposal the steel companies objected. Work stoppages followed and the President of the United States wired the unions promising that any wage increases or other concessions granted would be made retroactive.

Feeble efforts to reach an agreement on the union's demands were unavailing and the case went to the War Labor Board, which was committed to the policy of making adjustments retroactive.

The union originally presented 24 demands to the companies. When the case reached the board, however, the union proposed that only 14 of the demands be considered, and the remainder left to collective bargaining.

Briefly, the 14 issues follow:

1. General wage adjustment of 17 cents an hour for all employes.

2. Rehabilitation fund for steelworkers in the armed services, $20 to be contributed by each steelworker in the industry from wage increases directed by the War Labor Board, and another $20 for each employe to be contributed by the company.

3. Guaranteed minimum weekly wage to be computed on employes straight time average hourly rate for the year preceding the contract, plus the new wage adjustments, multiplied by 40.

4. Vacations with pay, one to two weeks depending on length of service.

5. Severance pay upon permanent closure of plants to be based on four weeks' pay for more than one and less than three years' service; eight weeks' pay for more than three years' service.

6. Sick leave with pay, based on length of service.

7. Shift differentials amounting to 5 cents for the afternoon shift and 10 cents for night shift.

8. Six holidays specified, with provision that employes working on those days receive time and one half without reference to the national emergency.

9. Elimination of geographical wage differentials.

10. Any wage inequality to be made the subject of a grievance, barring settlement of which may be submitted to the War Labor Board.

11. Classification of mechanical occupations, with fixed rates established for each classification up to three.

12. Provision for the deduction of union dues.

13. Common labor rate for learners.

14. Institution and maintenance by the company of a group insurance plan to provide life and accident insurance in a face amount equal to 75 per cent of the employes' average annual earnings, with a minimum coverage of $1500, together with disability, hospital and surgical benefits.

Representatives of the major steel producers maintained throughout the proceedings that since the steelworkers' wage structure was the basis for the Little Steel formula and any upward revision of that formula would be in violation of the national stabilization program, that the War Labor Board could not properly consider the demands of the union.

Principal challenge to the authority of the panel and the board was made in reference to the demand for the 17-cent hourly wage increase. The other 13 demands were held to be for more or less hidden wage increases.

Spearheading the industry's attack on the union's demands for direct and hidden increases was Benjamin F. Fairless, president, United States Steel Corp., who told the panel that if these demands were granted the public would have to foot the bill for increased steel prices.

"While the cost of the separate demands of the union is difficult to compute accurately, due the variable factors, it is estimated that allowance of all such demands would impose increased annual cost on 31 companies of at least $1,500,000,000," Mr. Fairless said.

Mr. Fairless was followed by Lauson Stone, president and chairman of Follansbee Steel Corp., who explained how it was impossible for his company and other small, semi or nonintegrated producers to meet the union's demands.

Presents Strong Argument

In answer to the union demand for a guaranteed wage, a strong argument was presented by Kemp G. Fuller, manager of market research for U. S. Steel, who told the panel that consumer demands for goods are controlled by a wide variety of factors that make it impossible to anticipate demands for steel products and to manufacture such products without firm orders and specifications.

Mr. Fuller presented seven graphic charts showing the fluctuation in demand for steel products since 1934.

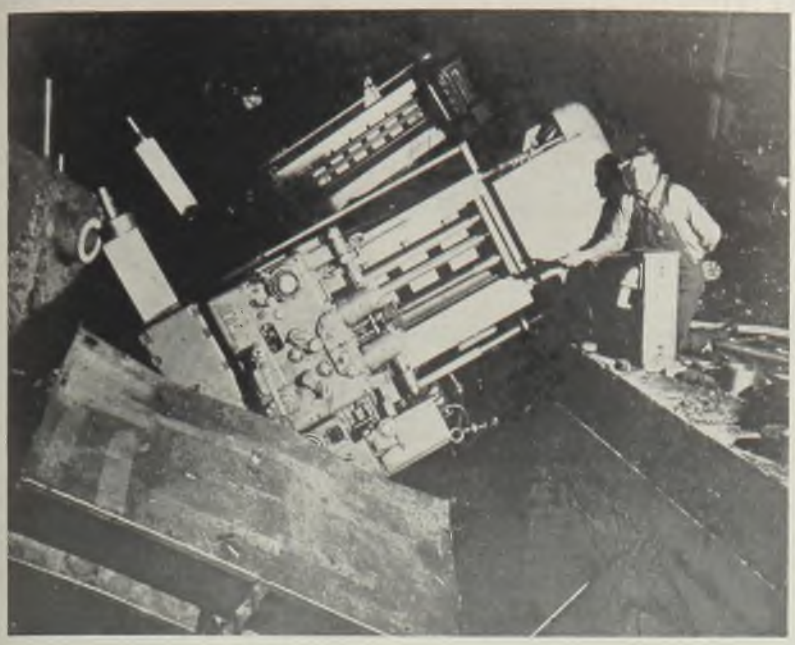
Among the claims made by the union and attacked vigorously by the producers was that the carry-back and carry-forward provisions of the federal revenue act would compensate the companies for any wage increases granted. "The facts," said Roswell Magill, former Under Secretary of the Treasury, "are exactly contrary to the union's assertions, inferences and insinuations."

Fourteen steel castings companies, which originally were scheduled to be heard by the panel last week, said they were not yet ready to present their case. Within a few weeks, 42 iron ore producing interests are scheduled to appear before a panel hearing.

The 362 manufacturing companies who are not basic steel producers, makers of castings or suppliers of iron ore still are uncertain as to what disposition is to be made of their case. These include toy manufacturers, bedding manufacturers, food companies, paving brick producers, cement companies and others whose common denominators appear only to be their contracts with the steelworkers and their confusion as to why they are involved in the steel wage case.

AUTO WAGES UP 33%

Average weekly wages paid to automotive industry employes have increased 33 per cent since the war started, while hours worked have increased 12 per cent, according to the Automotive Council for War Production. Hourly rated employes are working an average of 47.6 hours a week, as against 42.8 hours in the peak month of 1941. Average weekly wages are $61, an average hourly rate of $1.28, compared with $46 three years ago.



NAVY MACHINE DAMAGED: This milling machine was badly wrecked when an explosion, apparently caused by accumulated gases, tore a huge hole in the reinforced concrete flooring of the machine shop at the Mare Island Navy yard, Vallejo, Calif. Many other heavy tools, anchored to the floor, were torn loose and damaged. NEA photo

Steel Price Adjustments Expected After Decision in Wage Case

STEEL prices are almost certain to increase later this year, and the increases will affect virtually all carbon steel products, probably many alloy items.

Action is being held up to await the outcome of the steel wage case The disposition of union demands for higher wages will have an effect on any and all general increases. OPA studies on the carbon steel situation were completed before the steel wage case, and increases ranging up to several dollars per ton on some items were scheduled for announcement just before the opening of the hearings. The alloy study was not completed, and its completion will have to await the WLB decision.

If any wage increases are granted, prices above those initially decided on undoubtedly will be established. The carbon steel study made by OPA was based on present wage scales, and the increases which were approved following perusal of that study, but not issued, will be increased to take in any higher costs which will result if further wage boosts are granted.

Many observers believe final decision in the wage case will come in September or early in October, which means that after allowing time for reviewing costs in case any wage increases are granted OPA will announce new steel price schedules late in fourth quarter.

Meanwhile, special cases continue to come up for review and individual price increases will continue to be granted on their merits. Most recent of such cases was that of Follansbee Steel Corp., which was given a special price on alloy steel forging billets in connection with the shell program of $65 per ton at Toronto, O.

In the main, these individual increases are being granted only in products which would not necessarily be adequately covered by the proposed blanket increases. This is not an ironclad rule, however, and OPA emphasizes the fact that any petition for price relief with a sound basis will be granted. Since the establishment of ceilings in April, 1941, some 300-odd petitions have been received and processed.

Speedy Reconversion Is Urged by T. M. Girdler

The "honorable discharge" of industry from wartime regulations as soon as the war ends was urged by T. M. Girdler, chairman, Republic Steel Corp., and Consolidated Vultee Aircraft Corp., in a talk on "Some Postwar Problems in Industry", delivered June 16 before the Cleveland Chamber of Commerce.

Mr. Girdler pointed out that industry's first postwar problem is a speedy, orderly conversion from wartime to peacetime production. The removal of superfluous wartime restrictions on industry is the No. 2 peacetime requirement.

Reports from companies representing four-fifths of employment in the steel industry show that last year they turned over to the union $3,709,975 in dues checked off from the wages of 301,417 workers, said Mr. Girdler. When any portion of this money is devoted to political purposes, the effect is to force the wage-earner to support candidates chosen by the union leaders and not by the wage-earner himself.

He quoted Dr. John Steelman, director of the Labor Department's Conciliation Service, as reporting that his service handled 3482 labor disputes in the fiscal year 1940-41; 5807 in 1941-42; 11,158 in 1942-43, and 22,000 disputes in the first 11 months of the current fiscal year.

Mr. Girdler said "the growth of labor organizations in itself is not disturbing. Collective bargaining is necessary in modern industry. It is here to stay in one form or another. No enlightened employer would want to see it scrapped. But collective bargaining by government edict at the point of the bayonet ceases to be collective bargaining. It ceases to be democracy."

In discussing industry war profits, Mr. Girdler said that in 1943 fifty leading manufacturers of war material had 150 per cent increase in business volume over 1942, but a 14 per cent drop in earnings.

Great Lakes Steel Corp. Boosts Iron Output in May

Great Lakes Steel Corp., Detroit, reports its blast furnace division established a new monthly production record of 105,046 tons of iron in May, increase of 2728 tons over March, 1944.

Production from the Great Lakes blast furnaces at Zug Island, River Rouge, Mich., has risen steadily in recent months. February production from the furnaces totaled 88,070 tons while April output was 99,246 tons.

Appley Resigns WMC Post; Weinberg Rejoins WPB

Lawrence A. Appley has resigned, effective July 1, as deputy chairman and executive director of the War Manpower Commission and will be succeeded by Charles M. Hay, general counsel of the commission since last August.

In another change in personnel of war agencies, Sidney J. Weinberg has been appointed a vice chairman of the War Production Board to work on special problems.

Changes in the personnel of the Consumers Durable Good Price Branch, Office of Price Administration, were also announced last week. Harvey O. Tenner has been appointed head of the furniture price unit, succeeding E. J. Wormley, resigned.

Summer Steel Operations Outlook Somewhat Improved at Chicago

Start of European invasion seen as helpful influence in overcoming shortage of labor and adverse effects of hot weather. District ingot rate has not fallen below 100 per cent mark since start of the year

CHICAGO

FEARS for a serious slump in steelmaking operations in this area during the summer because of hot weather influences have been somewhat eased, start of the European invasion being seen as having a morale building effect upon both labor and management which will somehow keep mill activity close to capacity level.

At no time in 1944 have ingot making operations fallen below 100 per cent, currently being at that level. This, however, is off 1½ points from a week ago.

Speculation has been that output was bound to suffer some in the next few months, possibly even to the extent of 10 to 15 per cent, but hope is that the decline can be held to a much smaller margin. Manpower shortage, of course, is the variable which makes it difficult for management to provide an offset to decreased efficiency due to summer heat.

At the moment, there is some prospect the gradual laying off of some 1700 workers at the cast armor plant of American Steel Foundries at East Chicago, Ind., recently ordered closed, may react to the benefit of mills in that immediate vicinity.

Not a worry for the moment, but one for perhaps later this year, is a possible coal shortage. WPB is preventing some mills with their own mines from making outside purchases to build up stocks.

Spurred by the invasion news, organized labor—both AFL and CIO—made new pledges against striking.

Two work stoppages were known to have been brought to an end through the sobering effect of the invasion. One of these was an unauthorized strike on D-Day of 93 men—all but one worker—in the mechanical department of the steel warehouse of A. M. Castle & Co., Chicago, over negotiation of a new wage agreement.

In the second instance, 24 employes in the shipping department of the hot strip mill of Youngstown Sheet & Tube Co., Indiana Harbor, Ind., who were absent from their work since June 3, returned to their posts after news of the invasion.

WPB Survey Shows Labor's Morale Up with Invasion

Nationwide survey of industry since the invasion reveals a new "invasion spirit on the home front" of direct and constructive benefit to production, Donald M. Nelson, chairman, War Production Board, reported last week.

Nelson listed ten constructive production benefits including improved labor relations and a drop in absenteeism. According to the WPB survey, the war production front has been closely meshed with the battle front. The survey includes evidence from approximately 190 labor-management production committees in plants with more than 850,000 workers, embracing every major industry. It is declared representative of the nation's 4650 labor-management committees covering 7,300,000 workers, and was conducted chiefly through interviews by regional and district managers of the war production drive, WPB stated.

Ingot Output Up Million Tons in Five Months

Production of steel ingots and steel for castings in May totaled 7,680,472 net tons, 130,781 tons more than the 7,549,691 tons made in May, 1943. The May output compares with 7,568,530 tons produced in April and was second highest for this year, exceeded only by the all-time record of 7,820,226 tons produced in March. Total production to June 1, was 37,844,642 tons, almost 1,000,000 tons more than output in the comparable period in 1943. Operations averaged 96.8 per cent of capacity in May, compared with 98.5 per cent in April. Calculated weekly production in May was 1,733,741 tons, compared with 1,764,226 tons in April and 1,704,219 tons average weekly output in May, 1943.

Steel Corp. Shipments at New Five-Month High

Shipments of finished steel products by the United States Steel Corp. in May were 1,776,934 net tons, an increase of 20,137 tons over April shipments of 1,756,797 tons and 70,391 tons over the 1,706,543 tons in May, 1943. For five months ended May 31 shipments totaled 8,895,085 tons, compared with 8,487,353 tons in the first five months of 1943. This is the highest first five months on record, exceeding the previous high of 8,729,439 tons in that period of 1942.

(Inter-company shipments not included)

Net Tons

	1944	1943	1942	1941
Jan.	1,730,787	1,658,992	1,738,893	1,682,454
Feb.	1,755,772	1,691,592	1,616,587	1,548,451
Mar.	1,874,795	1,772,397	1,780,938	1,720,366
Apr.	1,756,797	1,630,828	1,758,894	1,687,674
May	1,776,934	1,706,543	1,834,127	1,745,295
5 mo.	8,895,085	8,487,353	8,729,439	8,384,240
June		1,552,663	1,774,068	1,668,637
July		1,660,762	1,765,749	1,666,667
Aug.		1,704,289	1,788,650	1,753,665
Sept.		1,664,577	1,703,570	1,664,227
Oct.		1,794,968	1,787,501	1,851,279
Nov.		1,660,594	1,665,545	1,624,186
Dec.		1,719,624	1,849,635	1,846,036
Total		20,244,830	21,064,157	20,458,937
Adjustment			*449,020	*42,333
Total			20,615,137	20,416,604

*Decrease.

STEEL INGOT PRODUCTION STATISTICS

	Estimated Production—All Companies								Calculated weekly production, all companies Net tons	Number of weeks in mo.
	—Open Hearth—		—Bessemer—		—Electric—		—Total—			
	Net tons	Per cent of capac.	Net tons	Per cent of capac.	Net tons	Per cent of capac.	Net tons	Per cent of capac.		
Based on reports by companies which in 1943 made 98.3% of the open hearth, 100% of the bessemer and 87.9% of the electric ingot and steel for castings production										
1944										
Jan.	6,769,438	97.2	439,551	85.4	377,751	83.3	7,586,740	95.6	1,712,582	4.43
Feb.	6,410,338	98.5	409,781	85.2	368,555	87.0	7,188,674	96.9	1,736,395	4.14
March	6,976,450	100.1	455,368	88.5	388,408	85.7	7,820,226	98.5	1,765,288	4.43
1st qtr.	20,156,226	98.6	1,304,700	86.4	1,134,714	85.3	22,595,640	97.0	1,738,126	13.00
April	6,768,895	100.3	437,517	87.8	362,118	82.5	7,568,530	98.5	1,764,226	4.29
May	6,860,532	98.5	438,980	85.3	380,960	84.0	7,680,472	96.8	1,733,741	4.43
1943										
Jan.	6,576,788	97.8	478,161	85.9	369,573	95.5	7,424,522	96.8	1,675,964	4.43
Feb.	6,031,605	99.3	447,810	89.1	345,189	98.8	6,824,604	98.5	1,706,151	4.00
March	6,787,902	100.9	503,565	90.4	383,111	99.0	7,674,578	100.0	1,732,410	4.43
1st qtr.	19,396,295	99.3	1,429,536	88.4	1,097,873	97.7	21,923,704	98.4	1,704,798	12.86
April	6,510,824	99.9	482,478	89.5	380,401	101.5	7,373,703	99.3	1,718,812	4.29
May	6,669,703	99.1	482,424	86.6	397,564	102.7	7,549,691	98.4	1,704,219	4.43

The percentages of capacity operated in first six months of 1943 are calculated on weekly capacities of 1,518,621 net tons open hearth, 125,681 net tons bessemer and 87,360 net tons electric ingots and steel for castings, total 1,731,662 net tons; based on annual capacities as of January 1, 1943 as follows: Open hearth 79,180,880 net tons, bessemer 6,553,000 net tons, electric 4,554,980 net tons. Beginning July 1, 1943, the percentages of capacity operated are calculated on weekly capacities of 1,531,789 net tons open hearth, 116,494 net tons bessemer and 94,667 net tons electric ingots and steel for castings, total 1,742,950 net tons; based on annual capacities as follows: Open hearth 79,867,450 net tons, bessemer 6,074,000 net tons, electric 4,935,960 net tons. Data from American Iron and Steel Institute.

Percentages of capacity operated in 1944 are calculated on weekly capacities of 1,572,755 net tons open-hearth, 116,182 tons bessemer and 102,350 tons electric ingots and steel for castings, total 1,791,287 net tons; based on annual capacities as of Jan. 1, 1944, as follows: Open-hearth 82,223,610 net tons, bessemer 6,074,000 tons, electric 5,350,880 tons.

Cleveland Conference Hailed As One of Most Successful on Record

Broad technical program, covering all phases of the finishing art, holds interest of delegates from all parts of the country and Canada. New officers elected. Pittsburgh to be host to 1945 convention

NEW OFFICERS

President
M. R. Caldwell, W. B. Jarvis Co., Grand Rapids, Mich.
First Vice President
Walter Pinner, Houdaille-Hershey Corp., Detroit
Second Vice President
Frank Savage, C. G. Conn Ltd., Elkhart, Ind.
Third Vice President
R. J. O'Conners, Contract Plating Co., Bridgeport, Conn.

FROM the standpoint of attendance and the caliber of technical papers the thirty-second annual conference of the American Electroplaters' Society at Cleveland hotel, Cleveland, June 12-14, was one of the most successful ever held by the association. Electroplaters, electrochemists, shop foremen and others associated with the art of finishing came from all parts of the country and Canada to establish record attendance of 1252.

Next year the annual conference will be held in Pittsburgh. New officers elected for the ensuing year are presented in the accompanying box.

Speaking on "Porous Chromium Plating—Its Principles, Procedures, and Operating Practices," T. G. Coyle, United Chromium Inc., Waterbury, Conn., explained that the coating is produced mechanically by cutting, blasting, engraving, or other means, either on the plate or on the basis metal before plating. Combinations or modifications of mechanical and chemical methods may be employed, he stated. A chemical etching of the basis metal can be used instead of a mechanical grit-blasting or a masking of the plate to obtain a pattern by chemical or electrochemical etching.

The extent to which the etched or porous layer is cut away determines the degree of porosity which results.

Suitable preparation of the basis metal was cited by the speaker as a means of producing a porous chromium plated surface with a multiplicity of indentations and prominences. Treatment of the plate itself was another. In the first instance, the basis metal is roughened or pitted by grit-blasting; and the chromium plate applied over the surface. With or without honing or finishing, this gives a final surface that is indented, pitted or porous.

Necessity is apparent for having a practical means of retarding the white corrosion products which form on zinc, especially in a salt atmosphere, according to Dr. J. E. Starek, director of research, United Chromium Inc., Waterbury, Conn. "Anozinc" represents a development which was designed primarily to meet that need and to give industry a useful finish. He explained that anozinc is a type of conversion coating formed anodically by treating certain metals and particularly zinc plated articles in a modified chromate bath.

In speaking on "Anodizing Aluminum," A. R. Goodkin, All-Brite Chemical Co., Waterbury, Conn., emphasized that aluminum is anodized for the purpose of increasing its resistance to corrosion and abrasion, to provide a receptive medium for coloring, painting, dyeing, and to obtain an electrically-insulating surface.

One of the most widely used commercial processes for anodizing aluminum utilized chromic acid as the electrolyte. The simplicity and low operating costs account to a large degree for the extensive application of this method in the aircraft industry on parts containing less than 5 per cent copper.

Low acid concentrations give harder coatings while softer and more porous films are produced in the stronger solutions. In general, about 18 per cent acid by weight is the most desirable electrolyte when the oxide is to be dyed. To improve the resistance to corrosion and abrasion sulphuric acid coatings which are not to be dyed are sealed in boiling water for about 20 minutes or in a hot 5 per cent solution of sodium dichromate where a yellow color is not objectionable and where additional resistance is desired. Aluminum anodized in sulphuric acid solutions is hard, light in appearance, closely adherent and relatively thick.

Oxalic acid coatings have a grayish cast, give excellent protection, and are of the same order of thickness as those formed in chromic acid.

The speaker, in conclusion, announced that important research activity in anodizing is now being directed towards the introduction of comparable immersion process (no current) for oxidizing prior to coloring and dyeing, and in the manufacturing end, toward the more extensive use of aluminum clad steel for fabrication purposes.

HONORS LATE SECRETARY: The 100,000th General Motors diesel landing craft engine is dedicated to the late Secretary of Navy Frank Knox and accepted for the Navy by Rear Adm. H. G. Taylor in ceremonies at a GM Detroit plant. At left, W. T. Crowe, general manager, Detroit Diesel Engine Division. Right, C. F. Kettering, vice president of General Motors. The engines are used in LCI, LCT, LCM, LCVT landing craft, and in trucks, tanks, bulldozers, buses and tractors

Baruch Urges Early Action On Contracts

Top postwar planner winds up job with plea for speed in setting up effective machinery and policies to ease transition when Germany collapses

CONGRESS and administrative agencies last week were prodded to take early and definite action toward meeting the problems of the day Germany collapses by Bernard M. Baruch, and John M. Hancock, the administration's top war and postwar adjustment planners, by James F. Byrnes, director of the Office of War Mobilization, and Under Secretary of War Robert P. Patterson.

Further delays in getting ready to meet reconversion problems "will turn the adventure in prosperity that lies within our grasp into an adventure in adversity", Messrs. Baruch and Hancock warned in a letter informing Mr. Byrnes that they were ending their work in formulating plans for the transition.

"For the good of all of us, but mostly for the sake of our soldiers and sailors, let us hurry, hurry, hurry, not only in winning the war but in being ready for peace," they wrote.

The letter observed that while there has been much discussion, "We are aware of no effective action for setting up of adequate organizational machinery and determining policies to insure cancellations of war contracts being properly planned in advance."

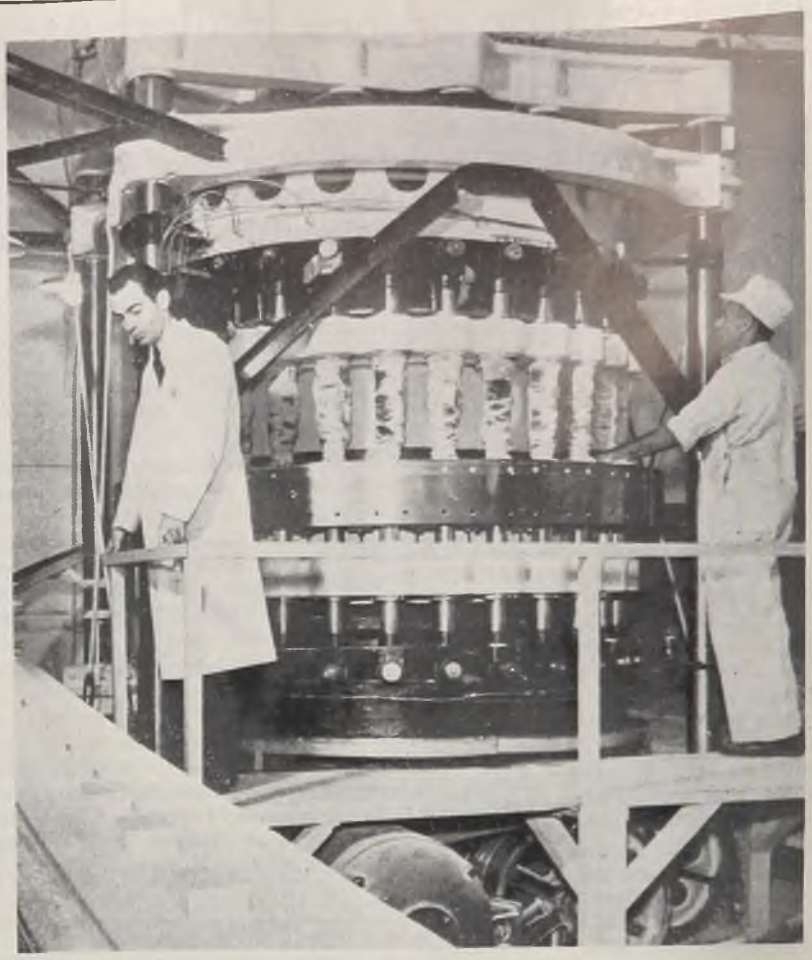
The letter indicated a belief that the War Production Board is partly responsible for this situation. The letter also noted that Congress has yet to complete action on legislation for settlement of terminated contracts.

Mr. Patterson, in a letter to a Senate Military Affairs subcommittee, stressed the need for prompt legislative action. He endorsed the George-Murray bill as "basically sound."

Mr. Byrnes also recommended to the subcommittee enactment of the George-Murray bill before Congress recesses. Contract termination, he said, is limping along in the absence of specific legislation.

Director Byrnes asked that Congress move rapidly into other phases of reconversion legislation. He admitted cancellation of the Brewster Aeronautical Co.'s fighter plane contract by the Navy recently without advance notice was a case of bungling but this was not to be repeated inasmuch as he has ordered all future cutbacks and cancellations be cleared with the Production Executive Committee of the War Production Board beforehand.

This ruling, incidentally, has the effect of strengthening the War Production Board's powers in reconversion at least as far as the executive branch is concerned.



SAVES SHIPPING SPACE: This rotary food press, in operation at the Doughboy Mills Inc., New Richmond, Wis., reduces many foods to one-half their normal volume for shipment overseas. Here the press is turning out bricks of compressed, dehydrated cheese soup. NEA photo

Urges Reduction in Taxes

Byrnes asked Congress to begin work on a postwar taxation bill which will reduce taxation to encourage investment of money in industry to create jobs. He recommended unemployment insurance of at least $20 weekly over 26 weeks with the federal government insuring state systems against extra and undue costs.

Director Byrnes also filed a report by WPB Chairman Nelson which shows WPB is working on a reconversion plan which assumes a 50 per cent slash in war production following the collapse of Germany. Within 30 days, Byrnes said, the armed services will start sending preliminary statements to war contractors informing them of approximate percentage cuts in outstanding contracts they can expect when Germany is defeated.

In the next few days Byrnes said WPB will advise contractors to place new orders for machine tools and related equipment they will need to reconvert to civilian production. The machine tool manufacturers, he said, will be authorized to produce such tools whenever plant capacity is available.

Byrnes is opposed to revival of the Works Progress Administration in the postwar period in the belief unemployment will be of relatively short duration, but he strongly recommended a public works program be developed for emergency use.

He said that, in the absence of legislation, procurement agencies are in doubt about their authority in terminating contracts and quick action is needed.

That long delay by the House in passing contract termination legislation may soon be over is indicated by the fact the rules committee last week decided to schedule S. 1718 for debate. This is the original Murray-George bill which was

passed by the Senate plus a number of subsequent amendments in the House Judiciary Committee.

In line with Director Byrnes' testimony, the move of Charles E. Wilson, vice chairman of the WPB, in appointing Arthur H. Bunker, Metals and Minerals vice chairman, as vice chairman of the Production Executive Committee and director of the Production Executive Staff is of major importance because, as Wilson said, the Production Executive Staff will "handle readjustments that grow out of changes in military production programs."

Membership of the Production Executive Committee Staff follows:

Director, Arthur H. Bunker, vice chairman, Production Executive Committee, WPB.

Deputy directors, Stacy May, director, Statistics Division, WPB; William B. Murphy, deputy vice chairman for production, WPB.

Army Service Forces, Lieut. Col. William H. Hutchinson, Production Division, ASF, War Department.

Army Air Forces, Maj. William Hodgkinson Jr., Materiel, Maintenance and Distribution, Resources Division, War Department.

Navy Department, Lieut. Commander Sinclair Hatch, Industrial Readjustment Branch, Office of Procurement and Material, Navy Department.

Bureau of Aeronautics, Capt. Donald Royce, director, Production Division, Bureau of Aeronautics, Navy Department. Lieut. Commander Morris Dane, Material and Resources Branch, Production Division, Bureau of Aeronautics, Navy Department.

Maritime, J. N. Franklin, United States Maritime Commission representative.

War Manpower Commission, William A. Haber, assistant executive director, for Program Development, War Manpower Commission.

Program Vice Chairman, Bertrand Fox, assistant director, Program Bureau, WPB.

Operations Vice Chairman, Wade T. Childress, deputy vice chairman for operations, WPB.

Office of Civilian Requirements, Robert B. Bradford, controlled materials officer, Office of Civilian Requirements.

Labor Production, Irving Brown, assistant to the vice chairman for labor production, WPB.

Manpower Requirements, Maj. Ralph G. Hetzel, deputy vice chairman for manpower requirements, WPB.

Smaller War Plants Corp., John Blair, special assistant to the chairman, SWPC.

Vice Chairman, Donald D. Davis, vice chairman, WPB.

Metals and Minerals Vice Chairman, Albert Butler, executive assistant to the vice chairman for metals and minerals, WPB.

Mounting impatience over the delay in Congress in acting on termination and other vitally needed legislation caused the Senate Postwar Committee last week to issue a statement that prompt action on such legislation is of transcendent importance and that no extended recess should be considered.

Public Relations Committee Of Scrap Institute To Meet

First meeting of the newly organized Public Relations Committee of the Institute of Scrap Iron and Steel Inc., Washington, has been called for Pittsburgh on June 28, Gerald M. Frank, M. B. Speer & Co. Inc., Pittsburgh, chairman of the committee, announced.

The committee will consider a public relations program for the scrap industry which will be submitted for approval to the national board of directors of the institute which meets also in Pittsburgh on June 29.

Arthur R. Robinson, R. L. Batteiger Co., Philadelphia, has been made vice chairman of the committee. Other members, one for each of the 22 chapters of the institute, are: Harry A. Alpert, Indianapolis; Nathan Breener, Baltimore; Samuel W. Brier, Boston; Morton Cohen, Minneapolis; William Frost, New York; Fred S. Fuld, St. Louis; Norman Gordon, Chicago; Louis G. Hehman, Cleveland; D. Sloan Hurwitz, Buffalo; William Isaac, Elizabeth, N. J.; Joseph C. Klein, Albany, N. Y.; George Liftig, Ansonia, Conn.; Richard N. Nathan, Houston, Tex.; Max Peterman, Los Angeles, Henry L. Purdy, San Francisco; Gordon D. Skinner, Detroit; Joseph R. Sternberg, Asheville, N. C.; John K. Travis, Birmingham, Ala.; John G. White, Seattle, and Lee J. Workum, Cincinnati.

Porcelain Enamel Group Elects New Officers

R. H. Turk, vice president, Pemco Corp., Baltimore, was elected president of the Porcelain Enamel Institute at a recent meeting in Cleveland.

Other officers elected are: Vice president, O. J. Heyer, president, Chattanooga Stamping & Enameling Co., Chattanooga, Tenn.; vice president, Joseph T. Penton, president, California Metal Enameling Co., Los Angeles; treasurer, William Hogenson, president, Chicago Vitreous Enamel Product Co., Cicero, Ill. Edward Mackasek was elected secretary and managing director of the institute.

POSTWAR PREVIEWS

RECONVERSION—Bernard M. Baruch and John Hancock, winding up postwar adjustment planning job, plead for speedy action in setting up effective machinery and policies against the day Germany collapses. See page 58.

UNEMPLOYMENT COMPENSATION—Program proposed by industrialist provides for withholding of portion of war profits before renegotiation to help tide employes over transition period. See page 63.

AUTOMAKERS' PLANNING—General Motors proceeding on six-front program to return to economy of full production when war ends. See page 67.

WEST COAST—Survey of potential markets for steel consumer products are being made by Pacific Coast cities as means to utilize war-expanded steel producing capacity and to provide employment for war-born increase in population. See page 78.

STEEL OUTPUT—Postwar production peak expected to be 70,000,000 tons a year, according to independent survey. See page 79.

ENGINEERED "EROSION"—Van der Horst technique of chromium plating bearing surfaces of engine parts to give porosity needed for proper lubrication commands widespread attention. Bus and civilian airline companies see possibilities for prolonging engine life. See page 82.

BUILT-UP "SPINNERS"—Forming, welding and reforming operations for fabricating airplane-propeller dust shields seem well adapted for making postwar products of sheet metal. See page 86.

ASSAYING SCRAP—Increased volume of alloy scrap and problem of its disposal bring to the forefront a new method for colorimetric determination of nickel in steel scrap which is extremely accurate for residual amounts. See page 97.

SPEED FASTENERS—Satisfaction given by spring-receptacle and cam-lock types of quick-acting fasteners used in airplane assembly makes them likely contenders for favor of peacetime industry. See page 100.

WINDOWS of WASHINGTON

Petroleum production depends on availability of steel and other materials for drilling wells, building refineries and providing transportation, deputy administrator of PAW tells House Appropriations subcommittee. Labor shortage also limiting factor

PRODUCING sufficient petroleum to fight the war and to take care of essential industrial and civilian requirements has been dependent on the ability to obtain the steel needed to produce, transport and refine petroleum and its products, Ralph K. Davies, deputy petroleum administrator, recently told the subcommittee on deficiencies, House Appropriations Committee, in justifying a request for an appropriation of $6,550,000 to finance the Petroleum Administration for War during the fiscal year ending June 30, 1945.

Questioned about the possibility of using more foreign petroleum and thus conserving United States supplies, Mr. Davies said this objective was being approached as rapidly as the steel supply permitted.

"We would very much like to see the burden upon the United States reduced," he said, "but the relief that can be had is limited by materials. We have not had the materials to build refineries abroad and at home too, and to drill wells abroad and at home. The restriction has been in terms of materials, as far as the oil operations themselves are concerned, and then beyond that there has been a restriction in terms of transportation. The problem is to provide facilities with which to refine the oil plus the necessary tanker transportation.

"The oil industry is very anxious to expand and develop abroad, and has made application for materials with which to do just that," he said. "Some of these applications we have not been able to grant. . . . The only limitation on the construction of refineries abroad is the matter of priorities."

