

NEW ENGLAND BUSINESS REVIEW MAY 1964

Capital Spending Spurts

Capital outlays in New England will increase 16 percent this year. Most spending will be for machinery replacement — particularly in the food, paper, and chemical industries.

Sights Up—in New England's First Quarter Business

Some recent strengthening in the region's business raises hopes for more improvement ahead.

New England's Electronic Future

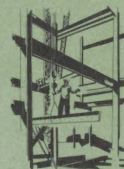
Growth and product changes are in store for the region's electronics industry according to 1970 forecasts.



FEDERAL RESERVE BANK OF BOSTON



NEW ENGLAND BUSINESS REVIEW



Capital Spending Spurts

NEW ENGLAND manufacturers' plant and equipment outlays this year are expected to rise 16 percent above the amount spent last year. This jump will place total spending at \$776 million, equal to the previous record registered in 1957.

Two-thirds of the total capital spending this year will take place in the nondurable goods sector, largely in the food and paper industries. Durable goods manufacturers will up outlays by almost a tenth with increases distributed among most of the industries in this classification.

These results are reached on the basis of reports to the Federal Reserve Bank of Boston in the February - early April period of this year. Replies were received from 825 firms which account for 29 percent of the region's manufacturing employment.

The regional increase expected in capital outlays this year is in line with that shown in

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surveys for the Nation as a whole. A Department of Commerce-Securities Exchange Commission survey in February showed manufacturers planning to increase outlays by 13 percent this year. A survey in March and early April by the McGraw-Hill Company found manufacturers nationally planning an 18 percent increase over last year's level.

In New England some of this capital spending will be for expansion of machinery and equipment, but the bulk of it will be for replacement of outmoded machines. This is a continuation of the trend that has prevailed in the region since 1957.

Outlays for new plant in the region will remain virtually unchanged from last year's level. They will account for only 18 percent of total spending this year, the same proportion as shown for the Nation in the McGraw-Hill survey. Since 1957, when plant outlays were 31 percent of total spending, the proportion spent for plant in New England has fluctuated in the narrow range of 18 to 24 percent.

Expenditures for expansion of facilities in the region will show a substantial increase — almost one-fifth — over last year's level. This will raise the proportion of total outlays for expansion from 36 percent last year to 37 per-

Capital Spending Plans of New England Manufacturers — 1964

	Total Expenditures		
	1963 Actual (\$ Millions)	1964 Planned (\$ Millions)	Percent Change From 1963
ALL MANUFACTURING . . .	\$667.5	\$776.1	+16
Durable Goods . . .	378.4	413.9	+ 9
Primary Metals . . .	35.2	40.8	+16
Fabricated Metals . . .	55.6	67.5	+21
Machinery . . .	74.3	85.8	+15
Electrical Machinery . . .	65.6	67.8	+ 3
Transportation Equipment . . .	51.4	54.8	+ 7
Instruments . . .	45.9	47.8	+ 4
All Other Durables . . .	50.4	39.4	-22
Nondurable Goods . . .	289.1	362.2	+25
Food . . .	52.0	62.8	+21
Textiles . . .	34.7	33.7	- 3
Paper . . .	60.9	102.7	+69
Chemicals . . .	24.0	38.1	+59
Rubber and Plastics . . .	36.6	37.8	+ 3
Shoes . . .	16.1	14.9	- 8
All Other Nondurables . . .	64.8	72.2	+11

Source: Federal Reserve Bank of Boston Survey.

cent this year. In 1957 regional manufacturers evenly divided their spending between replacement and expansion. Most of this year's upsurge in expansion will occur in the soft goods sector, where such outlays will rise by two-fifths. Large expansion programs are underway in the food, paper, and chemical industries.

