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The Business Situation

By Division of Research and Statistics, Bureau of Foreign and Domestic Commerce

VICTORY IN EUROPE, officially proclaimed on May 8, marked a definite turning point for the economy. Yet its significance is not at once apparent when viewing the economic indicators, since that particular day did not immediately bring the large downward adjustments in the munitions programs implicit in the fact of Germany's unconditional surrender. Economic conditions in May, therefore, did not differ in essentials from those of the preceding months, though the pressure on the economy very evidently had lessened.

During the month, successive decisions regarding future production were followed by a series of announcements which in sum pointed to a slackening in the tempo of activity in the latter half of this year—the period which will witness the initial adjustments to the Pacific war. By the end of May, the announced reduction in the size of the armed forces and the accelerating rate of cutbacks in scheduled munitions production were evidence that domestic economic policy actions must now be geared to a new situation. Under this situation, expansion of civilian goods production will be the keynote to both taking up the resources freed by lessened military requirements and meeting the civilian needs which have accumulated during the full-war-economy phase of the past 3 years.

Impact of VE-Day

Portents of the coming change in the economy were already in evidence. Employment in munitions industries, which had declined 200,000 between March and April, experienced an even sharper reduction in the succeeding 30 days. The preliminary munitions employment estimate for May 15 was 8½ million—about 6 percent below January and February.

The actual flow of munitions, on the other hand, showed little evidence of the two-front war ending, for the heavy slashes in schedules had a negligible effect on immediate operations. In fact, it will be several months before the major impact of the program cuts will be felt.

While April war production was 4 percent below March, this reduction was more than accounted for by the 2 fewer working days in April. Further small reductions are expected in May and June, but over-all second-quarter munitions production will be only slightly below the first quarter—an estimated 14 billion dollars as compared with 14.4.

From the standpoint of the release of resources, however, the great military victory in Europe had a wider effect than is shown by the quarterly production figures on the accompanying chart, since the mid-April munitions schedules for the second quarter were 8 percent higher

than first quarter production. Even after discounting the fact that part of this projected increase was unattainable, it is clear that May and June output will be down from the expectations held in April.

Moreover, the effects of the declining war program will be magnified in the early stages of the production cycles—in the raw material, components, and sub-assembly plants. In other words, the initiating changes in munitions output will result in the same kind of deceleration that is associated with declining demand under usual business cycle conditions.

Gross National Product

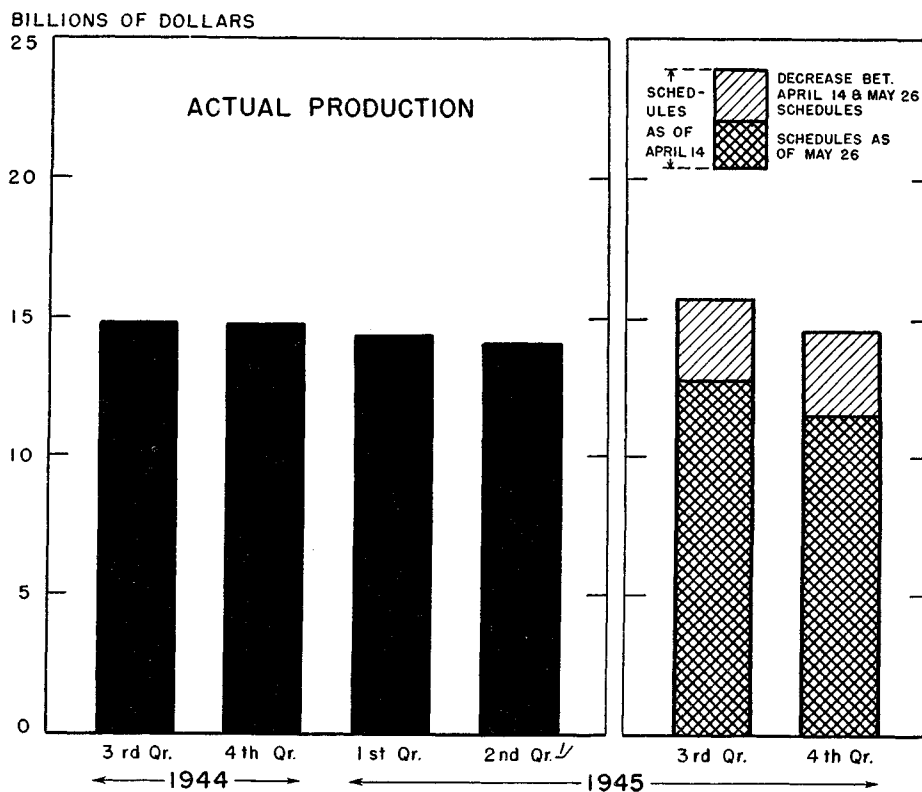
Full data for measurement purposes are not yet available on the status of the national economy during the period just ended. Nevertheless, it is clear that this initial half of 1945 will have witnessed the high point in the gross national product. On the basis of preliminary esti-

mates, the value of goods and services produced at current prices in the first four months was running at an annual rate of close to 205 billion dollars, after seasonal adjustment. Last year's total was slightly less than 200 billion dollars. The chief reason for this added rise was the expansion of consumer expenditures, based, as reported in the analysis of last month, not on a further rise in the volume of goods available, but upon price advances and trading up, which was largely of an involuntary character in so far as the purchaser was concerned.

Income payments to individuals, on a seasonally adjusted annual rate basis, ranged between 160 and 165 billion dollars during the first four months of 1945, as compared with 157 billion dollars last year. An all-time high was reached in February, with small declines being registered in March and April. The latter month saw a continuing of the decline in manufacturers' pay rolls and a drop in income payments by retail trade. This was in contrast to the preceding

Chart 1.—Actual and Scheduled Munitions Production

(In August 1943 Standard Prices)



¹ Estimated by U. S. Department of Commerce.

Source: War Production Board.

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month when the decline was attributable to agriculture.

Although there were two earlier months in the war period when there were small declines in nonagricultural income, the drop in April, in the light of subsequent developments, is likely to be of more significant character since incomes will follow war production downward.

Downtrend in Munitions Schedules

There are at this time major elements of certainty and uncertainty in the economic outlook. As pointed out in last month's issue, the second shoulder of the plateau in war production has now been definitely marked. Over-all munitions output will now go down—how far and how fast is as yet undefined. It is certain, however, to be at a sharper rate than that shown in chart 1, based as it is upon schedules as of May 26, which just happened to be a statistical point in time for measuring the changes as they were coming through the official mill.

Whether developments in the civilian economy will effectively counterbalance the sliding off of war production to the degree consistent with orderly reconversion is now the question. Some factors bearing on this are discussed in subsequent paragraphs.

After a month and a half of reprogramming, military procurement plans for the third and fourth quarters of 1945 stood 11 and 20 percent, respectively, below actual first quarter production. The programs implied a still sharper cut as of the year-end, since the reduction in the initial quarter of 1946 was almost 30 percent. But as previously indicated, the schedules as of May 26 were by no means scaled down to a one-front war basis.

President Truman, for example, in his message to Congress on June 1 announced that sharp cuts in the program of supplies for the ground forces are being put into effect. These additional cutbacks will further reduce the schedules for the end of this year.

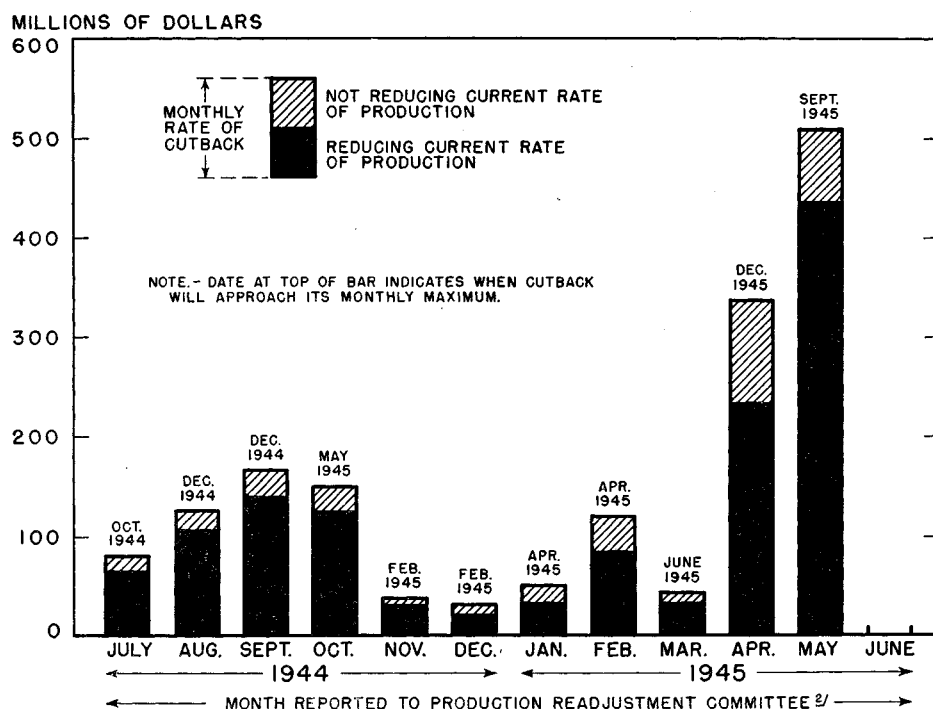
Chart 1 illustrates the over-all magnitude of the April and May cutbacks by contrasting pre-V-E day schedules with those as of May 26, just after the major reduction in the aircraft program had been announced. Immediately prior to the German capitulation, the procurement programs still called for rising production during the remainder of 1945. The allocation of materials, the manpower program, and various aspects of reconversion planning at that time were geared to this projection. Hence, there is still a considerable amount of unscrambling to be done.

Implications of Redeployment Plans

Consideration of the projected build-up of Army forces in the Pacific theater, as set forth in public statements of the President and the War Department, reinforces in a general way the expectation that considerable further cuts in the munitions production program will be made in the near future.

Up to VE-day, virtually all overseas troops—both in the European and Pacific areas—could be considered engaged in

Chart 2.—Monthly Rate and Effective Date of Munitions Cutbacks¹



¹ Monthly rate of cutback is the value of the reduction in schedules for the month indicated at the top of each bar. The data for May 1945 are preliminary.

² Cutbacks involving over \$100,000 in any one of the succeeding 12 months are reported to the Production Readjustment Committee.

Source: War Production Board.

combat or combat-supporting activities. Immediately after the final and unconditional surrender of Germany, however, only one-third of the overseas Army—those troops stationed in the Pacific, including China, Burma, and India—remained in the "active" category and continued to require a steady flow of combat munitions. In addition, there is need for a build-up of supplies in the Pacific similar to that required before continental operations in Europe.

In his special message to Congress, President Truman announced that Army strength in the Pacific would eventually double. In other words, this means that the number of troops in that area will be increased from one-third to two-thirds of the total number in both theaters of war on VE-day. If, as is likely, it will take about a year to do this, average troop strength in the Pacific during this period would be about 50 percent of the VE-day overseas force.

Before the end of the European War, the total pipeline was adequate to support a considerably larger number of "active troops" than will be engaged in the Pacific during the coming year. Even after allowing for a somewhat longer pipeline in the Pacific theater than in the European, and for the unsuitability, obsolescence, or disrepair of some munitions items, substantial stocks should still be available for transfer to the Pacific theater.

The foregoing analysis suggests some of the basic considerations which make it possible to reduce munitions production schedules by considerably more than the 15 percent reduction in the over-all

size of the army which is planned for the next 12 months. While a simplified analysis of this type obviously cannot yield any accurate measure of the reduction in munitions requirements implicit in the redeployment plans, it does point to the likelihood that the cuts still to be announced are sizable. Several months may pass, however, before procurement plans are finally geared to the latest redeployment plans and before full allowance is made for the availability of inventories.

Upsurge of Cutbacks

The extent to which the shift to one-front war production was initiated in April, the month of final destruction of the German forces, is shown in chart 2, which traces the monthly trend in munitions cutbacks since July 1944.

Cutbacks present a difficult problem of measurement since both the total value of the reduction in future production schedules and the monthly distribution of the reduction should be taken into account. The technique embodied in the chart is to compute the cutback rate on the basis of the reduction in schedules in the "effective month", which is defined as the first month in which the reduction approaches its monthly maximum. In the period covered in the chart, the monthly maximum reduction was not approached until from 2 to 8 months after the date when the cutbacks were reported to the Production Readjustment Committee of the War Production Board.

Chiefly because of the large scaling-down of the aircraft program, the

monthly rate of cutbacks in April was more than twice the previous high point of last September, following the rout of the German army in France. Almost a third of the April cuts, however, were "paper cutbacks"—that is, they eliminated projected increases rather than making an actual cut in production. Moreover, the "effective date" was 8 months ahead.

The month of May saw an acceleration of the cutback rate and a marked reduction of the "paper" portion of the cutbacks. Only 20 percent of the May cutbacks, however, will have an effect before September. The number of plants (prime-contractors) cut back during the month was 979, compared with 308 plants in April.

Revisions of Major Programs

The areas where the recent munitions cutbacks have been largest are indicated in chart 3, which relates third and fourth quarter schedules to actual production in the initial quarter of this year.

Striking point on the chart—in view of the announced reduction in the size of the fighting forces—is that the May 26 schedule for ammunition was still higher than actual first-quarter production. This simply means that the adjustments by the Army still have a considerable distance to go, and June changes will alter this as well as the other bars on this chart.

While a large percentage reduction is programmed for guns and fire control, the cuts in aircraft and ships are much more significant in terms of the physical volume of resources that are involved. The latter programs account for three-fourths of the dollar cut between the first and fourth quarters.

In the case of the ship program, however, it may be noted that the downward trend was determined long before the end of the war in Europe and that the ship production schedules have not yet been readjusted to the fact that we now have a one-ocean, as well as a one-front, war.

While the bulk of war production is scheduled to slide off in future months, there still remain a number of individual programs—notably jet propelled planes, the B-29, and rockets—that are rising. With the general easing of the war production picture, however, there can really be no "critical" or "must" programs in the broad sense in which these terms have been used up until recently. Expediting actions will still be required to accelerate production of particular items for short periods, but from now on these will proceed under conditions of easing materials, components, and manpower stringency and so cannot present the same problems as they did in 1944.

From the standpoint of industrial facilities, the cutbacks thus far announced and those anticipated shortly can permit a substantial resumption of consumer metal goods production. The explanation for this situation is not so much the actual size of the cutbacks, but rather the tremendous expansion of industrial facilities during the war. Only a fraction of existing facilities is needed to

produce the prewar volume of most consumer metal goods other than automobiles. This aspect of reconversion planning is explored in detail in the article, "Reconversion in Metal Fabricating Industries," appearing in this issue.

Basic Materials

The basic metals, particularly steel, contain the key to what reconversion will take place over the remainder of the year. It is obvious that additional amounts will become available for new civilian production, but estimates of the quantities to be released are still highly tentative. It is not yet known, for example, to what extent depipelining and inventory absorption will contribute to the available supply.

Release of Steel

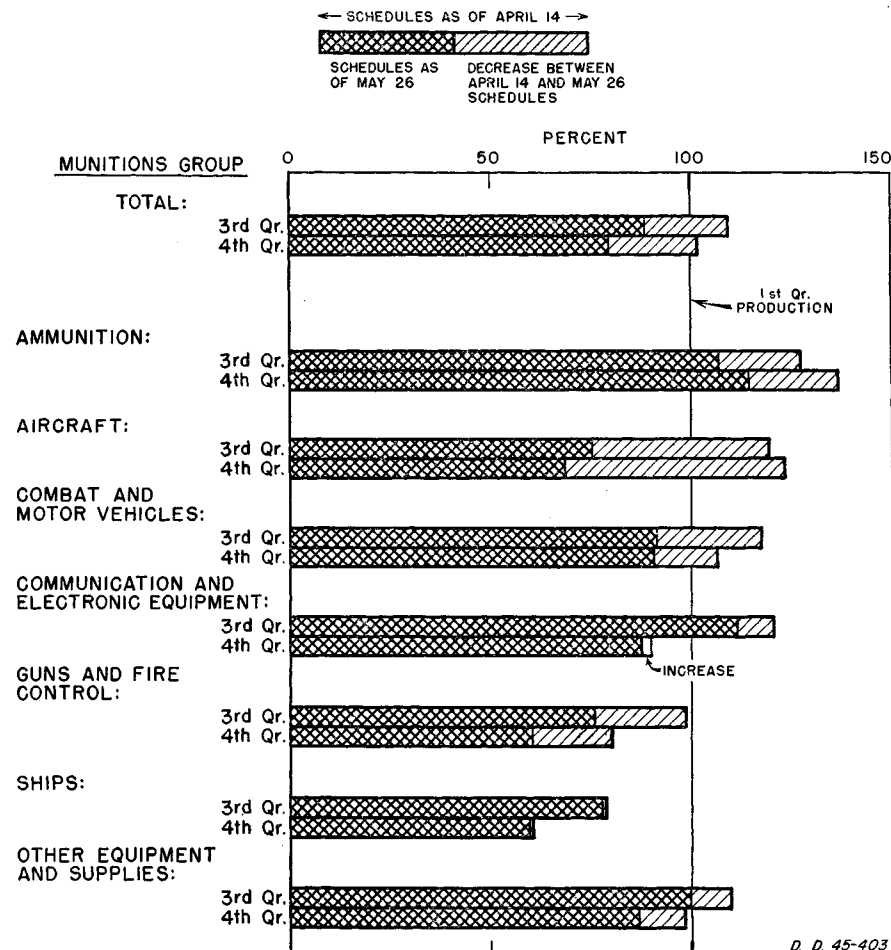
On the basis of the recent allocations of steel for the third quarter of 1945, it is apparent that the downward revision of military requirements is lagging behind the adjustments in munitions schedules. The reductions in the amounts of carbon steel allocated to the Army and Navy are small when related to the program cuts which have been announced.

Reductions nonetheless permitted additional allocations to the Office of Defense Transportation, the War Food Administration, and certain durable goods industries (e. g., machine tools, mechanical refrigerator, and washing machine manufacturers) which are given priorities assistance to speed resumption of essential civilian production.