"In the Middle East," he went on, "we can increase production with some expenditure of steel to almost any figure we like. There is an enormous deposit of oil in that area. . . . It is not a question of finding new sources, but of finding materials to develop them."

There now are two large refineries in the Persian Gulf area, said Mr. Davies. One is the Anglo-Iranian refinery that has been in operation for 20 years. The other is an American-owned refinery which has been operating during the war. The PAW, he said, is sponsoring a new 50,000-barrel-a-day refinery in Arabia, being built by American private capital.

Extensive Plans for Refineries

"There are extensive plans for other refineries there that are being considered, and there are applications in the offices for still additional refinery units that we have not yet passed upon. To the extent that material can be spared, additional refinery capacity will be brought into being in that area," he said. "The wells there are capable of producing more than is being produced at present, the only factor being the refinery capacity. Production could be doubled. For a small expenditure of steel, an almost unlimited amount of crude oil can be had there whenever we can use it." Present production in the Middle East, said Mr. Davies, is about 375,000 barrels a day.

RALPH K. DAVIES

Testimony offered by Mr. Davies indicated in other portions of the world increased quantities of steel are due to be used for increasing petroleum production and for expanding refining capacity. Production in the Caribbean area, now about 700,000 barrels daily, is to be increased to about 1,000,000 barrels. The greater portion of this oil comes from Venezuela, with some 60,000 barrels produced in Colombia, and smaller quantities produced in Trinidad, Argentina, Peru, Ecuador and Bolivia. Additional refining capacity is to be established in Venezeula and steel has been allocated for drilling wells in that country.

Mexico hopes to increase her oil production, said Mr. Davies, but that country now has only one oil field of any great importance, the Posa Rica field. The other fields have declined in production, he said, and are not in first-class operating condition.

India is producing about 7000 barrels of oil a day. Egypt is producing about 25,000 barrels daily. An oil area recently was brought in in the interior of China. These countries have not been explored for oil but some of the geologists feel encouraged over their prospects.

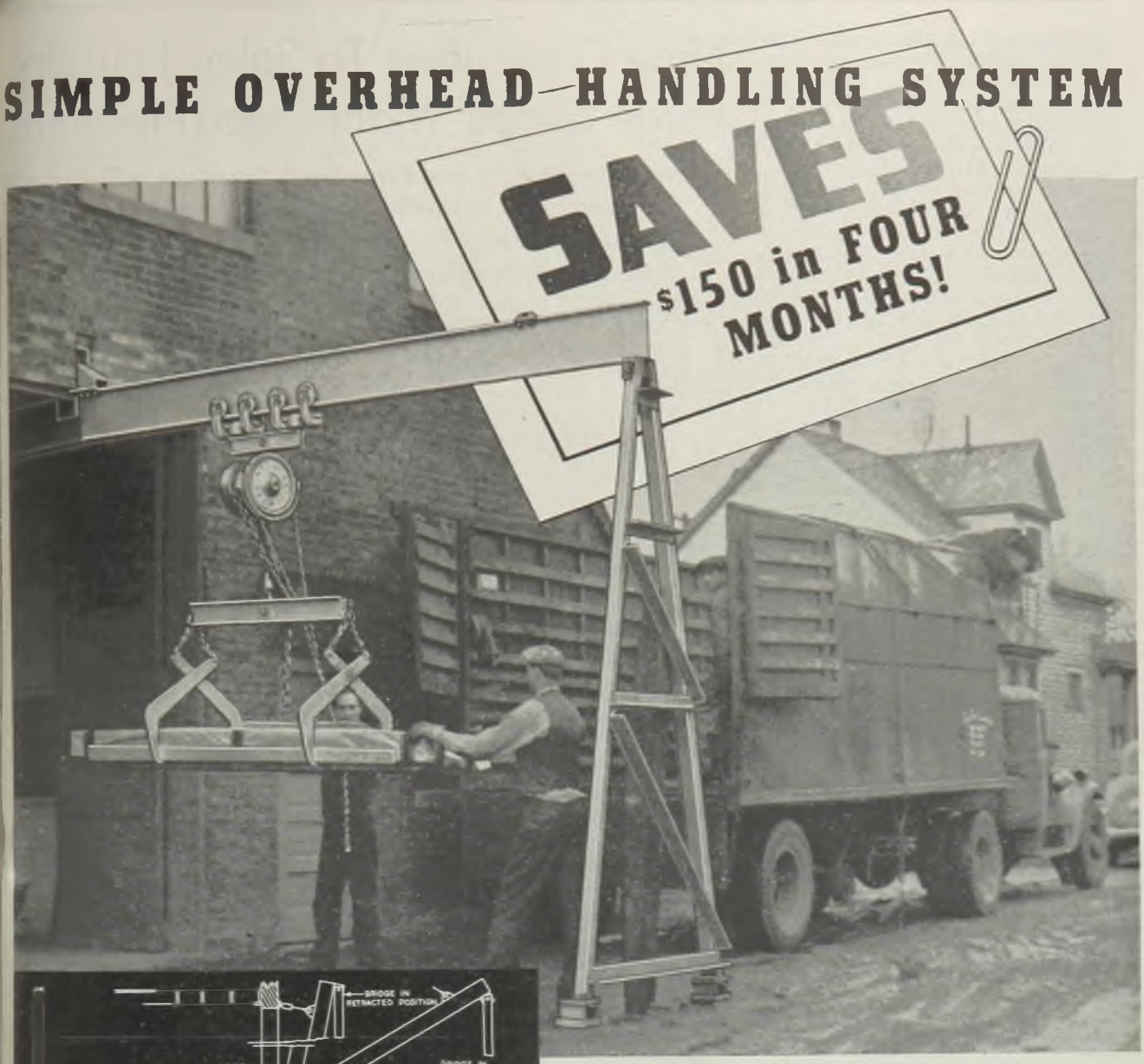
Information from Russia is not complete, said Mr. Davies, but he estimated that Russian production of crude is between 500,000 and 600,000 barrels a day, all of which the Russians are refining themselves for their war effort. In addition, Russia is importing fuel and also steel to increase production and refining capacity.

The contemplated pipeline in the Middle East about which there has been so much discussion is not under construction and still is in the stage of discussion, said Mr. Davies. This is a project of the Petroleum Reserves Corp., with which the Petroleum Administrator for War is not concerned. This pipeline, he said, could not be built in less than 12 months and it probably would take longer.

Speaking of the United States, Mr. Davies said our daily utilization of crude oil and natural gasoline is roughly 5,000,000 barrels. The military demand is for something over 1,300,000 and the difference accounts for the needs of industry and civilians. Domestic production, he said, is at the all-time high of 4,700,000 barrels daily, which compares with 4,000,000 barrels before the war. The deficiency of 300,000 barrels between domestic production and consumption is obtained by shipments of 150,000 barrels daily from Venezuela and 150,000 from stocks on hand.

Present rate of production represents all the oil that can be produced in the United States at the present time at efficient production rates. The principal exception is in the West Texas area, which could produce another 175,000 barrels a day if the transportation facilities were available. Pipelines for this purpose, he said, are under con-

SIMPLE OVERHEAD HANDLING SYSTEM



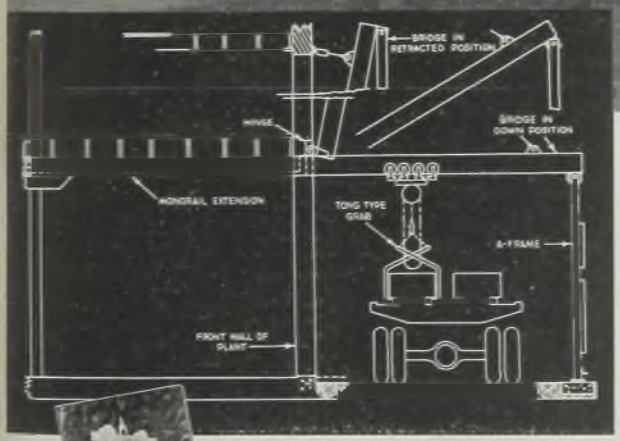


Diagram shows simple system for unloading steel. Crane is retracted against building over door when not in use.

Steel, formerly unloaded sheet by sheet, is now transferred from trucks to storage in 3-ton bundles. Handling labor was greatly reduced and damage to metal entirely eliminated.

Simple systems like this, worked out by American MonoRail engineers to meet hundreds of operations, speed up production — lower costs — reduce accidents — release skilled hands for more profitable use. Let an American MonoRail engineer show how you can save time and money. Write today!

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struction, and will be completed in the next few months. Wyoming production also could be moved up by an additional 25,000 barrels daily, he said. A new well in Florida is producing 60 barrels a day; the discovery there is too new to determine its potential productivity.

In normal times we drilled about 32,000 wells a year but we have not been able to maintain this rate during the war because of shortage of steel. Last year 19,000 were drilled, said Mr. Davies, and this year it is hoped to drill 24,000 but the manpower shortage may hold this down to 22,000.

About 75 per cent of the vast 100-octane gasoline refinery program had been completed by May 1, with the remainder of the program to be completed by the end of 1944. The prospect now is that the volume of 100-octane gasoline production is likely to be decreased for the reason the armed services now are anxious to get something better than 100-octane. This will raise new problems. In any event, the military demands continue to increase, so that the necessity of obtaining more crude, necessarily from foreign sources, is increasing in urgency.

Most PAW Pipelines Completed

The highly publicized Canol pipeline, he said, carries only 3000 barrels daily from Ft. Norman, a quantity geared to the capacity of the refinery at White Horse. He was not informed, he said, on the probable extent of reserves at Ft. Norman.

No additional pipeline construction in this country is warranted under present conditions, said Mr. Davies, and he would not recommend another pipeline to the East coast. The bottleneck today, he said, is in the product itself.

Asked about Germany's supply of petroleum, Mr. Davies guessed that Rumanian production now is about 110,000 barrels a day, Polish production 10,000 barrels a day, also that there is some small production in Germany and Austria. Germany produces most of her liquid fuel synthetically from coal and from shale.

Japan gets her oil and gasoline mainly from the Dutch East Indies, also some from Sakholin and Formosa, said Mr. Davies, and he conceded that when and if we cut Japan off from the Dutch East Indies that country will be in a grave situation as far as fuel is concerned. Java and Sumatra used to produce 163,000 barrels a day and Borneo 19,000, he said, but he had no idea what this production is today.

Questioned about the prospect for locating oil deeper in the ground, Mr. Davies said the deepest well now goes down 15,400 feet. Mechanically, he said, we can go down lower than that. "But experience proves that the deeper we go the more gaseous are the reserves. Comparatively few fields have been found at below 10,000 feet. Finds below that are gaseous or distillates rather than oil reserves."

New Committee To Solve Foundry, Forge Shops' Manpower Problems

National Foundry and Forge Shop Committee will deal with manpower and production problems not successfully solved by field staffs of WPB and WMC. . . Represents five federal agencies concerned with manpower problems

CREATION of a National Foundry and Forge Shop Committee, representing five federal agencies directly concerned with critical manpower problems that are hindering production in foundries and forge shops, was announced last week at a meeting of the WPB Foundry and Forge Labor Advisory Committee.

The function of the committee will be to serve as a clearing house to deal with obstacles standing in the way of recruiting badly needed manpower for the foundry and forge industries and also to undertake all necessary measures to remove production obstacles. The national and field staffs of the War Manpower Commission and WPB have been instructed to give full co-operation to the new national committee because of the urgency of production in the foundry and forge shops. The national committee will deal with manpower and production problems which are not successfully solved by the field staffs of WPB and WMC.

The new national committee, organized by Donald M. Nelson, WPB chairman, will be jointly headed by W. B. Murphy, WPB deputy vice chairman for production, and Vernon A. McGee, deputy executive director, WMC.

Other members of the inter-agency committee are: Clinton S. Golden, vice chairman, WMC, and vice chairman, Manpower Requirements, WPB; George F. Hocker, chief, Forging and Casting Branch, Steel Division, WPB; Brig. Gen. F. M. Hopkins, chief, Resources Division, Office of Assistant Chief of Air Staff, Material, Maintenance and Distribution Headquarters, Army Air Forces; Joseph D. Keenan, vice chairman, Labor Production, WPB; Rear Admiral Claud A. Jones, assistant chief in charge of production, Office of Procurement and Material, Navy Department; Allen D. MacLean, director, Production Division, Maritime Commission, and Brig. Gen. H. C. Minton, director, Production Division, Army Service Forces.

Producing for "Must" Equipment

The foundry and forge industries, though comprising only 1 per cent of the nation's war production, turns out critical castings and bearings that are essential for end-products amounting to more than 50 per cent of the total war output. The 300 foundries and forge shops currently designated as "critical" are producing material of which 75 per cent is going into "must" equipment, the WPB reports. Many other plants which are not listed as critical are, nevertheless, producing lesser quantities of vital forgings and castings.

The Foundry and Forge Labor Advisory Committee was notified by WPB representatives that a preliminary proposal to import Mexican nationals to relieve the manpower shortages in the industry has been abandoned because the Mexican government at present cannot increase the quotas of workers.

Spokesmen for labor expressed grave concern at the loss of manpower in the foundry and forge shops, which, they contend, is directly traceable to low wage rates for unskilled labor.

As a result of conferences between WPB, WLB and the Office of Economic Stabilization, WLB is giving special emphasis to speedy action on wage cases submitted from critical foundry and forge shops.

MYRON C. TAYLOR

Former chairman of the United States Steel Corp., Mr. Taylor is shown leaving the White House after conferring with the President regarding his fourth mission to the Vatican for the Chief Executive. Mr. Taylor said he plans to leave for the Vatican "very soon." NEA photo

Industrialist Formulates Program to Retain War Profits To Aid Unemployed

Plan provides that manufacturers be permitted to withhold percentage of earnings before renegotiation to be disbursed when and if contract termination creates idleness

COL. WILLARD F. ROCKWELL

AN industry-sponsored plan to withhold a percentage of present war production profits for the postwar benefit of returning veterans and unemployed war workers was outlined recently by Col. Willard F. Rockwell, Pittsburgh and Detroit industrialist, at a luncheon at the Waldorf-Astoria, New York.

Colonel Rockwell, whose companies have produced more than $500,000,000 worth of war goods since Pearl Harbor, disclosed that he has petitioned President Roosevelt and Congress for permission to institute this postwar plan in his own companies.

In essence, the "Rockwell plan" provides that war producers shall be permitted to withhold from profits, after taxes and dividend or interest requirements, but before renegotiation, sums ranging up to one week's average wages or salary for each month an employe has worked in a war plant, with a maximum withholding of 24 weeks' wages for each employe who has worked a minimum of two years.

A similar provision is included for all members of the armed services who left gainful employment in factories now engaged in war work.

These funds are to be disbursed if and when contract terminations and reconversions result in substantial unemployment, and until such time as the participating plants can re-employ their workers or the dismissed employes shall have found other work.

The entire plan would be under the supervision of the Social Security Board, with all unpaid balances remaining in these reserves two years after final settlement of terminated war contracts, to be returned to the government in the form of windfall taxes. Companies operating under this plan, it is envisioned, would have the use of unexpected reserves for reconversion purposes until the balances were due the Treasury.

The "Rockwell plan" contains six basic points dealing with the formula for withholding and disbursing funds from war profits. In addition it contains a strongly worded suggestion that the government establish a board of businessmen to survey the complicated surplus property and production facility inventories now in the hands or under control of government procurement agencies, for the purpose of recommending immediate steps to reduce these surpluses so as not to dislocate the national economy when the war ends.

Citing the many plans and proposals now under consideration by congressional committees, Colonel Rockwell pleaded for a return to practical common sense in planning for the future of industry and labor.

"Industry and labor both face a bewildering variety of plans, from blue-sky blueprints that call for a '$50 every Friday' form of government-guaranteed weekly wage to fantasies bordering on the brand of economic scarcity by executive decree that almost ruined this country in the mid-thirties," Colonel Rockwell stated.

"Bernard Baruch clearly states, in his report on postwar operations, that the government cannot guarantee prosperity. However, there are many who would like to see our government make the attempt to do so.

Believes in Renegotiation Principle

"Labor and industry have a vital interest in the maintenance of production and consumption in this country. Labor and industry have a vital interest in seeing that common sense and practicality are the measures that guide our thinking in the projection of any postwar plans.

"I firmly believe in the principle of renegotiation," Rockwell remarked emphatically. "However, I do disagree with the present application and administration of this law. When it is used as a punitive weapon it then defeats its own purpose."

Colonel Rockwell was severely critical of the huge stockpiles of materials, finished goods and facilities controlled by procurement agencies and cited several instances brought out by congressional inquiries where surpluses were revealed to have been literally "plowed under" by procurement agencies.

"Under private enterprise, if management understates costs or overstates market demands resulting in severe financial losses, stockholders demand a change in that management. But during the war we have seen government agencies underestimate costs on hundreds of projects and overestimate requirements so that billions of dollars have been lost. However, because these figures are so astronomical, there has been little demand for drastic change in government agencies as the average taxpayer does not realize the extent of his individual loss. Some day the nation's taxpayers will realize that the country's increased debt, caused in part by this extravagance and mismanagement, has mortgaged one-half of our total national assets.

"We did not plan for war so we were utterly unprepared for it. It would be shameful if the end of the war finds us unprepared to cope with the problems of peace and the severe readjustments that will follow," Colonel Rockwell emphasized.

Colonel Rockwell also pointed to the tremendous sums now in process of appropriation for such groups as the International Labor Organization, the United Nations Relief and Rehabilitation Administration and the World Bank, and declared that "someone must think about our own country and the millions of workers who have a right to look for the maintenance of their own high standards of welfare, earnings and opportunities for self-advancement. I do not think the American people will welcome an international WPA supported by the U.S.A."

Colonel Rockwell is at present vice chairman of the Industry Associations Committee of the War Manpower Commission. He was, until Jan. 1, 1944, director of production of the U. S. Maritime Commission and was also a member of the executive committee of the Army and Navy Munitions Board and the Material Requirements Committee of the WPB. He is chairman of the boards of the Timken-Detroit Axle Co., the Standard Steel Spring Co., the Pittsburgh Equitable Meter Co., the Hupp Motor Co., and the Merco-Nordstrom Valve Co.

PRIORITIES–ALLOCATIONS–PRICES

Weekly summaries of orders and regulations, together with official interpretations and directives issued by War Production Board and Office of Price Administration

INSTRUCTIONS

SMALL ORDERS: War Production Board has corrected a press release (published in the June 12 issue of STEEL), setting forth limits governing the use of the "SO" procedure by the War Department. The limits which govern the placement of authorized controlled materials orders and purchase orders for class A products under the SO procedure should have read: Carbon steel (including wrought iron) and alloy steel, 10 tons; copper wire mill and brass mill products, 1000 pounds; copper and copper-base alloy foundry products, 300 pounds; aluminum, 2000 pounds.

METAL CANS: Packers' quarterly consumption of metal cans, has been placed under further regulation. Schedule III (non-food) products, during the second quarter of this year are limited to 25 per cent of the full annual can quota for each product or 50 per cent of the annual quota less first quarter consumption, whichever is greater; in the case of paints and paint products, 65 per cent of the full annual quota minus first quarter consumption.

During the third quarter, schedule III items, and specified items from schedules I and II are limited to 25 per cent of the full annual packing quota or 50 per cent of the unused annual quota, whichever is greater. Paints and paint products are limited to 20 per cent of the full annual quota, or 50 per cent of the unused annual quota, whichever is greater.

E ORDERS

GAGES: Gage blocks, production and inspection gages and tool room specialties have been eliminated from order E-5-a. Sales now are unrestricted. Control over micrometers and various types of measuring tools is retained by the Tools Division, a rating of AA-5 being required at the producer level only. The order provides that 20 to 25 per cent of monthly production be set aside for stock orders. Only those purchase orders that bear preference ratings assigned on forms WPB-547, WPB-646, or Canadian form PB-1010 are included in the term "stock orders." (E-5-a)

L ORDERS

POWER TRUCKS: Approved model of truck which Yard-Man Inc., Jackson, Mich., manufacturers of power trucks, may produce is now designated as D-Truck-Man rather than C-Truck-Man. (L-112-a)

SPACE HEATERS: Provisions of the oil and gas-burning domestic space heaters order has been changed to conform to the recent amendment of the domestic cooking appliances and domestic stoves order, which permits production of five models of fuel oil circulating stoves with British thermal unit capacities varying from less than 30,000 to over 55,000. (L-173)

COMMERCIAL COOKING EQUIPMENT: Annual production, beginning July 1, of nonelectric commercial cooking and food and plate warming equipment is now permitted at an annual rate of 72 per cent of 1941 production. Applications for permission to purchase the equipment will be approved by OCR only in cases where there is evidence of need. Production of repair and replacement parts and of equipment to be delivered to the Army, Navy, Maritime Commission, or War Shipping Administration is in addition to the established production quotas. Quotas for individual manufacturers will be specifically authorized by WPB each quarter.

Nonelectric griddles, hot plates, grills and coffee urns of one to three-gallon capacity are eliminated from distribution restrictions, provided that the net weight of each does not exceed 50 pounds. Nonelectric coffee makers of any weight also are removed from restrictions on delivery. Used equipment also is removed from distribution restrictions. (L-182)

WATER HEATERS: Direct-fired side arm water heaters may be made now with copper coils and brass terminal outlets. Indirect water heaters may now be made with brass terminal outlets and spacer plates. Steel tubing in both direct and indirect storage water heaters may now be replaced with copper tubing. (L-185)

PLUMBING AND HEATING TANKS: Specifications for range boilers and hot water storage tanks have been revised to permit more satisfactory equipment. Double heavy range boilers are again permitted. Provisions designating the sizes of hot water storage tanks which could be produced have been entirely eliminated. (L-199)

MEDICAL, SURGICAL FURNITURE: Restrictions on weight of metal permitted in manufacture of certain items of medical and surgical furniture and related equipment have been removed. Provisions covering the use of nickel, monel metal, copper, copper-base alloy, aluminum, remain unchanged. (L-214)

COMMERCIAL DISHWASHERS: Production of nonelectric commercial dishwashers is now permitted, beginning July 1, at an annual rate of 92 per cent of 1941 production. Applications for permission to purchase the equipment will be approved by OCR only in cases where there is evidence of need. Production of repair and replacement parts and of equipment to be delivered to the Army, Navy, Maritime Commission or War Shipping Administration will be in addition to the established production quotas. Quotas for individual manufacturers will be specifically authorized by WPB each quarter. Manufacturers should apply by letter to the WPB, Plumbing and Heating Division, giving all pertinent information with respect to proposed production. Where the applicant will need controlled materials in order to produce the equipment, the letter should be accompanied by application on form CMP-4B. (L-248)

FARM MACHINERY: Controls over manufacture of farm machinery and equipment requiring rubber tires have been reestablished in orders L-257 and L-257-a.

Small manufacturers now are permitted to engage in unlimited production of farm machinery, equipment and repair parts made entirely from surplus materials or materials obtained with an AA-4 preference rating. Participation in this program is limited to plants which regularly employ 100 or fewer workers, and which are located in other than group 1 labor areas, or on the west coast, where it is limited to plants employing not more than 50 workers. (L-257, 257-a)

INDEX OF ORDER REVISIONS

M ORDERS

FOUNDRY PRODUCTS: Manufacturers wishing to use brass and bronze castings, containing more than 74 per cent copper or 2 per cent tin, now must apply to WPB for authorization, unless at least one of the following conditions are met: (1) Manufacturer has been lawfully using copper-base alloy for the same purpose sometime during the last six months of 1943; (2) a WPB order specifically allows an alloy with higher copper or tin content; or (3) specifications of the armed services, Maritime Commission, or War Shipping Administration call for a higher copper or tin content. Applications for specific permission to use copper-base alloy foundry products containing more than the specified amounts of copper or tin should be made by letter addressed to WPB's Copper Division. (M-9-c, 43)

TIN: Rules governing the use of tin in solder and bronzes have been modified. Permitted uses are set forth in the following schedules: I, miscellaneous items; II, solder applications; III, babbitt; IV, brass and bronze alloys. Restrictions apply to all schedules unless different specifications of government procuring agencies require a higher tin content than provided for in the schedules. Specific tin content solders have been regrouped for specific applications. Purchaser of high-tin babbitt for exempted applications must certify to the supplier that it is impossible to use a lead-base babbitt for his specific purpose. High-tin babbitt is permitted, subject to certification, for all trucks, tractors and irrigation water pumping equipment. Permissible tin content of copper-base alloy castings for items and end uses where substitutes were used in the last half of 1943 is limited to 2 per cent unless otherwise specifically provided for in an order of WPB or by direct authorization. (M-43)

ZINC SULPHIDE PIGMENTS: Order which established a monthly producers' pool of zinc sulphide pigments has been revoked. (M-128)

GOVERNORS: Table 8 of the general scheduling order, covering items that are under jurisdiction of the Power Division, Office of War Utilities, has been amended. Hydraulic governors, other than those for aircraft application, have been included and designated class X products. Manufacturers of this article must file reports on their order boards unless they are specifically excused from doing so by the Power Division. (M-293)

P ORDERS

AIRCRAFT REPAIRS: After July 1, order P-47 which governs maintenance, repair and operating supplies and equipment for civilian aircraft will concern only three types of operators: Those operating a commercial airline under certificate from the Civil Aeronautics Authority; operators of foreign commercial airlines, if approval is received from WPB on form WPB-1747, or if such approval was received for use in obtaining materials during the second quarter of 1944; and operators of any aircraft based in the territory of Alaska.

All other civilian aircraft operators must, after July 1, acquire material by the use of Controlled Material Plan regulations Nos. 5 and 5A.

Necessity of filing form WPB-1747 every quarter to obtain allotments has been eliminated, except in the following cases: Operators who did not receive an approved WPB-1747 for the second quarter of 1944; operators who file for an assignment in excess over their second quarter allotment; operators filing for items on list B of priorities

regulation No. 3. WPB may authorize the use of a preference rating and allotment symbol for list B items.

Each operator is now automatically assigned a preference rating of AA-1 on all allotments. It is provided that, after July 1, operators may purchase construction material up to an amount of $500. Any such construction job may be carried on without obtaining permission for small scale construction under L-41. (P-47)

PRICE REGULATIONS

USED CONSTRUCTION EQUIPMENT: An alternative pricing method for sales of used construction equipment, limited to tractors, shovels, draglines, cranes and backhoses has been established. It provides a sliding scale of prices, in terms of percentages of new base prices for the equipment. This will increase former maximum prices by adding 5 per cent to 55 per cent of the new base price for each more recent year of manufacture beginning with the year 1939 until a new ceiling of 80 per cent of the new base price of the equipment is attained for machines manufactured in 1943. (No. 136)

SILVER ARTICLES: Manufacturers and wholesalers of consumers articles containing newly mined domestic silver now may indicate the number of troy ounces of fine silver content and the amount of added cost of 36 cents an ounce due to the change from foreign silver by showing this only once, either on the first invoice or on a separate statement at the time or prior to the first invoice to each purchaser for each item, along with the statement of the amount by which retailers may increase their established ceiling prices. (No. 188)

GRAY IRON CASTINGS: A new alternative method for pricing "short orders" of gray iron castings has been established. A "short order" is one where the shipping weight multiplied by the quantity orders does not exceed 200 pounds. A price per pound is now permitted for short order castings 2½ times the seller's average price per pound for all gray iron sales in 1942. The starting charge has been eliminated. (No. 244)

Simpler Method Provided for Pricing Rejected Steel Products

Warehousemen compute maximum delivered prices for secondary or rejected flat rolled and semifinished iron and steel products by the "zone plan," already adopted for pricing prime quality heavy line products

A SIMPLER pricing method to replace the one by which warehousemen have been computing their maximum delivered prices for secondary or rejected flat rolled and semifinished iron and steel products was announced last week by the Office of Price Administration.

Appendix F of price schedule No. 49, has been revised, extending to secondary or rejected flat rolled and semifinished iron and steel products the "zone plan" already adopted for pricing of prime quality heavy line products.

"Zone Plan" Put in Effect

The country is divided into 17 zones, each of which corresponds generally to the usual market area of warehouses in the zone. The maximum delivered price for destinations within each zone is made up of the mill basing point price, freight, spread and extras. A "price component index" lists various products covered and refers to tables which the warehouseman uses to ascertain the value of the factors which make up the maximum delivered price.

Determination of the price, therefore, is a simple computation involving only the addition or deduction of the values listed in these tables. Maximum delivered prices for shipments outside the seller's zone are based upon the same principle. General price level will remain unchanged.

The action establishes as the "price at basing point" a percentage of the mill base price for prime material. The "freight" factors are those established for prime material except in the two instances where prime material has not been included in the zoning plan. For tin mill black plate and semifinished products, however, freight factors have been established since none existed for primes and the bases used reflect the freight provisions previously incorporated in appendix F. Similarly, the factors for "spread" shown for secondary or rejected iron or steel products are the same as those for the corresponding products of prime quality. New "spread" factors are established for tin mill black plate on the basis of the prices presently permitted by appendix F. The "spread" factor for semifinished products is expressed as a percentage and results in the same maximum price as heretofore. The percentages of differentials for size and quality now established are identical to those set forth in revised price schedule No. 6 (covering prices for producers.) Provision has been made for warehouse grades not covered by the producers' schedule.

The differentials for cutting, quantity and special operations performed by warehouses remain unchanged. These differentials reflect industry practice as of the base date, and bear no relationship to similar factors established for prime quality material at the warehouse level and for either prime or secondary material at the mill level. The allowance for waste is now determined as a percentage of all other factors included as a price rather than as a percentage of only base price and freight.

Another feature of the new appendix F is the extension of the definition of "secondary or rejected iron or steel products" to include products which actually are of less than prime quality at the time of purchase or sale as well as products which were purchased by, or invoiced to, the seller as other than prime quality. This broader coverage affords greater protection to the purchaser and prevents evasion through false invoicing.

War Agencies Appointments-Resignations

S. A. Crabtree has been appointed assistant director for program and distribution, vice chairman of the Requirements Committee, and will continue as chief of the Alloy Steel Branch, Steel Division, WPB. He succeeds Joseph L. Block, who continues as deputy director of the division. H. M. Francis succeeds Mr. Crabtree as deputy assistant director for production and will continue his position as chief of the Wire and Cold Finished Bar Branch. George Anderson, Worcester, Mass., has been appointed chief of the Cold Finished Bar section, succeeding V. R. Bates, resigned.

* * *

Richard S. Perkins has been appointed deputy director of the Facilities Bureau, WPB.

* * *

Edward D. Line has been appointed deputy chairman of the Facilities Committee, WPB, replacing Virgil E. Tobin.

* * *

R. W. Fray, chief, Surplus Section, Steel Division, WPB, has resigned. He came to WPB from the Steel Recovery Corp., Pittsburgh.

* * *

Resignation of Willard L. Davis as assistant director, Paperboard Division, WPB, has been announced. He is succeeded by Marc Shofer of Keokuk, Iowa.

* * *

Alexander Milne Jr. has been appointed deputy director, Project Essentiality Division, Facilities Bureau, WPB.

* * *

Richard Kimball has been appointed program officer, Combined Production and Resources Board, WPB.

* * *

Edward C. Welsh has been appointed Field Operations Officer for price, OPA, succeeding George Taylor, resigned.

* * *

William L. Sims II has resigned as price executive, Chemicals and Drugs Branch, OPA effective June 20, and will be succeeded by Lester Chandler as acting price executive who will continue as price executive of the Rubber Branch.

* * *

Nelson H. Cruikshank has been appointed assistant vice chairman for labor relations, War Manpower Commission, succeeding Miss Charlotte E. Carr, resigned. He will continue to act as executive assistant to the National Management-Labor Policy Committee, WMC.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

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MIRRORS of MOTORDOM

Automotive industry making progress in planning for resumption of peacetime production. General Motors' six-point program designed to permit reconversion as soon as possible when materials and manpower can be released from war output

THOUGH the bloody invasion battles have barely begun, industry is faced with the difficult task of centering its full production effort on turning out war materiel and at the same time moving ahead with its planning to "win the peace." This calls for a high order of industrial statesmanship, nowhere truer than in the automotive industry. Hence any discussion of progress in postwar planning must be judged in the light of the fullest responsibility toward keeping present production rolling.

On the premise that the philosophy of opportunity, production and plenty must replace the false philosophy of regimentation, restriction and scarcity, and that industrial activity substantially exceeding that of the immediate prewar period and approximately that of the war period must be achieved in a short time after the war if we are also to win the peace, General Motors Corp. has been moving ahead along six definite fronts for as long as a year. Here briefly are the six fronts, with full details now being worked out by the various GM divisions:

1. Asking the government and the services to clarify and to define the production facilities, whether owned or operated by the corporation, which will be made available for commercial products,—also what equipment will be declared surplus, and what equipment will be held as a military reserve for national defense. Corollary to this is a clearly defined plan for prompt termination of contracts, including handling of work in process, inventories and commitments and liquidation of surplus.

Problem Demands Early Solution

2. Prompt resumption of peacetime 1942 models, since they are the only things which can be produced promptly. Any program contemplating new product development and a large tooling program would so delay production as to cause serious unemployment. Corollary to this is the preparation of lists of all machine tools and equipment which have been scrapped, sold to other contractors or to the government. Since these must be replaced either by purchase of new equipment or from surplus, the problem demands early solution. Some orders for certain of these production units have already been placed.

3. The corporation will authorize prompt ordering of materials required to produce 1,000,000 cars and trucks and an equivalent quantity of the other products it makes. At the earliest possible date when the war emergency is over, telegrams will be sent to all suppliers and subcontractors authorizing them to start production immediately. Material will be accepted, even though some of it can be produced faster than actually required, in order to give the quickest possible employment and allow suppliers to proceed with their activities while the necessary plant rearrangements and other bottlenecks in commercial production are being overcome.

4. As soon as conditions permit—and some of this work may be possible during the war—research and product development will be resumed.

Appropriates Money for Reconversion

5. The corporation has appropriated $500,000,000 for reconversion of war plants, replacing obsolete equipment and expanding capacity, roughly in the ratio of 1-2-2. A 50 per cent expansion of prewar capacity for all products is being talked about, but more important is the "balancing" of capacity of all departments to eliminate bottlenecks—such as in sheet metal, hardware, gears and axles or whatnot. Thus, if the ideal postwar setup is realized, every department will work the same number of shifts to achieve a certain production level. As a part of this program, ten new automotive plants of various types have been approved to supplement present facilities.

6. At the proper time the corporation again will fill its research, engineering and development staffs, and continue its policy of product improvement and new product development. At present, personnel in these lines is fully devoted to war jobs, although the pressure is easing.

A few salient facts help to round out the GM picture. In its prewar plants the corporation operated about 75,000 machine tools, of which 50,000 were determined to be suitable for use in the war effort, and 3000 or 4000 others disposed of to other war plants, leaving a surplus bank of something over 20,000. At the moment it appears as though the first need would be for 3500 key or "bottleneck" machines when car production is resumed. If some way could be found to expedite the building of these key machines, reconversion would be greatly speeded.