This spring's survey indicates little pressure on capacity to stimulate large expenditures for expansion of plant facilities. The rate of capacity utilization has, on the average, shown little advance over the past three years in New England manufacturing. The tally of replies to this spring's survey shows an average manufacturing operating rate of 78 percent compared to a preferred rate of 90 percent. However, nondurable goods producers report their rate of utilization increased from 82 percent at the end of 1962 to 84 percent at the end of last year. Durable goods manufacturers, on the other hand, show a decline in operating rates from an average 76 percent to 74 percent over this same period. The decline in durable goods is largely the result of reduced capacity utilization in the transportation equipment and electrical machinery industries. Respondents in both industries reported an actual decline in sales from the previous year's level. If these

two industries are excluded, manufacturing in New England shows an increase in capacity utilization from 79 percent at the close of 1962 to 82 percent at the end of 1963.

Another factor in the hesitancy to increase expansion of plant is the 1964 sales expectation held by the respondents. After realizing a gain over 1962 of only 3 percent in the dollar volume of sales last year, New England manufacturers foresee a gain of only 2 percent this year. Hard goods manufacturers expect no change from last year's levels when sales rose only 1 percent. Transportation equipment makers expect sales to fall by 5 percent this year, while electrical

machinery manufacturers see no change from last year's depressed level. Producers of soft goods items, on the other hand, expect sales to rise 6 percent this year after a good gain of 5 percent last year. All the industries in this category look for a rise of at least 3 percent in their sales this year.

Current Business Picture

In comparison with the previous year, New England's manufacturing activity last year showed a very slight gain. This Bank's index of manufacturing activity averaged 119 percent of the 1957-1959 level last year, up only 1 percentage point from 1962. Nationally, industrial production in relation to the 1957-1959 level averaged 124 percent in 1963 compared to 118 percent in 1962.

As the following article reviewing the region's business shows, employment in the region's manufacturing sector declined 1 percent last year from the 1962 level, whereas nationwide employment rose by 1 percent in manufacturing.

It is, therefore, somewhat surprising to find the region's manufacturers planning such a large percentage increase in capital outlays this year. Since the 18 percent increase registered in 1959 when the economy was rebounding from the 1958 recession, the region's producers have held their yearly increments in plant and equipment outlays in the range of 3 to 6 percent.

However, an element of optimism about the future may have influenced plans this year. The current business expansion of 38 straight months has already exceeded any other peacetime expansion. Moreover, the tax reduction this year may foster additional spending that would sustain the expansion for months to come. Also, manufacturers are continuing to

hold their inventories at a relatively low level in relation to sales. Excessive inventories, therefore, are not currently a depressing influence on business activity.

Financing Outlays

Internal sources of funds, such as retained earnings and depreciation allowances, will increase in importance this year as a means of financing outlays. Whereas this source accounted for 85 percent of the funds last year, it will represent 90 percent of total funds this year. Borrowing is expected to decline from 12 percent of total funds last year to under 9 percent this year. Leasing arrangements likewise show a relative decline in importance, falling from 3 percent to 1 percent of total sources. None of the respondents reported any use of stock issues as a means of financing last year, and none expect to make use of it this year.

This shift to increasing use of internal sources reflects an improvement in profit positions that adds to retained earnings along with increased depreciation allowances provided through the accelerated depreciation rates in the revised tax guidelines. In addition, the recent reduction in corporate tax rates will mean more earnings retained by firms this year.

Industry Trends

Increased spending is scheduled in all but two (lumber and furniture) industries in the durable goods sector. The largest absolute increases will occur in the fabricated metals and nonelectrical machinery industries; both will advance spending by \$12 million. Respondents in these two industries report their sales showed a strong improvement last year, and they expect another good gain this year.

The electrical machinery industry plans to up its outlays by only 3 percent this year.

Production in this industry, according to the Bank's index, fell 3 percentage points between 1962 and 1963. Consequently, plans for expansion expenditures this year have been reduced by more than a fifth from last year's level. In an attempt to improve their competitive position, electrical machinery manufacturers will use the major portion, 85 percent, of this year's spending to replace obsolete machinery and equipment.