Existing allotment schedules, however, appear to provide little leeway for the operation of the "open-ending" program for steel. While it is certain that more steel will actually become available for civilian production than is now indicated by the official determinations, the continued large allocations to the military agencies will interfere with increased deliveries to other claimants. This situation, together with the slowness of many war contractors in cancelling their materials orders when contracts are cut, is a potentially serious impediment to the speedy absorption of workers discharged from war production.

Moreover, steel mills, being unable to distinguish between those orders which will later prove to be "paper" and those which will still be real when it comes time to roll the final products, are impeded in adjusting delivery schedules to

Chart 3.—Munitions Schedules for the Third and Fourth Quarters, 1945, as Percentages of Actual Production, First Quarter, 1945



Source: War Production Board.

the particular shapes and sizes that will be required to enlarge the flow of civilian goods.

The steel outlook is also clouded by the prospect of a particularly tight situation for sheet and strip steel, where the requirements of the industries on the verge of resuming civilian production are heavily concentrated. Deliveries on the unrated orders for these shapes may be long delayed.

While copper and copper base alloys and aluminum will be in relatively larger supply for expanding civilian production, the current tight situation in the so-called soft goods—cotton, leather, and woolen goods—is not expected to ease appreciably in the near future.

Adjustment of War Controls

VE-day brought a release of war controls on production and on the distribution of basic materials in anticipation of the release of industrial capacity, materials, and manpower through the reduced munitions schedules.

As a matter of basic policy to be followed in the reconversion period, the general decision has been made to relax controls to the full extent permitted by the reduction in military requirements and to give manufacturers broad access to released materials, rather than to attempt to schedule the resumption of civilian production in most lines on the basis of essentiality.

This fundamental decision has been implemented by two types of policy actions. In the first place, the War Production Board has revoked more than 150 limitation, conservation, and related orders affecting a large number of civilian items, such as alarm clocks, cutlery, cooking utensils, lamps and bicycles. Generally speaking, the products affected require only small amounts of steel in their manufacture.

Of course, such revocations give no assurance that early resumption of production will be possible. They merely clear the way for expanded activity as the requisite facilities, materials, and manpower become available. In addition, they permit the manufacturer to utilize ingenuity in making substitutions and taking advantage of idle or excess stocks.

The second course of action is reflected in the "open-ending" of steel, copper, and aluminum—this means that the mills are permitted to accept unrated orders and to fill them after all the priority orders are completed.

This procedure is effective July 1, 1945, with the exception that immediate delivery of brass mill products on unrated orders has already been permitted.

Reconversion planning has also been implemented by other measures which program a few essential civilian products and give priorities assistance for the acquisition of bottleneck machine tools and equipment and for necessary construction, in order to start production at minimum economic rates.

The automobile industry is the outstanding case where this latter type of action has been taken, but the washing machine and refrigerator industries are other examples. Permission has been granted to produce approximately 200,000

passenger cars during the remainder of this year—but priorities for the necessary raw materials have not been accorded to the industry. Washing machine and mechanical refrigerator manufacturers, on the other hand, have been given priorities for steel.

Brief mention might also be made of several other actions which have been taken, such as the granting of special preferences to small manufacturers, including veterans and new enterprises, and the relaxation of inventory controls.

Orders covering textiles, lumber, leather, many chemicals, containers, pulp and paper, and other materials and products in short supply are expected to be continued. In addition, the orders which apply to the important consumer durable goods will be retained for some time, at least in the modified form already indicated for passenger automobiles.

The net effect of the reconversion procedures is to open the door for resumption of civilian output in heretofore restricted areas. What will get through the door will depend, in the primary instance, on the incidence of cutbacks by plants and, secondly, on the ingenuity of the individual business men in acquiring the requisite materials and parts. By the end of this year and early next year, however, these interferences to expanding civilian output will be substantially reduced.

Manufacturers' War Inventories

The stepped-up rate of contract terminations has focussed attention on the value and composition of the inventories currently held by manufacturers for use in war production. Aside from entering into settlement arrangements, these inventories offer wide possibilities of being diverted to civilian channels once they are no longer needed in war production. Termination stocks of a more specialized character, on the other hand, give rise to problems of plant clearance and eventual disposal by the Government procurement and surplus property agencies.

No direct information is available allocating manufacturers' inventories between war and nonwar uses, but some

indication of the general magnitude of the war portion can be obtained by assuming that the inventories were distributed in the same proportion as exists between war and nonwar production in the different industries.

Total stocks held by manufacturers at the end of March 1945 were valued at 16.4 billion dollars. Application of the war-nonwar percentages by individual industries yields an estimate of war stocks of almost 10 billion dollars—roughly three-fifths of the total. The distribution between durable and non-durable goods industries and between raw materials and goods in process and finished goods is shown in table 1.

It should be noted that the figures in the table represent book value, which is stated on a cost basis, and are not an accurate measure of the obligation which the Government would assume on the termination of war contracts. Under present termination procedure, manufacturers are entitled to an allowance for profit on completed and partially completed work.

Industrial Distribution

War inventories are considerably more important in the durable than in the nondurable goods industries, both from the standpoint of the absolute magnitudes involved and, to a much greater extent, the relative size of the war portions. Within the durable goods industries, the heaviest concentration is in the metal fabricating plants, which are wartime producers of guns, ammunition, tanks, aircraft, ships and other matériel.

Rough estimates indicate that four industry groups in the metal-fabricating category—electrical machinery, machinery (excluding electrical), automobiles and parts, and transportation equipment (excluding automobiles)—account for 45 percent of all war inventories. This concentration is significant because of the likelihood that a large portion of the inventories in these industries will have very limited use in civilian production after the war.

The metal-producing industries also hold large war inventories, but these stocks are less specialized and will be more useful in civilian production. Among the nondurable goods industries, war inventories are most important, in both relative and absolute terms, in plants manufacturing chemicals and allied products.

Magnitude of the Disposal Problem

The problem of disposal of termination inventories held by manufacturers narrows down to considerably less than the 10-billion dollar estimate of war inventories on March 31, 1945.

In the first place, some reduction in inventory accumulation can be expected as a result of the current shift to one-front-war production. Moreover, a large portion of the war inventories will create no disposal problem because they can be readily channelled into civilian production. This is true of the bulk of the 2

Table 1.—Estimated War and Nonwar Inventories of Manufacturers, March 31, 1945

[Billions of dollars]			
	War	Nonwar	Total
Durable goods industries, total.....	6.7	2.1	8.8
Raw materials and goods in process.....	5.3	1.5	6.8
Finished goods.....	1.4	.6	2.0
Nondurable goods industries, total.....	3.0	4.6	7.6
Raw materials and goods in process.....	2.0	3.1	5.1
Finished goods.....	1.0	1.5	2.5
Total, all manufacturers.....	9.7	6.7	16.4

Source: U. S. Department of Commerce.

(Continued on p. 24)

Planned Capital Outlays by Manufacturers

By D. Stevens Wilson

DURING the next fiscal year, a great many of our postwar readjustments will be initiated. The timing of those adjustments is uncertain. We do not know how long the war in the Pacific will continue to absorb a large part of the national output. It is important, however, to have some measure of the present thinking of businessmen with regard to this period.

One important question is the amount of capital outlays necessary to put facilities in shape for expanding output for civilians as war production is cut back. This includes not only reconversion but also postponed replacements and additions where these were not permitted during the war. Closely related are the questions of the size of the civilian market for producers goods during the post-war transition and of how these outlays are to be financed.

Reconversion Key

Because of the importance of these questions various business and financial groups requested that the Department of Commerce undertake a survey of business plans on reconversion. The key designed to open the door for the analysis was the planned capital outlays and financial requirements during the 12 months following the end of the war in Europe. The returns, therefore, may be accepted as broadly indicative of the plans covering the July-June fiscal year which is about to start.

While there has not been time for complete analysis of the returns, enough information with regard to manufacturing—where the reconversion problem centers—is at hand to permit a preliminary over-all discussion. This article deals briefly with the general summary of the capital outlays currently projected by manufacturing companies. These are the manufacturers' own estimates, though we have developed these into meaningful aggregates for all manufacturing; and for the major industry groups.

A more comprehensive statement covering probable requirements for maintenance and for increasing inventories and trade receivables, and the sources of the funds required to finance these expenditures, whether internal from company resources or from outside sources, will be published in a later issue. In the latter case, the type of financing will be indicated for the aggregate of those companies whose plans have advanced to

this stage. Obviously, the method of financing is subject to change—or later determination—depending upon market conditions at the time.

A later report will also cover the public utilities—railroad, electric power, and gas companies.

Nature of the Survey

The survey requested information on the capital outlays planned for the next 12 months—that is, new construction and equipment, maintenance and repairs, and outlays for increasing inventories of civilian goods and trade receivables. The sources from which funds for making these outlays were to be obtained were also requested.

To serve as a general index to business thinking and to provide a common basis for appraising composite answers, the questionnaire also asked for the planned sales objective of each company, defined as the annual rate of sales which they anticipated for a period of a year to a year and a half after VE-day. The reason for this is that it was considered that capital expenditures for the year

after VE-day would be geared to sales expectations for the period shortly beyond that date.

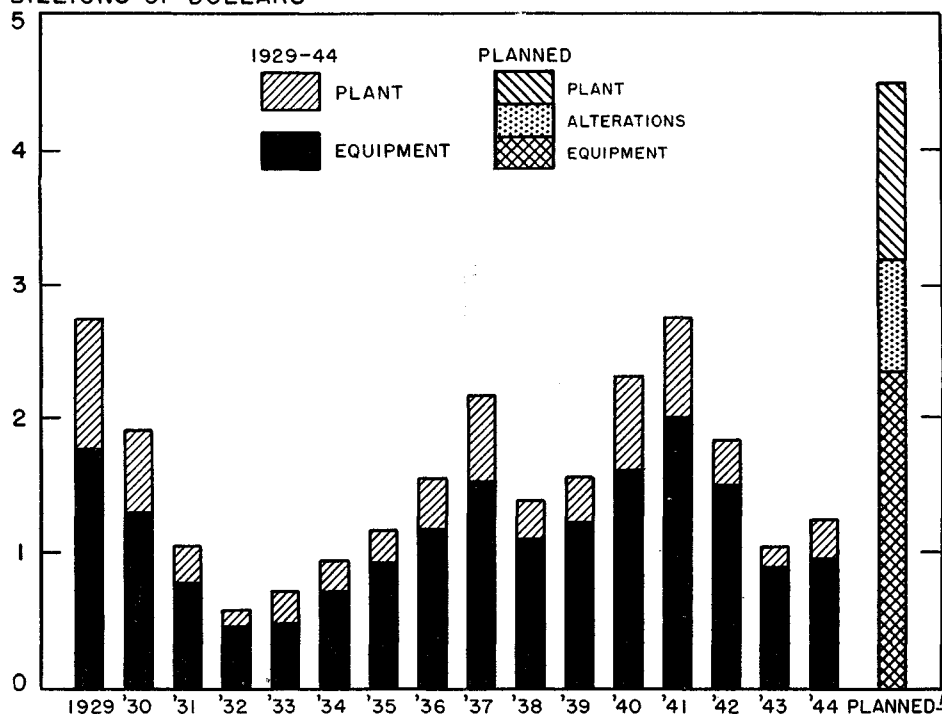
Data for 1939 sales and capital outlays were also included as a benchmark or reference point so that the returns could be aggregated into composites for the manufacturing as a whole, and for major groups of industries. The year 1939 was selected for the base period not only as a matter of convenience, but also because it represented the last year uninfluenced in a major degree by the impact of the war.

The results which are given below were developed from a mailed questionnaire returned by representative groups of manufacturing companies—nearly 7,000 in number. A supplementary field canvass was made to check for possible bias in the mailed returns.

The survey returns indicate that a record volume of private capital expenditures is contemplated for the ensuing year. The magnitude of these plans takes on added significance in view of the large additions to manufacturing facilities made during the war period.

Chart 1.—Manufacturers' Capital Outlays

BILLIONS OF DOLLARS



45-394

NOTE.—Mr. Wilson is a member of the National Economics Unit, Bureau of Foreign and Domestic Commerce.

1 "Planned" outlays are for the first 12 months following the end of the war in Europe.
Source: U. S. Department of Commerce. See text footnote 1 on page 6.

Planned Capital Outlays

In the coming year the survey disclosed that manufacturers are planning to spend approximately $4\frac{1}{2}$ billion dollars for plant, equipment, and alterations. As pictured on chart 1, this would be nearly three times the prewar, or 1937 to mid-1940, average and far above the 1929 peak of $2\frac{3}{4}$ billion dollars.¹ However, it is still considerably below the wartime level of expenditures for new manufacturing facilities if public and private outlays are combined.

Nearly 30 percent of the planned capital outlays are for plant. This total in terms of dollars is roughly three times the prewar rate and about 35 percent above the 1929 peak. Over 50 percent of the planned capital outlays are for machinery and equipment. This is about 75 percent higher than prewar and about 35 percent above 1929.

Because of the necessary shifting around of production facilities for war purposes the planned outlays include a rather large expenditure for alterations. A small amount of alteration expense charged to capital account occurs in almost every year. In the past this has been included in the estimates for construction or equipment. During the reconversion period, however, it will be a major item, and will account for a good part of the increase in planned outlays over the 1929 amount.

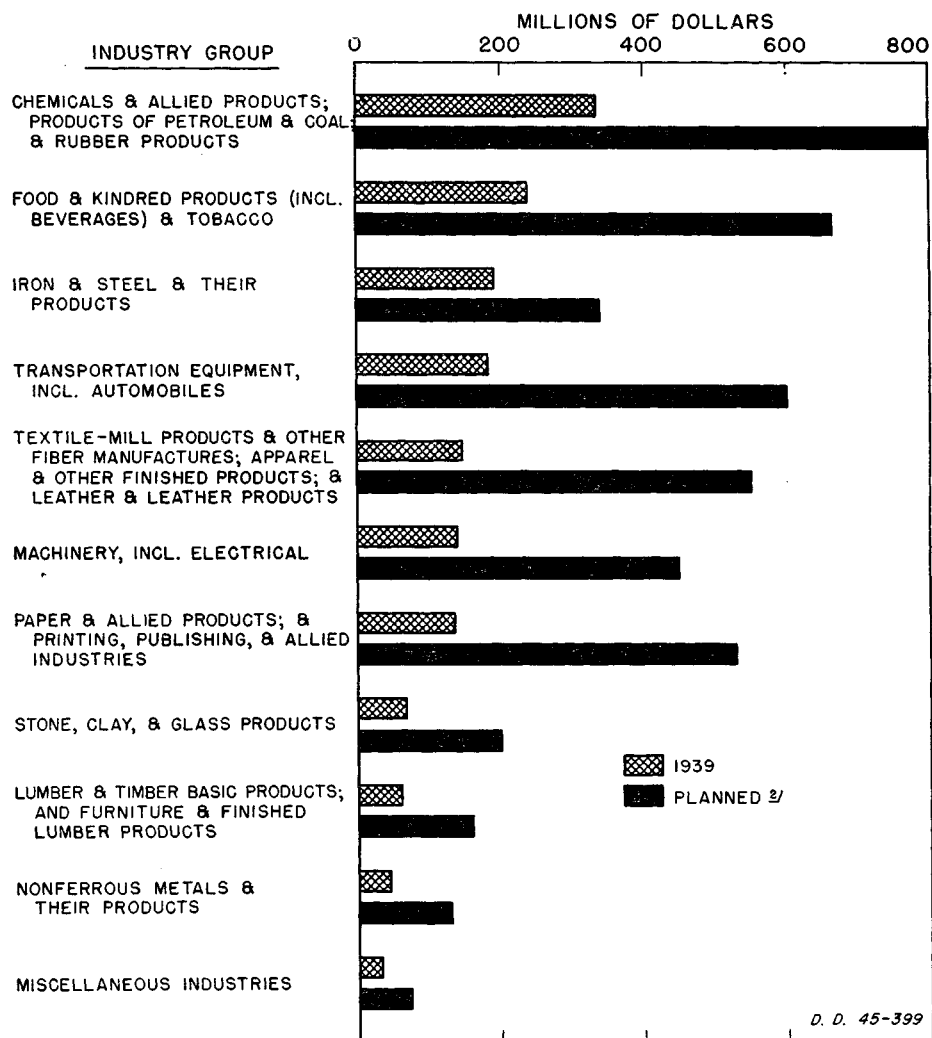
Chart 2 shows the variations in total capital outlays as between industry groups, and provides a comparison with the industry outlays for the year 1939. A comparison of outlays with any one year has limited significance since many factors would combine to influence outlays in that particular year which may, or may not, be present in other years. The year 1939, however, is the only one for which complete information is available on private capital expenditures by all industry groups.

Every industry group plans outlays well above the 1939 level. This breakdown by industry group, however, must be used with caution. It is considerably less precise than the total because of qualifying factors in certain industries. These are discussed later.

¹ The historical data or benchmarks used to project the data developed in the survey are the inclusive series developed by Lowell Chawner in an article, "Capital Expenditures for Manufacturing Plant and Equipment—1915-40," which appeared in the *SURVEY OF CURRENT BUSINESS*, for March, 1941. Minor adjustments have been made to exclude, as far as possible, publicly financed expenditures. Data for the war years as well as those derived from this survey comprise, as far as possible, an extension of the Chawner series.

These plant expenditures, therefore, are more inclusive than the figures on industrial construction currently issued by the Department of Commerce. The difference lies primarily in the fact that the concept of industrial construction excludes such things as boilers, power plants and other fixed installations, as well as auxiliary buildings such as cafeterias which are included in the plant total. These are included in the Chawner concept used here.

Chart 2.—Manufacturers' Capital Outlays, by Industry Groups¹



¹ Industry groups are arranged in decreasing order of magnitude of outlays in 1939.

² "Planned" outlays are for the first 12 months following the end of the war in Europe.

Source: U. S. Department of Commerce.