To the initial bank of 75,000 GM-owned machines, has been added in the past three years another 60,000 tools which are government-owned. A careful study has shown that perhaps 25 per cent, or 15,000, ultimately can be put to peacetime use, the others being special types for war work or of a size larger or smaller than those needed. Future planning has indicated an overall need for 45,000 machine tools, of which 15,000, as has been said, might come from those now or presently to be available. This would leave 30,000 still to be purchased, no small buy when it is considered the total inventory of such equipment before the war was just twice this number.

General Motors employment is now running close to 465,000, against 292,000 in 1942. Thinking on how to retain as many of these as possible is crystallizing at around 375,000 or 400,000 at full postwar tilt.

Materials and parts suppliers can take

DURATION STOPGAP: Servicing and overhauling power fruit tree sprayers constitutes a large portion of the service volume of the Ver Dow Chevrolet Co., Sodus, N. Y., since curtailed driving and the absence of new car production has reduced normal service demands

real heart at the GM proposal to place orders the moment government O.K. is received, thus minimizing their own reconversion lull. What this will mean for steel suppliers alone can be appreciated from the fact GM divisions currently are chewing up steel at a rate of around 75,000 tons a month against 250,000 tons a month when automobiles were the product. Assuming a gradual climb to a level 50 per cent beyond the peak prewar, it might mean GM will absorb better than 350,000 tons of steel a month. Naturally this will not be immediately after the war—it will probably take a year or longer to accelerate to this pace.

SHELTERED AMMUNITION: This is an aircraft ammunition depot somewhere in England. The aircraft ammunition is packed in boxes and protected from the elements by portable steel shelters. NEA photo

Throughout all this thinking there cannot help but be many imponderables. Chief of these, aside from the probable timetable of the war, is the future attitude of labor and its union leaders. All the planning in the world will come to naught if large segments of the country's population after the war refuse to believe in the nation's institutions, and are unready or unwilling to make a social contribution in proportion to the social reward expected. In other words, can a fair day's work be expected in return for a fair day's pay.

Returning veterans add further confusion to the labor picture. Already, General Motors has employed 10,000 returned soldiers and sailors, 3500 of them former employes. However, present union seniority provisions with GM work to the distinct disadvantage of returning veterans who are not former employes but who may like to become associated with the corporation. Present rules call for retention of seniority by all workers after a layoff for a period as long as the period of employment. This means that after the reconversion and new employment period more than 100,000 women and 200,000 laid-off employes would come ahead of any returned veterans who had not worked for GM previously.

Another significant development is in connection with the union maintenance-of-membership clause in the GM contract. This would require the corporation to fire any returned veteran who did not choose to join the union and pay his dues. Actually, five cases of this type have appeared already. The solution appears squarely up to the union and to the government.

It goes without saying that the increasing numbers of returning veterans seeking employment in automotive plants are going to have something pretty definite to say about these obstacles.

Council Recommends Seven Points

Further defining the position of management with respect to its foremen, the Automotive Council for War Production has recommended the following seven points as a minimum program to its 550 member automotive companies:

1. Define clearly who is a foreman, distinguish him from straw bosses, leaders and others without that status, and define clearly the elements of his job.
2. Bring earnings of foremen into proper relationship with those of workers whom he supervises.
3. Make clear to foremen company policy as to promotion, demotion and discharge, and explain carefully the reasons in each case of change of status.
4. Take necessary steps to prevent undermining of foremen's status and position through union activity and functioning of the union steward system.
5. Review carefully the functions of labor-management committees to insure protection of foremen's status.
6. Provide adequate training programs for new foremen.
7. Develop personal leadership from top to bottom of management ranks in lieu of dependence upon authority or rank.

This is a strong basic policy which, if it had been pursued rigidly over the past few years, might have avoided troubles such as the recent strike of foremen in a number of Detroit plants. Sudden upsurge of war employment, rapid upgrading of men to foremen's rank, with inadequate training, and the strong propagandizing effect of the unions and their steward system, have resulted in deficiencies at many points.

UAW Leader Makes Suggestion

As far back as 1937, one UAW leader had the temerity to suggest to an automotive executive that he might profitably accept the union steward system and thus be able to save an appreciable amount of money by firing all his foremen.

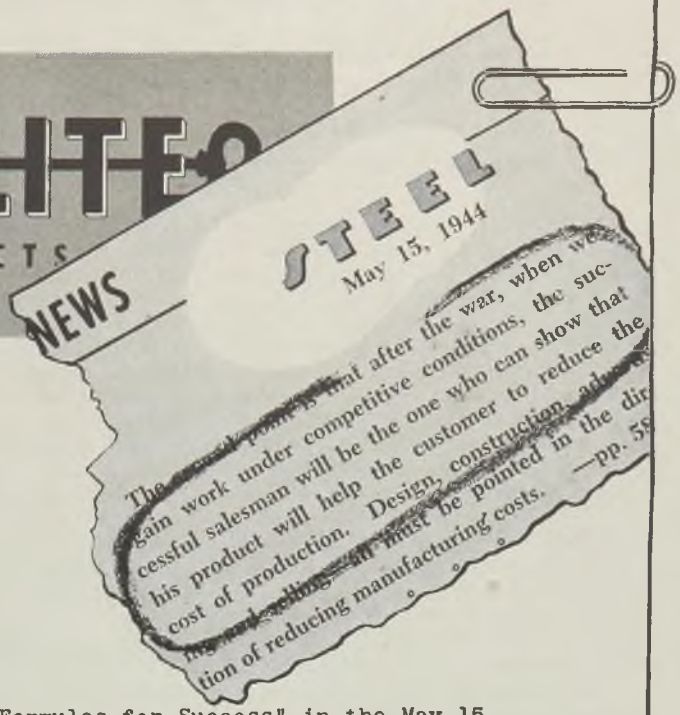
Fifth war loan got off to an auspicious start here with news of the sale of $52,300,000 in bonds during a cruise of 602 members of the Detroit board of commerce. The incident is reported of one cruising industrialist who ordered $200,000 worth of bonds and was thereupon told that if he really felt the trip was worthwhile he should buy ten times that amount. Without batting an eye, the purchaser said, "O.K., I'll take the $2,000,000 worth."

When Willys-Overland common stock hit 12½ last week, many experienced financial observers gasped, and marveled at the effect of C. E. Sorenson's introduction to the chief executive's post at the Toledo, O., company. Obviously it will be a long time before the production genius of Mr. Sorenson can be reflected in Willys' earnings, but speculators' money is evidently pouring into the market, as nearly all motor shares are strong. A recent offering of 50,000 shares of Packard common at $5 confounded the board watchers at a local broker's office, but the stock moved on unperturbed and at this writing was flirting with the $6 level.

How the war has boomed production of the Detroit Diesel Engine division of General Motors is dramatically illustrated by a tabulation of cumulative production statistics released on the occasion of delivery of the 100,000th engine from the plant. Here is the record:

1938	800
1939	2,500
1940	5,000
1941	10,000
1942	31,000
1943	57,900
June 6, 1944	100,000

KELITE PRODUCTS NEWS


STEEL
May 15, 1944
...ain work under competitive conditions, the suc-
...cessful salesman will be the one who can show that
his product will help the customer to reduce the
cost of production. Design, construction, and
...ing methods, all must be pointed in the dir
...tion of reducing manufacturing costs.
—pp. 5

Mr. E. L. Shaner, Editor-In-Chief
Steel Magazine
Penton Building
Cleveland 13, Ohio

Dear Mr. Shaner:

Thank you for the helpful editorial on "Formulas for Success" in the May 15 issue of "Steel". Your statement in the attached clipping has suggested a post-war series of Kelite ads which we think will be highly effective.

Every Kelite process is based on rigid pH Control in order to assure the speed and perfection which war-time schedules and inspection standards demand. Such control naturally cuts waste down to a minimum. The reports from Kelite Service Engineers are filled with facts and figures on production costs which have been reduced by Kelite materials and methods.

For instance, a Pacific Coast manufacturing company, which recently installed Kelite Protexol processing for the removal of rust-proofing grease from steel motor mounts prior to painting, now completes 96 in an eight hour shift where they formerly completed 16.

An aircraft accessory plant maintained a battery of tanks to remove fatty acids and oil from stainless steel before spot-welding. The solutions became quickly contaminated, requiring frequent re-charging and creating a difficult rinsing problem. Kelite Pro-Star now does this cleaning in a five minute tumbling operation and rinses free with plain tap water, leaving a clean surface ready for spot-welding.

P-27 primer and camouflage enamel were stripped from two identical airplanes operating as freight transports — one with regular solvent-type stripper, one with Kelite Stripaint. The first took five men working 46 hours and cost $253.25. The ship on which Kelite Stripaint was used took five men working eight hours and cost $105.25.

A large eastern manufacturer with an extensive footage of concrete floors to maintain recently changed over to Kelite Keprocess for this job and reports a saving of $2,103.75 per month in its floor cleaning operations.

Such evidence of dollars and cents economy should be helpful in solving post-war problems; and, in our experience, management find it very interesting today!

Yours very truly,

L. C. Sorensen

L. C. Sorensen, President
KELITE PRODUCTS, INC.

LCS/HG

HOME OFFICE: 909 E. 60TH ST. • LOS ANGELES 1, CALIFORNIA

—Advertisement

WING TIPS

Seven West Coast aircraft plants produced more than 90,000 planes from 1940 through March of this year. Man-hours per unit has declined steadily, and in some cases has been reduced more than half. Costs per pound of airframe weight cut

AIRCRAFT War Production Council Inc., Los Angeles, recently disclosed Pacific Coast aircraft manufacturers produced 64,551 warplanes in 1942 and 1943.

The seven companies constituting the Aircraft War Production Council delivered from their West Coast, midwest and southern plants, 90,834 planes with a total airframe weight of 779,153,100 pounds from the start of 1940 through March, 1944.

The 1943 output, 39,725 planes, of 384,900,000 pounds was 60 per cent more than 1942 in units and 113 per cent ahead in weight.

The most productive single month was March, 1944, with 4353 planes, 55,776,000 pounds.

A decrease in use of manpower was conspicuous. In the West Coast plants, output of airframe weight went up 30.99 per cent from June, 1943, to January, 1944, while employment decreased 10.58 per cent. Production for all plants in 1943 increased 113.48 per cent over 1942, while employment gained 96.60 per cent.

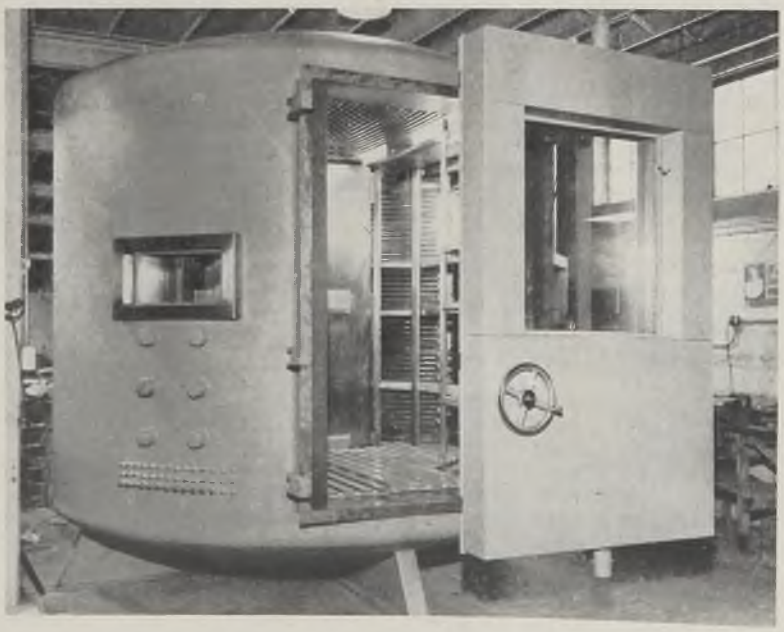
The number of man-hours required to build a typical heavy bomber was reduced from 37,200 in January, 1943, to 16,400 a year later. Man-hours for production of typical medium bombers dropped from 18,000 to 10,200; for a typical fighter plane from 11,000 to 8750, and for a typical transport from 20,700 to 10,300.

Dollar cost of construction has been steadily declining. In case of one light bomber, costs were reduced from $11 per pound of airframe weight in January, 1941, to $5.10 per pound in January, 1944. Costs were slashed in case of one fighter plane from $12 a pound in 1942 to $6 a pound in 1944.

Hudson To Build B-29 Wings, Fuselage Sections

Hudson Motor Car Co., Detroit, has been authorized to announce the start of quantity production in one of its Detroit plants of fuselage sections and wings for the new B-29 Superfortress. Fuselage sections are being built on the Hudson production line which for two years mass produced rear fuselage sections for the Martin B-26 Marauder bomber.

While producing the B-26 sections, Hudson was given the important assignment for the new B-29. Quantity production of the B-26 continued while preparations were made to make the B-29 sections and wings. The first B-29 fuselage sections were shipped within 19 days after the final B-26 Marauder fuselage section rolled from the assembly line.



COLD CHAMBER: Latest type of altitude test laboratory for studying aircraft equipment under a wide range of temperatures and pressures is shown above. Temperature may be varied from 194 degrees above zero Fahr. to 67 degrees below zero. Air may be exhausted until internal pressure is equivalent to that at 75,000-foot altitude. The 11-foot cylinder weighs 18 tons and comprises an interior wall of serpentine evaporator plates pressed from stainless steel, and a steel outer surface, with layers of insulation between. Two inspection ports, one on each side of the half-ton door, afford full view of testing operations inside the chamber. The stratosphere chamber was built by Kold-Hold Mfg. Co., Lansing, Mich.

Republic Aviation Corp. Trims to One Shift

Completion of a changeover to a new fighter plane model, plus greatly improved production efficiency, have meant the conversion to one-shift operations at the plant of Republic Aviation Corp., Farmingdale, N. Y., with appreciable reduction in personnel and adoption of a 9-hour instead of 10-hour day. The change will be complete by June 15.

To keep production uninterrupted during the model change, a large bank of fuselages and related parts was built up over recent months, and the force required to handle this production load no longer is needed. A further contributing factor has been the improved production performance of subcontractors. A third factor, which entailed a production load now subsiding, was a change in wing tanks for the P-47 Thunderbolt.

C. Hart Miller, Republic production chief, reports there has been no cut in Republic's schedule, which has never been higher than at the present time. However, he points to an increasing "cost-consciousness" evident in the Air Forces' procurement divisions, necessitating a thorough trimming of production personnel to the most efficient level. At the same time, this improved efficiency will mean increased individual rewards for maximum effort, in line with the bonus system of incentive pay which Republic operates.

Willys Forgings Output Million Pounds Monthly

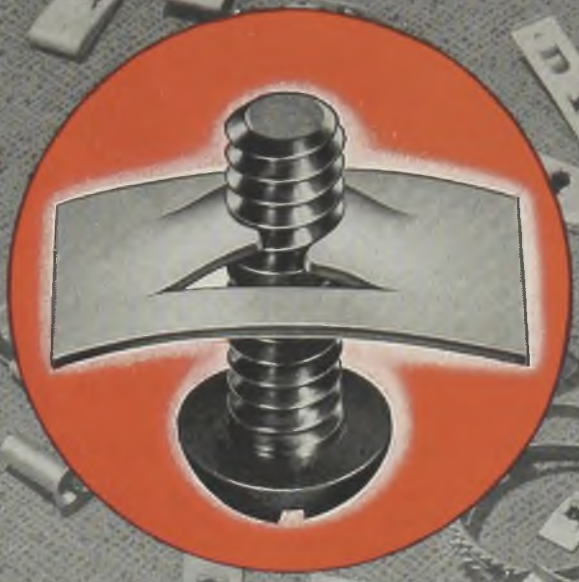
More than a million pounds of aluminum forgings are now being turned out monthly by Willys-Overland Motors Inc., Toledo, O., for use in virtually every plane now rolling off America's assembly lines.

As one of the three largest producers of small hammer forgings in the country, the auto concern insured the continuance of this production schedule by the installation of a conveyor system throughout the five buildings in which the aluminum division has been located since its inception in 1941.

At that time, the nation's acute need of plane parts necessitated the imme-

Over 2000 Assembly Short Cuts

WITH Speed Nuts



The SPEED NUT System of spring-tension fasteners comprises more than 2000 shapes and sizes. Back of each and every design was a new reason, hence a new method to improve specific assembly jobs.

In some cases, certain parts are completely eliminated. In other cases riveting operations or drilling of holes is dispensed with. Many SPEED NUTS hold themselves in screw-receiving position. Dismantling of parts for service or repair is often made twice as easy. And in every case, weight is reduced from 50% to 70%, time is generally cut in half and net assembly costs hit a new low.

Hundreds of metal, wood, and plastic products have already been fastened better in over 2000 ways with SPEED NUTS. Use more of them to fullest advantage now. If in doubt on correct shape, send blueprints for quick help.

TINNERMAN PRODUCTS, INC.

2039 FULTON ROAD • CLEVELAND 13, OHIO

*Trademark Reg. U. S. Patent Office

Fastest Thing in Fastenings

SHOOTING TEST: Operation of a combustion-type aircraft engine starter, which gets its power from a 12-gage shotgun-type shell, is simulated here on this special test stand at the Eclipse-Pioneer division assembly plant of Bendix Aviation Corp., East Orange, N. J. In addition to compressed air tests, each combustion starter is checked by firing of 11 shotgun-type shells

diate creation of the division out of the facilities at hand with the result that the operation required an unusual amount of inter-building transportation and handling.

Under the new arrangement, Mr. Canaday pointed out, the 700 different types of aluminum pieces turned out by the firm are transported in monorail carriages from the forging hammers to finishing department where they are transferred to conveyor belts.

The belts move past machining stations at the rate of 10 feet per minute and are divided into three lanes, each of which carries parts intended for different operations, he said. This procedure, he noted, eliminates the need of workers handling every piece to learn whether grinding, milling or buffing is required on it.

Manpower Shortages Acute Despite Layoffs

Announcement by Douglas Aircraft Co. of impending layoff of 8000 workers due to partial contract cancellations on the A-20 Havoc light bomber in the Santa Monica, Calif., plant has complicated the manpower situation here.

Northrup Aircraft meanwhile is calling for 2000 more workers immediately, and will need 1000 more before 1945.

Thomas C. Campbell, War Manpower Commission area director, says current manpower needs are in excess of 11,000 aircraft workers, and that the community is not meeting its manpower commitments.

WMC, to provide for orderly transfer of workers furloughed by Douglas to other plants, has set up a 4-point plan providing that Douglas refer terminated employes to the United States Employment Service for availability certificates. Selected aircraft and parts manufactures will have hiring representatives at USES offices; the employment office will refer workers on the basis of employment priorities; will not issue availability certificates to prospective employes until job commitments have been made or until after all efforts to refer workers to high-priority work have failed.

A survey completed by the Merchants and Manufacturers Association estimates that the labor turnover in the Los Angeles area is costing industry nearly $1,000,000 a month.

This figure is based on estimates that it costs industry $188 every time and employe leaves his job.

Branches Delivering Superfortress Parts

Branch plants of Boeing Aircraft Co. have begun delivery to the main factory in Seattle of subassemblies of B-29 Superfortresses. The first shipments came from Chehalis while Bellingham, Tacoma, Aberdeen, South Tacoma and Everett will follow as soon as conversion from B-17 to B-29 is completed. This work at the six branch factories coincides with similar conversion at the main plants co-ordinating into one production unit.

They Say:

"Because less has been accomplished before and during the war towards making distribution more efficient, the cutting of marketing costs offers the broader avenue to lower consumer prices and a higher standard of living for all of us."—**Robert Freer,** chairman, Federal Trade Commission.

* * *

"Are war controls to be turned into postwar restrictions or are they to be eliminated, with a gradual elimination of trade barriers, exchange controls, duties and tariffs to follow? It will require co-operation between business and government in the United States and co-operation between government and business of this country and those of other countries to bring about the desired solution. Change will not come overnight."—**William S. Swingle,** vice president, National Foreign Trade Council.

* * *

"We have gradually lost our incentive to hold costs down. . . . War needs have necessitated getting things done in a hurry with control of costs being relegated to a secondary position. . . . History proves that excessive costs of all kinds will become suspended as soon as the war is over. . . . If there ever comes a day when there are no more business failures, it will not be because the world has become completely efficient, but because free enterprise has vanished from the earth."—**Robert** N. Wallis, assistant treasurer, Dennison Mfg. Co.

* * *

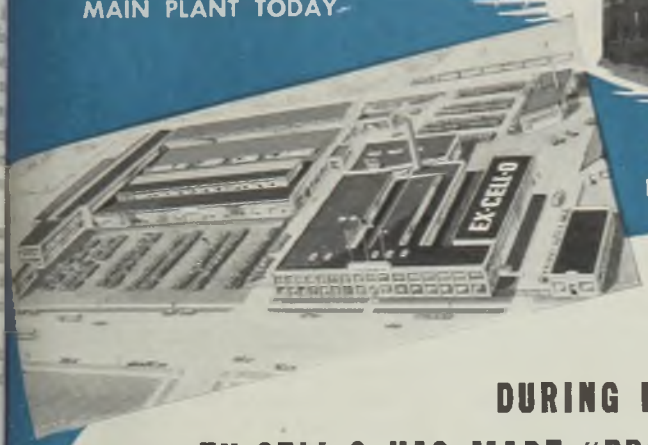
"The United States has demonstrated in war that it is capable of producing in peace enough to almost double the prewar standard of living of everyone in this country. Up to now, however, the country has not found the method of carrying this through, and labor must do its share of the thinking and acting to bring this objective to realization."—**Adolf A. Berle,** Assistant Secretary of State.

A Long Way in a Short Time

★ EX-CELL-O OFFICE AND MAIN PLANT TODAY

The First EX-CELL-O PLANT

★ EX-CELL-O AIRCRAFT PARTS DIVISION



DURING ITS FIRST 25 YEARS
EX-CELL-O HAS MADE "PRODUCTION" HISTORY FOR THE NATION

Ex-Cell-O was founded a quarter of a century ago with a practical ideal—to bring to metal-working industries a new high standard for accuracy and speed in mass production. Steadfastly through the years it has progressed in this direction. Ex-Cell-O was the first company in the United States to design and manufacture and introduce for successful commercial use: a *precision ball bearing internal grinding spindle . . . a precision horizontal-type diamond boring machine . . . a precision thread grinding machine . . . a precision cylinder boring machine . . . a 1½ horsepower compact hydraulic power unit . . . a Diesel fuel injection pump and a universal-type Diesel engine nozzle . . . a machine to form and fill automatically square paper milk bottles in the dairy . . . Ex-Cell-O was also the first American company to undertake the mass production of hardened and ground precision parts for airplane engines.* If you are planning for tomorrow, when new standards will necessitate costs that are competitive, take advantage of Ex-Cell-O's wide engineering experience and extensive manufacturing facilities.

EX-CELL-O CORPORATION • DETROIT 6

★ EX-CELL-O MACHINE TOOL DIVISION

★ EX-CELL-O DIESEL DIVISION

XLO

EX-CELL-O for PRECISION

SPECIAL MULTIPLE WAY-TYPE PRECISION BORING MACHINES • SPECIAL MULTIPLE PRECISION DRILLING MACHINES • PRECISION THREAD GRINDING, BORING AND LAPPING MACHINES • BROACHES AND BROACH GRINDING MACHINES • HYDRAULIC POWER [illegible] GRINDING SPINDLES AND DRILL JIG BUSHINGS • CONTINENTAL CUTTING TOOLS • TOOL GRINDERS • DIESEL FUEL INJECTION [illegible] NGS • PURE-PAK PAPER MILK BOTTLE MACHINES • PRECISION AIRCRAFT AND MISCELLANEOUS PARTS

MEN of INDUSTRY

ALEX U. STEENROD

ROBERT J. MURRAY

BRIG. GEN. T. S. HAMMOND

Alex U. Steenrod has been appointed manager, steel building products sales, Berger Mfg. Division, Republic Steel Corp., at Canton, O. He comes to his new position from the Milcor Steel Co., subsidiary of Inland Steel Co., Chicago, where he was manager of the Canton plant. His first position was in the cost department, Wheeling Corrugating Co., Wheeling Steel Corp. subsidiary, Wheeling, W. Va. In 1923, he was made district sales manager at Wheeling and in 1929 opened and had charge of the Detroit sales office. During the same year, he joined the Milcor organization, in charge of the Chicago warehouse, where he remained until 1936 when he was moved to Canton.

—o—

Jessop Steel Co. has elected **Robert J. Murray** as secretary and treasurer. He joined the company in 1925; from 1927 until 1941 was the purchasing agent; in 1928, assistant secretary; in 1934, secretary and assistant treasurer. The company also announced election of **L. C. Van Kirk** as assistant treasurer.

—o—

Emmet F. Harding has been appointed assistant sales manager, Corbin Screw Corp., New Britain, Conn.

—o—

Stuart F. Brown has been appointed director of exports, American Brake Shoe Co., New York. The company's export division directs the export activities of National Bearing Metals Corp. as well as all divisions of the American Brake Shoe Co.

—o—

A. H. Kruger has joined Wheelco Instruments Co., Chicago, as application engineer. Since 1941, he was vice president in charge of sales and estimating for the Vulcan Corp., Portsmouth, O.

—o—

C. E. Magoon has been appointed treasurer and assistant secretary of the Gary, Ind., plant of Tubular Alloy Steel Corp., U. S. Steel Corp. subsidiary. **W. L. Lohrentz** has been appointed secretary and assistant treasurer.

Mr. Magoon, whose election to the board of directors of Tubular Alloy was effective with his new appointment, began his career with Carnegie-Illinois Steel Corp. in 1939. Mr. Lohrentz was appointed assistant to the secretary of Tubular Alloy Steel Corp. in December, 1942.

—o—

John J. Hall has been appointed vice president and general manager of sales, Richmond Radiator Co., New York. Until recently, he was associated with American Radiator & Standard Sanitary Corp., New York, where he held the title of vice president, general sales. During the past two years, he has been connected with the War Production Board in Washington as deputy vice chairman for industry operations.

—o—

Thomas J. Connors, who has been with the Stanley Works Steel division for 22 years, has joined Reliance Steel Corp., Cleveland, as special representative for the Bancroft division, Worcester, Mass.

—o—

G. Clymer Brooke has been appointed assistant to the president, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa. He has been associated with the company since 1931 and is a director of the E. & G. Brooke Iron Co., Birdsboro.

—o—

William R. Thompson has joined the stainless products sales department, Pittsburgh Steel Co., Pittsburgh. For the past eight years, he was manager of stainless steel sales for Jessop Steel Co., Washington, Pa.

—o—

Edgar R. Garlick has joined the sales organization of the Bancroft division, Reliance Steel Corp., Worcester, Mass. Mr. Garlick has been with the Office of Chief of Ordnance, Detroit, and prior to that with Steel Recovery Corp., Pittsburgh.

—o—

William Blackie and **William J. McBrian** have been elected vice presidents, Caterpillar Tractor Co., Peoria, Ill. **William H. Franklin** has been made controller, succeeding Mr. Blackie in that position. **Edward W. Jackson** was appointed general parts manager of the company, succeeding **L. G. Morgan** who is now head of parts department activities on the Pacific coast.

—o—

Brig. Gen. Thomas S. Hammond, Illinois National Guard, retired, is relinquishing his post as chief of the Chicago Ordnance District because of ill health. **Col. John Slezak,** deputy district chief, will become chief while General Hammond will remain as deputy chief.

General Hammond was decorated recently by Lieut. Gen. Brehon B. Somervell, commanding general, Army Service Forces, with the War Department award for meritorious civilian service. He resigned in January, 1942, as president and general manager, Whiting Corp., Harvey, Ill., to serve the Chicago Ordnance District.

—o—

Jones & Laughlin Steel Corp., Otis Works, Cleveland, has announced the following personnel changes: **J. F. Spellacy** has been appointed to the newly created post of staff engineer; **B. F. Scott,** superintendent, 77-inch hot strip mill; **W. J. McNally,** steel order supervisor; and **Laird P. Lias,** assistant superintendent, Riverside open hearth department.

—o—

S. J. Hug, secretary, Universal-Cyclops Steel Corp., Bridgeville, Pa., and **Hubert J. Jirka,** comptroller, Kropp Forge Co., Chicago, have been elected to membership in the Controllers Institute of America, New York.

—o—

R. C. Geekie, sales representative, Scullin Steel Co., St. Louis, has been appointed assistant to the president in charge of sales, and will assume the duties of the late G. L. L. Davis.

—o—

Whiting Corp., Harvey, Ill., has appointed **G. M. Dennis** as manager of its Philadelphia district office. The company has made arrangements whereby the A. T. Herr Supply Co., Denver, Colo., will be the sales representative in this territory on Whiting railroad equipment only.

JOSEPH S. BORLAND

Who has been appointed Buffalo district sales manager, Wheeling Steel Corp., Wheeling, W. Va., as announced in STEEL, June 12, page 84

BYRON M. BIRD

WALTER L. MAXSON

A. R. TEIFELD

J. A. Sargent has been appointed Detroit representative by Chew & Burke Equipment Co., agents for Poole Foundry & Machine Co., Baltimore.

—o—

Paul R. MacMichael has been named vice president of the Foley Mfg. Co., Minneapolis, manufacturer of stainless steel mess kits for the Army, kitchen utensils, food mills and can openers.

—o—

Clarence W. Pearson has been named plant superintendent of Rogers Hydraulic Inc., Minneapolis, manufacturer of hydraulic presses and pumps. He was formerly general superintendent of the 0.30 caliber ammunition department at the Twin Cities ordnance plant.

—o—

Charles Gross has been appointed sales manager, Murchey Machine & Tool Co., Detroit, pioneer in the machine threading field. He was associated previously with Aeronautical Products Inc., Detroit, manufacturer of aircraft engine parts, where he served as assistant general sales manager.

—o—

S. E. Heyerick, formerly assistant to the late W. H. Hallsteen, has been appointed purchasing agent of the Ilg Electric Ventilating Co., Chicago. He has been associated with the company for 20 years.

—o—

John F. Johannsen has been named export manager for the Willamette Hyster Co., Portland, Oreg., and Peoria, Ill. He was previously export manager for R. G. LeTourneau Inc., Peoria, and recently has been with the International Branch, Office of Engineers, U. S. Army, Washington.

—o—

L. D. Harkrider, president, General Malleable Corp., Waukesha, Wis., has been elected director of Waukesha Motor Co. He is also vice president of Hein-Werner Motor Parts Corp.

—o—

Ernest Mahler, executive vice president, Kimberly-Clark Corp., Neenah, Wis., has been elected to the board of directors, Allis-Chalmers Mfg. Co., Milwaukee, succeeding **R. G. Hutchins,** New York, retired.

—o—

Howard M. Givens Jr. has been appointed manager of bar steel sales for the Midvale Co., Nicetown, Philadelphia.

—o—

Ralph C. Cameron has been appointed director of merchandising, Airtemp division, Chrysler Corp., Detroit. He will continue to direct postwar planning activities of the company. He came to Airtemp early in 1942 from Nash-Kelvinator Corp., where he was sales manager of the household division.

—o—

Charles J. Hardy, chairman of the board, American Car & Foundry Co., New York, received the honorary degree of Doctor of Law from De Paul University at its annual convocation in Orchestra hall, Chicago, June 6.

—o—

Byron M. Bird has been appointed technical consultant on coal preparation and ore dressing matters, Jeffrey Mfg. Co., Columbus, O. For several years he was in charge of experiment stations of the United States Bureau of Mines and in 1930 he joined the staff of the Battelle Memorial Institute, Columbus, in charge of research in ore dressing and in coal preparation.

—o—

Charles L. Blatchford, Chicago, has been appointed secretary of the National Metal Trades Association, New York.

—o—

Jules M. Keller, manager of foundries, American Car & Foundry Co., New York, was honored by his company and associates with a dinner at Missouri Athletic Club, St. Louis, June 13, in recognition of his 50 years continuous service with the organization. He is 72 years old.

—o—

Alfred Erwin McMaster, Vancouver, B. C., has been appointed liaison officer, Munitions and Supply Department, Labor Department. He has become also assistant co-ordinator of controls, and a member of the Wartime Industries Control Board, and of the Production Board.

—o—

Westinghouse Electric & Mfg. Co. has announced appointments of: **C. P. Croco,** manager, welding department, motor division, Trafford, Pa., works; **Theodore C. Monk,** assistant to manager, lamp division, Bloomfield, N. J.; and **Harold B. Donley,** manager, radio receiver division, East Pittsburgh, Pa. Mr. Croco had been director of engineering for the Federal Machine & Welder Co., Warren, O., since February, 1943, and for the preceding 18 years had been an engineer with Westinghouse. Mr. Monk has been with the company since 1920. Mr. Donley has been with the company for 22 years and recently had been general appliance manager for the Westinghouse Electric Supply Co., New York.

Walter L. Maxson, manager and chief engineer of the mining division, Allis-Chalmers Mfg. Co., Milwaukee, has been named director of research for the Oliver Iron Mining Co., U. S. Steel Corp. subsidiary. He began his career with the Anaconda Copper Mining Co. in 1915. In the following five years he was associated with various nonferrous metal mining firms and for the next six years he served as associate professor of metallurgy at the Colorado School of Mines. He joined Allis-Chalmers in 1927. Mr. Maxson will supervise the Oliver company's program of research in the general improvement of Lake Superior district iron ores.

—o—

A. R. Teifeld has been appointed advertising manager, Copperweld Steel Co., Glassport, Pa. He was formerly with the American Steel & Wire Co., Cleveland, his latest assignment being supervision of that company's electrical, wire rope and construction materials advertising.

—o—

Henry L. Metz, former advertising manager, Addressograph - Multigraph Corp., Cleveland, has been named head of the corporation's department of education.

—o—

W. F. Boyle has been appointed manager of gas turbine activities at the steam division, Westinghouse Electric & Mfg. Co., Philadelphia. Previously, he was manager of the marine section of the steam division application department.

—o—

Frank G. Horton, associated with the Illuminating Engineering Society, New York, as national executive secretary since 1924, has been named managing secretary of the Engineering Society of Detroit, succeeding the late E. L. Brandt.

—o—

J. Gordon Fogo, K. C., has resigned as Associate Co-ordinator of Controls, Munitions and Supply Department, Canada. He is a member of the legal firm of Burchell, Smith, Parker and Fogo, of Halifax, Nova Scotia.

—o—

Philip R. Elfstrom, assistant chief engineer, Chicago, North Shore & Mil-

FRANCIS P. GORMELY

JAMES W. McLAUGHLIN

ARTHUR V. WILKER

Union Carbide & Carbon Corp., New York, has announced election of Mr. Gormely as president of Electro Metallurgical Co., Electro Metallurgical Co. of Canada Ltd., Haynes Stellite Co., Michigan Northern Power Co. and Union Carbide Co. of Canada Ltd.; Mr. McLaughlin as president of the Bakelite Corp.; and Mr. Wilker as president of National Carbon Co. Inc., Canadian National Carbon Co. Ltd., all units of Union Carbide & Carbon Corp., announced in STEEL, May 29, page 76

waukee, and the Chicago, Aurora & Elgin railroads, has been elected president of the Western Society of Engineers, Chicago. **Henry T. Heald,** president, Illinois Institute of Technology, is the new first vice president, and **A. K. Bushman,** district manager of the industrial division, General Electric Co., second vice president.