The electronic components segment of this industry is now planning to cut back its spending by 15 percent this year. Respondents foresee sales expanding by only 2 percent this year. At the beginning of this year they were operating at 82 percent of capacity, 13 percent below their preferred rate.

The transportation equipment industry, after increasing outlays by a fourth last year,

plans to up outlays only 6 percent this year. Respondents are quite pessimistic concerning sales this year, looking for a 5 percent decline. Aircraft and aircraft parts producers in the region plan to advance their capital outlays by 8 percent. Ship and boat builders, on the other hand, expect to reduce their spending by 30 percent, even though they see sales rising by 12 percent. A substantial amount of excess capacity, however, exists in this segment. Shipbuilders are operating at 74 percent of capacity while they would prefer to operate at 96 percent.

In the nondurable goods sector the paper industry shows the largest increase, both in absolute and percentage terms, in spending this year. Outlays are expected to advance by more than two-thirds. A large part of this increase may be a carryover from last year.

In both the spring and fall surveys last year respondents in the paper industry reported plans to advance spending substantially. However, this spring's survey shows that spending actually declined by 4 percent in the regional industry last year. The same sort of shift is also shown nationally in the Department of Commerce-Securities Exchange Commission survey. Outlays were expected to advance 6 percent last year, but final figures showed paper producers nationally held their spending unchanged last year. This year they plan to increase outlays by a third.

Business activity in the region's paper industry has improved substantially. Sales were up 11 percent last year over 1962 levels.

New England Capital Spending

Percent Changes in 1963 Compared with 1962

	Anticipated in:		Actual 1963
	Spring 1963	Fall 1963	
ALL MANUFACTURING ¹ . . .	+ 4.3	+ 5.4	+ 5.9
Durable goods industries ¹	+ 2.0	+ 5.0	+ 4.6
Electrical Machinery . . .	+ 4.1	- 4.6	- 4.0
Transportation Equipment	+23.7	+28.4	+24.0
Primary Metals	-17.2	- 3.7	-17.4
Fabricated Metals	+ 1.5	+ 9.7	-24.2
Nondurable goods industries ¹	+ 7.2	+ 5.9	+ 7.6
Paper	+15.8	+28.2	- 3.8
Textiles	- 3.2	- 3.4	-12.4
Printing	-11.9	+ 2.6	+19.1
Food	+24.3	+23.9	+40.4

¹ Includes industries not shown separately.

Source: Federal Reserve Bank of Boston Survey.

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Respondents foresee a 7 percent increase this year. Moreover, excess capacity has been considerably reduced in this industry. At the beginning of this year New England producers were operating at 90 percent, compared to 86 percent the year before.

The region's food industry is scheduling an advance of one-fifth in its plant and equipment outlays this year following a rise of two-fifths last year. Sales in this industry rose by 30 percent last year — exceeding all expectations. This year respondents look for an additional advance of 7 percent in their sales. Outlays for expansion of both plant and equipment are expected to represent 40 percent of total spending this year compared to 29 percent last year.

The region's textile manufacturers plan to reduce capital outlays 3 percent this year. The Bank's index of production shows a decline of 2 percentage points in textiles last year from the 1962 level, and respondents report sales fell by 2 percent last year. Nationally, according to the McGraw-Hill survey, textile manufacturers plan to up outlays by 14 percent.

Chemical firms in New England expect to up their outlays by three-fifths this year after holding expenditures at 1962 levels last year. Respondents' sales advanced 12 percent in 1963, and they foresee a 7 percent gain this year. Outlays for expansion will more than double this year if present plans are fulfilled.

Business in the region's shoe industry last year remained relatively stable. Preliminary figures for 1963 indicate that the number of shoes produced was down 0.3 percent from 1962 levels in the region. The Bank's production index, which also includes leather processing, fell from 97 percent of the 1957-1959 average in 1962 to 95 percent last year. Conse-

quently, leather and shoe producers plan to reduce their capital spending in the region by 8 percent this year. Outlays for expansion purposes will fall by almost 18 percent.