Deferred Construction

In chart 3 a comparison is made between capital outlays in what are called the war and nonwar industries as broadly defined. Throughout the war years, the expenditure in nonwar industries for construction had to be restricted, and hence they accounted for only a small part of the new facilities. Outlays planned for this segment of the economy account for nearly half of the contemplated total and are far above the prewar rate.

In these nonwar industries the high rate at which they have operated during the war period has subjected the equipment to extreme wear for which replacements have been generally inadequate. The inefficiency and the high cost of the marginal facilities have also been brought forcibly to light. Furthermore, these industries have not been able to expand, to develop new products, or to take advantage of new developments.

The combination of these factors results in some very high increases in planned outlays. The largest gain over

the prewar figures are in the paper and printing group and the textile, apparel, and leather groups. Similarly, the food industries are projecting record outlays.

Capital Outlays Related to Sales

A comparison of these increases in planned outlays and the increases anticipated in sales volume yields some interesting results. (See chart 4.) The textile group, for example, has experienced a very large rise in output throughout the war period and this volume is expected to continue or increase. Since little new equipment has been produced for textile or apparel output, the result is that to achieve this high volume a very large increase in capital investment will be necessary, giving the industry a relative importance in terms of outlays never before attained. Several other nonwar industries have planned sales objectives very close to the 1944 level of output and are also planning capital expenditures at a very high rate, notably the paper, and stone, clay, and glass groups.

War Industries Also Plan Outlays

In contrast to the nonwar industries, the war industries experienced an extensive over-all expansion in facilities during the past few years. Even so, planned outlays for this group exceed the 1944 amount for both public and private expenditures and are well above those of prewar.

The explanation of this lies partly in the fact that within the war industries themselves there is considerable variation. The industry groups as given are necessarily very broad and tend to cover up differences as between segments—the machinery group, for example, includes both machine tools and refrigerators, on which the effect of the war has been completely opposite.

It also appears to reflect a judgment by business management that some of the Government-owned war production facilities have little utility for normal peacetime production requirements.

In some sections of the war industries, of course, the wartime facilities will have direct peacetime use. Thus within the iron and steel industry the large expenditures for new ingot and pig iron capacity are apparently considered sufficient to preclude the necessity of any sizable additions in the near future. For this reason the iron and steel group plans for a comparatively small increase in capital outlays during the reconversion period. Even so, plans envisage an expenditure which is large in terms of prewar years. There are many consumer lines of steel products—hardware, stoves, etc.—which have been curtailed by the war, and expect to make substantial outlays to take advantage of the large potential consumer market.

There are differences between the various parts of other war industries as they have been affected by wartime plant expansion. In the chemical industry a large investment has been made for explosives, ammunition and other war products, in contrast to the anticipated peacetime requirements for cosmetics and toilet goods, plastics, synthetic fibers and other civilian products. There has been a large expansion of the capacity for producing aluminum and magnesium, while the facilities for producing certain civilian products from nonferrous metals have been restricted.

Large outlays are planned also by the transportation equipment group which includes automobiles and the machinery industry despite the very large outlays in these fields during the war and the sharp drop in the sales from the 1944 level which is anticipated in the sales objective. This volume of capital expenditures is made necessary by the extensive reconversion which must take place before the production of automobiles, refrigerators, washing machines, and countless other consumer durable items can be reestablished.

Plans Cannot Be Final

In appraising the large volume of anticipated outlays indicated by the foregoing summary, it should be kept in mind that plans have varying degrees of defi-

niteness. They range all the way from firm commitments or the very necessary expenditures which cannot be avoided under any circumstances, through the desirable expansion or modernization which will take place if general conditions are more or less in line with present expectations, to those tentative projects which depend on technological or competitive developments.

Within this wide range of probabilities, the stated plans tend to be best approximations. In other words, this survey can in no sense be considered a forecast on the part of business or on the part of the Department of Commerce. It constitutes merely a composite picture of business plans in various stages of formulation as they appeared at a point of time.

The survey was made with full recognition of the difficulties involved in giving quantitative expression to future plans which must in the nature of the case be tentative and contingent upon future developments. Even in normal times business plans are subject to sudden changes but under present conditions the term "plans" must be considered in a very informal sense.

There are many factors, in addition to those ordinarily influencing business decisions, over which management has very little control, and the effect of these cannot in many cases be predicted. When the survey was made, for example, the timing of victory in Europe was still uncertain. In view of these difficulties, the cooperation of those firms which made returns is greatly appreciated.

Assumptions Were Not Given

The brief questionnaire used in the survey deliberately avoided setting up any assumptions as a basis for the answers or attempting to specify the probable factors which might influence the answers. It was felt that the survey could make the greatest contribution if it produced a picture of current business thinking on the questions of capital outlays and financial requirements and that any light shed on this subject would be useful even with a considerable margin for error.

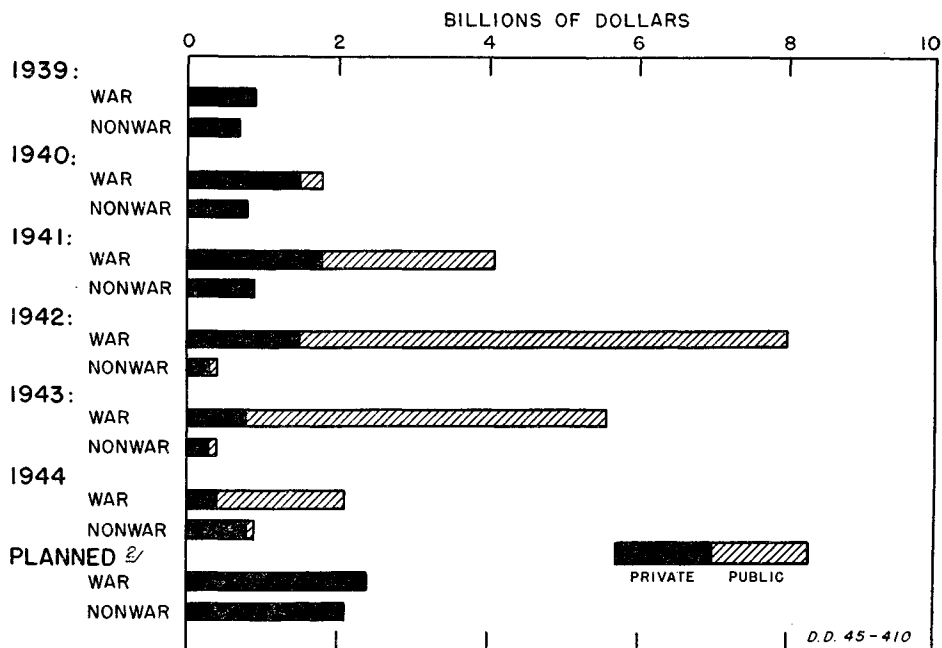
As a consequence businessmen were left to make their own assumptions on some very important questions and to pick from a range of "plans" one figure which would represent, in the light of those assumptions, the most probable magnitude of capital outlays. Even the notion of what constitutes capital outlays was left to the questionee.

While this lack of uniformity of concepts and assumptions presents some problems of interpretation, the results of the survey reflect the composite of management thinking on such very important questions as the length of the war, the availability of materials and supplies, the nature of the government controls during the transition period, and the probable price levels at which construction or equipment will be available.

Implicit Assumptions

While the assumptions were not given, these had to be implied in each return—the company had to have its own pattern of the future war requirements. To

Chart 3.—Private and Public Capital Outlays in War and Nonwar Manufacturing Industries¹



¹ War industries include chemicals and allied products, products of petroleum and coal, and rubber products; iron and steel and their products, except machinery; transportation equipment, including automobiles; machinery, including electrical; nonferrous metals and their products; and miscellaneous industries.

² "Planned" outlays are for the first 12 months following the end of the war in Europe.

Source: U. S. Department of Commerce.

a considerable degree, therefore, the variations among the companies arise from differences in the assumptions which underlie the plans. But this is what was wanted—the plans of the companies based on their own operating considerations.

The thinking on the length of the war and the effect which munitions cut-backs will have on the distribution of the product as between civilian and military lines can only be assumed from the general answers. However, the composite of underlying ideas can be deduced from an analysis of the sales objective which the companies are anticipating a year to 18 months ahead. The level of economic activity indicated by the sales totals reflects the general tone of business feeling about the future.

The planned sales objective refers to the annual rate which is expected to be reached sometime within this 12 to 18 months period, and not to the volume of any particular 12-month interval.

The over-all volume of sales which the companies have given as the objective for this period is more than double the 1939 amount, but about 20 percent below the record level of 1944. This includes changes in price as well as physical volume.

A breakdown of the sales reveals that volume in civilian or prewar lines is placed at 80 percent above 1939. With a rough adjustment for price the physical volume is perhaps 40 percent higher.

Product—Not Market Distinction

The distinction between sales of civilian lines and of military products relates to the character of the product, not to its market. Tanks, guns and aircraft are military products, but not the iron and steel or nonferrous metals from which they are made. To some extent the volume of sales in prewar lines will be contingent upon the reduction in the demand for munitions items. Most industries, however, have little or no military product as such; the large variable will be the distribution as between military and civilian use of the normal products.

Although there was wide variation as between individual companies regarding sales of military products, it is clear from the composite results that the respondents in general do not expect that Japan will be able to stave off unconditional surrender beyond the Summer of 1946. The level of munitions production anticipated—about one-third of the annual rate indicated by the first quarter 1945 totals—is that which might be expected as war contracts are in their final or liquidating stage.

Gross National Product Indicated

The aggregate sales objective derived from the survey corresponds to a gross national product of roughly 150 billion dollars at that time as compared with just under 200 billion dollars in 1944. The amount of capital formation induced from the survey is large. It apparently reflects the stimulating effect of accumulated needs, for capital re-

placement and expansion as well as managements' confidence that the demand for their products will be high in the immediate postwar period.

Back to Comparative Sales

There is considerable variation as between industries in the anticipated sales volume, particularly with respect to the 1944 levels. (See Chart 4.) As would be expected, those industries more closely connected with munitions output contemplate the largest decline from 1944. On the other hand, sales even larger than the 1944 totals are anticipated in the textile and paper groups. The influence of military products is still quite apparent in the sales volume indicated by the transportation equipment, nonferrous metals, and the machinery groups. In other industries where the output is of the same basic prewar lines, anticipated

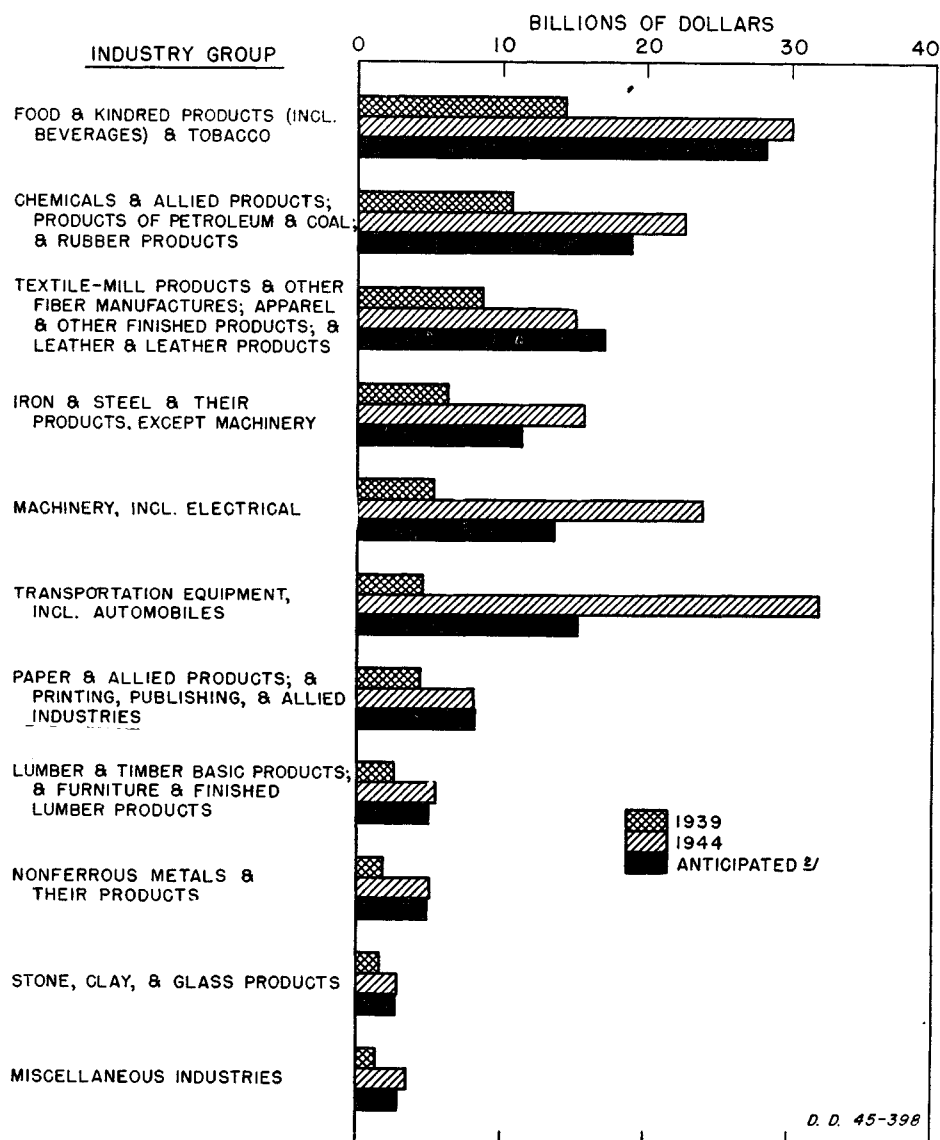
increases with relation to 1939 are much more uniform.

Can Expenditures Actually Be Made

In discussing the assumptions which underlie the figures for planned outlays it is impossible to avoid the question as to whether the volume, industry by industry, as indicated by the survey was reasonable—not only in terms of the probable availability of materials and supplies to produce the equipment, but also with respect to the ability of the suppliers of equipment in any particular field to meet the demand implicit in these outlays.

In some instances it is known that the figures given cover only that part of the required outlays which the management believes can be made within the next year. In other cases, plans appear to include necessary and desirable expendi-

Chart 4.—Sales of Manufacturing Companies, by Industry Groups¹



¹ Industry groups are arranged in decreasing order of magnitude of sales in 1939.

² "Anticipated" sales are at an annual rate for the first 12 to 18 months following the end of the war in Europe.

Source: U. S. Department of Commerce.

tures without too much regard for the probable difficulties involved in completing the projects. This is understandable, however. The plans of any one company and perhaps of one industry will not seem unduly large or likely to strain the material and supply situation, while the aggregate of all plans might well prove unreasonable. It is in the presentation and analysis of these aggregative amounts that the survey can be most helpful.

On an over-all basis the total volume of outlays is within reason since our war-time outlays were well above the contemplated levels; however, it may well be that many of the facilities and materials will not be available within the projected period for the production of new plant and equipment. As for particular industries, the amount indicated for the textile, apparel and leather group, and the paper and printing group raises some reasonable doubts as to whether makers of this type of equipment could produce that volume within a year period even were the necessary materials available.

Size of the Sample

Just over 6,800 replies to the survey were received. Firms returning the questionnaire accounted for almost 50 percent of the 1939 total volume of sales and nearly 60 percent of total 1939 capital outlays. Of these returns, however, only 63 percent gave figures for planned capital outlays and planned sales objectives. The others were either unwilling or unable to project their plans quantitatively.

Because of the importance of large companies, a special effort was made to secure complete coverage of the largest. As shown in chart 5, the 192 largest companies in 1939 accounted for one-third of the total sales volume and over 40 percent of the capital outlays. Planned outlays and planned sales objectives were reported by 62 percent of these companies.

In deriving a total for this group, plans for the remainder were estimated by comparing the nonreporting companies individually with other companies in the same industries which were subject to approximately the same conditions. Based on these results, the proportion of planned outlays attributable to this group is expected to decline while the anticipated sales volume remains at about one-third of the total objective. (See chart 5.)

One-third of the 1939 sales were by firms with output of less than 2½ million dollars in that year, and the other one-third by firms with output of over 2½ million dollars, but excluding the 192 largest companies. These two groups accounted for nearly 60 percent of the 1939 outlays. Returns were received from 6,614 firms in the two groups.

Reliability of Sample

Certain very general observations can be made as to the reliability of this sample. The mailing list was notably deficient in printing and publishing, and in lumber. In these industries the returns may not be representative. There was

no attempt to get coverage for any new firms which have come into existence during the war period, but this bias tends to be offset by exclusion of those which have gone out of business.

In general, the smaller companies, in terms of 1939 sales, were less well represented. Returns were received from firms representing a little less than one-fifth of the total 1939 sales of companies with output of less than 2½ million dollars in that year. Returns from firms with output of over 2½ million in 1939, but excluding the 192 largest, represented about 30 percent of the 1939 sales of this group. This bias is greater in the very small companies and in those industries where small companies account for a large part of the total.

This difference in coverage is important only if the aggregate plans of the smaller companies differ materially from the larger companies. On the average, the returns indicate that the smaller companies, some of which are no longer small, plan larger percentage increases over 1939 than do the larger companies. There is some evidence, however, to indicate that those small companies with plans for major expenditures tended to answer the questionnaire while those without particular plans did not file a return.

Field Survey Check

As a possible check against the representativeness of the returns, in comparison with those companies which did not report, a small sample of about one percent of the mailing list was selected for personal interviews. This group consisted of companies to whom the questionnaire had been mailed but from whom no reply had been received.

Some conclusions can be drawn from this small check survey. For example, the fact that a company did not report apparently did not mean that it had no

plans. The major reasons given by this group for not having filed the return voluntarily were simple neglect or a reluctance to answer. There seemed to be no great differences in the nature of their plans or their thinking.

The returns from this small check group also appear to indicate that no serious bias is present in the total sample.

A further problem is presented by roughly one-third of the returns which reported no plans. In some instances this meant that they were planning not to make any capital outlays, or that the amounts involved were thought to be too small to be significant. In other instances it simply reflected the inability or unwillingness to resolve the plans to a specific figure. Since the returns did not clearly distinguish between these two attitudes the decision as to their relative importance was quite arbitrary. The assumption adopted—that if plans had been stated, they would amount to no more than the 1939 outlays for this group—is probably conservative.