—o—

L. R. Thomas, system telegraph engineer since 1941, Atchison, Topeka & Santa Fe railroad, Chicago, has been appointed electronics engineer.

—o—

John W. DeLind Jr. has been appointed director of exports, Crosley Corp., Cincinnati. He served for 16 years with the Overseas Motor Service Corp., a division of General Motors Corp., and more recently as director of exports for American Brake Shoe Co., New York. Until recently, he acted as chairman of the export group of the Pneumatic Automotive Equipment Association in New York.

—o—

E. M. Hicok, personnel relations manager, Western Electric Co. Inc., New York, retired May 31 under the company's pension plan after 39 years service. He was succeeded by **R. J. Pfeifer,** assistant comptroller of manufacture, who became superintendent of personnel relations.

—o—

H. L. Harvill Mfg. Co. has appointed **Philip G. Nase** and **Henry J. DeBry** directors of the company. The Harvill company is a producer of aluminum die castings, pressure castings, centrifugal castings, and permanent mold castings.

Charles Boland has been placed in charge of an engineering and service office just established by Hardinge Bros. Inc., Elmira, N. Y., in Detroit, Mich.

—o—

H. McCaughey, president, Vulcan Foundry Co., Oakland, Calif., has been appointed to the Gray Iron Castings Industry Advisory Committee recently formed by the War Production Board.

—o—

William G. Hancock, general sales manager, McCord Radiator & Mfg. Co., Detroit, has been elected to the board of directors, Automotive Council for War Production, Detroit, succeeding the late H. W. Knapp.

—o—

John Lindegren, for a number of years assistant superintendent, Crompton & Knowles Loom Works, Worcester, Mass., has joined Henry C. Hook in the formation of the H. C. Hook Co., tool and gage engineering service, with headquarters at 340 Main street, Worcester.

—o—

Clarence Frazier, vice president of Food Machinery Corp., Los Angeles, has been appointed manager of the corporation's Peerless Pump division, succeeding the late Vernon Edler.

—o—

R. D. Vickers has been placed in charge of plastics and chemical sales in the eastern region of the United States, with headquarters in New York, for Goodyear Tire & Rubber Co., Akron, O.

—o—

Maj. E. W. Senior has left his post with the British Raw Materials Mission, Washington, and is returning to London to take over the duties of Ball Bearings Controller, British Ministry of Supply. **R. Colin Smith** has been placed in charge of iron and steel for the mission, succeeding Mr. Senior, with headquarters in the Kedrick building, Washington.

OBITUARIES . . .

J. Thomas Talbot, 47, an executive of the American Brake Shoe Co., New York, died suddenly at his home in Bronxville, N. Y., June 6. He joined Brake Shoe's sales department in 1920 and was appointed assistant vice president of the Brake Shoe & Castings Division in January, 1937. On Sept. 1, 1940, he was appointed vice president in charge of sales for both the Brake Shoe and Castings and Southern Wheel divisions. In January, 1944, he was elected vice president and director of the Dominion Brake Shoe Co. Ltd.

—o—

William W. Hebson, 50, office manager, South Works, Carnegie-Illinois Steel Corp., Chicago, died suddenly June 6 in that city while attending a testimonial dinner for C. C. Hill Jr., former division superintendent of rolling mills, now located in the corporation's engineering department in Pittsburgh. Mr. Hebson had been associated with the company for 35 years.

—o—

William C. Ramsay, 57, auditor, Buffington, Ind., plant of Universal Atlas Cement Co., New York, died June 6 in Chicago. He had been employed at the plant 34 years.

—o—

John W. Cowper, 73, organizer and president of the John W. Cowper Co. Inc., Buffalo, a contracting firm, died in that city June 7.

—o—

Albert H. Armstrong, 73, retired General Electric Co. engineer widely known for his work in railroad electrification, died recently in Schenectady. He had been associated with General Electric since 1892 when he went to Schenectady to work under the direction of the late Dr. Charles P. Steinmetz.

—o—

Prescott B. Wiske, an executive of Servel Inc., Evansville, Ind., died recently in Denver while attending a convention. He had been associated with Servel since 1932.

—o—

W. L. Belknap Sr., 79, chairman of the board and formerly president for 46 years of the Belknap Mfg. Co., Bridgeport, Conn., maker of brass valves, died June 7 in Bridgeport Hospital.

—o—

Clark W. Parker, 81, founder and former president of the Parker Rust Proof Co., Detroit, and president, Automotive Royalties Recovery Committee of New York, died recently at his home in Dobbs Ferry, N. Y.

—o—

Clarence C. Horner, credit manager, Emerson Electric Mfg. Co., St. Louis, died May 25 in that city.

—o—

John B. Rostron, 67, vice president and traffic manager, RCA Communications Inc., died June 12 at his home in Hewlett, L. I. He joined RCA in February, 1920.

Gray Iron Group Moves Meeting To Chicago

Change site of meeting from Milwaukee on July 6. . . Conference to discuss industry's desperate manpower problems

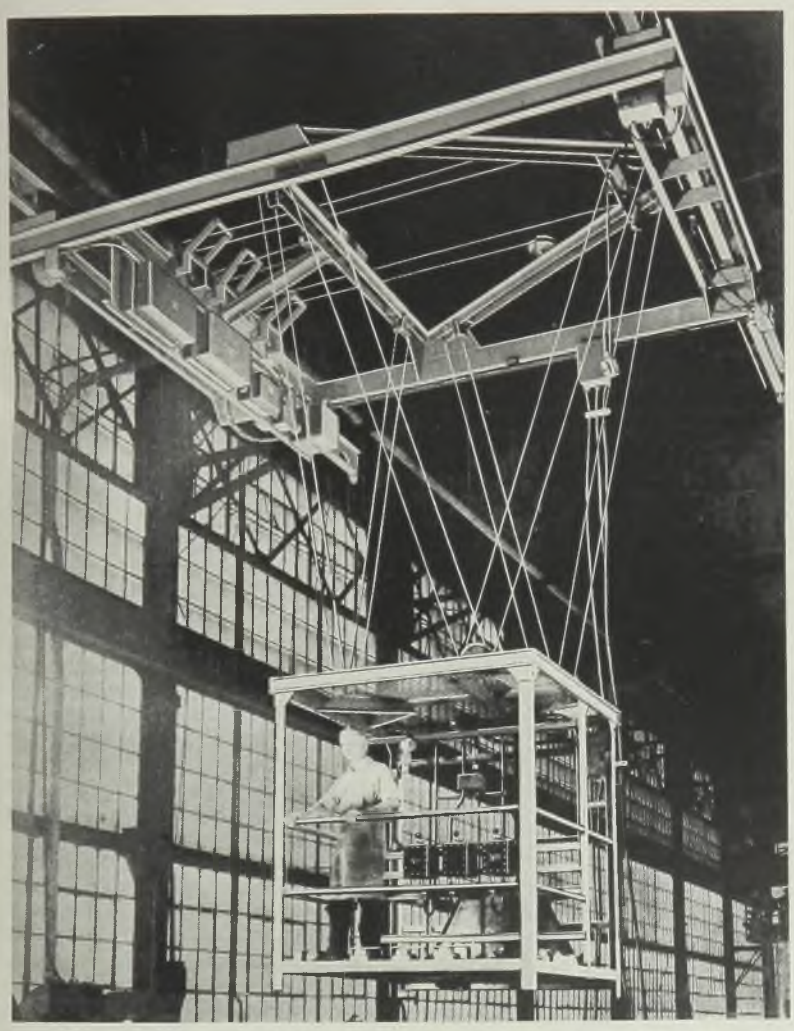
GRAY Iron Founders' Society announces its midwest region foundry management conference, originally scheduled for Milwaukee, will be held at the Stevens hotel, Chicago, on July 6. The site of the meeting was changed because Milwaukee, on that date, is host to another national convention which will tax its hotel facilities severely.

Third in a series of society-sponsored "foundry wartime problem clinics," the conference will be devoted primarily to discussion of the industry's desperate manpower shortage difficulties.

William B. Murphy, deputy vice chairman for production, War Production Board, will outline the critical castings supply situation stemming from the lack of manpower. Industry's and labor's views on the situation and their suggestions for quick, effective relief will also be expressed.

George W. Cannon, president, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich., and a member of the recently formed Gray Iron Foundry Industry Advisory Committee of WPB, will speak for industry.

Other matters to be discussed are the programs, policies and procedures of the War Manpower Commission, War Labor Board action, OPA price regulations, and the plan of attack of the newly created National Foundry and Forge Shop Committee, which represents the five federal agencies directly concerned with the foundry manpower shortage problems.



STABILIZED TRAVELING PLATFORM: This stabilized traveling platform, built by the Cleveland Tramrail division, Cleveland Crane & Engineering Co., Wickliffe, O., can be raised or lowered without swing as firmly as though held by vertical guides. It can be traveled to any point longitudinally or laterally in an area covered by the crane on which it is operated. It was designed for spray painting large air cargo ships and to aid with some of the assembly operations

BRIEFS . . .

Diamond Tool Co., Los Angeles, held a birthday celebration June 3, this date being the tenth anniversary of the founding of the company by Stanley Swiateck and Frank Kwasnik.

—o—

American Chain & Cable Co. Inc., Bridgeport, Conn., recently acquired the Wilson Mechanical Instrument Co. Inc., New York.

—o—

Westinghouse Electric International Co., New York, which for more than 25 years has operated in the international field as an exporter, has now entered the import field, John W. White, president, announced.

—o—

E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., reports construction has begun on additions which will increase the neoprene capacity at its Louisville, Ky., plant by 50 per cent.

—o—

Earle M. Jorgensen Co., Los Angeles, has received an authorization to construct a 220-foot extension to its warehousing facilities at Houston, Tex.

—o—

Ducommun Metals & Supply Co., Los Angeles, has instituted a new department to locate and buy surplus steel stocks and equipment for resale. Purchases are made from prime and subcontractors and companies possessing excessive inventories.

—o—

Adel Precision Products Corp., Burbank, Calif., recently produced its 200-millionth line support clip for aircraft.

—o—

Universal Engineering Corp., Cedar Rapids, Ia., has acquired manufacturing rights, parts stocks, and current orders for the U-6 automatic and coulter types of thread milling machines formerly manufactured by Automatic Machinery Corp. and Bolton Mfg. Co., Bridgeport, Conn.

—o—

Progressive Welder Co., Detroit, announces that partial ownership of the company has been transferred to employes as the result of stock purchases by individual workers in both shop and office.

—o—

American Can Co., Forest Park, Ill., reports that its scientific scrap disposal and oil reclaiming program saves hundreds of pounds of metal, 12,000 gallons of oil and more than 5000 gallons of solvent monthly.

San Francisco Looks Into Postwar Uses for New Steelmaking Facilities

Widening of peacetime outlets for home-produced metal products sought. Many industrialists believe West Coast can support fully-integrated automobile plants. Farm implement market possibilities being investigated

SAN FRANCISCO

WITH an eye to the postwar period, the San Francisco Chamber of Commerce expects to appoint soon a special iron and steel committee pledged to survey possibilities of expanding steel fabricating facilities in this area. The project is a part of a broad planning and development program which will cover a half dozen major industries.

As a result of the war-born increase in steel producing capacity in the West, San Francisco planners see the need of widening outlets to take full advantage of the facilities. So far as the postwar civilian market is concerned, wartime population gains lend a favorable aspect. From 1940 through April, 1944, the San Francisco metropolitan area's population is estimated to have expanded 25 per cent to more than 1,830,000, excluding military personnel and civilian transients. Not all of this influx will be maintained after the war, of course, but business and civic authorities believe a substantial percentage will be held.

Survey Potential Steel Markets

Working with the prospect of a larger residential population, the special steel committee will survey potential markets for iron and steel products in detail to determine what types of fabricated items may be sold in quantity. For example, many industrialists here believe the West Coast could support fully-integrated auto manufacturing plants instead of assembly units as is now the case. They reason, too, that the huge western market for agricultural equipment can be the basis for manufacture of farm tools on the coast. Scores of home-produced items can be expanded to fill local needs, it is believed.

However, officials see as the basic factor in any future expansion of steel fabrication industries here and on West Coast in general the problem of price differentials. Indications are that first aim of the committee will be a thorough-going analysis of the price structure with a goal of fostering adjustments to levels favorable to western manufacturers.

At present, 177 steel fabricators and manufacturers have plants located in San Francisco, making a wide range of products.

An effort to reduce excesses in some spots and to alleviate shortages in others, especially in a number of metals, equipment and other materials, is being undertaken by the Property Disposal Section of the Western Procurement District, AAF Materiel Command, with headquarters here. It has asked western war contractors to compile at once accurate lists of all surplus property and to segregate this property in their plants. Upon completion of the listing, the surplus materiel will be inspected and prepared for sale and shipment.

Property found not useful for aircraft maintenance or to other contractors on current production will be transferred to the Metals Reserve Co., an RFC subsidiary, from which it will be allocated wherever feasible to commercial warehouses for sale through normal trade channels.

The Property Disposal Section now is concentrating its efforts to get aluminum, copper, steel and idle parts into trade channels. Large amounts of aircraft hardware and components, such as nuts, bolts, valves, switches, rheostats, bearings and the like, have accumulated at many plants because of changes in design or due to over-ordering, and the object is to keep as much of the material as possible from ending on scrap piles.

Another factor in the disposal program is that under contract termination there is a commitment to remove material from plants within 60 days. With a serious shortage of warehouse space in the western area, all disposals which can be accomplished soon will be of assistance.

The Disposal Section reports that it was found possible on a recent order for 5,750,000 pounds of aluminum sheet to fill 80 per cent of the amount from idle inventories within three weeks.

Contract for Reservoir

Award of a $345,222 contract for construction of a reservoir outlet in San Mateo county, California, has been made by the San Francisco Public Utilities Commission to R. G. Clifford, South San Francisco, and Peter Sorensen, Redwood City. Included in requirements for the project are 35 tons of reinforcing steel, 23 tons of steel castings, 21 tons of intake screens, 9 tons of pipe and 7 tons of miscellaneous metal work. U. S. Pipe & Foundry Co. was low bidder, at $6335, for 7000 feet of 6-inch cast iron water pipe being purchased by the City of Pittsburg, Calif., and the City of Napa has under advisement bids for 6400 feet of 16-inch welded sheet steel water pipe.

Among pending naval construction in the San Francisco area is award of a $297,070 contract for new buildings in Alameda to Louis C. Dunn Co., San Francisco; a contract totaling $155,527 to Barrett & Hilp, San Francisco, for additions to the naval hospital at Mare Island; and $138,723 of construction in Alameda to H. H. Larsen, San Francisco. Parker, Steffins & Pearce, San Francisco, was low bidder, at $350,000, for new buildings at the naval training station at San Bruno, and Standard Building Co., San Francisco, bid low at $119,842 for a new Sonar school building on Treasure Island. Prospective federal jobs in this area have been increased by nearly $800,000 with Navy Department approval of new hospital facilities in Oakland, for which bids will be called shortly.

A survey just completed in Sacramento, Calif., shows that 250 business and industrial firms in that city have definite plans for postwar improvements and expansions aggregating $3,670,000. Of the number, 52 will build new plants, warehouses and stores as soon as possible after V-Day.

Marinship Corp., operating in Sausalito on San Francisco Bay, has started a drive to recruit another 1500 skilled workers as a result of enlarged contracts just placed with the company by the Maritime Commission. The shipyard now employs 15,000, of whom about 3750 are women.

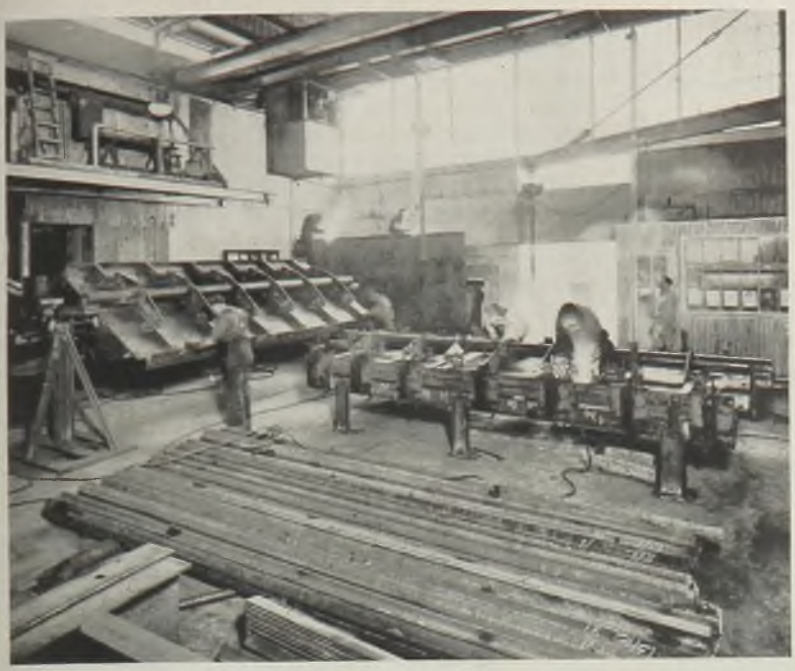
Convert Tankers for Navy

The new contract calls for conversion of six high-speed, 10,000 horsepower tankers for use by the Navy. These six ships now are under construction at Marinship. Each vessel will receive special installations to convert from a regular tanker to a Navy oiler, resulting in an 80 per cent increase in the work involved. From 75 to 90 days additional time will be required for the completion of each ship.

Marinship's latest schedule, in addition to the conversion job, calls for 24 tankers for the Maritime Commission, beginning with a keel just laid. First launching is set for late August and delivery in October, with a step-up in time on subsequent ships. The tankers will be driven by 8250-horsepower turbo electric installations.

The contract is designated as "Hill Class" ships, a distinct from the 10,000-horsepower "Mission Class" tankers, of which ten remain to be launched. Five of these are now on the ways. The Marinship tankers are all of 16,500 deadweight tons. "Hill Class" vessels are being built at Portland, Oreg., Mobile, Ala., and Chester, Pa., in addition to Sausalito.

Henry J. Kaiser's Permanente Metals Corp. magnesium plant at Lathrop, Calif., near here, is being shut down by order of Defense Plant Corp., putting out of operation two of the three Kaiser magnesium extractors within recent weeks. The Lathrop plant, constructed at a cost of several million dollars, began operating in June, 1942, and was a pioneer producer of the metal under the silico-thermic process.



FACILITATES PLATE WELDING: Apex Steel Corp., Los Angeles, has constructed a welding jig which handles plates 7 x 16 feet to facilitate the welding of bulkheads for barges. Plates are set on the jig, stiffened with angles latitudinally and longitudinally, and then can be revolved permitting welders to perform from one position

Southern California Receives Large Military Supply Contracts

LOS ANGELES

Of $17,715,000,000 placed in California for supply contracts for ships, ordnance and planes accumulative through March, 1944, more than half, $9,666,000,000, was placed in the Los Angeles area.

During May $104,781,211 in contracts for military supplies and construction was approved for Southern California by the Los Angeles Area Production Urgency Committee.

For military supplies, 126 contracts totaling $62,905,626 were approved. Military construction projects costing $41,875,585 were authorized for immediate construction.

Naval installations of a permanent nature representing an investment of almost $12,000,000 for southern California make up the major part of the new construction to be approved.

Among the larger naval projects under construction is a $3,218,000 naval ordnance depot at Seal Beach. Contract for construction has been awarded to William Simpson Construction Co. and W. E. Kier Construction Co., both of Los Angeles.

In the counties of Santa Barbara, San Diego, Imperial, San Bernardino and Los Angeles, a number of Marine Air Corps bases are to be developed at a cost of $10,000,000.

A housing project at Oceanside for 7000 officers and men and to cost $7,000,000 has been provided for. Also at Oceanside six warehouses for military supplies will cost $1,750,000. Special training facilities to include training in new types of war weapons will call for an expenditure of $5,500,000 in the same locality.

In San Diego, a new magazine for ammunition is a $6,000,000 project. New convoying and escort bases here will mean an expenditure of $1,200,000. The island of San Clemente off the Coast at San Diego is to be provided with new naval training facilities to cost $1,300,000. Contracts for many of these projects have been let.

In the harbor district of Los Angeles a vast expansion program is under way to provide for the coming speed-up of the Pacific war. In Wilmington and San Pedro, centers of the local shipbuilding industry and in Long Beach, a fleet base, many new projects are in various stages of completion.

Projects under construction in recent months include a $20,000,000 powder magazine and net depot on Terminal Island in Los Angeles harbor; tunnels and bridges between the Island and the mainland to cost $10,000,000. Increased convoy loading facilities, docks and barracks will require expenditure of $3,000,000.

Oregon Shipbuilding Co. Gets Liberty Contract

SEATTLE

Oregon Shipbuilding Co., Portland, has been awarded an additional contract to build 20 Liberty ships, to be delivered by June 1, 1945.

In line with Todd's overall policy, the name of the Seattle-Tacoma Shipbuilding Co., operating yards in both Seattle and Tacoma, has been changed to Todd Pacific Shipyards Inc.

Reports from Vancouver, B. C., state that shipbuilding across the line is entering its final phase. West Coast Shipyards has one way vacant and no new contracts while Burrard Drydock Co. Ltd. announces work on flat tops will end in July.

Because of crowded conditions at Puget Sound yards, the Liberty ship VALERY CHKALOV, under the Russian, flag, has been sent to a Vancouver, B. C., yard for repairs. This vessel broke in two in the North Pacific. The first section was towed stern first to the North Vancouver Shipyard. The prow was towed separately to join the stern half at the yards.

In about 30 days, Bureau of Reclamation will receive bids for a $300,000 addition to the Cove power plant in Oregon. Same agency is surveying one unit of the Deschutes project on the Crooked river, Oregon, planned to irrigate 14,000 acres and involving two tunnels and other facilities.

Naval approval of $730,000 for projects in Washington state includes a navy ammunition depot, gunnery training buildings and aviation utility shops at several centers. Puget Sound Bridge & Dredging Co. has a $25,000 contract and Boespflug Construction Co. one for $35,184 for work at the Seattle naval station. It is reported that $853.000 is available for a hangar, with 120-foot clearance, at the Astoria, Oreg., naval station.

Firestone Tire & Rubber Co. plans to open a branch plant at Ferndale, Wash., directed by G. H. Curtis.

See Postwar Steel Output Reaching 70,000,000 Tons

Steel production during the first good postwar year will reach 70,000,000 tons and that will be the peacetime peak, according to a study of the steel industry's present position and outlook recently issued by Paine, Webber, Jackson & Curtis, New York.

Comparative prewar production peaks were 67,000,000 tons in 1940, 63,200,000 tons in 1929, and 56,600,000 tons in 1937.

War Developments Spur Munitions Production

INCREASED war tempo has spurred output of key munition items to new high levels. Production schedules are still being disrupted by a number of strikes, but only a relatively few are now in progress compared with that recorded immediately preceding the invasion.

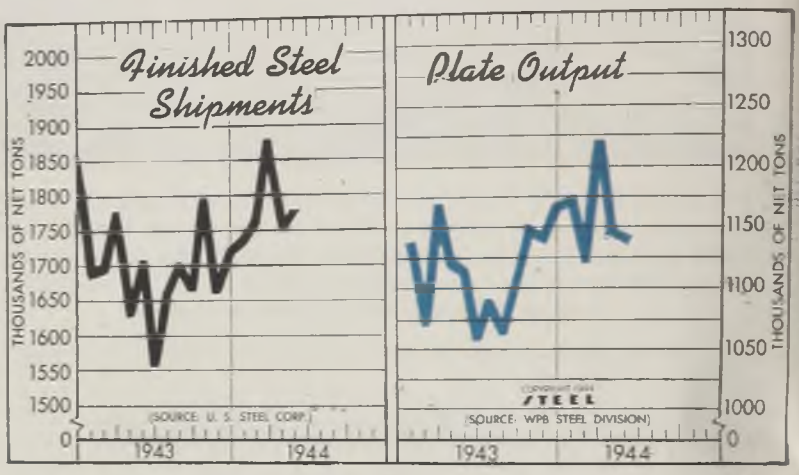
Significant, however, is the downward tendency in steel production, due to the manpower shortage and intensified by the hot weather. A 10 per cent decline in steel output, particularly in the finishing operation, would seriously impede urgent military programs.

Barring an unexpected early collapse of Germany's military resistance, overall war production is scheduled upward through October this year. Some cutbacks in the landing craft and certain type ordnance equipment may occur if our initial invasion success is broadened. However, requirements for other war materiel, including heavy guns and shells, have already been materially increased. Industrial leaders expect to cope with further sudden shifts in military requirements over the coming months.

CUTBACKS—Of the $210 billion in prime contracts placed by the government since June, 1940, the face value of contracts terminated up to April this year totaled only $22 billion. Most of these have been swiftly replaced by contracts for other products, or different models of the same product. The vast majority of contract terminations have not freed any significant number of workers or plants for civilian goods production.

POSTWAR OUTLOOK — Top government officials do not expect a serious business depression or widespread unemployment in the postwar period. Those in charge of the civilian economy are showing no more disposition than military men to take chances on the rate of Allied progress, in their attempt to put into effect reconversion plans. Renewed effort in formulating civilian goods output plans has resulted from recent war developments, but no action on them is expected until military victory is assured. To assist in this matter, the Army has advised WPB of the plant capacity that will be available for civilian goods manufacture when Germany collapses. The recent consumer goods survey of miscellaneous household items by WPB, based on responses by about 4500 national representative families, shows immediate merchandise needs and future buying desires which will serve as a guide in planning production increases as facilities become available.

CONSTRUCTION—For the first time since August, 1942, volume of construction in the United States during May recorded an increase over the previous month. Estimated construction last month was $295 million, or 3.5 per cent over $285 million recorded in April. During the latest period publicly financed construction accounted for about 61 per cent, and privately financed 39 per cent of this total.



	Finished Steel Shipments† (Unit 1000 Net Tons)			Steel Plate Output‡		
	1944	1943	1942	1944	1943	1942
Jan.	1730.8	1686.0	1738.9	1173.2	1135.4	754.5
Feb.	1755.8	1691.6	1616.6	1122.2	1072.0	758.7
Mar.	1874.8	1772.4	1780.9	1222.6	1167.7	878.7
April	1756.8	1630.8	1758.9	1141.9	1121.6	896.0
May	1776.9	1706.5	1834.1	1132.2	1114.9	1012.2
June		1552.7	1774.1		1056.1	1051.0
July		1660.8	1765.7		1089.7	1124.1
Aug.		1704.3	1788.7		1060.9	1097.9
Sept.		1664.6	1703.6		1106.9	1061.8
Oct.		1795.0	1787.5		1146.8	1101.4
Nov.		1660.6	1665.5		1141.1	1013.6
Dec.		1719.6	1849.6		1169.2	1060.0
Total		20,244.8	21,064.2		13,382.4	11,809.7

†United States Steel Corp. ‡War Production Board.

FIGURES THIS WEEK

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)	98.0	98.5	99.0	96.5
Electric Power Distributed (million kilowatt hours)	4,264	4,144	4,238	4,040
Bituminous Coal Production (daily av.—1000 tons)	1,978	2,088	2,020	504
Petroleum Production (daily av.—1000 bbls.)	4,523	4,523	4,502	3,988
Construction Volume (ENR—unit $1,000,000)	$69.6	$23.2	$42.2	$42.9
Automobile and Truck Output (Ward's—number units)	18,930	16,950	17,080	19,065

*Dates on request.

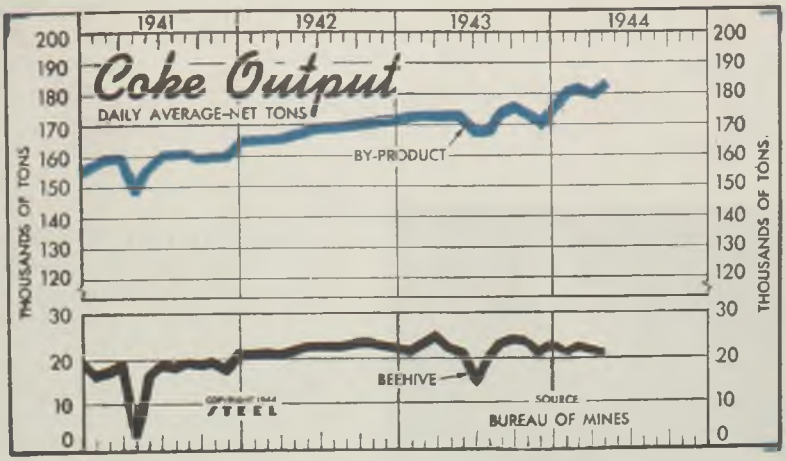
TRADE				
Freight Carloadings (unit—1000 cars)	850†	811	868	
Business Failures (Dun & Bradstreet, number)	22	22	32	854
Money in Circulation (in millions of dollars)‡	$22,255	$22,112	$21,725	54
Department Store Sales (change from like week a year ago)‡	+11%	+15%	+18%	$17,237 +43%

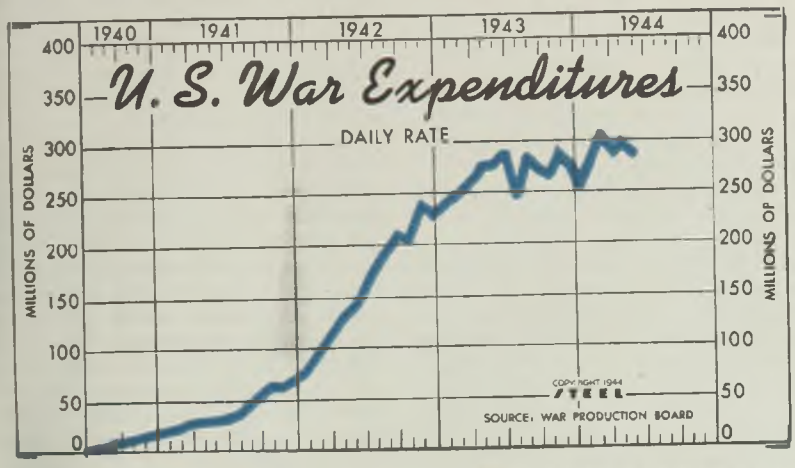
†Preliminary. ‡Federal Reserve Board.

Coke Output
Bureau of Mines

(Daily Average—Net Tons)

	By-Product		Beehive	
	1944	1943	1944	1943
Jan.	182,226	174,044	21,933	21,440
Feb.	184,384	175,099	22,248	23,987
Mar.	183,123	175,051	21,529	24,369
Apr.	185,362	175,857	20,521	22,948
May		174,240		21,270
June		168,735		14,055
July		169,936		20,009
Aug.		176,396		23,102
Sept.		178,090		23,637
Oct.		175,492		23,495
Nov.		171,594		20.421
Dec.		179,042		22,935
Average		174,465		21,795





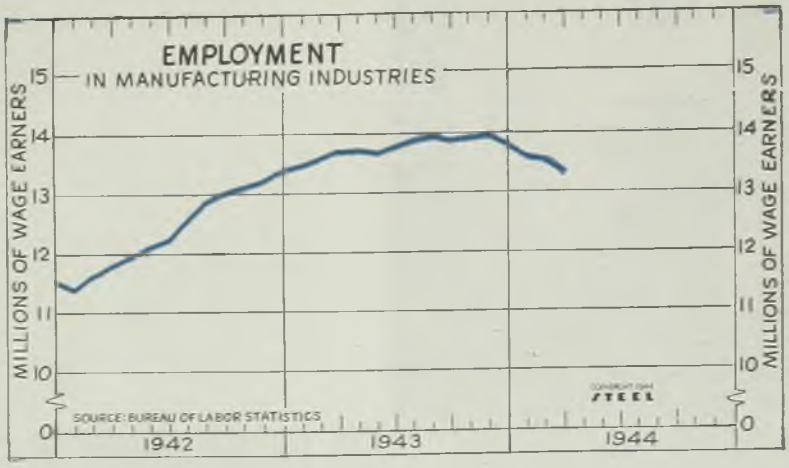
War Expenditures
(millions)

	1944 Monthly Expenditures	1944 Daily Rate	1943 Monthly Expenditures	1943 Daily Rate
Jan.	$7,416	$285.2	$6,254	$240.5
Feb.	7,808	312.3	6,081	253.4
Mar.	7,948	294.4	7,112	263.4
Apr.	7,493	299.7	7,290	280.4
May	7,879	291.8	7,373	283.6
June			7,688	295.7
July			6,748	249.9
Aug.			7,529	289.6
Sept.			7,212	277.4
Oct.			7,105	273.3
Nov.			7,794	299.8
Dec.			6,951	267.8
Total	Av.		Tt'l. 85,135	Av. 272.9

Factory Employment†
(000)

	1944	1943	1942
Jan.	13,667	13,503	11,456
Feb.	13,593	13,633	11,654
March	13,399	13,727	11,821
April		13,735	11,988
May		13,700	12,127
June		13,827	12,282
July		13,911	12,564
Aug.		13,990	12,869
Sept.		13,935	13,079
Oct.		13,965	13,168
Nov.		14,000	13,267
Dec.		13,870	13,474

†Source: U. S. Dept. of Labor.



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$8,676	$7,491	$8,235	$8,123
Federal Gross Debt (billions)	$188.5	$188.0	$187.4	$140.4
Bond Volume, NYSE (millions)	$55.8	$52.6	$39.1	$53.2
Stocks Sales, NYSE (thousands)	5,943	4,393	3,438	5,263
Loans and Investments (millions)†	$49,988	$50,240	$50,674	$47,182
United States Government Obligations Held (millions)†	$37,029	$37,184	$37,603	$34,317

†Member banks, Federal Reserve System.

PRICES

STEEL's composite finished steel price average	$56.73	$56.73	$56.73	$56.73
Spot Commodity Index (Moody's, 15 items)†	250.3	250.8	249.5	245.3
Industrial Raw Materials (Bureau of Labor index)‡	113.8	113.6	113.3	114.1
Manufactured Products (Bureau of Labor index)‡	101.1	101.1	101.0	100.9

†1931 = 100; Friday series. ‡1926 = 100.

Engineered Erosion

ELECTRODEPOSITED chromium's unique combination of excellent corrosion resistance, low coefficient of friction and extreme hardness has resulted in many important applications where these factors add up to greatly reduce wear.

But to obtain maximum benefit from these properties, it has been necessary to develop some means for changing the nonwetting characteristic of chromium surfaces so they can be made to hold a lubricant. By a new process, porous chromium-plated surfaces can now be produced that soak up and spread oil just like water wets and spreads on a blotter. How this is done is a unique engineering achievement. And the accurate control of porosity produced involves some of the most precise work in the plating industry.

But before we examine production operations, let's go back a few years to where the inventor, Hendrich Van der Horst, a native Hollander pursuing research in a modest way with a small test engine, found that he had a process that greatly reduced the rate of cylinder wear, for his little engine performed like no other had before.

So he took his process to an English company where the work was turned over to specialized electrochemists who proceeded to do a highly creditable job of chromium plating. But when the cylinder was reassembled in an engine, the beautiful chrome promptly froze the piston. "Then," says Van der Horst, "they ran me out of the plant."

What the experts didn't know and what Van der Horst found out was that the surface of the chromium must contain many fine channels, pits and "valleys" or it simply isn't any good for this purpose. And these depressions and surrounding plateaus must be of just the right size, shape and character if they are to hold the lubricant where it will do the most good.

Surface Profile Controlled: How are these depressions produced and controlled? . . . . That is the point where some nice engineering work enters the picture, for you do not "guess" when you finish aircraft engine cylinders, you "know" that the work will give at least a certain minimum number of hours in the air before engine overhaul is required. Nor do you give a cylinder for a truck or aircraft engine the same treatment as you do a diesel engine cylinder, because the life of a diesel is figured in years, not hours.

Total thickness of chromium deposited, amount and character of the depressions induced, as well as amount of "peaks" smoothed down during final finishing

Fig. 1—Navy, Army and Air Forces are employing process widely to reclaim worn radial aircraft and tank engine cylinders such as the one shown here whose surface is being charted on a Brush surface analyzer

Fig. 2—Typical of expanding uses of process is its application to welded steel piston of this Clark Bros. diesel compressor unit for oil field use. Cylinder is cast

Fig. 3—Solutions in bank of 2000-gallon plating tanks at Cleveland Van der Horst plant are checked and corrected three times daily. In back can be seen battery of rectifier units, each of 2500-ampere capacity, usually four or 10,000 amperes being used per tank

. . . . gives to chromium-plated surfaces the porosity needed to lubricate them properly, thus greatly reducing wear and thereby extending life of engine cylinders and piston rings. Important war uses forecast greatly expanded postwar application of the process

By G. W. BIRDSALL
Associate Editor, STEEL

operations must all be carefully controlled if the final surface is to meet porosity specifications.

This means that the plating cycle is controlled within precise limits because all these conditions affect the profile of the surface. The "eroding" of the plate is accomplished by actual "de-plating", reversing the plating current to remove a certain amount of chromium which does not come off in an even layer but forms pits and channels to produce the porosity desired.

What Happens? One of the best explanations of what occurs is as follows: Temperatures for chromium plating usually range from 120 to 150 degrees Fahr., depending upon type of deposit desired, for the temperature affects the quality or texture of the plate. Due to unexplained reasons (possibly crystal orientation or internal stresses), chromium deposits exhibit a tendency to crack minutely at the surface. Certain plating conditions such as high bath temperatures increase this tendency, affecting spacing between cleavages as well as width and depth of crevices.

Anodic treatment (reversing the current or de-plating) then can be employed to develop cracks from the existing stress pattern.

Apparently the anodic treatment forms the pit and channel depressions by removing at a faster rate those molecules under greatest stress.

Strict Control Essential: To maintain accurate control of crack pattern, width

(*Please turn to Page* 156)

Fig. 7—Hendrich Van der Horst examines cylinder of marine diesel that ran 4¼ million miles on a Dutch ship and has just worn through the Porus-Krome finish

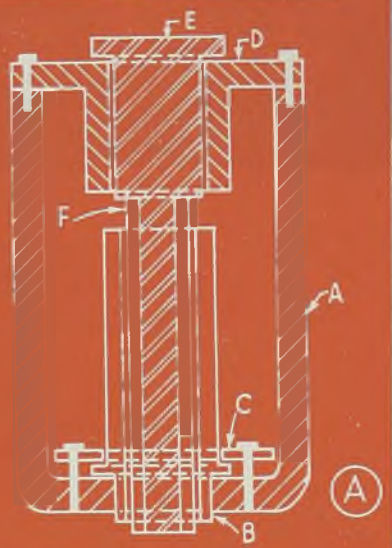
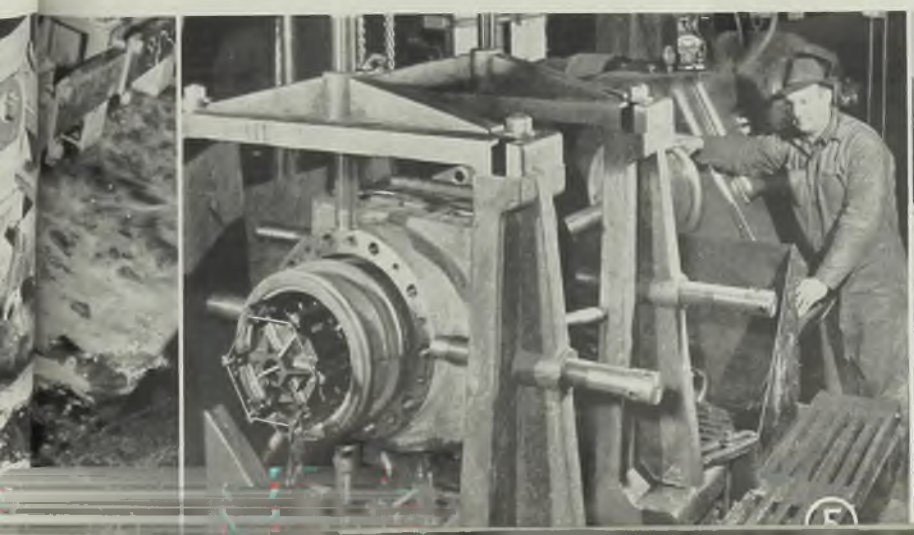


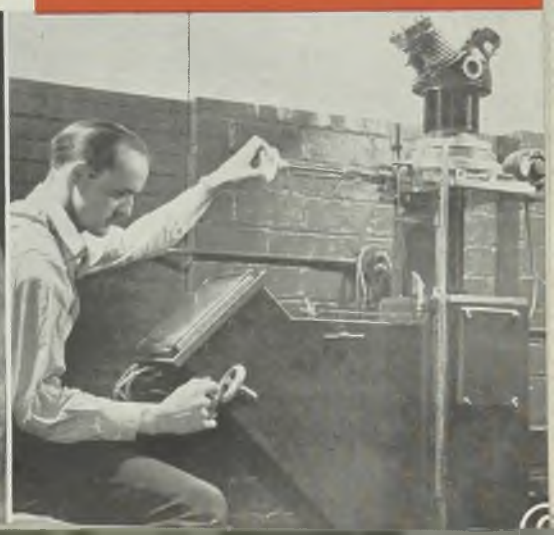
Fig. 4—Closeup of tank showing massive fixture assembly, heavy bus work, strongly agitated solution, exceptional cleanliness

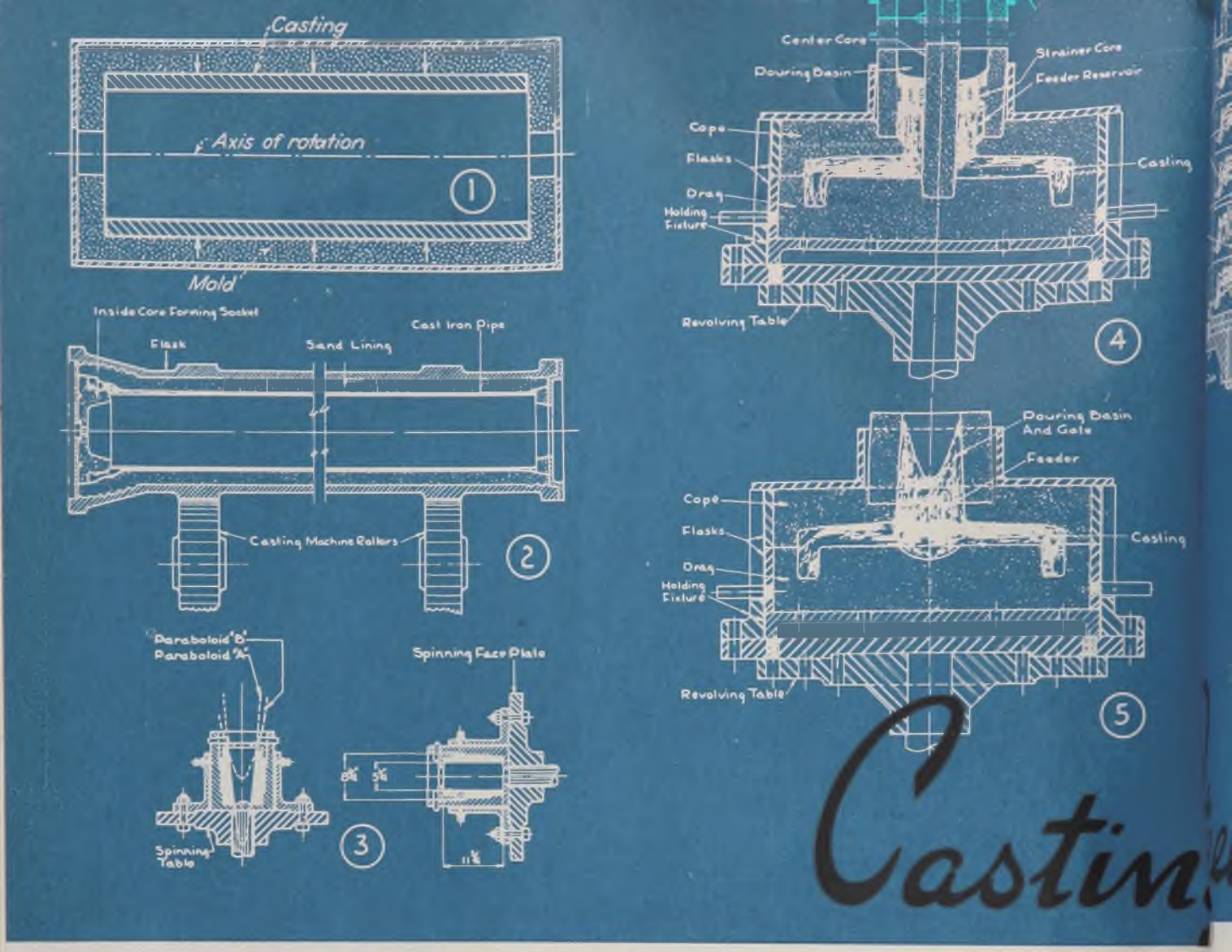
Fig. 5—Special fixture for horizontal precision honing of large diesel engine cylinder liner

Fig. 6—This special optical instrument affords 100-*diameter magnification for both visual production inspection and photographic recording of surface structure, is called a "Soebier"*

Diagram A—Section through fixture to show arrangement of lead-surfaced anode which is positioned accurately in center of cylinder or cylinder liner







. . . is rapidly finding its place in production of high-quality engineering parts due to exceptional ability to turn out consistently sound homogeneous castings with high-physical properties

By S. D. MOXLEY*
Chief Engineer
American Cast Iron Pipe Co.
Birmingham, Ala.

CASTING METALS centrifugally is basically "pressure casting". In static molding, feeding is done by atmospheric pressure and gravity. Pressure under which the metal is cast depends on height of gates and risers. In centrifugal casting, metal is forced against the mold wall and into the cavities under the much higher pressures of centrifugal force.

The three methods of centrifugal casting include true centrifugal casting, semi-centrifugal casting and centrifuging.

The "true centrifugal" method involves spinning the casting about its own axis and using centrifugal force to hold the metal on the wall of the mold, thus forming a hollow casting without the use of a center core. When a mold is spun about a horizontal axis, the interior cavity formed by the molten metal is a true cylinder, regardless of the shape of the outside of the casting. Its inside diameter is determined by the volume of metal poured.

Fig. 1 shows a cylindrical flask with sand and provided with suitable end fixtures. If the mold is spun at sufficient speed and metal poured into it, a cylindrical tube is cast.

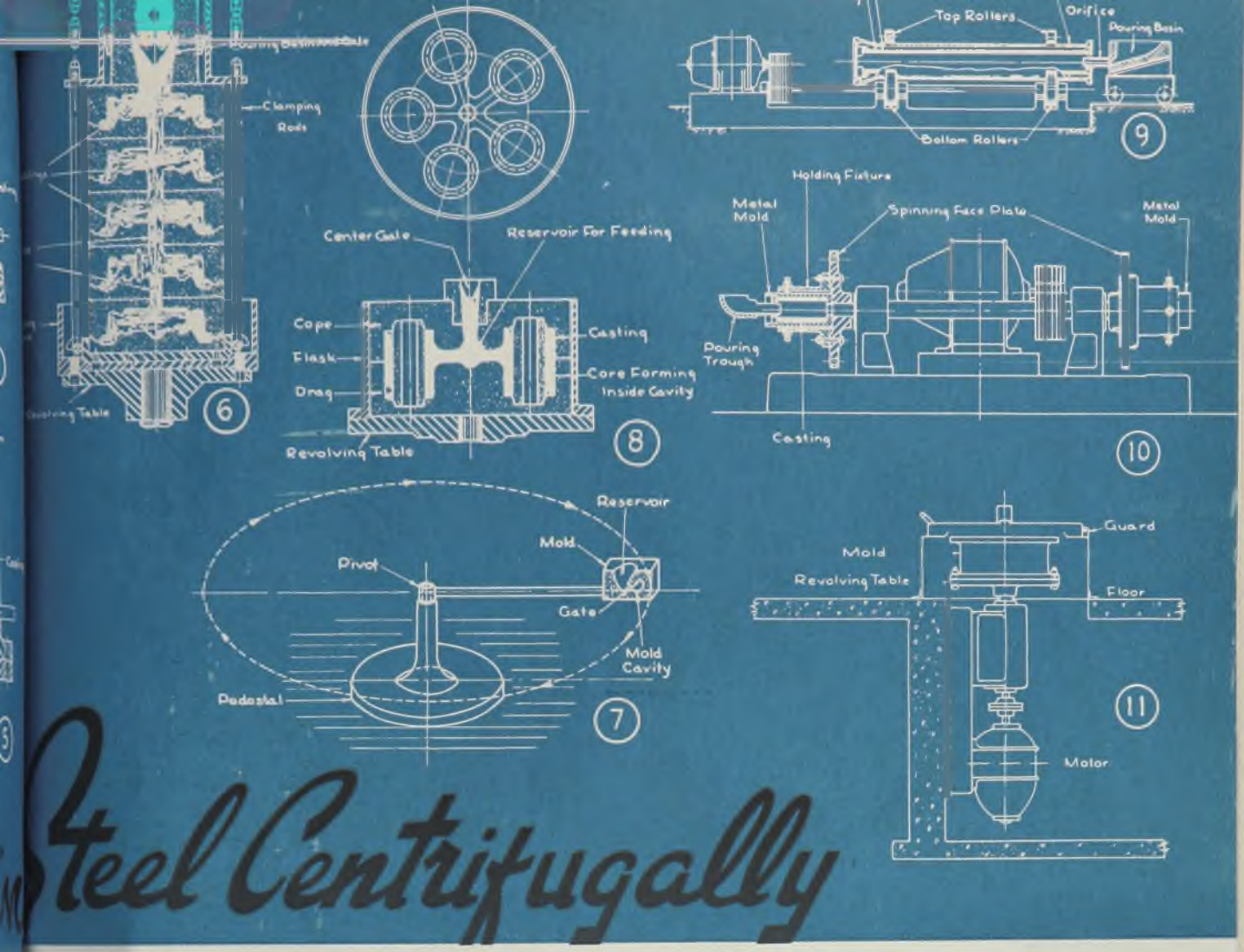
If more than one inside diameter is required in a casting, the larger inside diameters may be formed by cores extended from the ends of the mold, leaving the smaller diameter to be formed by centrifugal force. Fig. 2 shows conventional mold for making cast iron pressure pipe. Inside diameter of the socket at the left end is larger than that of the pipe. It is made with a core. This method has been used in the mass production of cast iron pipe for more than 20 years.

*From data presented by Mr. Moxlev before ASME.

True horizontal centrifugal casting is well adapted to the manufacture of short and long tubes in various sizes where the inside cavities are cylindrical. Steel tubes, ranging from several inches up to 50 inches in diameter, can now be made in lengths of 16 feet. Typical products are pipe, various kinds of tubing, radial engine cylinder barrels, hollow ship-shafts, weldneck castings, bearings, sleeves, etc.

True centrifugal casting is also done by spinning the mold about a vertical or an inclined axis. When this is done, the resulting interior cavity is a paraboloid. The shape of this paraboloid is dependent upon speed of rotation, diameter of the closing fixture at top of mold, and angle of inclination of axis of rotation. Assuming a fixed diameter at the top of the inside cavity and a fixed angle of inclination, the depth of the paraboloid is increased by an increase of speed. Likewise the paraboloid will be shortened with slower speed.

Fig. 3 shows radial engine cylinder barrels being cast by the horizontal and the vertical methods. At the right the mold is spun about a horizontal axis and the inside cavity is cylindrical. At the left the mold is spun vertically and the inside cavity is parabolic in shape.



Steel Centrifugally

At a certain speed of rotation the inside cavity will take the shape of paraboloid "A" as shown, while at some lower speed the inside cavity will be formed on the line of paraboloid "B". In each case the top diameter of the inside cavity will be larger than the bottom diameter. These castings (8¾ inches outside diameter by 11¾ inches long) are now being made horizontally at speeds of 975 revolutions per minute and lower, and vertically at speeds approaching 1800 revolutions per minute.

The horizontal and vertical methods of producing castings have many advantages. When spun, the impurities such as dirt, sand and slag, having lower specific gravity, are forced to the inside surface of the casting by centrifugal force. Any gas or air pockets are likewise eliminated. The elimination of these foreign inclusions results in a sounder casting and the product is more uniform.

Directional solidification is very important in any method of molding. In true centrifugal casting this comes naturally, since the metal is cooled from the outside toward the center. Inspection of the castings is greatly simplified, since such defects as are found are in nearly all cases on the inside or outside surface of the castings, thus making them more readily detectable. Elimination of inside cores greatly reduces costs in the foundry, as well as in the cleaning shed.

Elimination of gates and risers greatly increases the yield. In some cases 100 per cent yield is obtained, as in cast steel hollow ship shafts, various tubing, cast iron pipe, etc., where inside machining is not required. In castings such as radial engine cylinder barrels where the inside machined surface is highly important, the wall is poured thicker than required. This extra thickness on the inside serves very much as an inside gate or feeder and is later removed by machining. Thus, in such cases the actual yield is lower. The centrifugal method is highly adaptable for mass production of identical castings.

Semicentrifugal casting is spinning a casting about its own axis—usually the vertical axis. If the casting has a center cavity, this cavity is often formed with a center core, and the casting is fed by a center gate passing down around this core. Fig. 4 shows this method, a sand mold being mounted on the revolving table of a vertical casting machine. This is a fly wheel, a typical

(*Please turn to Page* 148)

Fig. 1—Mold is spun about its horizontal axis in "true centrifugal" casting
Fig. 2—Core at left permits making larger inside diameter at end of pipe for fitting in manufacture of cast iron pipe
Fig. 3—"True centrifugal" method of casting cylinder barrels for radial engines; vertical method being shown at left, horizontal method at right
Fig. 4—Semicentrifugal casting of flywheels, using a core
Fig. 5—Same as Fig. 4 but without the central core
Fig. 6—Semicentrifugal casting of track wheels in a stack type mold
Fig. 7—"Centrifuge" casting as used in dentists inlay casting machine
Fig. 8—"Centrifuge" casting of bogie wheel hubs
Fig. 9—"True centrifugal" casting machine for making pipe
Fig. 10—"True centrifugal" casting machine for producing items of short length, direct-driven type
Fig. 11—Pit-type centrifugal casting machine

Built-Up Spinners

By G. ELDRIDGE STEDMAN

TULSA is regarded as the world's oil center, but war has brought industrial diversification. The surrounding area, Eastern Oklahoma and Western Arkansas, is rich in coal, oil, gas, limestone, lead, zinc, mercury, manganese and hard and soft woods. There also is an oversupply of labor. Expansion is forecast in aviation, textiles, enameled products, zinc smelting, plastics synthetic rubber, steel products and heavy machinery.

A number of small fabricators has gone into war work and plan further after-war growth. A typical company is the Harry E. Montgomery Metal Spinning Works, fabricator of propeller spinners in all sizes needed to accommodate Hamilton Standard 2-position constant-speed 2-bladed propellers.

Harry E. Montgomery was a first lieutenant in the balloon service in the last war, shot down over Chateau Thierry and decorated with the Croix de Guerre. He returned to devote some of his inventive ability to the forming of lightweight sheet metal into hollow, circular shapes. He made original engineering contributions to the spinning of aluminum and was running a metal spinning plant when the war intensified the problem of shielding vital airplane parts from dust and sand. "To protect the hub and save the propeller", Montgomery developed a combined stretching and fabricating method producing built-up propeller spinners from light weight steel

. . . . cut costs 50 per cent; employ unique refabrication method by which parts are drawn after welding. This method is expected to increase the use of sheet steel in the production of many types of hollow shapes

which was called wholly unorthodox.

"Sometimes, acute knowledge denies or withholds the right to investigate," Mr. Montgomery philosophized. "A friend of mine once defined 'horse sense' as that sense that doesn't permit a horse to bet on a man. Approaching the problem with an open mind resulted in developing an utterly simple method that appears to have great possibilities in producing higher quality work at lower cost. The method is applicable to a variety of hollow forms and shapes.

"Essentially, the method is one of stretching and refabrication of difficult drawings, giving metal molecules an upsetting without consequent fatigue, thus making full use of relative elongation characteristics in cold drawing.

"We have no interest in elasticity; in fact we wish the characteristic wasn't there. Elasticity isn't elongation. The former resists distortion from original shape, the very thing our method accomplishes. We do our work entirely within the elongation range, the only limit of the method."

The Montgomery propeller spinner consists mainly of three parts: (1) A welded, cold-drawn frustum of 0.025-inch SAE-1010 steel sheet in diameters from 12 to 36 inches, with depths up to 28 inches. A dished cold-drawn cap of the same metal is welded to this frustum and the whole work is refabricated into an integral frustum cone.

(2) A rear pan is cold drawn to depth, varying in relation to particular model. Involved in this are two drawn and pierced side ports to accommodate propeller blades, a drawn and pierced engine shaft port. Felt retainer rings are inserted in these ports, forming a channeled collar to accommodate positioning of removable felt pads.

(3) Two cold-drawn 3-inch bulkheads consisting of a 112-degree arc of 0.060-inch SAE-1010 steel plate, the outward edges of whose side flanges are arced to smaller diameter, providing a buttress of 2:1 stiffener ratio at the bulkhead ends. Bulkhead brackets are welded on each end in one model. On all other models, gussets are welded into place to accommodate the thicker surface where the bulkhead is bolted to the propeller hub housing.

The frustum cone and rear pan sections are held in position on the bulkhead by drilled fillister-head screws which turn into plate nuts, spot welded on the bulkhead inside face. These fillister-head screws are wired together between sections in final assembly for double protection.

Propeller spinners have usually been fabricated from spun aluminum. Parent metal SAE-1010 used here has a tensile strength of 76,000 pounds per square inch. Tests at Wright Field have proved steel spinners satisfactory. The Montgomery method cuts cost of material about two-thirds and reduces overall costs 50 per cent.

Formation of the frustum cone com-

Fig. 1—President H. E. Montgomery instructs "draftlady" at Montgomery Metal Spinning Works

Fig. 2—First step: Rolling sheet metal pattern to form cone

Fig. 3—Second step: Gas welding the side seam on the cone frustum

Fig. 4—Third Step: Stretching the cone frustum to form, without cap

Fig. 5—Fourth step: Trimming cone frustum to take cap. Caps are cut on same dies, assuring fit

Fig. 6—Fifth step: Cap is gas welded to cone frustum. This requires extremely delicate "touch." Operators wear goggles

Fig. 7—Cross section or cut-away view of propellor spinner used with Hamilton Standard type 2D30 propellor. Spinner consists of three main parts—cone, bulkhead and gusset plate

prising the front part of the spinner requires 23 operations. Material is received in sheets, accompanied by complete mill analysis and the pieces are cut out in conformity with a template by electric hand shears, ends are sheared and inspected for size. The work proceeds to the welding department where it is rolled to truncated shape, tack welded into conical form, and the final weld bead is laid, using oxyacetylene. Weld is then planished to 0.001-inch and the work is press drawn into a frustum cone form, but without cap.

An 8-inch cap is then press drawn. Cone and cap are trimmed on the same die, one of the innovations contributing to the success of this method. Cap and frustum cone are then tacked, welded together, and planished. The work, now in one piece, is repressed with the cap in place.

The cone is then trimmed on a lathe. Propeller blade ports are pierced, flanged and trimmed to size. Felt retainer rings are spot welded into position. The frustum cone is then zinc plated, assembly holes are drilled to accommodate fillister-head screws, a felt strip is inserted in the felt retainer rings, decalcomania are applied and the work is ready for final assembly.

Forming of the rear pan proceeds in 12 operations. Circles are cut from sheets, sheared to perfect contours and press drawn to depth and trimmed in one operation. The engine shaft port is formed and sheared in one operation.

Two side ports are similarly accomplished. Felt retainer rings are spot welded into position on all ports. Work is zinc plated. Assembly holes are drilled. Felt pads are inserted. Decalcomanias are applied and the rear pan is ready for final assembly to the body of the shield.

The bulkhead is of 0.060-inch SAE-1010 steel. Blanked and final trimmed in one operation, it is press formed into a 112-degree arc channel in one operation, its flange sides having outside edges trimmed to smaller diameters, effecting thicker buttress at the bulkhead ends. Brackets are spot welded into place. Gusset plates are installed. Locating holes are punched, reamed and burred into two mating bulkheads in the same operation. Assembly holes are drilled to accommodate the fillister screws and plate nuts are welded into position on inside of the bulkhead, one to each assembly hole, into which the fillister screws turn.

(*Please turn to Page* 142)

Fig. 8—*Sixth step: Now cone with cap in place is stretch-formed to final shape desired*

Fig. 9—*Forming the bulkhead. This is a deep-draw operation in special double-acting dies*

Fig. 10—*Deeply drawn shape of bulkhead is apparent here where it is being welded to gusset plate*

Fig. 11—*Final fitting and assembly is done by this group of operators*

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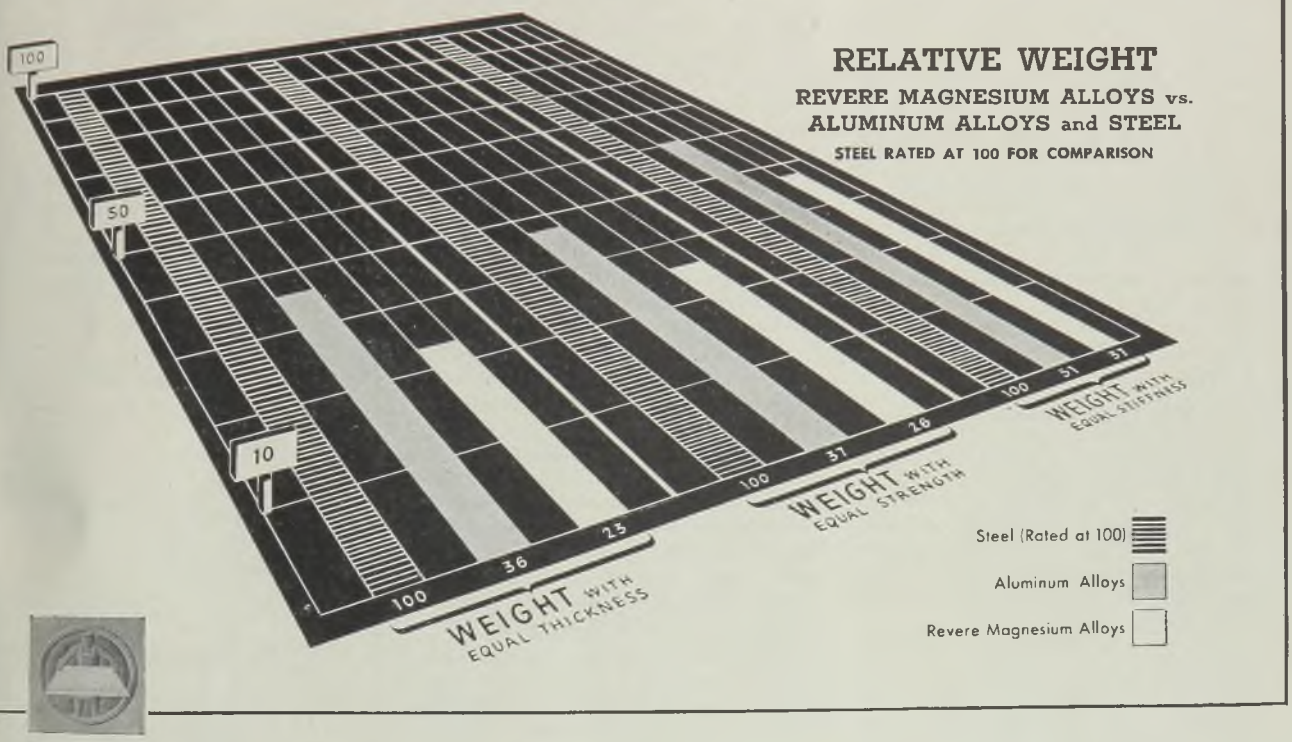

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INDEX TO SPECIFICATIONS

Form	Revere Alloy	American Society for Testing Materials		Society of Automotive Engineers	Aeronautical Material Specifications S. A. E.	Navy Bureau of Aeronautics		Navy Department		U. S. Army Air Forces	
		Alloy Designation	Specification No.			Alloy Designation	Specification No.	Alloy Designation	Specification No.	Alloy Designation	Specification No.
Plate, Sheet and Strip	M	11	B90-41T	51	4370	..	..	11	47 M 2	1	11339
	FS-1	18X	B90-41T	..	....	..	..	18	47 M 2	..	11340
	J-1	8X	B90-41T	..	4380**	..	..	8	47 M 2	2	11338

**4380 annealed 4381 hard rolled

We "Sit in" with Gear Engineers at the AGMA Meeting

By GUY HUBBARD
Machine Tool Editor, STEEL

HAD THE gear industry in America—and I mean Canada as well as the United States—not attained the near-perfection that it has reached in design, metallurgy and technique of mass production of all sorts of gears, gear mechanisms and related details, few of the things which the United Nations have achieved, are achieving and shortly will achieve, in this World War II would be possible. If, all of a sudden, all gears in all of our mechanized equipment on land, at sea and in the air suddenly should revert to the normal standard of World War I, the whole vast war machine would come to a grinding, jolting stop, and it would be impossible to start it again.

War Work Without Fanfare

Few people not directly in the business realize that—exceptions being those of us who for a number of years have been privileged to attend the meetings of the American Gear Manufacturers Association. Gear makers neither have asked for, nor have they received, due credit for it.

Perhaps it would have been better for them if they had, because their struggles to get adequate materials and equipment, and to retain skilled manpower, have been a lot tougher than might have been the case had they had more sympathetic appreciation in high places. However, they have had a big job to do and little time to do it in, so the keymen in the industry have stuck to their job of gearmaking and have not spent much time in besieging and beseeching bureaus in Washington and in Ottawa. They are patriots, not politicians.

While we already have touched upon the annual meeting of AGMA at Rye, N. Y., from the news angle (STEEL, May 29, Page 56), a number of matters of engineering interest came up at that time which deserve further attention. As is usual at the meetings, technical papers predominated over those of economic and general interest. Thus it is that the records of meetings since the first one, at Lakewood, N. J., in March, 1917, can be said to represent the compendium of gear engineering and gear making progress since that time.

Of the several technical papers delivered at Rye, that by John O. Almen, research engineer, General Motors Corp., on "Aircraft Gearing" is deserving of treatment by itself and we hope so to deal with it in a future issue. In keeping with the methods favored by Charles Kettering and his associates in the General Motors Research Division, Mr. Almen's conclusions are based upon practical experimentation and testing of actual parts—rather than upon abstract paper work. In other words, he works with factual rather than theoretical basic design factors—which is a comforting thing to know when one is depending on the design at any elevation of several thousand feet.

Michael Malitz, analytical engineer, Kearney & Trecker Corp., on the other hand tackled the problem of "Combined Static Stresses in Teeth of Spur Gears" entirely from the mathematical angle. As near as I can make out, he has evolved by some rather long and abstruse computations a refinement of what Wilfred Lewis sought to do in 1892 by a more simple method which dealt with a gear tooth essentially as though it were a weighted protruding beam.

While the Lewis formula admittedly did "cut corners", it nevertheless has served a useful purpose for more than 50 years. In the terse words of Allan

(*Please turn to Page* 136)

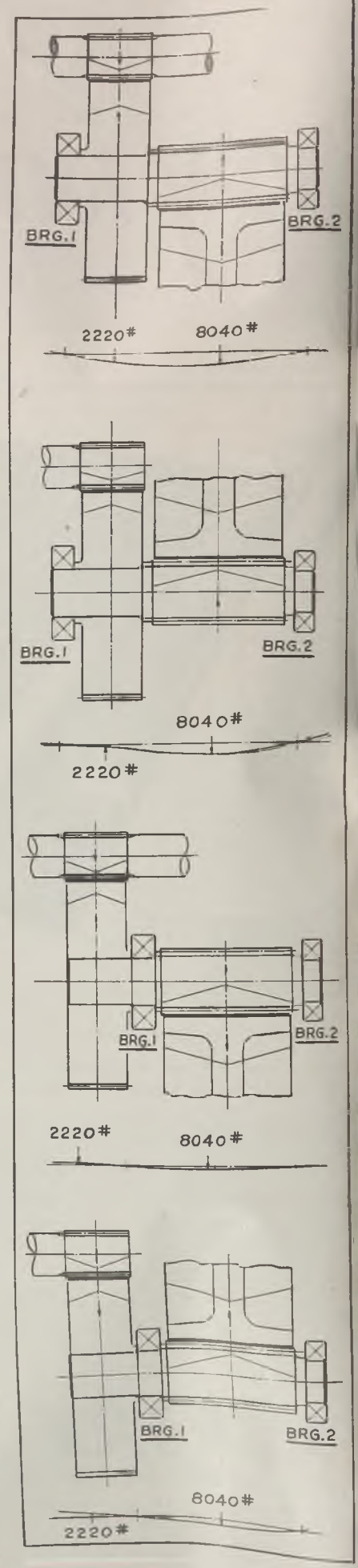

Fig. 1 (*Right*)—*Graphic presentation of intermediate shaft deflections in double reduction drives, by H. W. Kayser, Falk Corp.*

Table I (*Below*)—*Torque, load and deflection data relating to diagrams at right, the figure numbers applying to successive diagrams from top to bottom of Fig.* 1

TABLE I

Fig. No.	Deflection Across Face of Low Speed Pinion	Bearing Loads—Bearing 1	Bearing 2
5A	.0012 inches	4720 lbs.	5880 lbs.
5B	.0007 inches	2300 lbs.	5140 lbs.
5C	.0002 inches	6950 lbs.	4020 lbs.
5D	.0004 inches	3120 lbs.	4770 lbs.