In view of the various qualifications and adjustments, the over-all conclusions drawn from the survey can only be approximate. On the whole, however, the problems presented by the sampling process do not appear as important in modifying or qualifying the results as do the difficulties implicit in reducing plans to a definite figure.

Summary

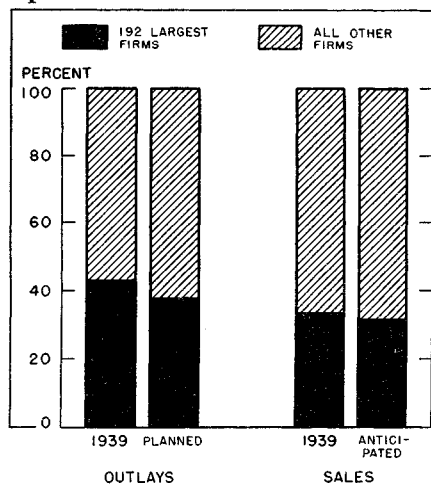
Manufacturing firms are planning large outlays for plant, equipment and alterations over the next 12 months. The total of approximately 4½ billion dollars is nearly 3 times the 1937 to 1940 average and more than half again as large as in 1929.

These are plans, not commitments. They are being kept flexible to meet a range of possible conditions and contingencies. They do, however, reflect the considered judgment of an adequate cross-section of American industry. The verbal and written comments and qualifications accompanying the returns suggest that the total is not inflated by inclusion of nebulous plans or those which will be consummated only under unexpectedly favorable conditions.

The indicated market for construction, for producers, equipment and machinery will be an important influence favoring the transition from war production to a high output of civilian goods. The planned outlays are greater than the total of public and private expenditures on manufacturing facilities in 1944, although well under the war-time peak. The recent thinking of business management is that these outlays for reconversion, expansion, modernization and postponed replacements are necessary or desirable in spite of the large outlay on war production facilities.

In some industries the planned outlays are so large as to raise doubts as to whether the supplying industries can produce the desired equipment within the next year. They suggest that the production of many producers' goods will be limited less by demand than by the time necessary to resume or expand production of those goods.

Chart 5.—Manufacturers' Capital Outlays and Sales, by Largest and Other Manufacturing Companies¹



¹ "Planned" outlays are for the first 12 months, and "anticipated" sales are at an annual rate for the first 12 to 18 months following the end of the war in Europe.

Source: U. S. Department of Commerce.

Reconversion in Metal Fabricating Industries

By Clarence H. Danhof

SIGNIFICANT cutbacks in war production already announced have focused attention on the reconversion of industry. The metal fabricating industries constitute the major segment of the economy affected, though others will be concerned to a lesser degree by reductions in government orders. Even after providing everything necessary for the armed forces to press the subjugation of Japan, there will now be considerable capacity available for nonmilitary products. This is so because of the tremendous wartime expansion of the factors of production—labor, plant and materials.

A few summary statistics place the problem in its setting. In 1944 shipments of metal fabricated products exceeded those of 1939 more than five times, which, even after allowing for the wartime rise in costs, represents a tremendous expansion. They comprised 45 percent of manufactured products as contrasted with 25 percent in the prewar year. Employment in these industries in 1939 was 2 million; in 1944 it was 7 million, the increase comprising 80 percent of the increase in employment in all manufacturing industries over the 5-year period.

Converting this highly expanded group of war industries to the best purposes of peace is but one part of the main post-war issue—how to utilize the enlarged producing power of the nation so as to provide a higher standard of living.

The purpose of this article is to review the data which have been assembled in the furtherance of mobilizing our resources for war, but which have not been generally accessible. Since Pearl Harbor, the War Production Board, through the facilities of the Department of Commerce, has been collecting reports from some 10 000 producers of metal fabricated goods on value of shipments, by major class of product, and on utilization of facilities.

The quarterly reports for 1944 have been combined in this study and compared with 1939 Census data for comparable industries in order to deduce the more significant highlights of the changes that have taken place in these industries. Since changes in these industries have been relatively minor thus far this year, the data presented for 1944 can be considered to represent the situation in the first 5 months of this year as well.

The Over-All Changes

The main outlines of the wartime changes in the metal products industries are summarized in chart 1. The five-fold increase in the dollar value of shipments

between 1939 and 1944 consisted of the following elements:

1. A doubling in the aggregate value of shipments of civilian-type goods (referred to in the chart as 1939 type products). This occurred despite the extensive restrictions after Pearl Harbor in the production for civilian use of almost all finished metal goods. The increase went, therefore, to meet the needs of the military for products, such as repair parts for metal goods in the hands of consumers, and selected essential civilian needs, (e. g., agricultural transportation, and electric power equipment).

2. Greatly expanded shipments from private plants of special war goods (referred to here as combat matériel) which amounted in 1944 to more than three-fifths the total shipments of metal fabricating plants in 1939. There was only an insignificant amount of such goods turned out in 1939, and there is no method of adjusting these shipments for price changes after 1939.

3. The production of metal goods by Government plants, mostly new, with dollar shipments in 1944 that were two-fifths above those of the entire private industry in 1939. The Government plants accounted for close to 30 percent

of the total metal fabricated products shipped in 1944. Again, there is no 1939 production of sufficient magnitude to call for either comparison or concern with problems of price change.

Leaving aside the Government plants, the companies in the metal fabricating field quadrupled their 1939 dollar sales after 5 years of defense preparation and war.

The only price adjustment that can be made in this chart to improve the comparison, is to adjust the output to the higher 1944 cost basis. If done roughly, the bar for 1939 would be raised by a third or more to 17 billion dollars. If this very rough estimate of price change is used, the increase in shipments from the private plants in this field was three-fold times in the same years.

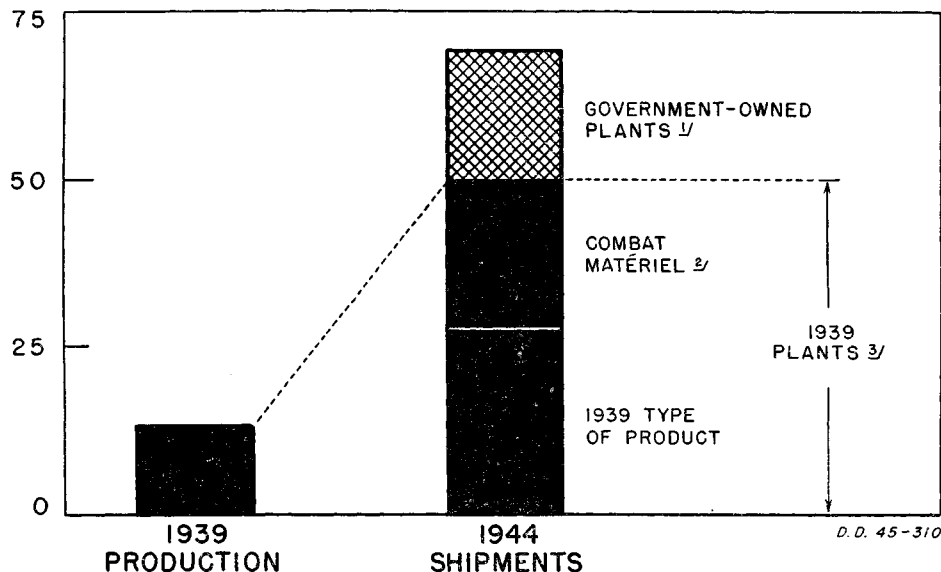
New Facilities Made Record Possible

The basis of the rise in output during the war was primarily the addition of new facilities and, secondarily, the more intense use of prewar facilities. Multiple-shift operation and longer work weeks obtained a much larger output from the prewar machines and equipment that remained in use.

Over and above this, with private and Government financing, floor lay-outs

Chart 1.—Output of Metal Products Industries

BILLIONS OF DOLLARS



¹ Data include shipments of combat matériel and other products from Government-owned plants, whether operated by the Government or by private management. Data do not include shipments from those Government-owned facilities or equipment that are located in, or closely integrated with, privately owned plants, nor output of Government-owned and operated navy yards. The relatively negligible output of Government arsenals, docks and navy yards is not included in 1939 production.

² Includes ammunition; guns and fire-control equipment; combat vehicles; aircraft, parts, and equipment; and ships and equipment.

³ Both 1939 production and 1944 shipments are based upon the plant classifications in the 1939 Census of Manufactures.

Sources: U. S. Department of Commerce and War Production Board.

NOTE.—Mr. Danhof is a member of the Current Business Analysis Unit, Bureau of Foreign and Domestic Commerce.

were rearranged, plants were enlarged, and more efficient and new equipment was brought in. This was especially true for the plants engaged in the manufacture of new types of combat equipment—for which considerable special machinery and new assembly techniques had to be introduced.

Machine Tools a Bellwether

Some indication of the enormous expansion in the facilities of these war industries can be gathered from the installations of new machine tools. The machines that cut and grind metal comprise about 90 percent of metal-working equipment. At the end of 1939 there were about 930,000 machine tools in this country. Between 1939 and the end of 1944 there were more than 730,000 new tools installed in metal-working establishments.

The new machine tool installations do not represent a net increase in the machine tool population, since there was some obsolescence of old tools and a withdrawal from use of many tools formerly engaged in civilian output that was restricted during the war. A very rough estimate of these withdrawals, and taking into account that average hours worked on machine tools per week increased more than 2½ times during the period, would indicate that the number of machine tool hours in the metal working industries in 1944 was more than four times as large as in 1939.

Output Per Employee Rises

Although labor input did not increase so rapidly as the value of output or machine hours in the combined metal-working industries, the man hours worked increased by more than 3½ times between 1939 and 1944. Aside from price factors, the dollar value of output per employee increased from the changed nature of the special war products—the increased machining, more complex assembly, and higher precision requirements.

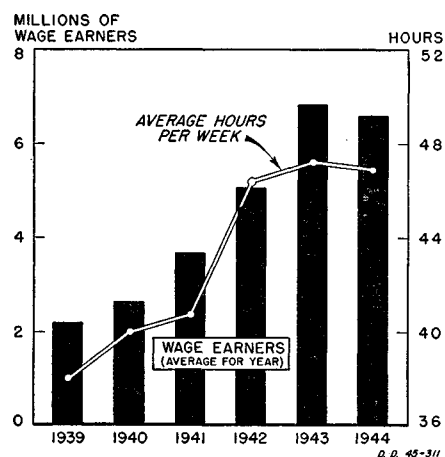
The annual changes in employment and average hours worked are presented in chart 2. The 25 percent increase in average hours worked per week, with the big jump occurring after Pearl Harbor, reflects not only intensified use of labor but of the equipment that was worked upon as well.

Caution is necessary in interpreting the increase in employment and hours of work from 1941 to 1942.

The over-all figures cover up the shift in employment during the year in those plants where major conversion of facilities to war work was under way. There were temporary declines in employment in many of the plants during the process of conversion. But the simultaneous expansion of employment in plants already engaged directly or indirectly in munitions output and the subsequent rapid strides in hiring when the converted plants became ready for mass production of military goods accounted for the upward movement of average employment in 1942.

In the case of average hours worked, there were no restrictive factors, since even in the plants where employment

Chart 2.—Employment and Hours in the Metal Products Industries¹



¹ Data for "wage earners" represent the industries as defined in chart 3, footnote 1; and data for "average hours per week" represent these industries and others included in the U. S. Department of Labor classification of "metals and their products."

Sources: Average hours, U. S. Department of Labor; wage earners, U. S. Department of Commerce based upon U. S. Department of Labor data.

dropped during the period of production readjustment, the hours of those remaining at work—in large measure skilled tool and die and machine set-up workers—increased considerably.

The reconversion ahead for the remainder of this year and next will occur in an environment far different than that which prevailed during the period of reconversion. Whereas in the conversion months following Pearl Harbor, cost factors were subordinated to considerations of speed, cost as a competitive and profit factor will play a more important role in shifting to peacetime production.

Qualifications of Data

Before presenting the information for individual industries, several characteristics and qualifications of the data should be noted. The privately-owned metal fabricating plants were classified according to their prewar (1939) major product. Hence, a former automotive plant now wholly engaged in producing aircraft engines was classified in the motor vehicle industry. This procedure is most useful in an analysis of wartime developments geared to the questions of the return to civilian output.

However, while the 1939 data are from the Census of Manufactures and hence cover in each case the entire industry as defined by the Census, the 1944 data exclude some of the small plants that are included in the Census. In general, the 1944 data represent reports from approximately 90 percent of this industry. The effect of this is to understate somewhat the increase in shipments between the two dates, but it has little effect on comparisons of rate of expansion between different industries. The data presented in chart 1 include an estimate for this lack of coverage. The source of the 1944 data is the War Production Board.

The 1939 Census data measure production; the 1944 data are for shipments. It is believed that shipments in 1944 in the industries studied are virtually synonymous with production and no adjustments have been made to account for inventory changes in finished products. Furthermore, the data represent gross production. This means that the value of those components and subassemblies that are produced in plants separate from those in which final assemblies are made will be included more than once in the gross value figures used here.

Table 1.—Distribution of Metal Fabricating Industries by Percentage Increase in Value of Output, 1939 and 1944¹

Percentage increase 1939 and 1944	Producers' goods			Consumers' goods			Intermediate products			Aircraft, shipbuilding and firearms		
	Number of indus- tries	Value of ship- ments		Number of indus- tries	Value of ship- ments		Number of indus- tries	Value of ship- ments		Number of indus- tries	Value of ship- ments	
		1939	1944		1939	1944		1939	1944		1939	1944
		Millions of dollars			Millions of dollars			Millions of dollars			Millions of dollars	
No increase.....	2	133	114	1	55	38	1	76	49			
1 to 100.....	6	302	513	9	676	1,053	8	934	1,398			
101 to 200.....	12	878	2,170	9	4,627	10,592	7	838	2,056			
201 to 300.....	14	1,648	5,670				5	403	1,428			
301 to 400.....	7	1,292	5,693	1	5	22	2	193	806			
401 to 500.....												
501 to 600.....	1	6	40	1	276	1,768						
601 to 700.....	2	201	1,492									
701 to 800.....			1,492							1	18	154
801 to 900.....	2	86										
901 to 1,000.....			835									
Over 1,000.....	2	158								2	607	9,584
Total.....	48	4,703	18,474	21	5,639	13,472	23	2,444	5,738	3	625	9,737

¹The industry classification is according to the major end-use of its product. Detail will not necessarily add to totals due to rounding.

Sources: U. S. Department of Commerce; basic data for 1944 from War Production Board.

Growth by Industries

Although rapid and huge expansion was the rule for the metal fabricating plants, the rate of growth has been quite different for the separate segments.

Largest of these is the group of Government plants engaged primarily in the manufacture of special weapons of war and, to a relatively smaller extent, on equipment for components of those weapons which are similar to normal peacetime products. Such plants were of negligible importance in 1939. Currently their products comprise 30 percent of total shipments.

Among the private industries, there was wide disparity in wartime expansion as may be seen in table 1. Among these industries the giant aircraft, shipbuilding and firearms industries are a category which share with the Government plants both very great expansion and reconversion problems. Relatively unimportant in 1939, the aircraft and shipbuilding industries by 1944 had expanded some 15 times and accounted for a fifth of the vastly larger output of metal products.

Aside from these two groups, the differential rate of growth among the private industries was important. As may be seen in the frequency distribution in table 1, the difference between the manufacturers of producers', intermediary and consumers' goods was marked.

The contrast followed from the nature of the military demand for the peacetime products of these industries. The producers' goods industries had to supply the machinery and equipment for the extraction of minerals and the manufacture of munitions.

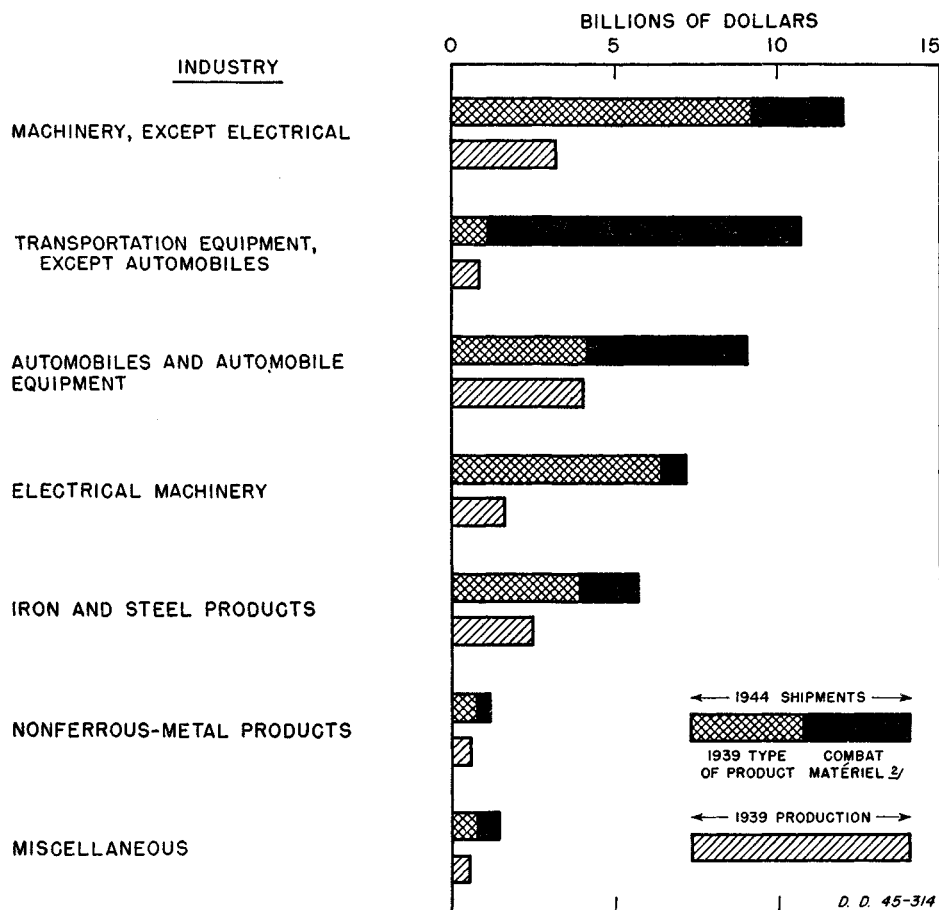
The normal products of some of these industries were required in expanded volume for direct military demand and for the support of the domestic economy so that it could cope with the additional strains of war, as in the case of agricultural, railroad and electrical generating equipment. In addition, there existed in many of these industries the facilities or the managerial ability and experience to manufacture complicated weapons of war.