Gear and Load Data:
1st Reduction 17-91 Teeth 6D.P.
2nd Reduction 17-95 Teeth 4D.P.
Imput Torque 3250 Inch Pounds.

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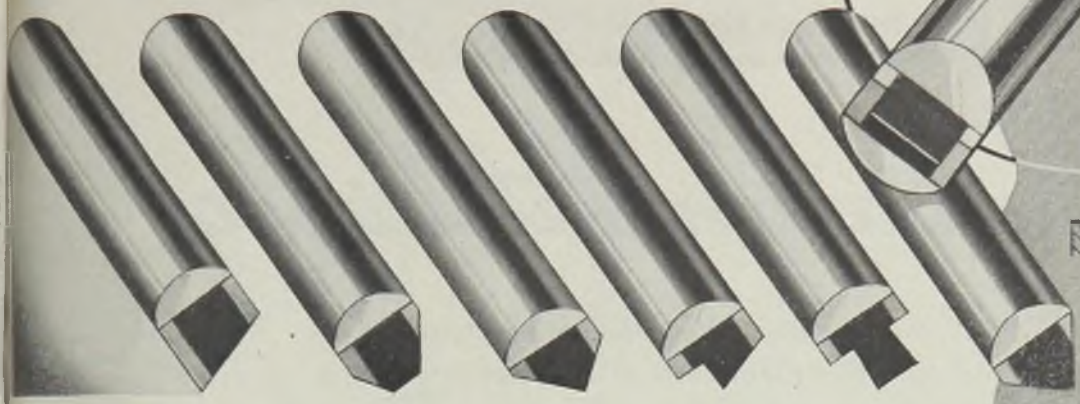

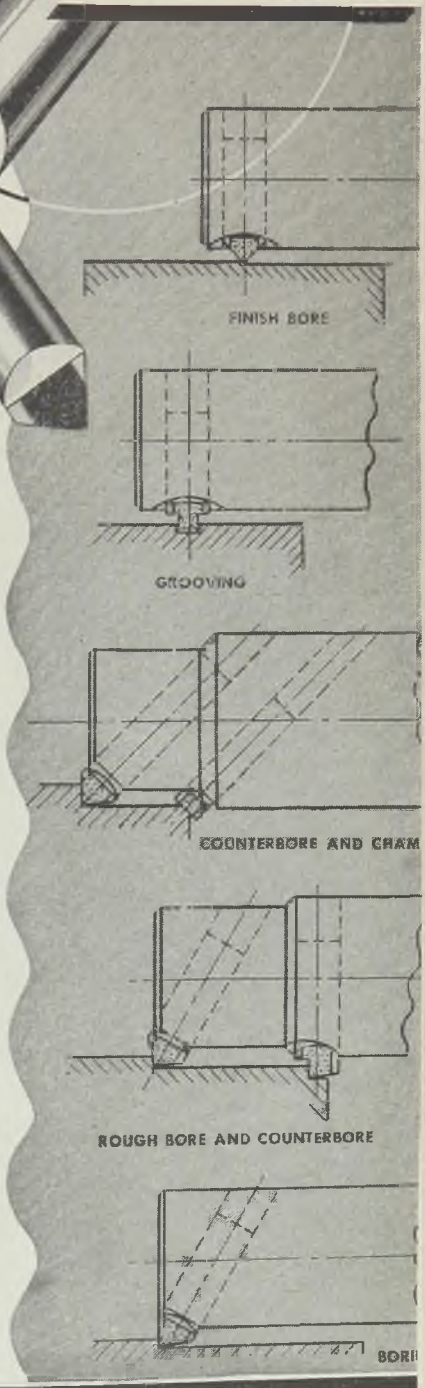

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Fig. 1—A smooth, even coat of aluminum is applied to Wright aircraft cylinder assemblies with automatic equipment. Operations include sand-blasting and passage through 6-station metal spraying machine

Production Metallizing

Completely automatic system applies coating of aluminum to steel aircraft cylinders at rate of one every 75 seconds

By H. E. LINSLEY
Wright Aeronautical Corp.
Paterson, N. J.

THE PROBLEM of protecting the exterior surfaces of aluminum alloy aircraft engine components from corrosion due to exposure to the elements, is one which has been the subject of prolonged study on the part of engineers.

The most common method, that of painting, is generally adequate for normal use, but even the best of paints have but a very limited resistance to salt water spray. Moreover, since both a priming coat and a finishing coat must be applied, and each of these must be baked for a considerable time, the process, even when handled on automatic conveyors, is necessarily slow.

The introduction of the metallizing process in which pure molten aluminum, itself highly resistant to corrosion, is sprayed on the parts, seemed to offer a solution to this problem, but before it could be applied on a production basis there were many technical difficulties to be overcome. The first attempts were made with the parts standing on a bench, and the spray applied with a hand gun. Not only was this too slow, but the coat was too uneven, and it was realized that some mechanical means of application must be found. The first mechanical method consisted of mounting the cylinders on an arbor in an engine lathe and carrying the spray gun on the tool post. This improved matters considerably but was still too slow, and required the use of a second gun, hand operated, to spray the vertical fins on the top of the head.

The next method was to mount the parts on a power-driven turntable equipped with a hydraulic jack. The spray gun was mounted adjustably on a post and was inclined downwards so that the upper surfaces of the fins would be successively coated as the part rose under the influence of the jack. At the top of the stroke, the angle of the gun was changed to permit of coating the lower sides of the fins as the part was lowered. To complete the operation, the gun was removed from the post and directed by hand over the vertical fins and complicated top surfaces.

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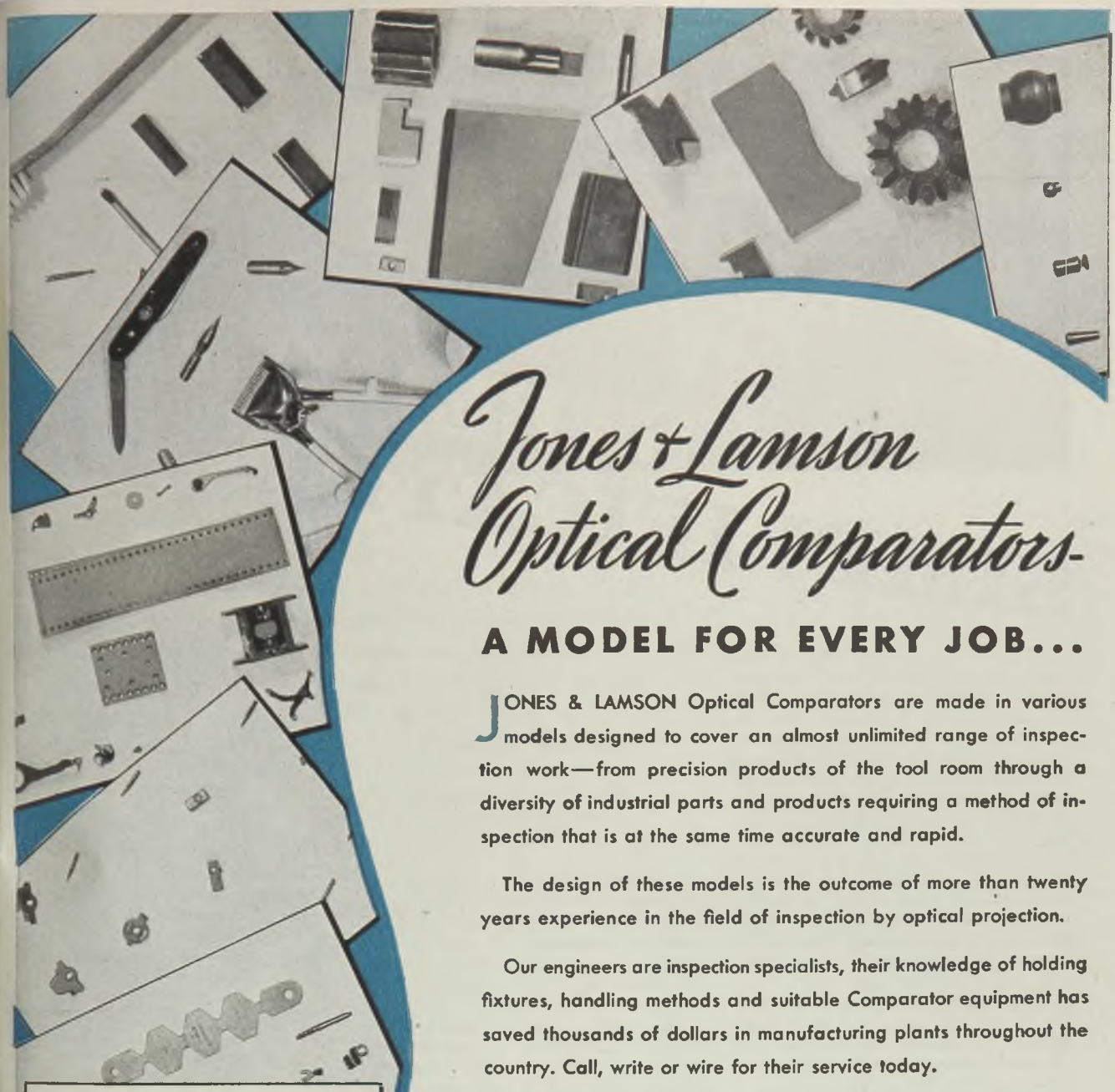
Fig. 2—Lower portions of the cylinders are not coated with aluminum and therefore are protected by heavy rubber cuffs



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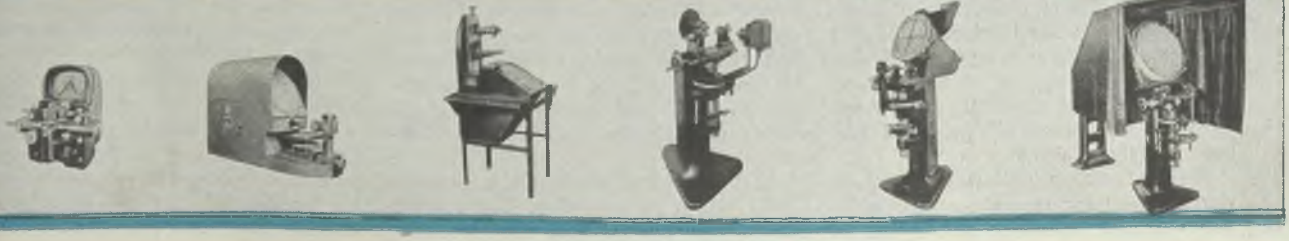

View showing portion of equipment in heat-treating department of the Sheffield Corp., Dayton, O.

STEEL SIMPLIFICATION

. . . . is also important in the small or medium-sized plant. With its company simplification program just begun, the author reports a 20 per cent reduction in number of different steels stocked, with significant savings already being obtained

By EARL ADKINS
Superintendent
Heat Treating Department
The Sheffield Corp.
Dayton, O.

IN MOST small and medium-sized plants the selection of steels required for a variety of uses is often left to the discretion of individuals who depend upon the producer to supply a satisfactory product. In many instances it is quite evident that the steel selected may be well adapted to the particular need, but not suitable for other products.

This method of selection naturally results in the customer's stock having so many different kinds of steel as to be a constant problem. Experience has shown that had the selection been based on all factors pertaining to the most critical part or product, the same type of steel could be used in many other less critical items. The need for a thorough analysis of product requirements and the establishment of a simplified stock steel setup is quite obvious.

The suggestion has been offered that each plant control all the steel used in critical parts metallurgically, as to composition, grain size and especially cleanliness to prevent any possibility of an inferior quality product getting into service. Of course, consideration must be given to whether the expenditure for the necessary equipment to perform this service would be justified.

Postwar Planning Favors Simplification

A great amount of helpful information has been gained during the national emergency due to the scarcity of alloys. An excellent job of production of high-quality products has been accomplished under these limitations, or imposed simplifications. Perhaps it is better than could have been done if any or all types of steel previously produced had been readily available.

There are strong indications that postwar planning for present or new products will look favorably upon a simplified program using as few types of steel as possible. The field of application for most any kind of steel is very broad and is further extended by control of such factors as grain size, carbon content, cleanliness, and the knowledge of its characteristics in detail.

There are no doubt many instances where the production of various high-quality products could well be accomplished by the use of only one general purpose steel, if it were available in sizes, shapes, carbon content and grain sizes desired. There are few who would refuse to accept as a high-quality product a lathe or many other machine tools built entirely from such a steel as that of the SAE-6100 series, with the possible exception of a very few parts of special purpose steels.

The foregoing comments pertain only to engineering or constructional type steels, which due to the SAE and NE numbering systems are the most simplified group. After the emergency it is very possible that from these two groups a selection of a number of different types, perhaps no more than one half the total number now represented by the two, will be considered as sufficient to fill all engineering requirements with ample allowances for substitutions.

As for tool and die steels, a situation exists which is somewhat discouraging, so far as simplification is concerned. There are very many combinations of metals and other elements containing sufficient carbon to produce high hardness values when heat treated, which are classified as tool steels and designated by trade names in general.

This situation has been created in most part by the producers and it is the opinion of many that it is their responsibility to inaugurate a program of simplification. However, co-operation of the user can be quite beneficial in such a program. To establish a simplified setup under current conditions, about the only recourse open to the user is to limit his sources of supply to a minimum or to accept steels within limited specifications.

Direct Savings Realized

The machine tool builders of Cincinnati certainly are to be congratulated for the inauguration of their program. See details in STEEL, April 24, 1944, p. 94. The conclusions and recommendations described there are the result of careful investigations and will be of exceptional value to all concerned.

Of particular interest is the report of the effect of inclusions which is in line with results of recent investigations conducted by the Sheffield Corp. of steels other than the NE types. The individual company simplification program as explained by Mr. Hartley in the April 24 article is well worth rereading; the savings realized are quite important.

No doubt, it will be generally agreed that his allowance of five general-purpose and five special-purpose steels for the building of most machines is quite liberal. Tool steel users and producers

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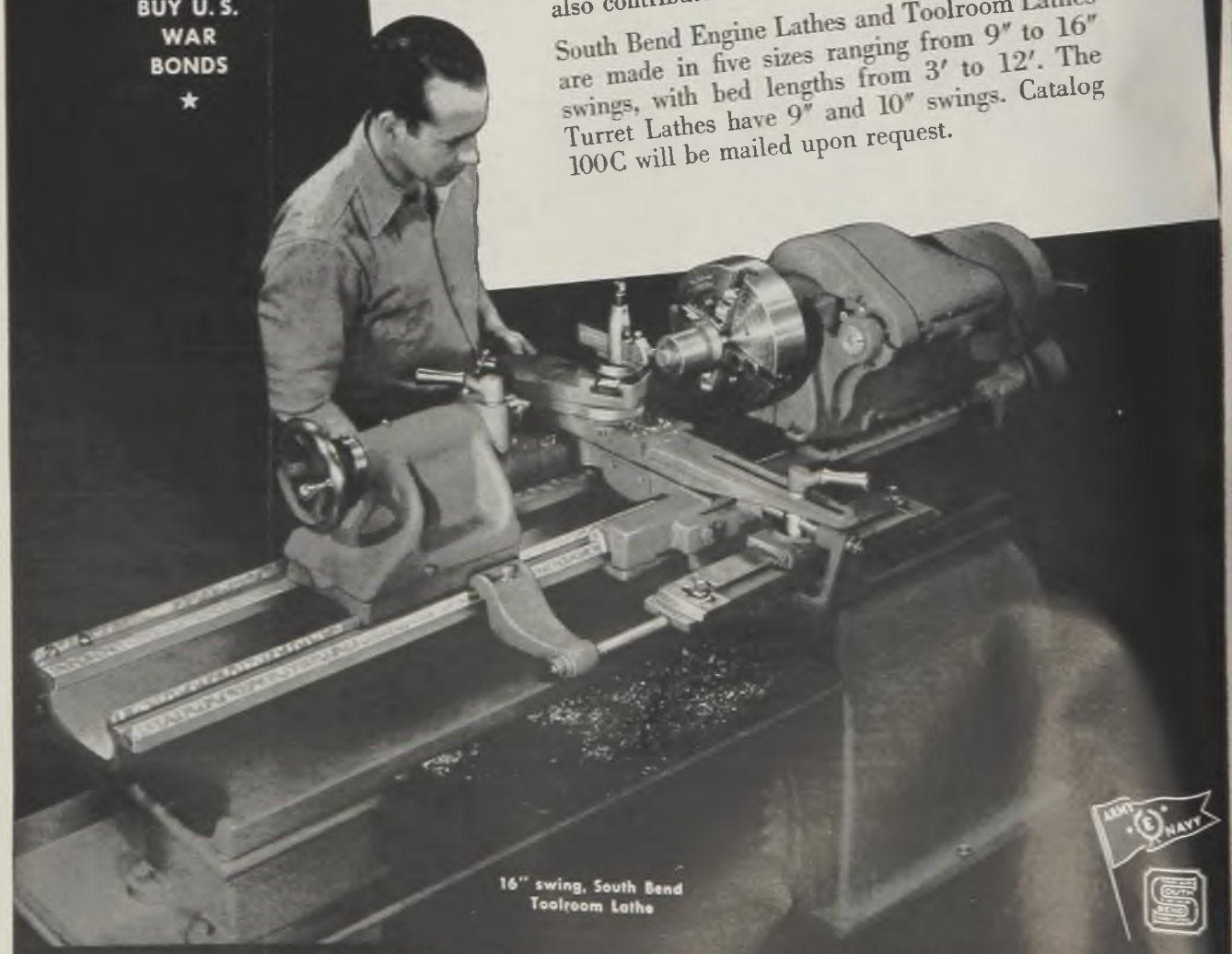

16" swing, South Bend Toolroom Lathe

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might do well to approach the simplification of tool steels in a like manner. "Preparing for V-Day" is only sound logic.

In the manufacture of gages, precision instruments and machine tools, Sheffield is confronted with the same problems as many other users. This company has just recently started a program of simplification and standardization of steels used in its products. To date the number of different steels in stock has been reduced by approximately 20 per cent and on the basis of present products and postwar availability, indications are that this percentage will be increased considerably.

Direct savings realized are from decreased inventories, less storage space required, more uniform methods of processing, and a drop in the average cost of steel. *An indirect saving which is not always recognized is the fact that all personnel concerned, especially key men, become better acquainted with the characteristics of the steels used as the number of types are reduced.*

All users of steel are vitally interested in this problem, and a satisfactory solution will be found only through their co-operation.

Overhead Support Used In Spot Welding

Similar in construction to a small crane, an overhead support in use at Glenn L. Martin Co., Baltimore, makes possible the spot welding of certain parts previously designed for riveting because of their size and weight. The support consists of a horizontal beam which pivots from a supporting trolley on a pin which permits 360 degrees rotation. The assembly to be spot welded is suspended from this beam by springs attached by means of quick-acting clamps and is counterbalanced for easy handling. The crane-like support travels on small rollers on an overhead track and can be moved almost effortlessly in any lateral direction.

Tubing Straightener Speeds Production

Straightening rolled steel tubing, a time-consuming operation, has been solved by a device conceived by two employes at the Grove City plant of Cooper-Bessemer Corp. The device, one of the simplest labor-saving tools used in the shop, is made of a few odds and ends of metal and a series of five rollers.

Previously, tubing of ¼ and ⅜-inch diameter, which is received in large coils, had to be unwound as needed, straightened with a paddle, then bent and formed to fit a specific connection. With the new device the coil is simply positioned over a bracket at the side of the contrivance, the loose end is threaded through the rollers and the tubing is straightened by pulling it out along a horizontal tray where it is measured and cut off to the required length.

Colorimetric Determination of NICKEL IN STEEL

By C. G. HUMMON
Chief Chemist
Sheffield Steel Corp.
Kansas City, Mo.

ONE OF the problems that the steel producer must face is the variable amounts of residual alloys found in the scrap that is received for the open-hearth charge. Turnings especially must be carefully watched, checked, and used where the residual elements will do the most good.

Steel plant laboratories are doing a good job in conserving critical elements by a certain amount of scrap control. This is necessary for at least two reasons: (1) it saves chromium, molybdenum, and nickel by knowing the residuals in a heat before making final additions; (2) it is necessary to segregate the scrap so that undesirable residuals will not contaminate the grades of steel made for cold working and forging.

Because of the number of determinations needed in the scrap control program, and of the time consumed in employing the customary methods for determining the percentage of nickel, it was decided to develop a rapid colorimetric method.

Various proposed colorimetric methods were available in literature and books but none of these came up to expectation, either because of interfering elements, or because the accuracy did not meet standard requirements. Experimental work led to the decision that the best procedure lay in developing the red color **in a basic solution. Insofar as is** known, the proposed method developed by W. W. Weber, R. J. Fritts and the author is new and should be of interest to chemists associated with the steel industry.

Accuracy of this method is plus or minus 0.002 per cent in residual quantities. The method has been found to be as accurate or better than the gravimetric dimethylglyoxime procedure in any quantity of nickel. This is accomplished by using different weight samples and aliquot proportions. Extremely accurate results can be obtained by making graphs of the various working ranges needed in any particular case.

Filters: These are important factors in colorimetric analysis. The filter must conform to the transmission range of the analysis that is to be determined. The green filter used in the determination of manganese, which is supplied with the Cenco - Sheard - Standford - Photelometer plus a yellow lantern filter made by Corning Glass Works gives the right transmission values for the narrow band of wave lengths within the characteristic absorption bands of nickel.

Solutions: Nitric acid solution (HNO_3)—1:2. Concentrated nitric, 200 milliliters and 400 milliliters of water.

Ammonium persulfate solution, $(NH_4)_2\ S_2O_8$, 100 grams in 500 milliliters of water.

Methyl alcohol 99.5 per cent reagent grade.

Dimethylglyoxime solution — 1.0 gram of dimethylglyoxime in 100 milliliters isopropyl alcohol.

Procedure: Weigh 0.5-gram sample and transfer to a 200-milliliter erelenmeyer flask.

Dissolve sample with 15 milliliters of 1:2 nitric acid solution and heat until the sample is in solution and brown fumes are gone.

Add 10 milliliters of ammonium persulfate solution and boil slowly for about 15 seconds.

Add 1 milliliter of methyl alcohol and remove from the hot plate, cooling slightly.

Dilute solution with 10 milliliters of water.

Add 25 milliliters of concentrated ammonium hydroxide, and boil slowly for one minute.

Remove from hot plate and cool to room temperature.

Take sample from cooling trough and add 10 milliliters of concentrated ammonium hydroxide, followed by 10 milliliters of ammonium persulfate, shaking the solution after each addition.

Add 5 milliliters of 1 per cent dimethylglyoxime and shake the flask for 30 secods.

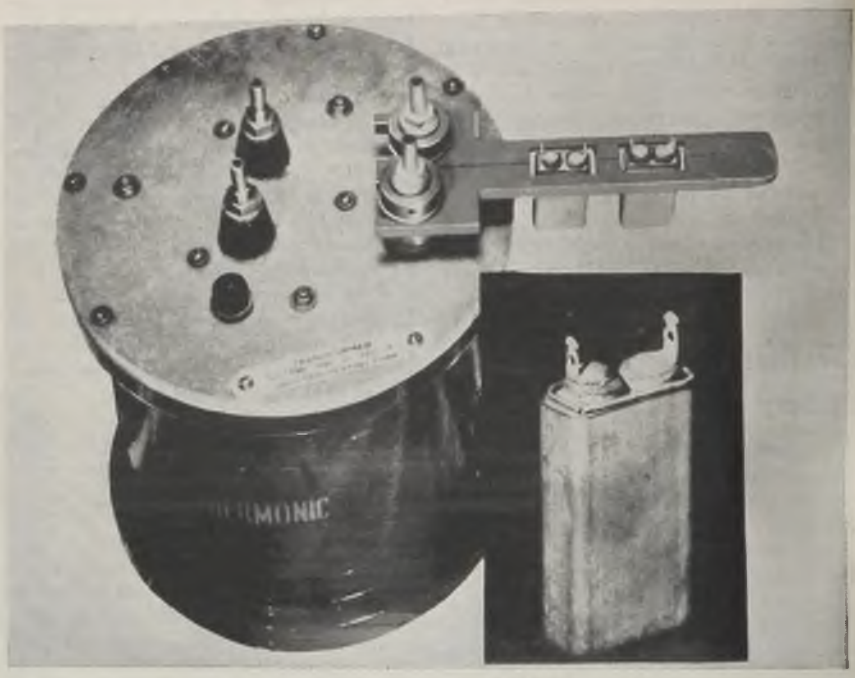
Pour the solution into a 200-milliliter volumetric flask, dilute to mark and mix well.

Pour solution into a flask or beaker and allow to settle for five minutes.

Filter enough of the solution through a No. 41 Whatman or similar paper to make the photelometer reading, discarding the first 5 to 10 milliliters that come through the paper.

Sample is now ready for the photelometer readings.

90% CUTS SOLDERING TIME



Transformer and inductor setup for soldering can tops on condenser units, a closeup of one of which is shown at right below

OUTSTANDING among the recent work passing through the laboratory of the Induction Heating Corp., New York, and set up in the field as a practical installation is the soldering of covers on condenser cans. This soldering job formerly took 16 minutes when performed by the usual method. But with the introduction of induction heating, the time was reduced to 2½ seconds. It also permitted the use of unskilled labor, instead of employing an experienced soldering iron worker.

Preliminary preparation of the cans and covers, which are stamped or drawn from terne plate, is simply to apply flux, to allow the solder to run freely and adhere to the base metal. The condenser element is inserted into the can, and its leads electrically fastened to the terminals, which are brought through the cover of the can.

Fixture Holds Eight Cans

The assembled cans are then placed in a fixture which holds eight cans simultaneously in relation to each other. A ring of solder of the proper specifications and with the same shape as the periphery of the joint is preplaced over the section to be joined. The fixture, with the cans in place, is now raised to a position which brings the joint area in proper relation to the copper work coil, this work coil being positioned directly above the fixture. The induction generator is energized by pressing the start button and heat is immediately evolved in the joint section. Simultaneously a timer starts its cycle. At end of the predetermined time of 2½ seconds it automatically shuts off the power, the joint cools and the work is lifted from the fixture fully soldered.

Accompanying illustration shows the relative position of the work coil with its energizing transformer and the condensers in place in two positions of the coil.

Where large production is required, a 2-position coil setup is used with eight positions in each coil. The transformers and switching equipment are included in the table holding the coils, which are so arranged electrically that when one position is heating and cooling, the other position is being loaded with condensers to be soldered; thereby keeping the production constant at all times and obtaining a high resultant use-factor on the generating equipment.

The process can be readily adapted to another size condenser can or entirely dissimilar objects by simply attaching different size work coils to the terminals of the transformer. However, a wide range of sizes may be soldered with the one coil, thereby keeping the total number of coils to a minimum.

The work coil is usually made up of copper bar-stock or tubing, shaped to accommodate the objects to be heated. These machined holes are slightly larger than the object and as is common with all induction heating, at no time make electrical contact with the work. The thickness of the coil is determined by the width of the heat pattern desired. In this particular case, the heat pattern is a narrow band restricted to the joint section.

The cooling water used for the induction generator also cools the work coil and the specially designed high-frequency transformer. This transformer operates at a terminal voltage across the coil of approximately 200 volts, and allows the coil to be grounded for safety of operation.

The salient points of this time-saving method of soldering condenser cans are as follows:

—All joints are uniform.

—With the elimination of personal element, rejections are negligible.

—Energy cost is minimized.

—Large saving in labor.

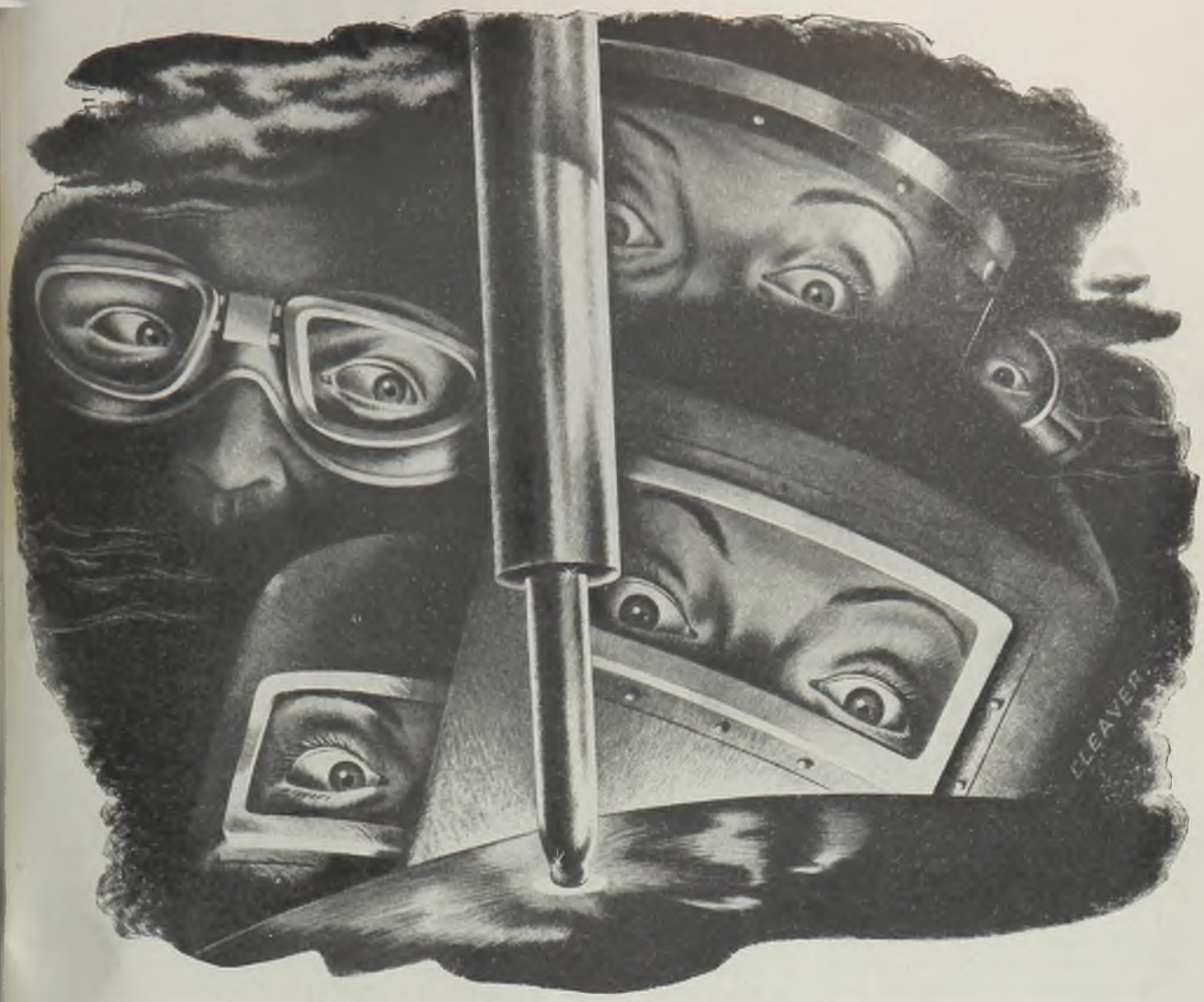
—Unit cost of condenser reduced.

—Same amount of solder used in every joint.

—Comfortable working conditions—no radiated heat from soldering irons.

—No skilled labor required.

—Equipment can also be used for localized hardening, brazing, annealing, etc.



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In the spot welding of aluminum, this intense heat has often made it necessary to stop production and dress or replace the electrodes as frequently as every 30 welds. Now, however, by cooling the electrodes with a refrigerated liquid, it is sometimes possible to make as many as 800 welds before it is necessary to dress or replace the welding tips . . . another amazing application of G-E industrial refrigeration!

Many, many other new and improved techniques in refrigeration and air conditioning are helping industry do the "impossible" in war production today. They'll all be available, and *ready* for any commercial or industrial application after Victory.

To place your name high up on the preferential list for earliest available data on finer postwar air conditioning equipment, write *now* to: *General Electric Company, Air Conditioning and Commercial Refrigeration Divisions, Section 447, Bloomfield, New Jersey.*

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Quick-Acting Fasteners

Literally millions of quick-acting fasteners like those shown here are being used for holding aircraft cowling and panels in place. In postwar period, such fasteners are expected to find many applications for quickly removable panels and parts on a variety of equipment

developed for aircraft use may find many peacetime applications

By R. W. ALLEN
Project Engineer
Camloc Fastener Corp.
New York

QUICK-ACTING FASTENERS have become a vital part of the modern combat airplane and appear destined to find applications in many peacetime products. They can be used to advantage in a variety of locations, but are especially useful on access panels which must be removed quickly or frequently.

The importance of accessibility in all mechanical equipment cannot be overemphasized. In aircraft, accessibility for inspection and repair is essential, especially under battle conditions where ground maintenance must be reduced to a minimum. The many access panels and cowlings provided for this purpose must also be secured in such a way that they can be removed and replaced in the least possible time. The development of a new type of fastening device was indicated. The requirements were speed of operation, aerodynamic flushness, light weight, strength, endurance and flexibility. In addition, all parts had to be securely attached to prevent loss.

Through the research of numerous engineers, various types of fasteners have been developed. Most of the designs depend upon a cam surface to pull the sheets together and a detent and spring to lock the fastener in a closed position. Thus the fastener operates in approximately one-quarter turn, yet gives a firm positive lock that will not open under the most strenuous flight conditions.

This is the so called "cowel fastener" in its simplest terms. The fundamental requirements, as outlined above, set certain limitations on the design which become apparent when the fastener is put into use. To a large extent, these have been overcome as a result of the experience gained from the millions of installations on fighting planes. Nevertheless, it will be well to study these limitations in detail as they provide an insight into the operation of the fastener, as well as a means of judging its usefulness in other industries.

Small allowable tolerances, due to the nature of the locking principle, cause the most difficulty. The sheets must be tightly pulled together by a cam whose length is limited to a fixed dimension. This requires an accurate selection of parts.

Yet, the manufacturing tolerances on material thickness and the danger of warpage, especially on curved sheet applications, produce accumulations that may run as high as 1/16-inch. These tolerances are unpredictable in the drafting room, and parts selected according to theoretical figures for grip thickness fail to function properly on the assembly line.

Misalignment of mounting holes is another common source of trouble. This may require additional length in the stud member and cause unequal distribution of load that may result in premature failure. Misalignment may also cause jamming of the fastener which makes it appear that it is locked, yet permits it to open under vibration. Floating receptacles have been developed to compensate for this condition. In order that these should function with the greatest efficiency, they should be self-aligning and free from any binding.

Installations on curved sheets not only aggravate the above conditions, but also require a stud member which is retractible enough to prevent interference with the receptacle when the fastener is open. It is easy to see that a rigid projection from the inside of the outside sheet would prevent the engagement of the fastener on sheets having any considerable degree of curvature.

In order to reduce the critical nature of fasteners, there have been many attempts to design a "universal" fastener which could be used for nearly all grip thicknesses, in other words, a fastener having the same characteristics as a nut and bolt, yet allowing operation with but a quarter turn. So far, these attempts have failed to result in a satisfactory solution, but some of the commercially available products now on the market are so adaptable to different conditions that development of a "universal" fastener is practically unnecessary.

Having considered some of the difficulties involved in quick-acting fastener design, let us examine the commercially available products. Essentially, there are two types of fasteners on the market:

1—The spring-receptacle type, which may be subdivided further into:

(a) Flat spring type having the cam surface part of or supported by the spring, and

(*Please turn to Page 130*)

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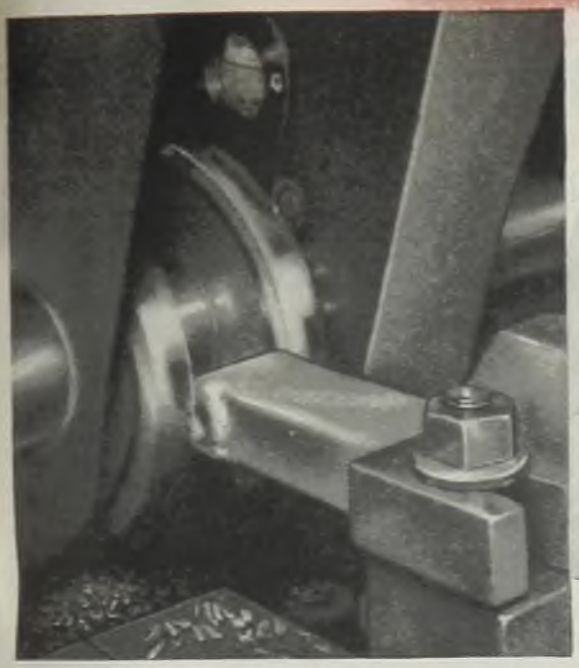

America's astounding record in airplane production will go down in history as one of the vital factors in winning World War II. Behind the scenes of this achievement are major advancements in technic of metal-cutting—among the most important of which is Kennamilling, the process of using Kennametal-tipped cutters to mill any kind of metal, including the toughest steels, at almost incredible speed.

Kennamilling has contributed tremendously to the war effort, and will have a significant bearing on post-war production. Consider, for example, the savings effected in the following three instances:

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(2) Face milling aluminum castings with H.S.S. cutters resulted in 10 finished surfaces per hour. Kennamilling turns out 125 per hour, and the quality of the work is much improved!

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Switch to Kennamilling now—speed present war work—be equipped and gain the "know-how" for economical production in a future competitive commercial market. Ask a Kennametal field engineer to tell you about the revolutionary advancement in milling practices with Kennametal-tipped cutters. Write for catalog information.

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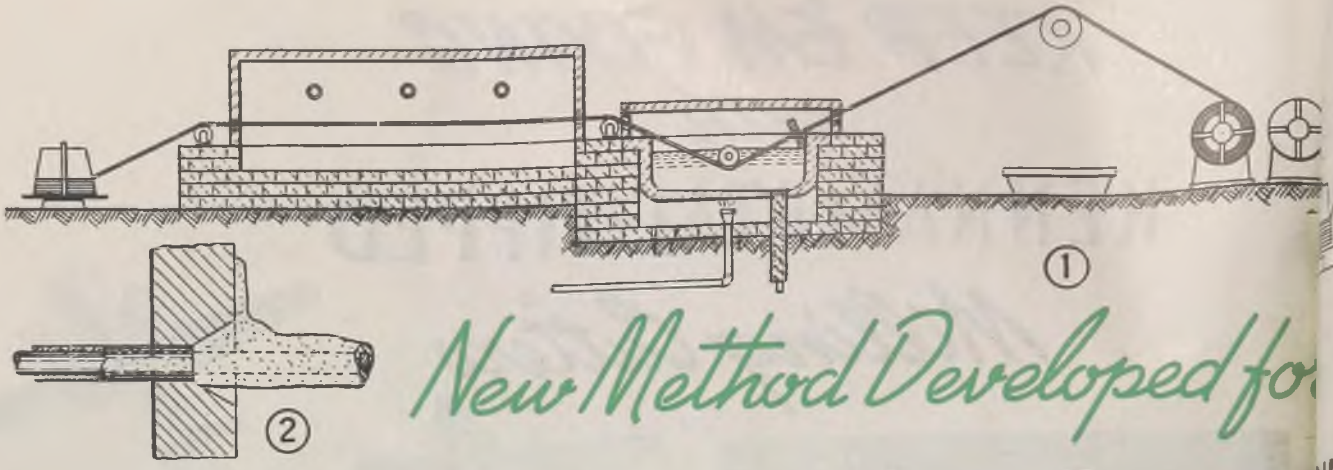


New Method Developed for PROCESSING WIRE and

New procedure for cleaning ferrous metal coated with lead includes heating the material to oxidize the lead coating and form lead oxide, coating the piece with glass, and cooling it so that the glass will separate and carry the lead oxide with it thus leaving a clean surface on the steel. Process eliminates usual pickling, annealing and de-leading operations and is suitable for various grades of wire and strip steel

By J. J. CAUGHERTY

IN THE MANUFACTURE of metal products, such as sheets, stripsheets, strips and wire, particularly in the lighter gages, a number of successive reductions by rolling or drawing operations are required before the product is brought down to the desired thickness.

Such cold reducing operations greatly diminish the ductility and workability of the metal, so that at frequent intervals during reduction it must be subjected to annealing treatments to restore ductility, followed by the usual acid pickling to remove any scale.

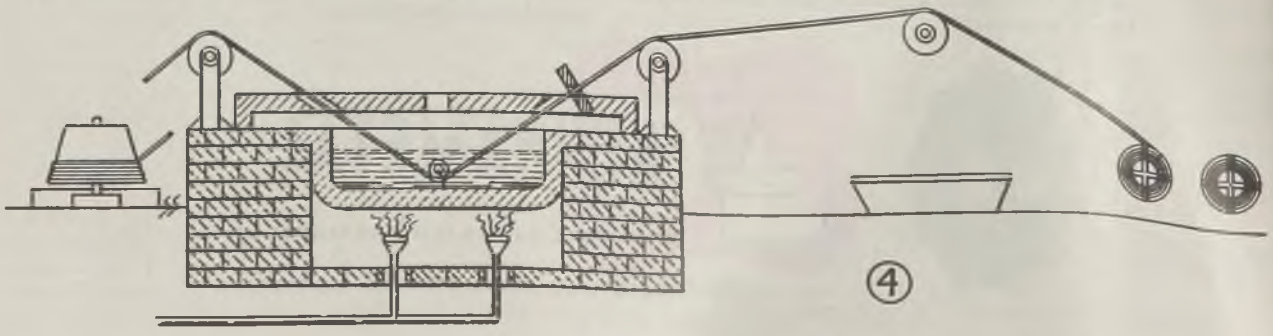
When the product being worked is stainless steel wire, these operations become more involved. Stainless steel wire usually is coated with a relatively soft metal, such as lead, prior to the drawing operations. Moreover, the lead coating must be removed after drawing and before annealing and must again be applied before further drawing after the pickling following the anneal.

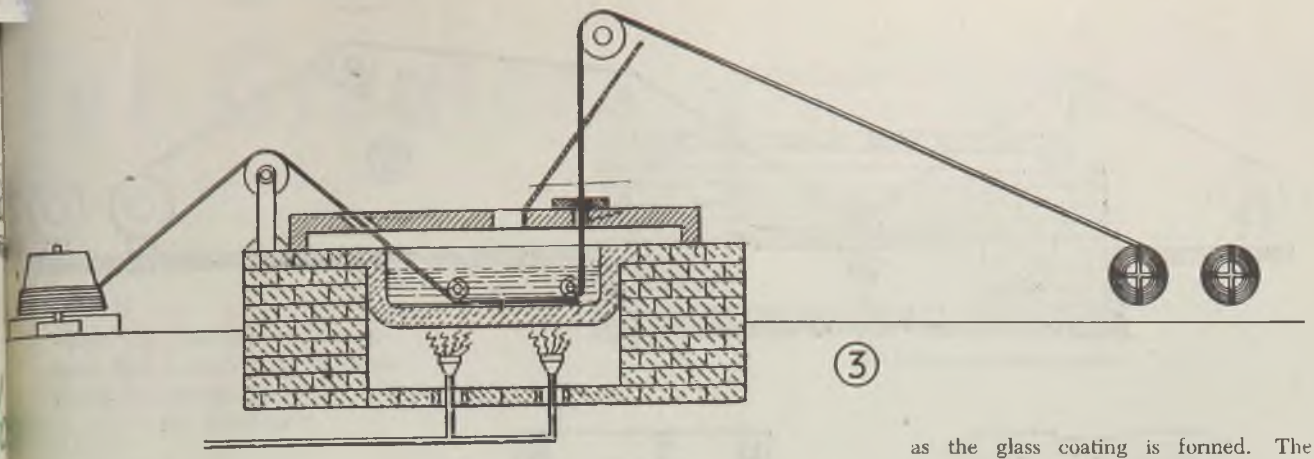
Thus, the present practice in making stainless steel wire preferably includes passing hot-rolled stainless steel rods through an acid pickle, fluxing, then passing the rod through a bath of molten lead to form a lead coating, which serves as a lubricant during subsequent drawing operations, and then drawing the wire down as far as possible or until the wire becomes so brittle as to require further annealing. With present practice, three successive drawing operations or drafts seem to be the maximum amount of drawing which can be performed without further annealing.

The drawn wire then is passed through an acid bath to remove the remaining lead coating, and may be bright annealed or batch annealed. If it is bright annealed, it is again fluxed, lead coated, drawn up to three drafts and again pickled to remove the lead. The material is sometimes shipped in this condition or it is lime coated and given one finish draw, or it may be again bright annealed and the last operations repeated. If the material is batch annealed, it must be pickled and lead coated for subsequent drawing operations.

In the manufacture of stainless steel wire in the manner outlined, which is in accordance with present practice, high costs are involved. Each pickling operation of stainless steel products and the de-leading operations are expensive. The lead, which is removed, is lost and when it becomes necessary to change the pickle bath for carrying out the de-leading operation, the acid is also lost. No economically satisfactory way of recovering the lead or acid in the spent bath has been found. Handling costs in connection with each of the operations also are involved. Moreover, due to the repeated acid treatments, the possibility of the development of acid brittleness in the material being processed always is present.

A method which eliminates the usual pickling, annealing and de-leading operations recently has been developed. By this method, Fig. 1, the wire is first lead coated and drawn as far as possible and then is passed into a preheating furnace where the lead coating remaining is oxidized to form lead oxide. The material then passes immediately into a molten bath of glass and a uniform coating of glass of controlled thickness is formed on the wire. The lead oxide is absorbed in the glass coating and subsequent separation of the glass coating from the wire after cooling, carries with the glass





TRIP in MOLTEN GLASS

all of the lead oxide, leaving a perfectly clean metal surface ready for further processing.

Meanwhile, the heating of the wire as it passes through the bath of molten glass also anneals the wire so that it is ready, after removal of the glass, to be either lime coated and finish drawn, or fluxed if desired and then lead coated and again drawn to provide the desired gage, after which the lead coating can be again removed as just described. Moreover, the lead absorbed in the glass coating in the form of lead oxide and separated from the wire upon removal of the glass coating, can be readily recovered.

In utilizing the present method for manufacturing stainless steel wire, hot-rolled stainless steel rods which have been pickled and lead coated, are drawn the maximum number of drafts to form a coil of hard, drawn, stainless steel wire having some lead coating remaining thereon. The coil is placed on a reel and the wire is passed over a guide roll into a preheating furnace. The furnace is maintained at a sufficient temperature, preferably with an oxidizing atmosphere so as to preheat the wire to a temperature of approximately 1000 degrees Fahr. and oxidize the lead coating on the wire and form lead oxide.

The wire then passes directly from the preheating furnace over another guide roll into a glass heating furnace, beneath a roll submerged in a bath of molten glass, then out through a die and over an elevated deforming roll to a motor-driven reel.

The bath of molten glass is produced by melting a frit, preferably containing silica with soda and lime or other similar materials to form an alkaline glass.

The molten glass is maintained preferably at a temperature between 1800 and 2400 degrees Fahr. The speed of the wire passing through the molten glass is controlled so that the wire is immersed in the bath for a sufficient time, say 5 to 30 seconds, to anneal the wire, depending upon its size and the temperature of the bath.

In passing through the glass bath, a coating of molten glass adheres to the surface of the wire. The thickness and uniformity of the coating may be controlled by passing the wire as it emerges from the bath of molten glass, through a die whose wall (Fig. 2) is provided with a die opening of such size and shape that the resulting thickness of the glass coating on wire is not more than about 1/32-inch thick and is uniform throughout.

The lead oxide coating on the wire is absorbed in the glass coating as the wire passes through the glass bath and as the glass coating is formed. The breaker roll is located at a sufficient distance from die so as to allow the wire with its glass coating to properly cool to the desired temperature. As the glass-coated wire passes over the breaker roll, it is flexed to such an extent that the glass separates from the wire and falls into a receiver, carrying with it all the lead oxide on the wire.

Thus the wire with a clean surface has been annealed and de-leaded and is ready for further processing either by lime coating and finish drawing, or by being again lead coated, drawn the maximum number of drafts, and heat treated and de-leaded.

The broken glass and the lead oxide removed from the wire may be charged into the glass heating furnace through an opening in the roof along with a sufficient amount of a reducing agent such as ordinary flour. The reaction between the reducing agent and lead oxide in the molten glass bath reduces the lead oxide to molten lead, which settles to the bottom of pot and may be drawn off through a tube filled with magnesite to allow the recovered metallic lead to be recovered without being oxidized. The tube extends through the heated chamber beneath the pot so as to be maintained hot while the lead is filtering through the magnesite.

Advantages claimed for this method of drawing stainless steel wire include:

1. Pickling operations are eliminated.
2. Acid de-leading costs including the cost of acid and lead lost, and attendant handling costs, are eliminated.
3. Entire de-leading operation takes place at same time product is annealed.
4. Cost of combined de-leading and annealing is only slightly more than the cost of annealing. This cost is offset by the value of lead recovered.
5. Time of processing and handling is reduced.

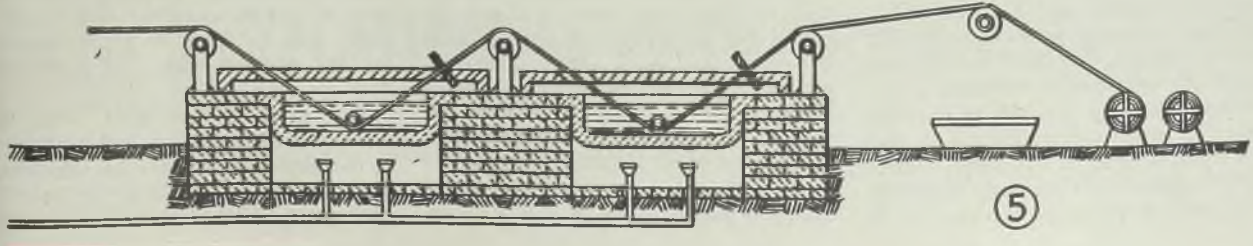
Fig. 1—Equipment employed for glass coating stainless steel wire

Fig. 2—Detail of die which provides a uniform controlled thickness of glass coating

Fig. 3—Equipment employed for glass coating common steel wire

Fig. 4—Modified arrangement for glass coating common steel wire

Fig. 5—Twin-pot setup for treating high-carbon wire



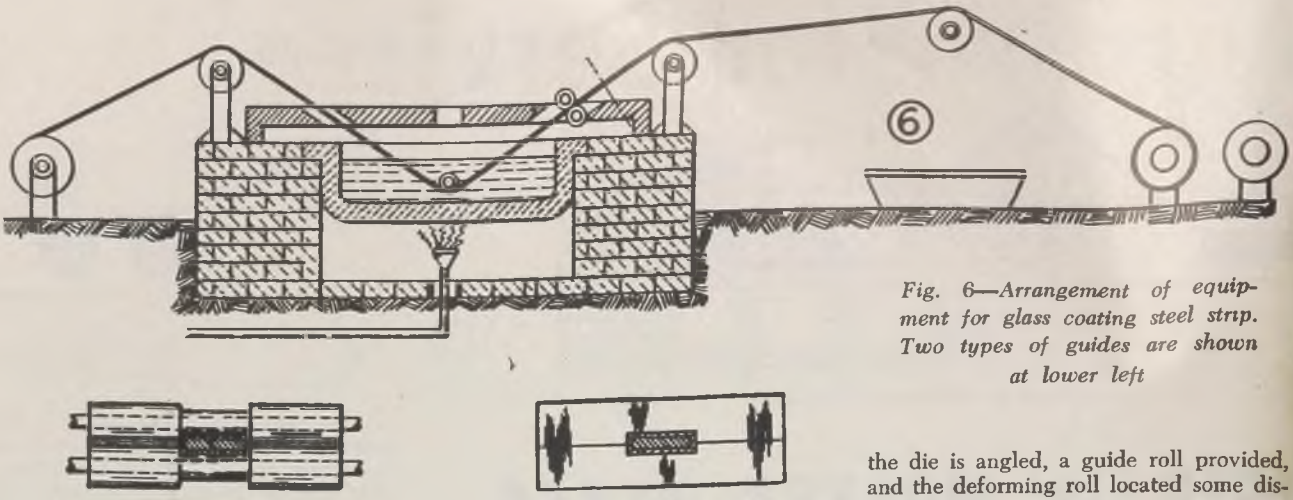


Fig. 6—Arrangement of equipment for glass coating steel strip. Two types of guides are shown at lower left

6. Acid brittleness in the product is eliminated because no acid is used.

This treatment also is applicable to other steel commodities such as carbon wire, rods and strip.

For dead soft annealing of the wire the molten glass is maintained at a temperature of approximately 2300 degrees Fahr. and for medium annealing, approximately 1800 degrees Fahr. The speed of the wire in passing through the molten glass bath is controlled so that the wire is immersed in the bath from say 5 to 30 seconds, depending upon the size of the wire and the temperature of the bath. The die is provided with die openings of such size and shape that the resulting thickness of the glass coating on wire is not more than 1/32-inch thick. Moreover, the coating is uniform throughout.

In leaving the molten glass bath the products must be passed through openings or between rolls, or dies or wipers to provide a uniform thickness of glass, and the thickness of the glass must be controlled in order to obtain proper and uniform heat treatment of the article, and proper protection from oxidation, or separation of oxides on the surface if any are present.

Thin Coating Is Best

The resulting glass coating, upon leaving the die, should be as thin as possible so long as a uniform coating is maintained and so long as the metal is completely covered, in order to obtain the best results. In any event, the glass coating should not be more than 1/32-inch thick, because a greater thickness may heat or maintain the material heated too long before the glass cools. Moreover, a greater thickness of glass does not contribute any to the oxide separation or oxidation prevention functions of the glass; and a greater thickness uses too much glass, and therefore fuel for heating the glass, and involves additional unnecessary expense.

The deforming roll is spaced the necessary distance from the die so that the wire is cooled to the proper degree before separating the glass therefrom. The glass dropping on a chute is directed back into the molten bath.

The heat treating cycle, which may be either annealing, normalizing or patenting is controlled by the time of immersion of the wire in the molten glass, and therefore by the distance between the submerged rolls and the speed at which the wire is passed through bath, by the temperature of the molten glass, and by the time of cooling. The temperature of the molten glass may be anywhere between 1800 and 2400 degrees Fahr., the higher the temperature, the better. The molten glass is more fluid at higher temperatures. The material may be passed faster and the wiper die functions better to provide the desired uniform thickness of the coating when the molten glass is more fluid and when the speed of the wire passing through the die is fast.

Coating Sometimes Pops Off

When the thickness and uniformity of the glass coating is not controlled, the glass coating upon cooling to about 400 degrees Fahr. will suddenly and violently separate or pop off. In many instances this is undesirable. By controlling the thickness and uniformity of the coating, the glass coating can be cooled, even to room temperature if desired, and it will still adhere to the metal surface, although ordinarily it will not be cooled to this extent before passing over the deforming roll. However, a slight deformation or bending of the glass coated wire when cool will break the glass coating, and separate it from the wire as indicated. Normally the cooling operation is carried out in the air, although if necessary for a selected heat treatment cycle for certain grades of steel, the glass coated material can be cooled or quenched in hot water.

After leaving the deforming roll, the wire is bright and clean and may be passed through oil for oiling the surface, if desired, or a quick drying clear coating for protection may be applied before being wound on reels. Thereafter, the wire on reels may be given a light draft to size and finish specified if desired.

A modified arrangement of the equipment for wire is shown in Fig. 4. Here the die is angled, a guide roll provided, and the deforming roll located some distance from the furnace.

An arrangement of equipment for treating steel strip is shown in Fig. 6. The equipment is similar to that shown in Fig. 4, except that a reel is provided for the strip, and roller wipers are provided to control the thickness and uniformity of the glass coating. The rolls are grooved so that the glass coating will be as thin as possible, completely covering the surface of the strip but not over 1/32-inch thick.

Handles High-Carbon Wire

High-carbon steel wire may be similarly treated with some modifications of the equipment as shown in Fig. 5. In heat treating, the wire is first passed through a furnace heated to approximately 1500 degrees Fahr. for the required time, and is then passed from the furnace through two glass pots, both equipped with wiper dies. Some oxide of course is formed by the initial furnace heating, and this oxide on high-carbon, high-silicon steel wire and also rods appears either to dissolve or go into solution in the glass.

Molten glass with oxides in solution does not always uniformly cover or adhere to the metal, so that there may be some bare spots, even after passing through the first pot. However, by again passing the wire through the second glass pot and wiper, the dissolved oxides or oxides in solution in the first glass coating do not become absorbed in the second glass coating, so that uniform thin glass coating results as the wire emerges from the last set of wiper dies.

Ordinarily, with this type of material, after passing over glass deforming roll, the wire may be passed through a lime bath before being wound on take-up reel, for preparation for subsequent drawing operations. Ordinarily, the total time of immersion of the wire in glass baths may be from 10 to 30 seconds, and the resulting wire is of a patented structure.

The treatment described, with the control of the thickness and uniformity of the glass coating, may be substituted for annealing and pickling wire prior to galvanizing. That is to say, the product

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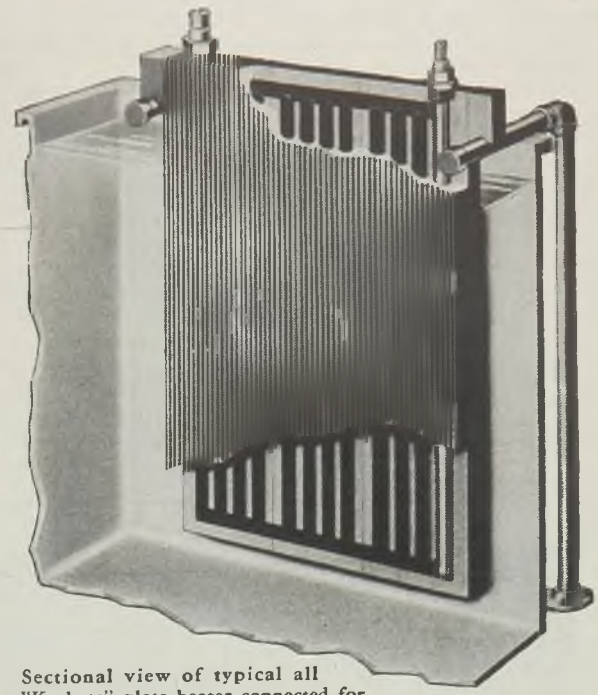
The "Karbate" Plate Heater is a new departure in heaters for pickling tanks, plating tanks or other services where heating, or cooling, of corrosive liquids is required. For greater serviceability through increased resistance to mechanical shock, special construction combines tubular channels in unit blocks of "Karbate" corrosion-resistant material.



Sectional view of typical all "Karbate" plate heater connected for parallel flow. Note assembly of three basic units to specified size and "Karbate" shoulders for support of heater. Other types of supports are available.

Features of the "KARBATE" Plate Heater

- **"Karbate" material is chemically inert . . . resists practically all acids, alkalies and solvents.**
- **Thermal conductivity of "Karbate" equipment is higher than that of most materials used for such installations.**
- **Fluted sides utilize principles of extended surface for greater heat transfer.**
- **Channels can be arranged in parallel or series flow for heating or *cooling* liquids.**
- **No dilution of tank contents.**
- **Sturdy construction minimizes maintenance costs.**

The "Karbate" Plate Heater is available in four separate design groups and 30 different combinations to meet almost any service requirement. Our representative will be glad to furnish details. Write National Carbon Company, Inc., Cleveland 1, Ohio, Dept. 34F.

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may be passed from glass deforming roll to a flux bath, then into a spelter bath, wiping dies and ultimately to reels, for galvanizing the material treated in the glass furnace.

The same treatment described for low-carbon steel wire may be used for descaling low-carbon steel rods, which may have a heavy scale thereon, which is brittle and loose. In passing the material through the molten glass bath and glass coating control dies, and then removing the scale, a cleaned white steel surface results after the glass separates.

A treatment for high-carbon steel rods may be used similar to that for high-carbon steel wire. The scale on this material is tight and goes into solution and is absorbed by the glass. If the glass coating is not uniform in passing through one molten glass bath, the material may be passed through a second glass bath to obtain a uniform coating.

The foregoing methods carry patent numbers 2,337,185 and 2,337,186.

Pistons Are Faced with Flame-Sprayed Bronze

A new method of producing bronze-faced pistons has been announced by the Neo Mold Co., Cleveland, who developed a process to make special pistons for Cleveland Pneumatic Aerol Inc., division of Cleveland Pneumatic Tool Co. The method involves flame spraying of bronze on steel.

Comparatively light steel blanks, designed by Neo Mold, are sprayed with a special bronze alloy to a thickness of approximately 0.045-inch on the bearing surface. This is rough-machined in the initial production, then given the required high finish, with oil grooves, in the Aerol plant.

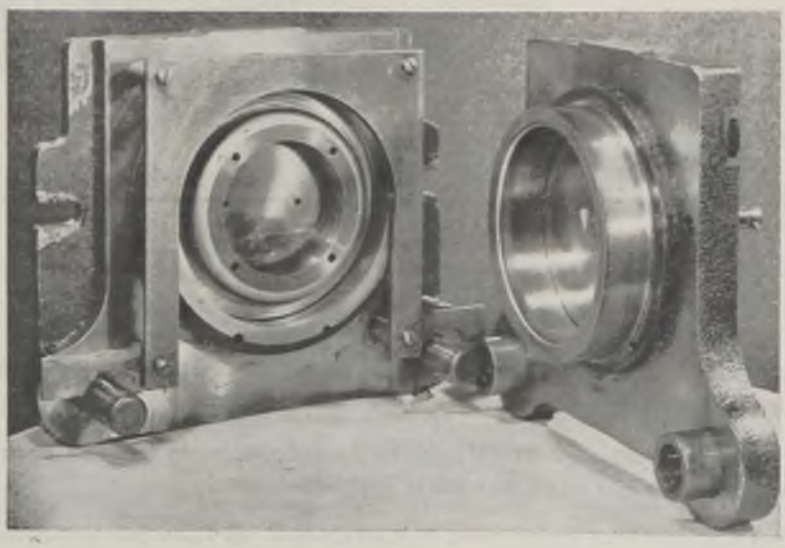
In the new process some 3½ pounds of bronze are saved on each piston, thus the finished product is lighter than those produced from the old process which were machined from bronze castings.

One of the chief advantages of steel is method is that the strength of steel is combined with the bearing qualities of bronze. Having an extremely fine porosity, the sprayed bronze absorbs and retains oil, thus after short use it becomes self-oiling.

This process is now being applied to all types of pistons for compressors and pumps, where the unusual combination of strength, lightness and wearing quality is essential. According to company officials, it has been developed for the successful application of any metal to any other metal.

—o—

A British patent No. 548275 has been granted to S. C. Caddy, covering a method for case hardening steel. The material to be packed around the steel so as to obtain surface carburization is prepared from a mixture of fine powder of 280 pounds of salt, 160 pounds of coal dust, 60 pounds each of soap and charcoal, and 676 pounds of dry blood.



Die Making

simplified through use of tool steel tubing

SINCE the beginning of World War II, tool steel tubing has come into much wider use as a result of the pressure on manufacturers to reduce tooling time and speed war work, reports George Bissett, president, Bissett Steel Co., Cleveland. One of the uses of tool steel tubing is in die making, where it can be utilized in a great variety of ways.

The die shown in the photograph, for instance, is made of four different sizes of tool steel tubing. In the portion of the die shown at the left, the outside section of tubing is the blanking ring, the middle section is the pressure pad, and the inner section is the draw stake. In the portion of the die shown at the left, one section of tubing was used to make a blanking and drawing ring.

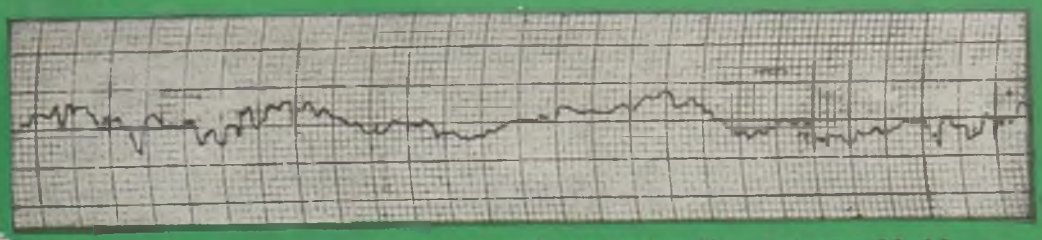
Sizes of tubing used in this die range from 14 to 10 inches outside diameter. The die blanks and bars, forms small heater tops of 20-gage cold-rolled sheet in a single operation. If tool steel tubing had not been used, the die would have been made by forging rings to size and then machining them. In smaller dies, particularly with a deeper draw, the only other method would be to bore solid bars, which is a very expensive and time-consuming procedure.

Tool steel tubing is most commonly substituted for bored bars in the manufacture of blanking dies, forming dies, punches, collets, collet closers, spindle thrust collars, lead screw thrust collars, rim rolls, hardened rolls, master tools, ring gages, bushings, slitters, spacers, skiving knives, machine tool parts and many other tools and parts.

The practice of boring solid bars to obtain a simple tubular part made of tool steel is a wasteful one in more ways than one. For instance, suppose a tool steel bar 6 inches in diameter and 1 foot long is bored into a tube with 1-inch wall thickness. The equivalent of a 4-inch bar is simply swept up as scrap, having been bored out of the bar. If the steel costs 40 cents a pound, the waste in cost of material alone (estimating the weight of a 4-inch by 1-foot bar of steel to be 43 pounds) is $17.20. The labor involved in most cases costs even more, to say nothing of the loss of time and manpower and the cost of tool bits, machine maintenance, power and other expense.

To make a part of tool steel tubing, it is only necessary to select the proper size of tubing, saw off the desired length, and then make any machining operations which are necessary to give the tube the contours required by the job.

Proof of a Better Finish



Each small square represents 1.0 micro inches. Micro inch r.m.s. 0.9—1.6

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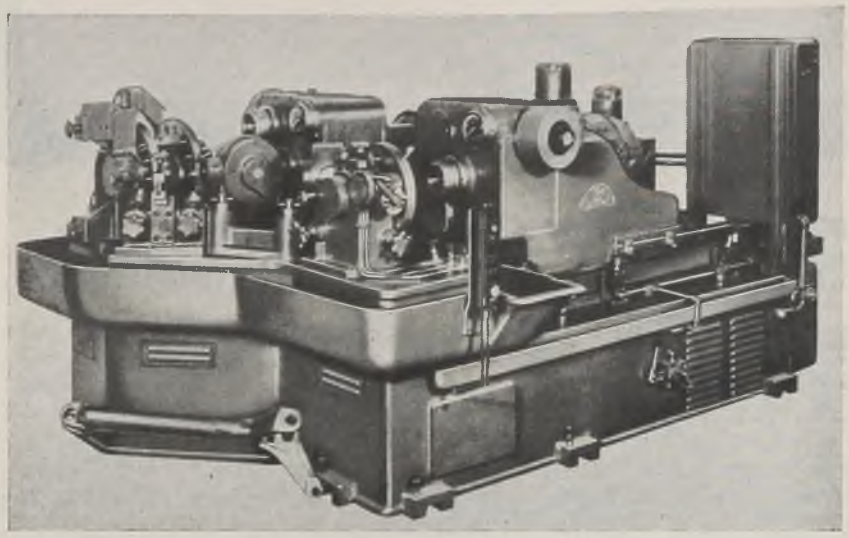
Hydraulic Drilling and Reaming Machine

Designed and built for core drilling, redrilling and reaming holes through very tough steel, by Snyder Tool & Engineering Co., 3400 East Lafayette avenue, Detroit 7, this machine is equipped with two hydraulically operated slides, one carrying a single-spindle and the other a 3-spindle head. Tool spindles are equipped with breech locks enabling the operator to exchange tools readily. Each side of the machine has its own push-button station and is an independent mechanism.



Because various high-speed steel and tungsten carbide tools are used, a wide variation in spindle speed is provided through alternating current-direct current motors with rheostat control. Spindle speeds are indicated on speedometer dials on the heads. Varying feed rates for different tools are provided by means of two metering valves set for predetermined feed rate, the rate desired being secured by setting a hand valve on the side of the machine.

This valve is conveniently placed so that the operator when changing tools can set the desired feed rate and also set the rheostat controlling spindle speed at the same time.

The fixture locates and supports the part for the drilling operation and is designed to accommodate both right and left-hand parts. And because right and left-hand parts are processed, the second unit is equipped with three spindles. The fixture subassemblies are mounted upon a sub-base which is also a chip trough.

Work cycle is as follows: The part is loaded and clamped securely in the fixture. The first of the three tools is placed in the tool spindle and the operator selects the correct size tool guide bushing on a disk attached to the fixture, selects the correct speed and feed rate and starts the cycle. He then repeats this operation on the other side of the machine for two tools.

This procedure is repeated on both sides of the machine for redrilling and finish reaming. At each of the two push-button stations there also is an emergency button so that the operator can retract both heads immediately from either side of the machine.

Refrigeration Unit

Designed for cooling resistance spot welders and for other specialized industrial liquid cooling service, Airtemp Division, Chrysler Corp., Dayton, O., has developed an air-cooled "packaged" 1½-horsepower refrigeration unit.

The new unit has ample capacity to cool all types of resistance spot welders. It has a counter-flow liquid cooler mounted in the base. An insulated storage tank is equipped with a special ¾-horsepower pump having a nominal capacity of 6 gallons per minute. Location of the liquid cooling unit in the base eliminates losses of the coolant employed at the time of changing tips, as all liquid drains back to the storage tank. A pressure regulating valve assures flow of coolant at a constant pressure.

The 1½-horsepower radial compressor is hermetically sealed, protecting the working mechanism against the harmful effects of dirt and moisture and reducing refrigerant losses to a minimum. All vital parts are superfinished to reduce wear and assure long life. Cylinder liners are removable and interchangeable and each cylinder is protected by a suction strainer. An efficient oil separator is standard equipment.