For the producers' goods industries as a whole, dollar shipments in 1944 were four times as large as in 1939. The majority of the individual industries in this category tripled the value of their output during the same years, and two industries—internal combustion engines, and locomotives and parts—expanded their shipments ten-fold.

In contrast, the percentage rise in shipments of the consumers' goods industries was a little more than half that of the producers' group. Consumers' goods represented an area where restriction of the peacetime output was feasible and hence the resources devoted to them provided a source of facilities, manpower, and materials for war production.

The military demand for consumer-type goods, plus the value of parts for replacement and repair of civilian equipment, permitted by the production au-

Chart 3.—Output of Major Groups of Metal Products Industries, Excluding Government-Owned Plants ¹



¹ Both 1939 production and 1944 shipments are based upon plant classifications in the 1939 Census of Manufactures. The first four industry titles in this chart are those used in the Census report, but the coverage differs slightly as follows: "Machinery, except electrical" excludes machine-shop repairs; "transportation equipment, except automobiles" excludes boatbuilding and repairing; "automobiles and automobile equipment" excludes automobile trailers (for attachment to passenger cars); "electrical machinery" excludes electric lamps. The last three industry titles in this chart are not those used in the Census report, but cover Census industries as follows: "Iron and steel products" includes tin cans and other tinware, not elsewhere classified; wire products, except wire drawn from purchased rods; cutlery, tools, and hardware; heating apparatus and plumbers' supplies; vitreous enameled products, including kitchen, household, and hospital utensils; automobile stampings; stamped and pressed metal products (except automobile stampings); fabricated structural steel and ornamental metal work; bolts, nuts, washers, and rivets—made in plants not operated in connection with rolling mills; wrought pipes, welded and heavy riveted—made in plants not operated in connection with rolling mills; springs, steel (except wire)—made in plants not operated in connection with rolling mills; screw-machine products and wood screws; steel barrels, kegs, and drums; firearms; and safes and vaults. "Nonferrous-metal products" includes clocks, watches and materials and parts (except watchcases); silverware and plated ware; lighting fixtures; aluminum ware; kitchen, hospital, and household (except electrical appliances); collapsible tubes; sheet-metal work not specifically classified; and nonferrous-metal products not elsewhere classified. "Miscellaneous" includes professional and scientific instruments, photographic apparatus, and optical goods; surgical, medical, and dental instruments, equipment and supplies; toys and sporting and athletic goods (except dolls); pens, mechanical pencils, and pen points; soda fountains, beer dispensing equipment, and related products; and fire extinguishers, chemical.

² See chart 1, footnote 2.

Sources: U. S. Department of Commerce and War Production Board.

thorities, was with but few exceptions equal to or less than prewar civilian demand. The increase in war shipments was made, therefore, in part at the expense of reduced shipments of civilian-type goods.

Half of the individual industries in this group experienced increases of less than 100 percent and only one-tenth of them expanded shipments by more than 300 percent. The outstanding exception in this group was radio. The military demand for radio and radar products resulted in a six-fold growth in the shipments of this industry between 1939 and 1944.

The output of the intermediate products, or components, industries went to combat equipment, and producers' and consumers' goods. On the whole, the expansion in this group was parallel with that of the consumer goods industries. The restriction of metal production for civilian use made possible here, more so than in the other industries, a diversion of its products for war use.

Wartime Changes in Product

Next in importance to the expansion of the output of metal-fabricating industries has been the marked change in the

Table 2.—Metal Products Industries Classified by Percent of Combat Matériel Production**GROUP I**

[Combat matériel 80 percent and over]

Shipbuilding and repair
Firearms
Aircraft and parts**GROUP II**

[Combat matériel from 50 to 80 percent]

Professional and scientific instruments (except surgical and dental)
Safes and vaults
Automobile stampings
Laundry equipment, domestic
Games and toys
Printing trades, machinery and equipment
Aluminum ware, kitchen, hospital and household
Vending, amusement and other coin-operated machines
Oil burners
Food products machinery
Clocks, watches, and materials and parts
Sewing machines, domestic and industrial
Lighting fixtures
Motor vehicles and parts
Refrigerators and refrigeration machinery
Office and store machinery
Electrical appliances**GROUP III**

[Combat matériel from 20 to 50 percent]

Measuring and dispensing pumps
Vitreous enameled products
Optical instruments and lenses
Stokers, mechanical, domestic and industrial
Fabricated structural steel and ornamental metal work
Cars and car equipment—railroad, street, and rapid-transit
Stoves, ranges, water heaters, and hot-air furnaces
Hardwares, n. e. c.
Metal door, window sash, and trim
Special industry machinery, n. e. c.
Paper-mill, pulp-mill and paper products machinery
Stamped and pressed metal products
Motorcycles, bicycles, and parts
Sporting and athletic goods, n. e. c.
Machine shop products, n. e. c.
Children's vehicles
Photographic apparatus and materials and projection equipment
Oil-field machinery and tools
Textile machinery
Enameled—iron sanitary and plumbers supplies
Sheet-metal work, n. e. c.
Wirework, n. e. c.
Industrial machinery, n. e. c.
Heating and cooking apparatus
Pumping equipment and air compressors
Steam and hot-water heating apparatus
Silverware and plated ware
Measuring instruments, mechanical
Elevators, escalators and conveyors
Steam fittings
Wrought pipes, welded and heavy riveted
Insulated wire and cable
Steel barrels, kegs and drums
Soda fountains, beer dispensing equipment and related products
Electrical measuring instruments**GROUP IV**

[Combat matériel less than 20 percent]

Ophthalmic goods: lenses and fittings
Woodworking machinery
Springs, steel (except wire)
Agricultural machinery
Screw machine products and wood screws
Mining machinery and equipment
Nonferrous metal products, n. e. c.
Electrical products, n. e. c.
Nails, spikes and related products
Power boilers and associated products
Generating, distribution and industrial apparatusSurgical, medical and dental instruments and equipment
Fire extinguishers, chemical
Machine tools
Scales and balances
Locomotives and parts
Construction and similar machinery
Tin cans
Wiring devices and supplies
Automotive electrical equipment
Cutlery and edge tools
Pens, mechanical pencils and pen points
Metalworking machinery and equipment, n. e. c.
Hand tools, files and saws
Machine tool and other metal-working machinery accessories
Mechanical power transmission equipment
Commercial laundry, dry cleaning and pressing machinery
Tractors
X-ray and therapeutic apparatus and electronic tubes
Communication equipment
Steam engines, turbines and water wheels
Radios, radio tubes and phonographs
Batteries, storage and primary (dry and wet)
Bolts, nuts, washers and rivets
Blowers: exhaust and ventilating fans
Internal combustion engines
Cars and trucks, industrial
Collapsible tubes
Carbon and artificial graphite for the electrical industry
Transportation equipment, n. e. c.

SOURCE: U. S. Department of Commerce based upon data from the War Production Board.

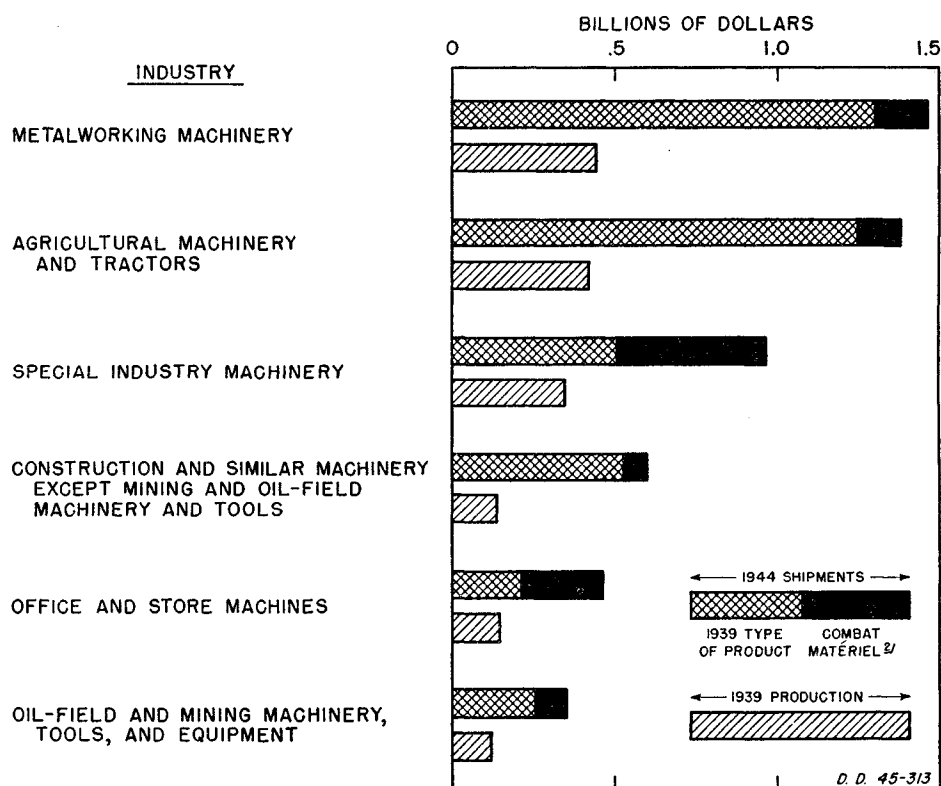
product. Automobile plants have been engaged in the production of tanks and aircraft engines, refrigerator plants in the manufacture of propellers, and sewing machine plants devoted to the production of guns, whereas the tractor industry continued to produce tractors, and the radio industry continued the production of radio equipment, as well as radar and special war-types of communication devices.

In order to aid in the analysis of the changed composition of products, a new two-fold classification, necessarily somewhat arbitrary, is here introduced. The current products of the metal-fabricating industries have been divided into combat matériel and prewar types (the year 1939 being used as the reference date for prewar type).

Combat matériel includes the ammunition, guns and fire control equipment, combat vehicles, aircraft and ships which comprise the specialized weapons of war.

The prewar type goods include goods identical to those made in peacetime as well as those produced to military specifications and which, while frequently not identical to those produced in prewar years, are nevertheless basically akin, differing usually no more than do different models of the same product.

While in general no distinction between prewar-type goods produced for

Chart 4.—Output of Selected Producers' Metal Products Industries, Excluding Government-Owned Plants¹

¹ Both 1939 production and 1944 shipments are based upon the plant classifications in the 1939 Census of Manufactures. The industry titles in this chart are those used in the Census report, except that "office and store machines" is specified as not elsewhere classified. These industries are included in the "machinery, except electrical" group shown in chart 3.

² See chart 1, footnote 2.

Sources: U. S. Department of Commerce and War Production Board.

the civilian economy and those produced for military use is necessary, in certain instances it is important to recognize that military goods may involve reconversion difficulties of the kind though not of the degree faced by combat matériel producers.

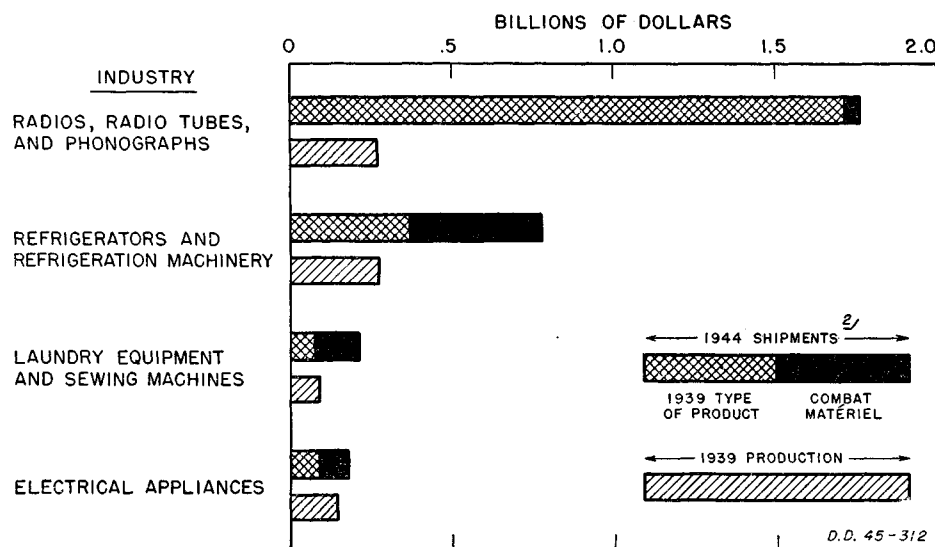
The character of the wartime product—whether it be similar to past production or markedly different—is indicative in a general manner of the ease or difficulty of industrial reconversion. Combat goods were for most plants completely new items of manufacture, requiring different machines, changes in plant lay-out, new tools, jigs and fixtures, and unique shapes and forms of material. To a lesser extent this was true of some of the products classified here as of prewar type, but redesigned for war use, as in the case of heavy trucks and radar.

Although not an absolute guide, the proportional distribution of an industry's manufacturing activity on combat matériel and prewar-type products is a general indicator of the relative amount of technical or engineering reconversion that will be required.

In 1944, less than 15 percent of metal products shipped by private industry were of peacetime type and available to the civilian economy. About half of total shipments were of combat matériel, the remainder being prewar types of product shipped for military use and in many instances modified to meet military requirements.

The incidence of expansion for industries by reason of combat matériel production is illustrated in chart 3 in the case of transportation equipment. On the other hand, two other producers' goods industries shown—the two machinery groups—owed their growth not

Chart 6.—Output of Selected Consumers' Metal Products Industries, Excluding Government-owned Plants¹



¹ Both 1939 production and 1944 shipments are based upon the plant classifications in the 1939 Census of Manufactures. The titles for the first and fourth industries are those used in the Census report. The fuller title given in the Census report for the second industry is "refrigerators, domestic (mechanical and absorption), refrigeration machinery and equipment, and complete air-conditioning units." The third title is a combination of the "laundry equipment, domestic" and "sewing machines, domestic and industrial" industries shown in the Census report. These industries are included in chart 3, the first and fourth in "electrical machinery" and the second and third in "machinery, except electrical."

² See chart 7 for the percentage distribution of the 1944 shipments for these industries.

Sources: U. S. Department of Commerce and War Production Board.

so much to combat matériel production as to the support they were called upon to give of their normal production to the industrial system.

Inspection of table 2, which classifies all the metal products industries according to the degree of their concentration on combat matériel production, will con-

firm the distinction pointed out earlier relative to the different incidence of war production in the producers' and consumers' goods industries. As a whole, the production of combat matériel by the former has been a relatively small part of their total shipments; the contrary is the case for the consumers' durable goods group. This is illustrated by a comparison of charts 4 and 6.

Producers' Goods Industries

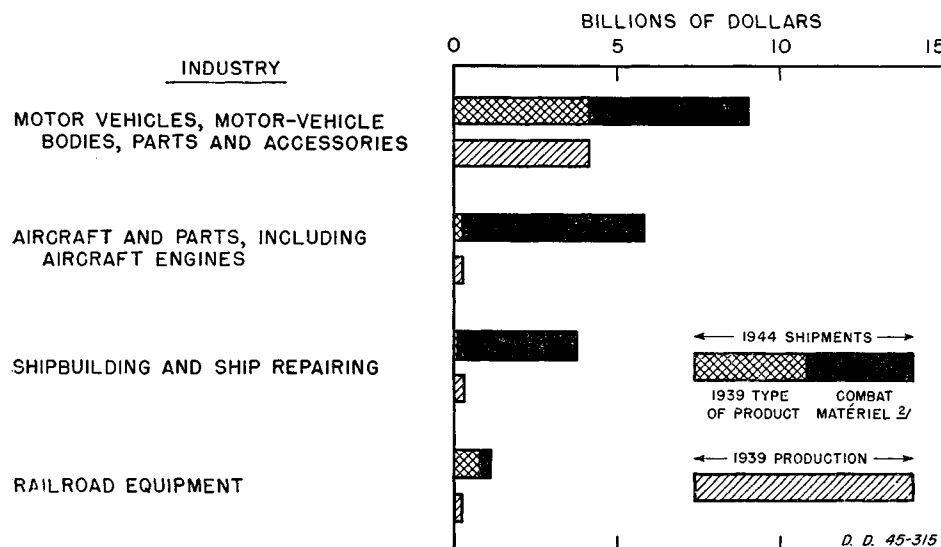
Most of the producers' goods industries shipped from 20 to less than 50 percent of their 1944 production in the form of combat matériel. For the producers' goods industries as a whole, combat matériel accounted for only one-fifth of the output. Though military takings of all their products (combat matériel and other) exceeded three-fifths of shipments, the amount remaining available to the civilian economy, largely industrial consumers, measured in dollar value and not quantity—was 150 percent above 1939 production.

The favorable position of these industries relative to reconversion is further illustrated by chart 4—the very large measure of growth and the fact that the expansion has in all but two cases been achieved by enlargement of production of prewar type goods.

Consumers' Goods Industries

While combat matériel production is the smaller part of total product for most of the producers' industries, the opposite is true for the consumers' group. With the exception of a few of the industries, such as the special case of radios, com-

Chart 5.—Output of Transportation Equipment Industries, Excluding Government-Owned Plants¹



¹ Both 1939 production and 1944 shipments are based upon the plant classifications in the 1939 Census of Manufactures. These industries are included in chart 3, the first in "automobiles and automobile equipment" and the others in "transportation equipment, except automobiles."

² See chart 1, footnote 2.

Sources: U. S. Department of Commerce and War Production Board.

Table 3.—Percent of Combat Matériel Produced by Consumers' Durable Goods Industries

	Ammunition	Combat guns and fire control	Combat vehicles	Aircraft parts and equipment	Ships and equipment	Total combat
Total consumers' durable industries...	21.5	8.6	42.6	16.2	0.3	15.3
Motor vehicle industry.....	11.2	10.6	41.8	13.8	.3	12.3
All other.....	10.3	8.0	.8	2.4	0	3.0

Source: U. S. Department of Commerce based upon data from the War Production Board.

bat matériel comprised 50 percent or more of shipments (table 2).

The high degree of concentration on combat matériel production by the consumers' industries followed from the fact that restrictive actions precluding access to raw materials or forbidding production prevented continued production of normal-type products. Hence, facilities were largely converted to combat matériel production. As will be seen in chart 6 and the motor vehicle bar of chart 3, in contrast to the producers' goods, the wartime expansion was mainly in terms of combat matériel except in the case of radios.

Repair parts for maintenance of the civilian economy comprised a large part of the prewar products that continued to be made; the remainder was taken by the military in a volume much below peacetime levels and frequently considerably changed to conform to military needs.

Because of the sweeping character of the change in the products of the consumers' durable goods industries, technical problems of reconversion center in this group. When combat matériel contracts are terminated, the plants in these industries will with few exceptions be forced to retrace the steps taken in conversion. Thus, the machinery and much of the paraphernalia of combat matériel production will have to be removed from their plants and the machinery for peacetime products retrieved from storage or bought, the flow of parts and materials reestablished, and marketing organizations revitalized.

Combat Matériel Production

Although virtually all metal products industries, both large and small, have contributed to the supply of combat matériel, the bulk of production was concentrated in a few industries. It has already been noted that more than one-third of all combat matériel was shipped by Government plants. These plants, plus the facilities of those industries which had merely to expand their peacetime production (aircraft, ships and firearms), and of the important automobile industry, account for four-fifths of combat matériel shipments.

As may be seen in table 4, some of the industries classified as producers' durable goods were important contributors of specific combat matériel items. In very few cases, however, were such contributions more than 10 percent of the total products of the combat matériel items in question. Since these industries need not prepare for significant changes in their products they are in a position, aided by their wartime expansion, to meet the demands for new equipment of other converting industries almost as quickly as military demands for their products decline.

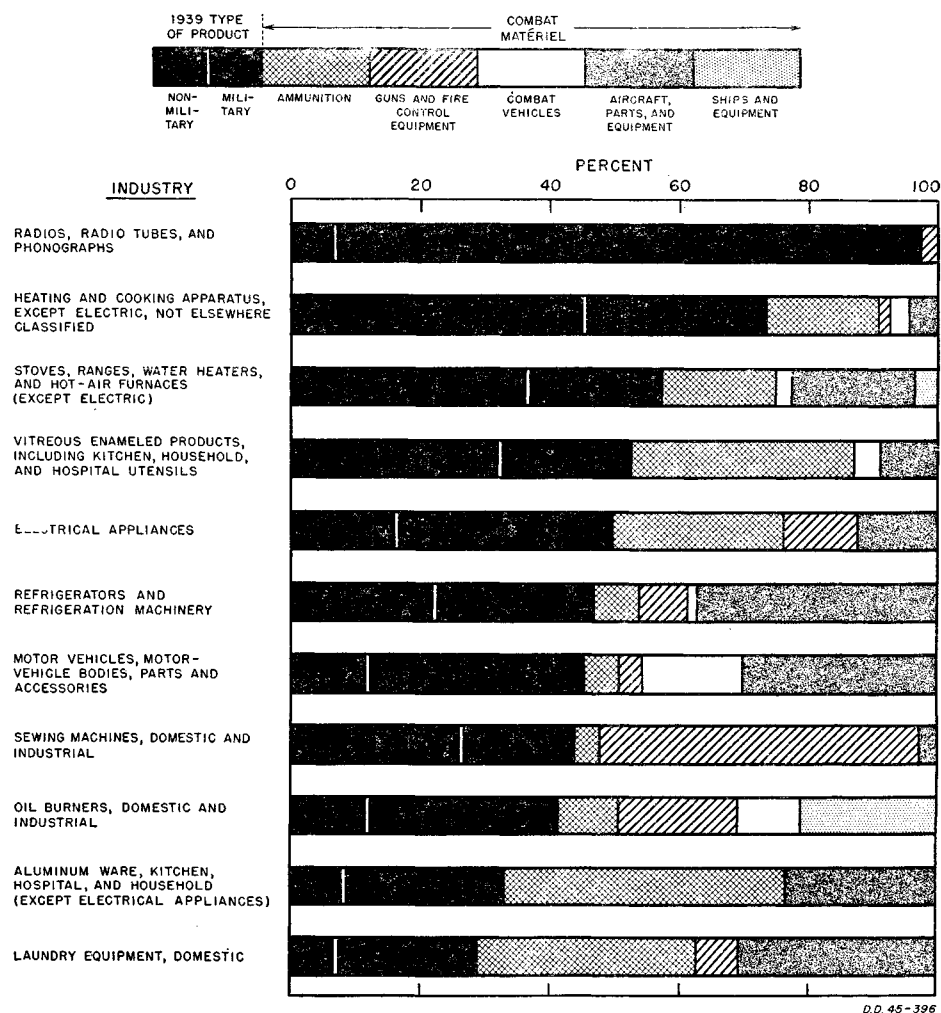
A few areas of possible difficulty should, however, be noted. As is apparent in chart 4, the facilities of the office and store machinery industry and of certain kinds of special industry machinery (printing, food products, and paper)

were converted to a very large degree to the production of combat matériel.

In the case of such industries as professional and scientific instruments, measuring and dispensing pumps, and lighting fixtures, the combat matériel production has been concentrated in specific specialized types. Because these industries have been major sources of their special product, their conversion may present difficulties which may unfavorably affect reconversion elsewhere.

Although a large proportion of the products of the consumers' durable goods industries was combat matériel, the aggregate contribution of the total of such products was only 15 percent.

The percentage of total combat matériel shipments by these industries is shown in table 3.

Chart 7.—Percentage Distribution of 1944 Shipments of Selected Consumers' Metal Products Industries¹

¹Percentage distribution is based upon data for 1944 shipments grouped according to plant classifications in the 1939 Census of Manufactures. The sixth industry shown in this chart is specified in the Census report as "refrigerators, domestic (mechanical and absorption), refrigeration machinery and equipment, and complete air-conditioning units." Where any type of combat matériel for an industry does not show in this chart, the shipments were less than 1 percent of the total industry or there were none.

Sources: U. S. Department of Commerce and War Production Board.

Because of its major contribution to four of the five major types of combat matériel, its position in war production was unique. In addition to supplying the largest proportion of combat vehicles, it was the second largest producer of ammunition.

In addition, military takings of pre-war-type products include such items as heavy-heavy trucks. These differ in form from peacetime products in sufficiently large degree to require substantial changes in production equipment when such facilities are reconverted to peacetime-type products.

For these reasons the timing of reconversion is more difficult in the automobile industry than in any other. The importance of the industry in the production of most types of combat matériel suggests that substantial cut-backs are required to release its facilities to a degree permitting volume production of civilian vehicles.

The situation of the radio industry also calls for special comment. Its experience, both in degree of expansion and in the character of product, distinguishes it from the other consumers' goods industries. Its growth exceeded that of any other industry in its classification. Its wartime experience has thus been very similar to that of the prewar aircraft and shipbuilding industries.

Conclusion

The progress of reconversion will be tied not so much to the availability of facilities as it will be to the supply of raw materials, and of essential production equipment, and, importantly, to the speed of reestablishing those business relation-

ships necessary to assure a balanced distribution of commodities through manufacturing plants.

In the case of producers' durable goods industries, the relatively small combat matériel production is of special importance. For these industries the ability to supply the demands of the civilian economy depends not so much on the reduction of combat matériel production as it does on the curtailment of military demands for the industry's normal production.

War production cutbacks will thus enable these to quickly enlarge shipments to the civilian industries. How quickly the industries will be able to supply the demand for producers' equipment which is essential to the resumption of a flow of consumer goods in volume remains a question.

The consumers' durable goods industries face a different situation. Current production of peacetime-type goods is a relatively small part of total production, whereas that of combat matériel is a relatively larger part. Much of civilian production is restricted to repair parts and the military takings of peacetime products which can be expected to continue as long as the Japanese war lasts.

Despite these considerations, however, the early release of the facilities of these industries is feasible as a result of the reductions in aggregate munitions production already announced for the latter part of the year, because of the relatively minor share of their contribution in the total output of combat matériel. Automobiles may provide an exception because of their heavy involvement in combat equipment production. But here,

too, the announced cut-backs in munitions will provide a significant amount of free facilities.

With that exception, the immediate objective of reconversion—volume production of civilian goods—is therefore possible concurrently with the vigorous and successful prosecution of the Japanese war. The speed with which these industries will find it possible to resume peacetime output will depend on the problems they face in clearing the plants of specialized equipment of no value in the production of civilian products, their ability to secure needed equipment, the flow of raw materials, and component parts, and the incidence of cut-backs so as to release first facilities best adapted to certain output.

It is of importance that this lapse of time be reduced to a minimum, not only because of the needs of the civilian economy for many of these items, and the desirability of easing inflation control problems, but because the attainment of a substantial degree of reconversion will significantly assist in the reconstruction tasks once the Japanese acceptance of the fact of defeat no longer makes necessary large military expenditures.

The dominant position of the automobile industry in the group is of special importance. It accounted for four-fifths of the combat matériel produced by the consumers' goods industries and the largest contributor of every type.

Excluding automobiles the consumers' durable goods industries produced only 3 percent of combat matériel. Aside from the automobile industry, the most important contribution made by the industries to total shipments was of ammunition and guns and fire control equipment (table 3 and chart 7). The aircraft equipment produced by these industries comprised less than 3 percent of the total of such production while the contribution made to ships and combat vehicles was very small.

Although the consumers' goods industries thus contributed to all types of combat matériel, the adaptability of its facilities resulted in wide differences among the individual industries in their concentration upon specific items.

As may be seen in the chart, ammunition was the predominant combat product of four of the industries shown, although it was produced by all but the radio industry. Aircraft equipment was produced by nine of the industries and was the most important for three. Only in the case of aircraft propellers did any one of these industries contribute a substantial part of total shipments of these classes. Clearly small cutbacks in such an item as ammunition might serve to release entire industries from its production.

The situation of the automobile industry is of special interest because of the importance of the industry both to the war production program and to the civilian economy. It was the largest producer of combat matériel among the civilian industries aside from aircraft and shipbuilding (table 4).

Table 4.—Percentage of Combat Matériel Produced by Selected Industries ¹

	Ammunition		Guns and fire control		Combat vehicles	Aircraft, parts and equipment					Ships and ship equipment		
	20 mm. and above, including bombs	Below 20 mm.	Guns and mounts, 20 mm. and above	Machine guns 20 mm. and below		Aircraft and parts	Engines and parts	Propeller and parts	Accessories	Instruments	Vessels	Instruments	Equipment and parts
Government plants.....	23.2	73.7	38.4	39.4	11.0	35.4	48.1	36.0	59.2	24.3	25.5	53.4	18.7
Aircraft and parts.....							33.0	26.8	15.5				11.5
Communication equipment.....													26.5
Electrical generating and distributing machinery.....					10.5							23.2	5.5
Firearms.....				19.1									
Industrial machinery, n. e. c.....												4.6	8.7
Insulated wire and cable.....				5.3						8.9			
Lighting fixtures.....													
Machine shop products, n. e. c.....													5.5
Mechanical power and transmission.....													5.1
Motor vehicles and parts.....	15.1		18.8	6.6		41.8	10.2	24.6		22.3			
Office and store machinery.....				6.0	5.3								
Photographic apparatus.....					9.1					7.2		7.6	
Professional and scientific instruments.....					22.7								
Pumping equipment and air compressors.....			5.8										
Radio, radio tubes and phonographs.....													42.8
Refrigeration and refrigerating machinery.....								16.7	7.7				
Shipbuilding and repair.....											41.3		
All others.....	61.7	26.3	37.0	23.6	41.4	22.8	8.7	12.6	8.6	45.7	30.2	5.3	32.4
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Only industries providing 5 percent or more of designated combat matériel items are listed.

Sources: U. S. Department of Commerce based upon data from the War Production Board.

Revised Estimates of Wages and Salaries in the National Income, 1929-43

By Edward F. Denison

THE BUREAU OF FOREIGN AND DOMESTIC COMMERCE is engaged in a basic revision of its estimates of the national income and related series that involves reconsideration of definitions, complete reworking of the statistical data, and adoption of an improved industrial classification.

This article is limited to presentation of revised estimates of wages and salaries in private industry, together with the usual corresponding estimates of average annual earnings of full-time employees and full-time equivalent employment. Revised estimates for the other income shares will be published as soon as they are completed.

The revision of wages and salaries in private industry includes no important changes in definition. It does, however, involve minor reclassifications from private wages and salaries to Government wages and salaries and to net income of unincorporated enterprises.

With these exceptions, the differences between the present and earlier estimates of the private-industry total are statistical in origin. For industrial divisions and minor industries, however, differences between the present and earlier estimates reflect in varying degree changes in industrial classification as well as statistical revisions.

Comparable estimates of pay rolls, employment, and average annual earnings classified in considerable industrial detail covering the economically heterogeneous period from 1929 to 1943 are of obvious value to the economic analyst and businessman.

Data shown in tables 2-4 trace the rapid growth of such industries as air transportation and radio broadcasting and the declining relative importance of anthracite mining, brokerage, and (until the war) the railroads. They reflect the varying impact upon 64 industries of prosperity and depression and of the transition from peace to war. When later supplemented by similar estimates for other segments of the national income these data will provide a comprehensive statistical summary of the industrial history of the period.

Definition of Wages and Salaries

Wages and salaries, as defined for this purpose, include all payments accruing to persons in an employee status as compensation for their work. They include commissions, tips, and bonuses, as well as cash payments commonly referred to as wages or salaries, together with the value of those payments in kind

which clearly represent an addition to the income of the recipient.

Income in kind is valued, insofar as is possible, at its cost to the employer. Industries in which it is a perceptible portion of wages and salaries include farming, eating and drinking places, water transportation, hotels and other lodging places, private households, educational services, and religious organizations.

The wage-and-salary series presented here does not include all types of employee income. Dismissal pay, directors' fees, employer contributions to social insurance funds and to private pension plans, and accident compensation payments are among the types of income accruing to employees in private industry which are not included but will be measured in the Bureau's revised series on "Supplements to Wages and Salaries." This constitutes a distinct component of the national income.

The present estimates of wages and salaries in private industry are a component of national income and should be distinguished conceptually from the series included in the Bureau's estimates of income payments to individuals. The latter series is measured after deduction of employee contributions to social insurance funds.

The distinction between employees, whose compensation is included in wages and salaries, and independent proprietors, whose income is counted in net income of unincorporated enterprises, is usually clear cut, although there are the following marginal cases for which specific decisions are required.

1. Wages and salaries in the construction industry are confined to the earnings of persons employed by establishments. All "own account" workers, as well as proprietors of establishments, are classified as proprietors, and their income will be counted in the net income of unincorporated enterprises. This treatment differs from that previously followed. "Own account" workers in construction represented a large portion of the employment and pay rolls listed in the former "Miscellaneous" industry.

2. "Office solicitors" in insurance will be classed as proprietors in the "Insurance agencies and combination offices" industry. These persons previously were counted as employees in the former "Insurance" industry.

3. Dressmakers and seamstresses operating in or from their own home are treated as proprietors, not employees.

4. Express agency commission agents are classed as employees in "Railroads."

Full-Time Equivalent Employment

Full-time equivalent employment measures man-years of full-time employment. The latter is defined simply in

terms of the number of hours which is customary at a particular time and place. It may mean 30 hours in one industry and 60 in another, or, in the same plant, 30 hours in 1932 and 55 in 1943. It does not refer to any hypothetical "standard" of hours, uniform over time and space.

If all employees worked full time, full-time equivalent employment could be measured by averaging the number of persons at work on a sufficient number of representative dates throughout the year. Even though there are many part-time workers, a series so constructed has some uses, particularly in measuring the total number of filled jobs. Estimates on this basis are presented for the years 1939 to 1943 in table 6, at the end of the article. In most industries, the figures shown in table 6 are simply the average of 12 monthly figures for the number on the pay roll in the last pay-roll period of each month.

In many industries part-time employment is of sufficiently minor importance for the average number of persons at work on given dates or in given pay-roll periods, as shown in table 6, to furnish an acceptable measure of full-time equivalent employment. These figures are used directly as measures of full-time equivalent employment in manufacturing, mining, construction, farming, most of communications and public utilities, and a number of industry subgroups within industry divisions.

In industries other than this group, however, part-time employment is so prevalent that the simple average of the number of persons at work gives a misleading picture of employment in the industry. Moreover, if this average is used as a divisor in obtaining average annual earnings, the result seriously understates the earnings of full-time employees and invalidates interindustry comparisons.

For industries having an appreciable degree of part-time employment, the average number of persons at work during the year is adjusted to reduce the number of part-time employees to the equivalent number of full-time employees. Statistically, the calculation is performed in the following manner when the requisite data are available.

Annual total wages and salaries paid to full-time employees in an industry are divided by the average number of full-time employees on the pay roll to secure average full-time equivalent earnings. Division of total wages and salaries paid to both full-time and part-time employees by average full-time equivalent earnings yields full-time equivalent employment.

This procedure involves the assumption that the hourly earnings of part-time workers are equal to those of full-time workers in the same industry. Even

NOTE.—Mr. Denison is a member of the National Income Unit, Bureau of Foreign and Domestic Commerce.

if this assumption is substantially incorrect, the aggregate earnings of part-time employees usually are so small that no significant error can arise.

A more important limitation of the data is the infrequency with which separate data on full-time and part-time employment and pay rolls necessary for this computation are available. In most industries it has been necessary to hold the ratio of full-time equivalent employment to average monthly employment constant from 1939 to 1943. It may be noted, however, that this ratio changed little during the period of wide cyclical fluctuation from 1929 to 1939, and it is unlikely that it changed markedly even over the war period.