The compressor starts unloaded which saves electric current and reduces strain on the motor. The motor is equipped with a magnetic across-the-line starter, and has built-in overload and low voltage protection with external hand reset.

The steel condenser is equipped with a 16-inch propeller-type fan which permits the unit to operate efficiently at high ambient temperatures encountered in industrial service. The entire mechanism is encased in a steel cabinet, which is "bonderized" against rust and corrosion. Starting and selector switches are mounted on the outside of the cabinet and a large flush-mounted door gives access to the condensing mechanism when necessary.

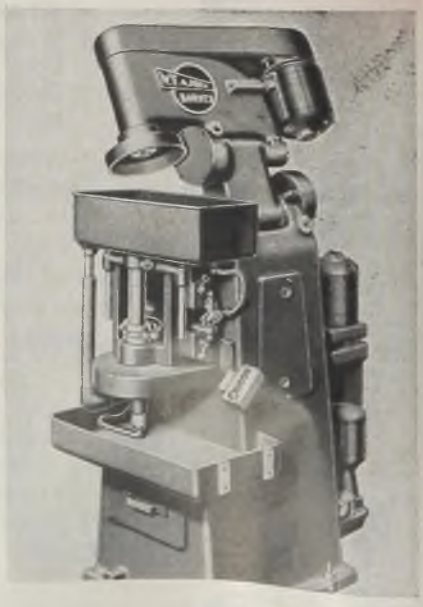
The unit is equipped with high-pressure cutout. A remote bulb thermostat having a temperature range from minus 20 to plus 20 degress Fahr. controls the temperature of the coolant.

Optical Curve Generator

The model No. 4 optical curve generator is a precision machine, equipped with a special hydraulically actuated system for automatic cycle operation. This machine can be used either singly with one all-purpose grit diamond tool or a battery of two or more machines. In the latter instance, the first machine is equipped with a coarse grit (100) diamond tool that will quickly rough grind to approximate size and curve and the second machine equipped with a fine grit (400) diamond wheel for finish grinding of the lens.

For single lens operation the machine is equipped with a vacuum holding device where lenses having sufficient edge thickness can be chucked and held in the work spindle without the use of blocking pitch. The lenses can be inserted and removed in a few seconds, thus saving a great amount of time in blocking and cleaning.

The machine base incorporates a coolant tank and also a removable baffle tray in which the ground glass is accumulated and from which it may be removed easily.



Service on the spindles is reduced to a minimum by the use of large heavy-

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

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THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

duty spindles with bronze bearings. The upper spindle has a forced feed lubrication system to provide positive lubrication for speeds up to 6000 revolutions per minute.

The machine may be adjusted quickly from one radius to another. When the curvature has been set, the linkage arm holding the upper spindle is securely locked into place and becomes "as one piece" with the heavy main casting. This design, plus the heavy, dynamically balanced upper spindle and motor, reduces vibration to a minimum.

A semiskilled operator can operate one or several machines. The lens or block is inserted in the holder, a button is pressed to start the cycle and then the work is removed when the machine has automatically shut off after the cycle is completed. It is manufactured by W. F and John Barnes Co., Rockford, Ill.

Ring Gear Heater

American Car & Foundry Co., 30 Church street, New York, has developed an induction type ring gear heater. The part to be heated, such as a ring bearing, bull gear or the face part of gears, can be used as a secondary to the transformer and the temperature raised sufficiently high so that it can be shrunk on to a shaft or other unit part.

The part to be heated is placed over a portion of the silicon steel core; or in some instances it can be placed between the two sections of one leg of the silicon steel core, for heating up or soldering purposes. A timing device is attached; also an air cylinder for raising and lowering the movable leg. The adjustment for raising and lowering is so arranged that it is impossible for the operator to get his hands under the moving leg.

Portable Heater

A new portable heater which can be used in applications such as warming field repair tents, temporary localized heating in unheated warehouses and other

buildings, localized heating in shipyards, factory yards and other locations beyond the limits of regular heating systems, is announced by Surface Combustion, Toledo, O.

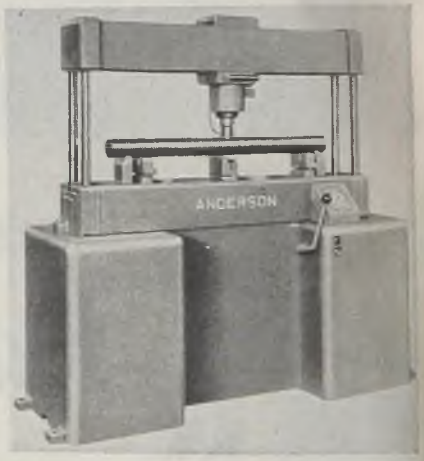
Designated as the Janitrol, it embodies

the "whirl flame" combustion which permits instant lighting in sub-zero temperatures. It also makes it impossible for the heater to "blow out" regardless of temperature, altitude or air density. The flame is made to whirl by tangential introduction of air into the combustion chamber. It sustains combustion under the most adverse conditions. The flame is literally whirled around itself, becoming a tightly wound spiral resulting in complete combustion.

The new portable heater uses liquid fuel and will operate on any grade of gasoline. Kerosene also may be used and, with minor modifications, the unit will operate on other liquid fuels. Equipped with gasoline engine or electric motor drive, and mounted on a two-wheeled carriage, the unit can be moved in wheelbarrow fashion. Draw and push bars, as well as lift bars, are incorporated into the frame. The center of gravity is directly over the wheels when the unit is lifted to the most convenient position for hand wheeling, thus the weight of the unit is balanced on the wheels.

Power Press

Especially adaptable for straightening cam shafts, a new power press with a traveling ram has been added to the line of presses manufactured by Anderson Bros. Mfg. Co., 1907 Kishwaukee street, Rockford, Ill. Instead of moving

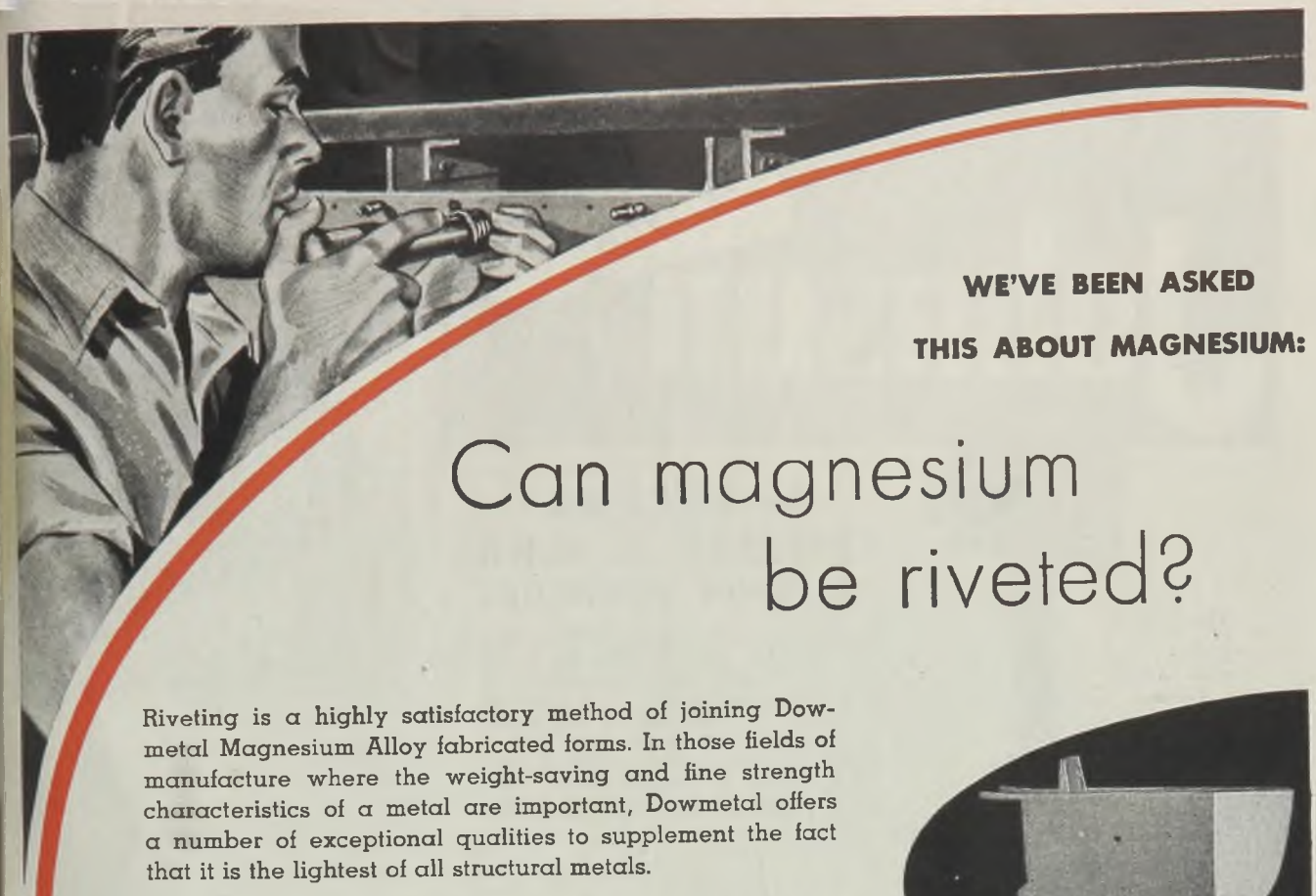


the anvils, centers and work, the ram is moved along on ball bearings.

The base and hydraulic unit are the same as used on the model HP-010-P. At present this unit has a capacity of 10 tons or 20,000 pounds, however a 25-ton press will be available shortly.

Inserted-Blade Cutters

Known as Kennamills, a line of inserted-blade cutters for step-milling of steel is announced by Kennametal Inc., 200 Lloyd avenue, Latrobe, Pa. These new cutters are available in four sizes—2-inch with three blades, 3, 4 and 5-inch with four blades. The 2 and 3-inch sizes have taper shanks to fit No. 40 and No. 50 spindles; the 4 and 5-inch sizes have taper shanks to fit No. 50 spindle only. All sizes use the same standard replace-



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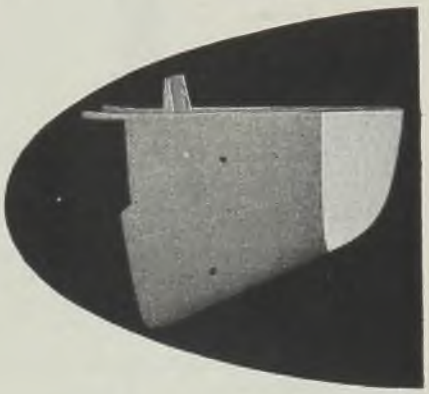
Can magnesium be riveted?

Riveting is a highly satisfactory method of joining Dowmetal Magnesium Alloy fabricated forms. In those fields of manufacture where the weight-saving and fine strength characteristics of a metal are important, Dowmetal offers a number of exceptional qualities to supplement the fact that it is the lightest of all structural metals.



An example of the riveting of Dowmetal sheet, as applied to an aircraft vertical fin sub-assembly.

Dowmetal is readily suited to hot or cold riveting by standard methods. Anodized rivets of the proper aluminum alloy are generally specified. Drilling is recommended in preference to punching, especially in heavy sheet or extruded sections. Flush heads are provided by machine countersinking or by dimpling with the correct tool. While either the squeeze riveter or hand gun can be employed, the former is preferred in most instances.

Dow, as the pioneer and largest producer of magnesium, has accumulated comprehensive technical data on the riveting of magnesium alloys, and on the application of the riveting technique to various types of Dowmetal fabrication. Complete facilities are maintained in the Dow plants for the actual production of riveted assemblies, in quantity as well as in small or experimental lots. Dow's experience and production capacities are readily available to assist you in any phase of Dowmetal riveting methods.

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able Kennametal-tipped blades. Two sets of blades are furnished with each cutter head.

These cutters permit high-speed carbide milling of steel with the same smoothness of operation attained with multiple-blade cutters. However, they are as simple to maintain as fly cutters. Tool and cutter grinders are not necessary since the blades may be removed from the cutter head and resharpened to

a template on a simple adjustable table carbide grinder. Accurate resetting in the head is not necessary as each blade cuts an independent path.

With these cutters the horsepower available on modern milling machines can be utilized fully on cuts of over ¼-inch depth. Work is distributed among the greater number of blades and the load on the machine thereby smoothes out.

Engine Generators

Direct-current engine generators are available in sizes from 1 to 200 kilowatts for direct assembly to the engine frame or for belted drive. This gen-

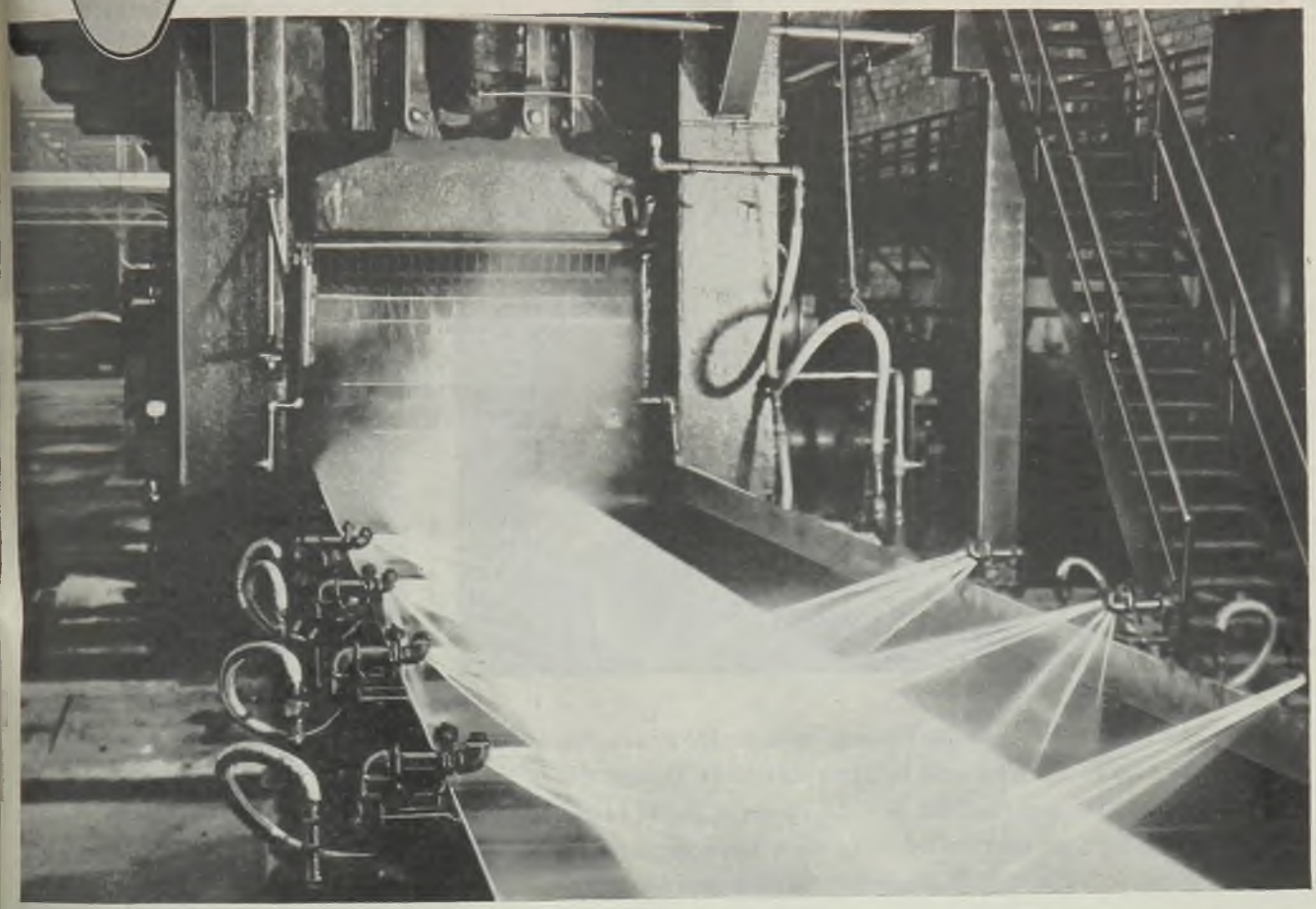
erator is constructed to bolt directly to the engine housing and engine shaft. It is equipped with one ball bearing.

These generators, manufactured by Century Electric Co., St. Louis, are built for voltages ranging from 15 to 600 volts for a wide variety of applications.

Tap Extractor

The Thomas tap extractor, made exclusively by Clinton Machine Co., 8240 Harper avenue, Detroit 13, removes jammed and broken high-speed tools

CORRECT Lubrication means Better Maintenance



CORRECT lubrication makes for better maintenance by preventing excessive wear.

Sinclair specialized oils and greases provide *correct* lubrication for all types of *STEEL MILL* equipment. They meet efficiently the requirements of engine circulating systems, motors, mechanical drives, gears, and all moving parts.

Where continuous heavy duty operation threatens excessive wear and stoppages there is a lubrication problem. Consult us about it.

(Write for "The Service Factor" — published periodically and devoted to the solution of lubricating problems.)

SINCLAIR INDUSTRIAL OILS

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

from workpieces by disintegrating equip- tool imbedded. The disintegrating equipment consists of a transformer and a nonferrous electrode or tip with a hollow center through which a coolant flows. The unit is mounted on drill press or similar machine in the same manner as when chucking a drill or reamer.

The work from which broken tool is to be removed is clamped on the table of the machine. The suspended electrode or tip is centered on the broken tool. Electricity and coolant are brought into play and the tip is lowered, making contact with the work. The disintegration then begins, with no further adjustment at an average rate of 1/32-inch depth per minute. This rate, of course, depends upon the size of tool to be removed and the material.

When the core of the tool has been disintegrated, the remaining ring of metal

is picked away from the wall of the workpiece. While the working temperature at which the extractor performs the job of disintegrating imbedded tools is approximately 130 degrees Fahr., there is no danger of distorting the workpiece in the process of removing broken high-speed tools from it. There is no need to resort to hammer blows, no dangerous fumes and voltage ranges from 2 to 12 volts which is not dangerous. The use of the electrolysis has no effect whatever on the workpiece itself.

The extractor works well on all metals. It has been found efficient on such metals as steel, aluminum, cast iron, copper and magnesium.

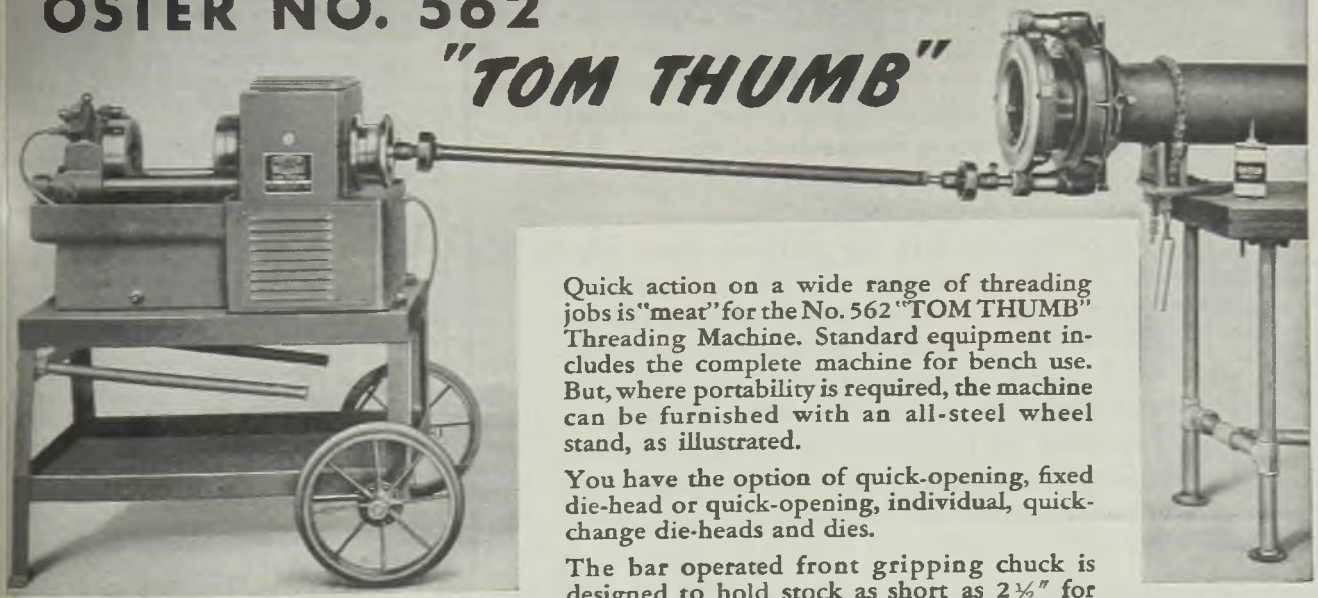
Internal Grinder

Combining hydraulic operation and electro control, an internal grinder with short table stroke (5/32-inch minimum), extremely rapid table feed and reverse which combine to give the machine almost machine-gun speed on short work, is announced by Sav-Way Industries, Detroit.

Designated as the Spitfire, other char-

READY FOR *Threading Anywhere Anytime!*

OSTER NO. 562 "TOM THUMB"



Regular range of the Oster No. 562 "TOM THUMB" is ¼" to 2" pipe. Extra range from 2½" to 8" pipe is threaded with a Universal Drive Shaft through which the machine drives geared die-stocks as illustrated. Bolt range of machine is 5/16" to 1¼" N.C. or Whitworth; 5/16" to 1⅛" N. F. or B. S. F.

Quick action on a wide range of threading jobs is "meat" for the No. 562 "TOM THUMB" Threading Machine. Standard equipment includes the complete machine for bench use. But, where portability is required, the machine can be furnished with an all-steel wheel stand, as illustrated.

You have the option of quick-opening, fixed die-head or quick-opening, individual, quick-change die-heads and dies.

The bar operated front gripping chuck is designed to hold stock as short as 2½" for threading on one end. *Both* ends of nipples as short as 3½" in the 2" size can be held and threaded without using a nipple chuck. (Other sizes of proportionately short stock can be held and threaded easily.)

Oster No. 562 "TOM THUMB" has 19 distinctive features which combine to make it the most modern machine of its type. Write for illustrated CATALOG No. 8-E.

OSTER *for faster, better threading*

THE OSTER MANUFACTURING COMPANY, 2037 EAST 61st ST., CLEVELAND 3, OHIO, U. S. A.

venience of operation and facilities for quick, easy loading and unloading. Solenoid-operated valves and aircraft-type micro limit switches provide constant control and reduce time lag to a negligible minimum. In addition to electro-hydraulic control, the machine also is equipped for hand table feed, a valuable time-saving convenience when setting up. The hand feed is engaged by moving the hand wheel out to engage a rack and pinion. To disengage the hand feed, the hand wheel is pushed in.

The grinder is available with either manual or electrically controlled power cross-feed. The electric cross-feed gives a cross-slide ratchet feed of 0.0001-inch per tooth, resulting in 0.0002-inch increase in the diameter of the hole. The cross-slide hand wheel is graduated in increments of 0.000125-inch.

The standard machine is equipped with a manually operated wheel-truing mechanism with cam return; however, it is also available with a semiautomatic

diamond wheel dresser, electrically operated with automatic, adjustable slow-down of table traverse while dressing the wheel. This automatic dresser is protected by a suitable mechanism to prevent damage to the machine through mis-operation.

The grinder is equipped with the company's Gold Seal spindle which provides for a constant flow of oil-air mist through the working parts of the spindle, and also keeps the spindle free from dirt and coolant. The spindle is driven by a 3-horsepower 3600-revolution per minute dynamically balanced, totally enclosed, fan-cooled ball-bearing motor. The workhead spindle is driven by a ½-horsepower 1140-revolution-per-minute dynamically balanced, ball-bearing motor, which is totally enclosed. Workhead spindle speeds of 90, 145, 235 and 365 revolutions per minute are provided through an adjustable V-belt drive.

Solderless System for Wire Connections

Aircraft-Marine Products Inc., 1591J North Fourth street, Harrisburg, Pa., has developed a complete system of solderless knife-disconnect splicing. The basic design of the manufacturer's splicing

terminal in which identical ends are put into perfect 4-point electrical connection by knife-wiping action is incorporated into the system. The connection is maintained until intentionally taken apart.

This design has been adapted to T-link, Y-link, H-link and cross-link applications and to stud tabs, jumpers and

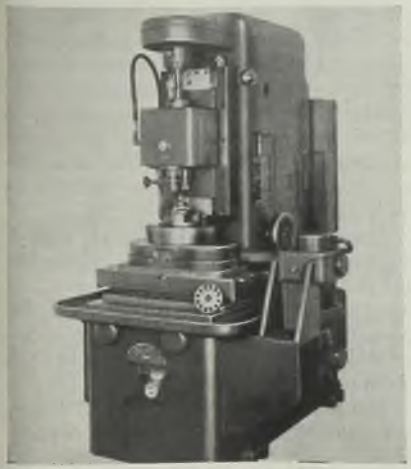
small electrical assemblies such as switches, relays, etc. The hand, foot and power installation tools are precision-engineered to make quick, perfect crimps of terminals to wires. All terminals are fully annealed, hot-electrotinned copper. The Diamond grip insulation support type terminal is available in wire sizes 22 to 10 and standard type B is available in wire sizes 22 to 8.

Milling Machine

A special-purpose machine designed for milling radius-shaped slots connecting two holes, (as shown in the work part near the fixture slide) is built by Snyder Tool & Engineering Co., 3400 East Lafayette avenue, Detroit 7. Six slots, each connecting two holes, are cut in each flange. In this operation, the 2-spindle head with ball-bearing mounted spindles advances rapidly toward the work which is slowly reciprocating through an arc the length of the slot.

Hydraulic fluid motor feed mechanism within the column allows head and tools to move into the work in small steps of 0.010 to 0.060-inch, per reciprocation of the part. As each pair of slots is finish cut, the tools retract rapidly, the hydraulic feed automatically resets itself and the fixture is indexed 60 degrees, bringing the flange into position for the next cycle.

The round table contains the index and table positioning mechanism. Index drive is through a splined shaft from the right-hand side of the machine where



the index drive motor, worm [illegible] control mechanism are rigidly mounted on a bracket. Reciprocation of the main table is through rack and pinion by means of hydraulic cylinder plungers and is continuous throughout the entire machining cycle.

The 2-spindle milling head is driven through a spline shaft from a motor over V-belts near the top of the column. Base and column are cast iron and contain all hydraulic mechanism and piping. Coolant and hydraulic tanks are mounted on the side.

Voltage Tester

A voltage tester that tests without lamps, gives positive voltage identification and distinguishes between alternating and direct current is offered by Square D Co., 6060 Rivard street, Detroit 11.

Alternating-current voltage markings are 110, 220, 440 and 550. Direct-current markings are 125, 250 and 600. Frequencies can be determined by the

vibrations of the indicator. The device is housed in a cylindrical fiber case, for easy gripping, and is practically unbreakable. The 4-inch fiber grips on the leads give complete insulation and leads are 24-inch flexible wire, with double thickness, rubber insulation vulcanized to the wire to prevent slipping. A peg and spring assembly prevent sharp bending and breaking of leads where they enter the case. Sharp spear points on the ends of the leads permit piercing of wire insulation for testing without damaging it.

Industrial Illuminator

A new high-intensity industrial illuminator is announced by Kelley-Koett Mfg. Co., 212 West Fourth street, Covington, Ky., which provides four times more illumination than previously available, permitting observation of film detail formerly overlooked with weaker light sources. This increased intensity also makes it possible to use films of greater density with the resultant improvement in radiographic contrast. The illuminator raises the usable density from 1.5 to more than 4.0.

The view box is equipped with a Variac control which affords a stepless increase in intensity by varying the voltage from 0 to 110 volts. By means of this control the exact amount of light necessary to observe details at various film densities can be obtained.

The illuminator is a full 14 x 17 inches so that even the largest film can be viewed without repositioning. Masks are

Blue Flash Snagging Wheels Never Raise the White Flag

EXAMINE any of Bay State's Blue Flash Snagging Wheels and you'll understand why there isn't a job too rough or tough for them.

Bay State's special resinoid and vitrified bonds give them "guts" . . . the extra strength to stand up longer under severe use, hold their shape, and cut cooler.

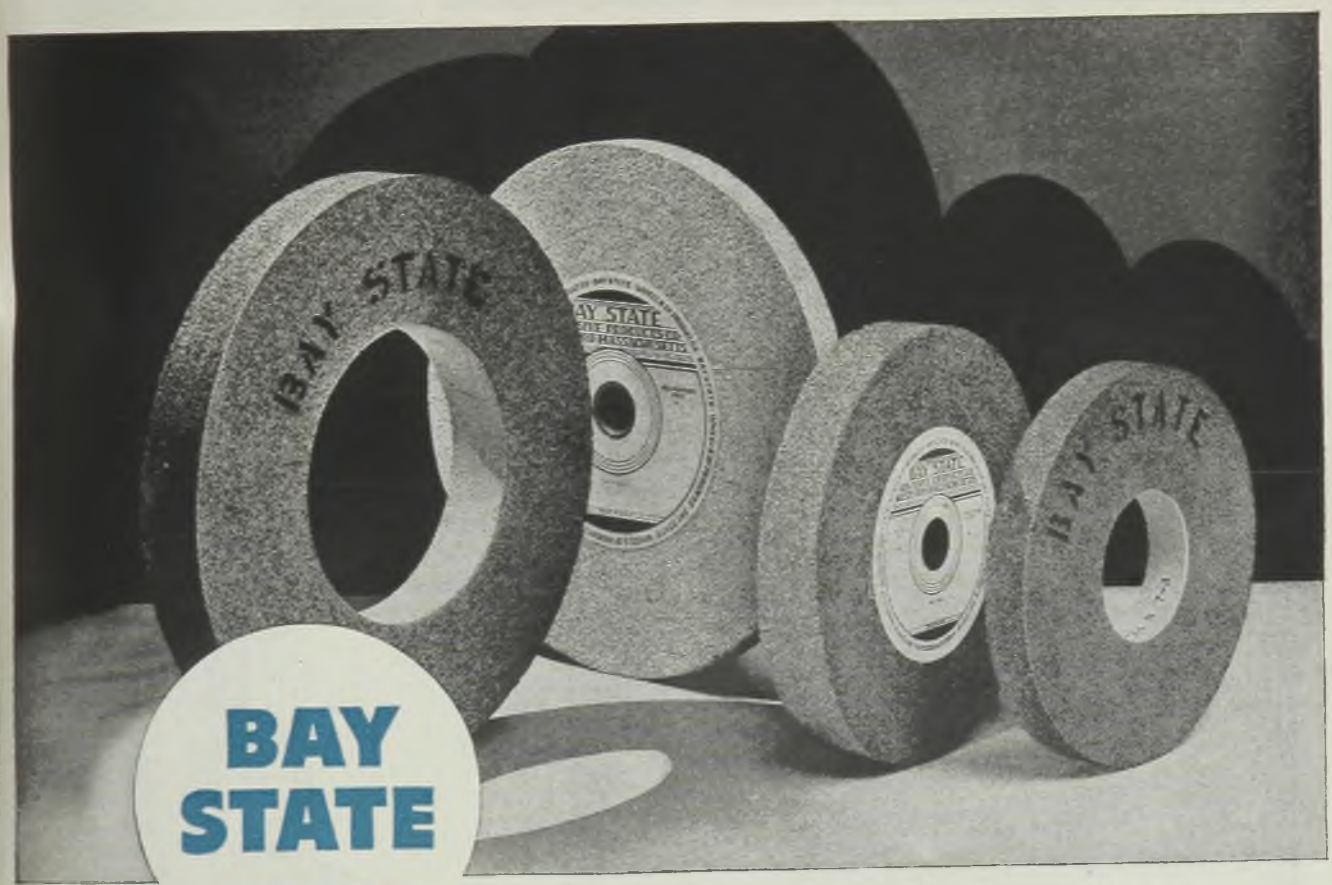
Bay State's controlled porosity, available in several different degrees, means that you can "fit the grade to the grind" more accurately to obtain faster and more economical production. These are basic advantages.

Now consider these special advantages . . .

1. portable snagging wheels with threaded nuts securely anchored in the wheel back . . . a unique manufacturing feature.
2. double purpose resinoid wheels for both high speed floor stand and swing frame use . . . a wheel within a wheel.
   For instance, it is possible to produce resinoid bonded wheels 30″ x 3″ x 12″ with the first 6″ of the diameter in an abrasive combination best suited for high speed floor stand snagging. When reduced to a 24″ diameter, another accurately suited resinoid specification is then available for the generally more severe swing frame grinding requirements.

If you are not using Blue Flash Snagging Wheels now, try them. Call in a Bay State engineer to help you choose those best suited for your particular work. See for yourself why Blue Flash Snagging Wheels never raise the white flag. Send for Bulletin B for additional details.

BAY STATE ABRASIVE PRODUCTS CO.
WESTBORO, MASS.



BAY STATE

BLUE FLASH GRINDING WHEELS *FAST and COOL*

GRINDING WHEELS · HONING AND SUPERFINISHING STONES · PORTABLE SNAGGING WHEELS
MOUNTED WHEELS AND POINTS · CUT-OFF WHEELS · INSERTED-NUT DISCS AND CYLINDERS

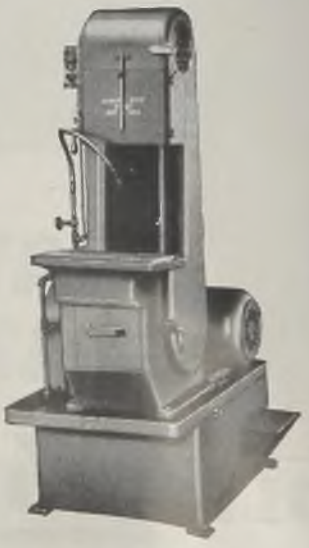
used to reduce the illuminated surface when films smaller than the full size are examined. Another convenience is the wet film hanger that allows films to be observed immediately after they are developed.

Films are protected from the heat of the photo-flood lamps by the cold front. A heat-absorbing glass baffle and cooling fans which circulate 900 cubic feet of air per minute, dissipate all excess heat

even during continuous operation. A 3-inch spot with four times the intensity of the large front surface permits intensive examination of critical areas on the film. Although the 3-inch spot provides such intense illumination, a specially constructed air-cooled water cell prevents a rise in front surface temperature even during continuous operation.

Wet Belt Grinder

The new model AG-8 wet belt surfacer, put on the market by Porter-Cable Machine Co., Syracuse, N. Y., has great coolant capacity and rigid construction for greater grinding accuracy. Equipped



with a 35-gallon self-contained recirculating pump system, an abundance of coolant is available for all grinding operations.

Close tolerances are held on this machine—even with inexperienced operators. Other features include an accessible