This type of adjustment of average monthly employment has been made in wholesale and retail trade, in most of the transportation, finance, and service industries, in agricultural services, and in radio broadcasting.

Estimates of full-time equivalent employment cover only wage and salary earners. They do not include proprietors, own account workers, or unpaid family workers. Tables in the present article also exclude all Government employees.

The definition of full-time equivalent employment, as the term is used here, is the same as that attached to employment estimates of the Bureau of Foreign and Domestic Commerce published periodically as part of its national income studies from 1933 to 1942, and to estimates of the National Bureau of Economic Research. It is thought to furnish the best available measure for comparison of the volume of employment in different industries and between different time periods.

Average Annual Earnings

The principal reason for preparing estimates of full-time equivalent employment in connection with national income studies is to make possible the calculation of a meaningful average annual earnings series.

"Average annual earnings per full-time employee" measures wage-and-salary income per man year of full-time work. The principal usefulness of data conforming to this concept lies in inter-industry comparisons of earnings levels, in inter-temporal comparisons of the earnings of employed persons, and in the analysis of the effects of shifts in the industrial composition of employment on the income stream. In conjunction with related information, they are useful also in the appraisal of the economic position of employees.

The limitation of such average earnings data for "welfare" analysis must, however, be emphasized. They reflect the earnings of all occupational groups, from corporation executives to charwomen. Statistical data required for the compilation of full-time average annual earnings cross-classified by industry and occupation are not available. Further, the estimates are not intended to reflect loss of income due to unemployment. Because of unemployment, actual annual earnings of all workers attached to an industry (or to all indus-

Table 1.—Industrial Classification for Revised Estimates of the National Income ¹

Industrial division or industry ²	Industrial content in terms of the—	
	Standard Industrial Classification	Social Security Board Classification
Agriculture, forestry and fisheries	01 to 09 ³	01 to 09.
Farms	01 to 06	01.
Agricultural and similar service establishments	07 ⁴	07.
Forestry	08	08.
Fisheries	09	09.
Mining	10 to 14	10 to 14.
Metal mining	10	10.
Anthracite mining	11	11.
Bituminous and other soft-coal mining	12	12.
Crude petroleum and natural-gas production	13	13.
Nonmetallic mining and quarrying	14	14.
Contract construction	16 and 17	15 to 17.
Manufacturing	19 to 39	19 to 39.
Food and kindred products	20	20.
Tobacco manufactures	21	21.
Textile-mill products	22	22.
Apparel and other finished fabric products	23	23.
Lumber and timber basic products	24	24.
Furniture and finished lumber products	25	25.
Paper and allied products	26	26.
Printing, publishing and allied industries	27	27.
Chemicals and allied products	28	28.
Products of petroleum and coal	29	29.
Rubber products	30	30.
Leather and leather products	31	31.
Stone, clay, and glass products	32	32.
Iron and steel and their products, incl. ordnance	19 and 33	19 and 33.
Nonferrous metals and their products	34	35.
Machinery (exc. electrical)	35	37.
Electrical machinery	36	36.
Transportation equipment (exc. automobile)	37	34.
Automobiles and automobile equipment	38	38.
Miscellaneous manufacturing industries	39	39.
Wholesale and retail trade	40 to 61, and 88	50 to 59, and 75.
Wholesale trade	40 to 47	50 and 51.
Retail trade and automobile services	48 to 61, and 88	53 to 59, and 75. ⁴
Finance, insurance, and real estate	62 to 70 (exc. 707)	60 to 67 (exc. 654).
Banking	62	60.
Security and commodity brokers, dealers and exchanges	66	61.
Finance, not elsewhere classified	63, 64, 65, and 67	62 and 67.
Insurance carriers	68	63.
Insurance agents and combination offices	69 ⁵	64 and 66.
Real estate	70 (except 707)	65 (except 654).
Transportation	72 to 80	40 to 45.
Railroads	72	40.
Local railways and bus line	73 and 741	41.
Highway passenger transportation, n. e. c.	742, 743 and 749	431, 433 and 439.
Highway freight transportation and warehousing	75 and 79	42.
Water transportation	76 (except 766)	44.
Air transportation (common carrier)	771	432.
Pipe-line transportation	78	434.
Services allied to transportation	744, 766, 772, 773 and 80	45.
Communication and public utilities	81 to 83	46 to 49, and 736.
Telephone, telegraph and related service	81 (except 813)	46.
Radio broadcasting and television	813	736.
Utilities: electric and gas	821 and 822	48.
Local utilities and public services, n. e. c.	823 and 83 ³	49.
Services	84 to 96 (except 88) and 707	70 to 90 (except 75 and 736) and 654.
Hotels and other lodging places	84 (except 8442)	70 (except 7042).
Personal services	85	72.
Private households	86	90.
Commercial and trade, schools and employment agencies	874, 953 and 954	74.
Business services, not elsewhere classified	87 (except 874) 707 and 942	73 (except 736), 807 and 654.
Miscellaneous repair service and hand trade	89	76.
Motion pictures	90	78.
Amusement and recreation except motion picture	91	79.
Medical and other health services	92	80.
Legal services	93	81.
Engineering and other professional services, n. e. c.	941 and 949	831 and 839.
Educational services, n. e. c.	95 (except 953 and 954)	82.
Religious organizations	966	832.
Nonprofit membership organizations, n. e. c.	96 (except 966) and 8442	86, 833 and 7042.
Government ²	97	94 and 95.

¹ Numbers refer to the code numbers of industries in the Standard Industrial Classification Manual (Government Printing Office, 1942) and the Social Security Board Industrial Classification Code (Social Security Board, 1942).

² All establishments operated by Government agencies or corporations are classified in the Government industry, regardless of their classification in the two codes with which comparison is made.

³ Irrigation system operation is classified in "Local utilities and public services, n. e. c."

⁴ Industry 52 is divided between wholesale trade and retail trade.

⁵ In national income classification, includes insurance agents, brokers and services, and establishments regularly engaged in any combination of real estate, insurance, loans, or legal activities when none of these activities alone constitutes the principal business of the establishment.

Source: U. S. Department of Commerce.

tries) always fall below the full-time annual earnings shown for the industry (or for all industries) and fluctuate more over the course of the business cycle. The incidence of unemployment also varies widely among industries. Finally, full-time average earnings are measured in "current" dollars, hence do not take into account price-level changes.

The estimates of wages and salaries, employment, and full-time average annual earnings are based on the same sources and are statistically comparable in every respect.

The present estimates of full-time average earnings, like those of full-time equivalent employment, are comparable in definition to similar estimates pub-

Table 5.—Revised and Unrevised Estimates of Wages and Salaries and Employment in Private Industries¹

Year	Wages and salaries (millions of dollars)			Total employment (thousands)		
	Revised estimates	Unrevised estimates ²	Difference	Revised estimates ³	Unrevised estimates ⁴	Difference
1929	45,206	47,546	2,340			
1930	40,720	42,510	1,790			
1931	33,607	34,896	1,289			
1932	25,297	26,056	759			
1933	23,690	24,246	556			
1934	27,420	27,979	559			
1935	29,984	30,590	606			
1936	33,866	34,508	642			
1937	38,432	39,267	835			
1938	34,564	35,163	619			
1939	37,519	37,996	477	28,183	28,870	687
1940	41,130	41,851	721	30,083	30,878	795
1941	51,537	52,587	1,050	33,716	34,819	1,103
1942	65,554	66,921	1,367	35,255	37,513	2,258
1943	78,885	80,024	1,139	37,511	38,554	1,043

¹ See text for description of differences in definition between revised and unrevised data.

² Source: SURVEY OF CURRENT BUSINESS, April 1944.

³ Excludes farms. Sum of full-time equivalent employment in the Service industry and full-time and part-time employment in other industries, for comparison with unrevised estimates of employment.

⁴ These estimates were used in computation of average salary-wage data published in SURVEY OF CURRENT BUSINESS, April 1944.

Source: U. S. Department of Commerce.

sented in much more detail than formerly.

The unit of classification is the establishment, all of whose employees and pay roll are classified in the industry to which the principal activity of the establishment corresponds. Insofar as possible, establishments are reclassified as soon as their principal activity changes. The establishment basis of classification is similar to that followed in most other Federal government income and employment series, with the important exception of tabulations of the Bureau of Internal Revenue, whose unit of classification is the firm, which may include a number of establishments in different lines of activity.

Comparisons with Earlier Estimates

A comparison of the revised estimates of total pay rolls in private industries with the estimates currently contained in the national income is shown in table 5. If there were no statistical revisions, the new series would fall below the old by the earnings of own-account workers in the construction industry, of office solicitors, and of employees of agencies allied to the Farm Credit Administration (transferred to "Government").

Accurate data to adjust for these differences are not available, since income of own-account construction workers (formerly classified in the "Miscellaneous" industry) was not separately estimated. Nevertheless, it is evident that the new series does not result in any appreciable revision of the 1932-40 estimates, although it does yield a downward revision of the 1942-43 estimates of perhaps one-half of 1 percent, and a more substantial downward revision of the 1929-31 estimates.

The Bureau's revised and unrevised estimates of employment from 1939 to 1943 are also compared in the same table. The same differences in definition between the series exist as for pay rolls. A rough estimate of the effect of these differences on employment indicates that there is little statistical difference between the two series, but that the old series rose slightly too much from 1940 to 1942.

Although the revisions of the totals for private industry wages and salaries and employment were not appreciable, it may be noted again that the changes for some of the industry groups were significant. These stem from the three principal aspects of the new series distinguishing it from the old: (1) Improved, more detailed industrial classification; (2) fuller exploitation of the comprehensive data made available by the Social Security programs; and (3) improvement of methodology.

Methodology

Detailed description of sources of data and statistical methods used in the formulation of the pay roll and employment estimates shown in tables 2 and 3 cannot be undertaken in an article of this scope. The estimates for the 64 industries utilized a great variety of source material that obvi-

ously could not be processed in standard fashion and required countless special adjustments in the attempt to achieve the comparability requisite to inter-industry and intertemporal comparisons. It is planned, however, to present a detailed description of methodology at a later time.

Meanwhile, the present article best may concentrate on brief descriptions of methodology for three phases of the work: (1) Estimates of wages and salaries and employment for 1939-43 in industries covered by the Social Security and Railroad Retirement Acts; (2) estimates for 1929-43 in industries not covered by these acts, and (3) estimates for 1929-38 in the manufacturing industries.

The most difficult and time-consuming parts of the estimation procedure related, of course, to the 1929-38 estimates. The variation in methodology among industries is too significant to permit generalization, and manufacturing has been selected for description because of the widespread interest in this industry.

"Covered" Industries

Data for industries covered by the Social Security Act and the Railroad Retirement Act have attained a degree of accuracy and refinement since 1939 that did not exist before these programs came into operation. This segment of the economy includes all private industries except the following: Farms; part of forestry; private households; nonprofit hospitals (included in medical and other health services); most of educational services, n. e. c.; religious organizations; and about a third of nonprofit membership organizations, n. e. c.

Table 6.—Average Number of Full-time and Part-time Employees in Private Industries by Industry, 1939-43

(Thousands)

Industrial division or industry	1939	1940	1941	1942	1943
All private industries, total	31,308	33,205	36,810	39,369	40,450
Agriculture, forestry and fisheries ¹	2,726	2,696	2,660	2,681	2,536
Agricultural and similar service establishments	82	82	82	92	84
Mining ¹	832	927	975	985	919
Contract Construction ¹	1,219	1,285	1,764	2,129	1,573
Manufacturing ¹	9,967	10,882	13,137	15,282	17,411
Wholesale and retail trade	6,805	7,199	7,692	7,492	7,416
Wholesale trade	1,625	1,679	1,780	1,703	1,617
Retail trade and automobile services	5,180	5,520	5,912	5,789	5,799
Finance, insurance and real estate	1,393	1,440	1,481	1,450	1,421
Banking	290	298	311	321	330
Security and commodity brokers, dealers and exchanges	76	71	61	50	48
Finance, not elsewhere classified	117	124	135	124	103
Insurance carriers	346	357	367	362	347
Insurance agents and combination offices	144	143	144	145	145
Real estate	420	447	463	448	448
Transportation	2,073	2,164	2,358	2,513	2,744
Railroads	1,114	1,160	1,285	1,429	1,534
Local railroads and bus lines	184	170	161	169	184
Highway passenger transportation, n. e. c.	93	102	112	126	152
Highway freight transportation and warehousing	347	385	451	475	477
Water transportation	148	150	151	112	146
Air transportation (common carriers)	15	19	24	34	46
Pipe-line transportation	22	23	24	25	25
Services allied to transportation	150	155	150	143	180
Communications and public utilities ¹	870	900	954	948	912
Radio broadcasting and television	23	25	28	29	30
Services	5,423	5,712	5,789	5,889	5,518
Hotels and other lodging places	405	417	432	432	442
Personal services	656	726	786	821	845
Private households ²	2,231	2,365	2,253	2,209	1,774
Commercial and trade schools and employment agencies	21	19	28	48	59
Business service, not elsewhere classified	278	280	294	285	280
Miscellaneous repair services and hand trades	74	72	79	82	96
Motion pictures	191	192	204	215	227
Amusement and recreations except motion pictures	215	230	250	252	241
Medical and other health services ³	504	530	559	595	612
Legal services	126	126	128	125	121
Engineering and other professional services, n. e. c.	37	41	53	78	63
Educational services, n. e. c. ³	265	270	271	267	263
Religious organizations ²	209	210	210	214	216
Nonprofit membership organizations, n. e. c.	211	234	242	266	279

¹ Industry estimates in this industrial division, other than those (if any) shown, are identical with those contained in table 3.

² Data represent number of persons employed; the number of full-time and part-time jobs is much larger.

³ Full-time equivalent employment (full-time and part-time employment not available).

Source: U. S. Department of Commerce.

For years beginning with 1940 a highly accurate estimate of total pay rolls in covered industries can be obtained by combining data collected by the Bureau of Old-Age and Survivors Insurance, by the State unemployment compensation agencies, and by the Railroad Retirement Board.

The Railroad Retirement Board reports the total pay roll of establishments covered by the Railroad Unemployment Insurance program. These include railroads and certain electric railroads, some nonprofit membership organizations, and some establishments furnishing services to the railroads.

The Bureau of Old-Age and Survivors Insurance secures the amount of taxable pay rolls—the first \$3,000 earned by any employee in a year—for all other establishments in covered industries. These data are collected as part of a continuing program in operation since 1937 and can be considered as complete for all practical purposes.

The State unemployment compensation agencies obtain both taxable and nontaxable pay rolls from establishments covered by their programs. Addition of (1) total pay rolls covered by the Railroad Retirement Act, (2) taxable pay rolls covered by the Old-Age and Survivors Insurance program, and (3) nontaxable pay rolls of establishments reporting to the State unemployment compensation agencies, provides a figure for total wages and salaries in covered employment which is complete except for nontaxable pay rolls in employment covered by the O. A. S. I. program but not by unemployment compensation.

This employment consists of (1) vessel employment, (2) employment by firms too small to be subject to unemployment compensation (the State laws vary from coverage of employers having one or more to eight or more employees), and (3) employment by firms in business too short a time or too intermittently to be covered by State laws.

The Social Security Board has estimated the amount of nontaxable wages in these types of employment to secure total pay rolls in all covered industries. To this series is added the estimated value of tips and from it are deducted pay rolls in Alaska and Hawaii and in the few farms covered by O. A. S. I. to obtain total pay rolls in covered industries in the continental United States.

Since the total derived from the above procedure was accepted as the most reliable that can be obtained, the task in making estimates for covered industries for 1940-43 may thus be regarded as that of obtaining an industry break-down of this pay roll total and of corresponding estimates of full-time equivalent employment. The actual procedure, however, was to estimate pay rolls and employment in each industry independently and to adjust the resulting aggregate to the previously described totals.

In most industries the procedure adopted in making the unadjusted industry estimates from 1939 to 1943 made use of unemployment compensation data, supplemented by Old-Age and Survivors Insurance data. Quarterly pay roll and monthly employment data are published by the Bureau of Employment Security of the Social Security Board for all establishments covered by State unemployment compensation laws.

Special tabulations of Old-Age and Survivors Insurance data furnished employment for September of 1940 and 1943 and pay rolls for the third quarter of the same years for firms with too few employees to be covered by the State unemployment compensation laws.

Combination of these data for small firms and the unemployment compensation data in the same periods furnished totals of pay rolls and employment for all establishments covered by the Social Security Acts.

The ratios of these totals to pay rolls and employment covered by the State laws were calculated. For each industry in which they were similar in 1940 and 1943, the ratios were interpolated between these years and applied to pay rolls and employment of establishments covered by unemployment compensation.

tion to obtain total pay rolls and employment.

For other industries, employment not covered by unemployment compensation was found to be stable; and the 1940 and 1943 noncovered employment figures were interpolated directly and multiplied by estimated average pay (interpolated by average pay in covered employment) to obtain noncovered pay rolls.

In both cases adjustments were made for the few changes over this period in the coverage provisions of the State laws. Employment and pay rolls covered by the Railroad Unemployment Insurance program were then added to secure aggregates for all covered industries, prior to their adjustment to the controlling totals.

It should be noted that the adjustment for small firms is trifling in most of the major industries—1 percent or less for the "Mining," "Manufacturing," and "Communication and public utilities" divisions, as well as for such important segments of other divisions as "Local railways and bus lines" and "Insurance carriers." In only a few industries, of which retail trade is most important, does the adjustment exceed 10 percent.

This method of utilizing Social Security (and Railroad Retirement) data was departed from only where more reliable data were available from other sources or where the portion of employment in firms not covered by unemployment compensation was so large as to suggest the use of another procedure. Agricultural services, forestry, fisheries, banking, railroads, water transportation, personal services, medical and other health services, and legal services received special treatment for these reasons.

The base figure for agricultural services was derived from O. A. S. I. tabulations; that for forestry and fisheries, from Census of Population data. In banking, Federal Deposit Insurance Corporation, Comptroller of the Currency, Federal Reserve Board, and unemployment compensation data were utilized. Interstate Commerce Commission data were used for railroads. Water transportation was estimated from Maritime Commission, O. A. S. I., and unemployment compensation data.

A Census base was used for personal services (but the final effect of adjustment was to render the derivation of the pay-roll series statistically similar to that for industries based on unemployment compensation data). Estimates of wages and salaries paid by independent proprietors in the medical and legal services were derived from questionnaire surveys of the Bureau of Foreign and Domestic Commerce.

In no case was the resulting estimate for an industry receiving special treatment lower than that which would have been obtained by following the more standard procedure of using solely Social Security data.

Summation of the direct industry estimates gave aggregate pay rolls which fell short of the controlling pay roll totals by the following amounts (in millions of dollars): 1940: 877; 1941: 688; 1942: 590; 1943: 827.¹

These were distributed among the covered industries in which unemployment compensation data were utilized in proportion to the original estimates of pay rolls not covered by unemployment compensation. This procedure was adopted because it was believed that the discrepancy arose primarily from underadjustment of the unemployment compensation data for small firms omitted from coverage. This method of adjustment,

¹Part of the discrepancy can be traced to the omission from the industry estimates of data for unclassified establishments in both the unemployment compensation data and the O. A. S. I. data for small firms and to the omission of nontaxable wages of small firms from the original industry estimates. The amounts which cannot be thus accounted for are as follows (in millions): 1940: 578; 1941: 378; 1942: 338; 1943: 530. These discrepancies relate to an aggregate that rises from 38 billions to 74 billions over the period in question.

it may be noted, is also essentially that which would be indicated if it were desired to make the adjustment proportionate to the probable accuracy of the original estimates.

Employment was adjusted in proportion to the pay roll adjustment, except that no adjustment for employment was made corresponding to that part of the pay roll discrepancy attributable to the omission of nontaxable wages of small firms from the direct industry estimates.

Since the industry estimates for wages and salaries and employment were entirely comparable statistically, it was thus possible to use the O. A. S. I.-R. B. pay roll series as a controlling total for both pay rolls and employment. The 1940 percentage adjustment of the individual industry data to the controlling total was applied to the comparable estimates for the years 1929-39.

"Noncovered" Industries

Estimates of pay rolls and employment in industries not covered by the Social Security and Railroad Retirement Acts were based on a variety of sources, which can only be outlined in this context.

Data for farms were furnished by the Bureau of Agricultural Economics of the Department of Agriculture.

Employment in private households (domestic service) was obtained for 1930 and 1940 from the Census of Population and interpolated by data from surveys of employment agencies. The series was extrapolated from 1940 to 1943 by the domestic service component of the Bureau of the Census—"Monthly Report on the Labor Force."

Average cash pay in 1939 was derived from the Census of Population. The 1939 figure was extended to 1929 by average cash pay reported in the surveys of employment agencies and to 1943 by the Labor Department's index of the price of domestic service, a component of the cost-of-living index.

The percentage of domestic servants receiving food was determined from the Bureau of Foreign and Domestic Commerce 1936 survey of employment agencies. A valuation for a year's board was derived from the 1935-6 consumer expenditures study of the National Resources Committee and extrapolated by the Labor Department's food component of the cost-of-living index. The number receiving board multiplied by the average value of board yielded the total value of board. This was added to total cash pay to obtain total pay rolls for servants employed in private households.

The 1935 Business Census of Hospitals furnished base-year data for hospitals, and Bureau of Foreign and Domestic Commerce canvasses added data for 1929 to 1934. For years following 1935, pay roll, employment, and related data were utilized from the following sources: annual hospital census of the American Medical Association; U. S. Children's Bureau; Ohio Hospital Association; and Community Chests and Councils, Incorporated, as well as unemployment compensation data.

Estimates for private education stem chiefly from U. S. Office of Education and National Catholic Welfare Conference data. For religious organizations, pay rolls were derived from the Census of Religious Bodies; and employment mainly from the Census of Population. Interpolation and extrapolation were based on data for a sample of reporting denominations. A base-year figure for the charitable organization component of nonprofit membership organizations, n. e. c., was secured from the 1935 Census. Estimates for other years represent extrapolation of the 1935 estimate by a combination of reported data and estimates based on expenditures.

Manufacturing Industries

In the derivation of employment and payroll estimates in manufacturing from 1929 to 1938, series for each of the 20 manufacturing industries were first constructed from Bureau of the Census, Bureau of Internal Revenue, Bureau of Labor Statistics, and New York, Pennsylvania, and Ohio state data. The resulting series were used to extrapolate

the 1939 estimates based on Social Security data.

The Census, Bureau of Internal Revenue, and state data used were reclassified for all years to conform to the Standard Industrial Classification. The following description refers to the series before adjustment to the 1939 levels indicated by Social Security data.

Employment estimates are the sum of estimates of wage earners and salaried employees. Wage earners were obtained from the Census of Manufactures for all odd years of the period 1929-39. Employees reported under the "construction" and "all other" categories by the Census for 1939 were combined with wage earners in manufacturing establishments.

Estimates of the number of wage earners for even years were derived by interpolation by Bureau of Labor Statistics indexes. The interpolation utilized annual averages of the Bureau of Labor Statistics indexes, except 1938.

Sharp differences between the movements indicated by the Census of Manufactures and by the Bureau of Labor Statistics indexes for the late months of 1937 suggested for 1938 an interpolation of employment between December 1937 and January 1939, rather than between the 12 months' average for the 2 years.

A continuous, comparable series could be obtained for only one group of salaried employees—clerical and administrative employees other than principal officers in manufacturing establishments. Census of Manufactures data were available for 1929, 1933, 1935, and 1937. Bureau of Labor Statistics sample data for clerical workers were used to interpolate between 1935 and 1937 and to extrapolate to 1938 and 1939.

Estimates of clerical and administrative salaried employees for the years 1930-34 were based on interpolation of Census figures by available State data. The number of wage earners and the number of salaried employees were available for New York by a 7-industry break-down and for Pennsylvania and Ohio by both a 7-industry and a 20-industry break-down.

Ratios of the number of salaried employees to the number of wage earners were computed from Census data for 1929, 1933, and 1935. Ratios for other years of the 1929-35 period were derived by interpolation by similar ratios based on the State data and then were multiplied by the number of wage earners to secure the estimated number of clerical and administrative employees.

Seven-industry estimates, utilizing 3-State data, were used as controlling totals for 20-industry estimates based on interpolation by 2-State data.

The estimates of clerical and administrative employees, other than principal officers, were used to extrapolate base-year estimates for all other groups of salaried employees. These groups include manufacturing employees engaged in distribution, corporate officers, and central administrative office employees other than corporate officers.

A base-year figure for number of distribution employees, referring to 1939, was obtained by using the difference between the Census total of salaried employees, including distribution employees, but excluding corporate officers, and the number of clerical and administrative employees, excluding principal officers. A base-year figure (1937) for the number of corporate officers was estimated by division of a Census-derived figure on average pay of salaried officers in manufacturing, including central administrative offices, into total compensation of corporate officers as reported by the Bureau of Internal Revenue.

A base-year figure for the number of central administrative office employees other than corporate officers was computed from data reported by the 1937 and 1939 Censuses. The total number of such employees reported for 1937 for all manufacturing was allocated among the 20 industry groups on the basis of 1939 data on the number of establishments under central administrative office control.

Wages and salaries are the sum of estimates of wages and salaries. Wages were obtained for all odd years from 1929 through 1939 from the Census of Manufactures (the pay of "construction" and "all other" employees in 1939 was included in wages) and interpolated by annual averages of Bureau of Labor Statistics indexes. The interpolation for 1938, however, was made on a monthly basis, with the product of number of wage earners and B. L. S. data on average weekly earnings used as the interpolating index. The number of wage earners was obtained from the Census for 1937 and 1939 and estimated for the months of 1938 by interpolation of Census figures for December 1937 and January 1939 by B. L. S. indexes.

Annual estimates of salaries were derived in the first instance for two groups of employees: (1) Compensation of corporate officers was secured from "Statistics of Income" reports of the Bureau of Internal Revenue, supplemented by unpublished detail from that Bureau's "Source Book." (2) Salaries of clerical and administrative employees, other than principal officers, in manufacturing establishments were obtained from the Census of Manufacturers for 1929, 1933, 1935, and 1937. Estimates for 1936 and 1938 and 1939 were based on interpolation and extrapolation by Bureau of Labor Statistics sample data for salaries of clerical workers.

In the computation of salary totals for 1930-34, average salary was first calculated from the 1929, 1933, and 1935 Censuses and interpolated by average salary based on New York, Pennsylvania, and Ohio data. The product of average salary and number of employees yielded total salaries of clerical and administrative employees. Seven-industry estimates based on data for three States were used as controlling totals to which 20-industry estimates based on data for two States were adjusted.

The sum of compensation of corporate officers and salaries of clerical and administrative employees was used to extrapolate base-year estimates of total salaries for the other groups, including salaries of distribution employees of manufacturing establishments and of central administrative office employees other than corporate officers. Salaries of distribution employees were estimated for 1939 as the difference between Census salary totals including distribution and the estimated salaries of clerical and administrative employees. Salaries of central office employees excluding officers were derived from the Census for 1937 and allocated by industry groups on the basis of 1939 Census data on number of establishments under central office control.

The comparability of data reported by the Census of Manufactures for 1939 with those reported for earlier years is a matter of question insofar as the 1939 Census for the first time called for data on the total number of employees in manufacturing establishments, including those engaged wholly or chiefly in distribution, construction, and other non-manufacturing activities. It is not known to what extent data for such employees were included in earlier censuses.

It may be noted that the foregoing procedures in estimating employment and pay rolls in the manufacturing industry imply the following adjustments of the 1939 Census to secure comparability with the 1937 Census: (1) The number and compensation of "construction" and "all other" employees should be added to manufacturing wage earners and wages; (2) of the 583,000 distribution employees reported by the Census for 1939, 175,000 (with compensation of \$269,000,000) should be added to salaried employees, excluding salaried officers or corporations, to secure comparability with the 1937 Census.

Independent estimates of pay rolls and employment in manufacturing for 1938, constructed from unemployment compensation data and Pennsylvania State data, agreed exactly with estimates derived by procedures described above, and thus served as a check upon the adjustments of the 1939 Census.

Business Situation

(Continued from p. 4)

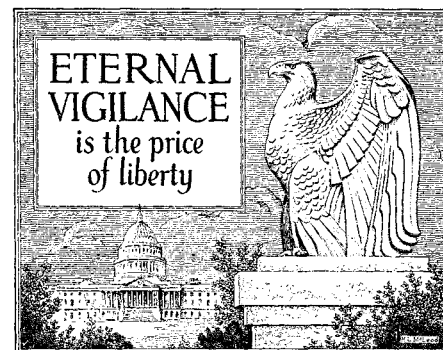
billion dollars of raw materials and goods in process held by the nondurable goods industries and of a part of the 1 billion dollars of finished goods in these industries. These stocks consist of such products as food, textiles, paper, petroleum, and rubber, and are often identical with those used in civilian production.

Consequently, the disposal problems will be largely centered on the approximately 7 billion dollars of durable goods inventories. Even here, however, sizable portions of the war stocks may be retained by manufacturers for use in civilian production, particularly when the stocks are made available to them at low prices.

In this connection, it is interesting to note that termination claims settled by the War Department through March 1945 have involved inventories valued at approximately 380 million dollars on the basis of the cost to the Government. Sixty percent of this total, or 225 million dollars, was retained by the contractors either for use in their own operations or for resale. The amount of termination credits actually involved, however, was only 70 million dollars, since the prices paid by the contractors for the inventories which they retained were only 30 percent of the cost to the Government. More than half of the inventories retained by the manufacturers had scrap-value only.

On the other hand, the ready disposability of substantial portions of the war stocks held by manufacturers should not conceal two unfavorable factors of considerable importance. First, the heavy concentration of stocks in the metal-fabricating industries indicates that speedy contract settlement and plant clearance are essential to the rapid resumption of civilian output in these plants. Second, there undoubtedly is large concentration of war stocks in particular products, so that carefully conceived disposal policies will be needed to prevent the disruption of the commercial markets for these products.

While there has been some liquidation of war stocks since 1943, the declining munitions production scheduled for the coming months makes further reductions possible. To the extent that efforts at paring inventories are successful, there will be not only fewer disposal problems and, consequently, more expeditious re-conversion, but also a net release of raw materials and plant facilities for civilian use.



Unless otherwise stated, statistics through 1941 and descriptive notes may be found in the 1942 Supplement to the Survey	1945	1944										1945		
	April	April	May	June	July	August	September	October	November	December	January	February	March	

FINANCE—Continued

PROFITS AND DIVIDENDS (QUARTERLY)*

Industrial corporations (Federal Reserve): ♂													
Net profits, total (629 cos.).....mil. of dol.													
Iron and steel (47 cos.).....do.													
Machinery (69 cos.).....do.													
Automobiles (15 cos.).....do.													
Other transportation equip. (68 cos.).....do.													
Nonferrous metals and prod. (77 cos.).....do.													
Other durable goods (75 cos.).....do.													
Foods, beverages and tobacco (49 cos.).....do.													
Oil producing and refining (45 cos.).....do.													
Industrial chemicals (30 cos.).....do.													
Other nondurable goods (80 cos.).....do.													
Miscellaneous services (74 cos.).....do.													
Profits and dividends (152 cos.):*													
Net profits.....do.													
Dividends:													
Preferred.....do.													
Common.....do.													
Electric utilities, class A and B, net income (Federal Reserve)*.....mil. of dol.													
Railways, class I, net income (I. C. C.).....do.													
Telephones, net operating income (Federal Communications Commission).....mil. of dol.													

PUBLIC FINANCE (FEDERAL)

U. S. war program, cumulative totals from June 1940:*													
Program.....mil. of dol.													
Cash expenditures.....do.													
U. S. Savings bonds:*													
Amount outstanding.....do.													
Sales, series E, F, and G.....do.													
Redemptions.....do.													
Debt, gross, end of month:⊗													
Interest bearing:													
Public issues.....do.													
Special issues.....do.													
Noninterest bearing.....do.													
Obligations fully guaranteed by U. S. Gov't:													
Total amount outstanding (unmatured).....do.													
Expenditures and receipts:													
Treasury expenditures, total.....do.													
War activities.....do.													
Transfers to trust accounts†.....do.													
Interest on debt.....do.													
All other.....do.													
Treasury receipts, total.....do.													
Receipts, net.....do.													
Customs.....do.													
Internal revenue, total.....do.													
Income taxes.....do.													
Social security taxes.....do.													
Net expenditures of Government corporations and credit agencies*.....mil. of dol.													
Government corporations and credit agencies:†													
Assets, except interagency, total.....do.													
Loans and preferred stock, total.....do.													
Loans to financial institutions (incl. preferred stock).....mil. of dol.													
Loans to railroads.....do.													
Home and housing mortgage loans.....do.													
Farm mortgage and other agricultural loans.....do.													
All other.....do.													
U. S. obligations, direct and guaranteed.....do.													
Business property.....do.													
Property held for sale.....do.													
All other assets.....do.													
Liabilities, other than interagency, total.....do.													
Bonds, notes, and debentures:													
Guaranteed by the U. S.....do.													
Other.....do.													
Other liabilities, including reserves.....do.													
Privately owned interests.....do.													
U. S. Government interests.....do.													
Reconstruction Finance Corporation, loans outstanding, end of month, total.....mil. of dol.													
Banks and trust cos., incl. receivers.....do.													
Other financial institutions.....do.													
Railroads, including receivers.....do.													
Loans to business enterprises, except to aid in national defense.....mil. of dol.													
National defense.....do.													
Other loans and authorizations.....do.													

* Revised. † Special issues to government agencies and trust funds. ⊗ Figures are on the basis of Daily Treasury Statements (unrevised).

† Partly estimated. ‡ November data include prepayments on securities dated Dec. 1, 1944, sold in the Sixth War Loan drive.

• In addition to data shown above, quarterly estimates of profits of all corporations are published in special tables in the Survey; see note in March 1945 Survey for references.

♂ Revisions for first quarter of 1944 (millions of dollars): Total, 443; foods, beverages, and tobacco, 38; other transportation equipment, 50. The latter series and the total have been revised also for 1942-43 and scattered revisions have been made in the 1943 data for other series; all revisions are available on request.

† For 1941 revisions see p. S-17 of the November 1942 issue. Data for the agricultural adjustment program, shown separately through the February 1944 issue, and unemployment relief, shown separately through the July 1944 issue, are included in the "all other" item. Debt retirements, which have been comparatively small, are excluded.

‡ Beginning September 1944 data are reported quarterly and for some items (notably farm mortgage and other agricultural loans, all other loans, business property, property held for sale, all other assets) are not comparable with earlier data owing to changes in Treasury Department regulations governing reports from the agencies and to shifts between classifications.

* New series. For data beginning 1929 for profits and dividends of 152 companies, see p. 21, table 10, of the April 1942 Survey. Data for net income after taxes of class A and B electric utilities have been substituted for data for 28 companies; they include affiliated nonelectric operations and cover 95 percent of all electric power operations. Data beginning 1939 are available on request. Data beginning July 1940 for the series on the war program are shown on p. 29 of the June 1943 issue; a comparatively small amount of intercompany duplication in the figures for R. F. C. and its subsidiaries has been eliminated beginning October 1943; see footnote marked "†" on p. S-18 of the April 1944 issue. The series on war savings bonds is from the Treasury Department; amounts outstanding are at current redemption values except series G which is stated at par; this item and redemptions cover all savings bonds series, including pre-war issues; sales represent funds received during the month from sales of series E, F, and G, the series issued since April 1941 (for sales beginning May 1941, see p. S-16 of the October 1942 Survey). The series on expenditures of Government corporations and credit agencies includes net transactions on account of redemptions of their obligations and other net expenditures by the Reconstruction Finance Corporation, the Commodity Credit Corporation, and other lending agencies; transactions of these agencies are not included in Treasury direct budget expenditures and receipts shown above; since October 1941 funds for these agencies are provided by the Treasury.

† Revised series; see note in the December 1943 Survey regarding changes in the classifications; the figures include payments unallocated, pending advances, at end of month.

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