In contrast to its shoe industry, New England's rubber and plastic products industry showed an increase in activity last year. As measured by the Bank's index, production advanced by over 2 percent last year in this industry. Respondents report their sales rose by 6 percent in 1963, and they expect an additional 3 percent gain in 1964. Average operating rates advanced in this industry last year to 86 percent of capacity from 83 percent the year before. With this impetus rubber and plastics manufacturers plan to raise capital outlays this year about 4 percent with virtually all the increase going into new plant.

1963 Programs Fulfilled

New England manufacturers' actual outlays last year were quite close to those forecasted in the Bank's fall survey. They were up 5.9 percent over 1962 in comparison to the 5.4 percent expected in the fall survey. As the table on page 5 shows, durable goods producers spent slightly less than had been anticipated, whereas nondurable goods manufacturers exceeded expectations. The fall survey correctly indicated the direction of change in spending in 15 of the 19 major manufacturing industries.

Last spring's total spending estimate for 1963 turned out to be 1.7 percent below the amount actually spent. Ten industries, including nonelectrical machinery, instruments, food, and printing, boosted their spending last year well above their spring estimates. This, of course, points up the likelihood that spending may change over the course of the year from the estimates made in the spring.

The Future

The tendency, based on past experience, is for firms to underestimate the extent of their spending in times of business expansion. But this year plans seem rather large in view of the excess capacity and low sales expectation shown in the survey. However, a large increase in business activity could reduce this excess capacity and create the need for New England manufacturers to increase spending for new plant. This is the crucial element, for new plant

also calls for additional spending on machinery and equipment.

The transportation equipment and electrical machinery industries will be particularly important in determining the amount of capital spending in the region. Combined, these two account for more than a sixth of New England's total spending. If, for example, these industries were to raise their current plans for expansion outlays to last year's level, total spending in the region would advance an additional 1 percent.

Sights Up — In New England's First Quarter Business

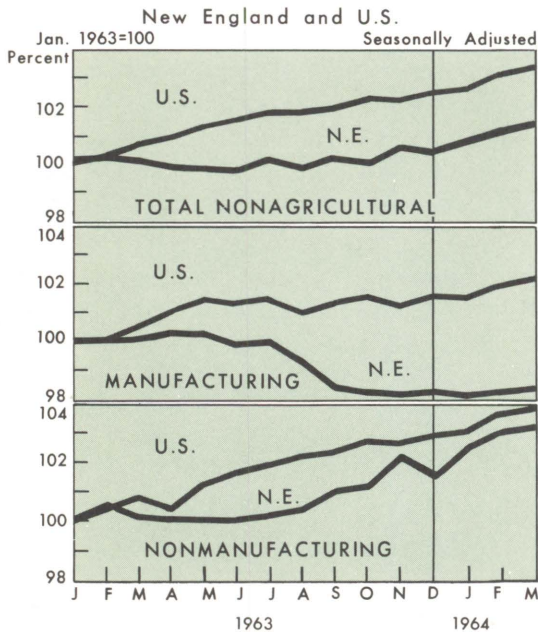
NEW ENGLAND business lifted its sights as gathering strength in the first quarter of 1964 gave hope of even more vigor in the months ahead. Statistics of business performance were generally improving. Outlook expectations reflected growing confidence and stimulated increased willingness to spend.

This by no means implies that vigorous boom conditions had already pervaded the New England economy in the first quarter of this year. Such conditions were prospective rather than actual. During 1963 while the national economy quickened the pace of its expansion, the New England region was at first a hesitant, and later a lagging participant. Even in the closing months of that year there was considerable disparity among rates of expansion in the various aspects of the region's economy. Although performance in various measures of consumer and business spending was quite

satisfying, those based on employment — especially in manufacturing — were disappointing. Some of that disparity lingered in the generally improved pattern of early 1964.

New England's nonagricultural *employment*, adjusted for normal seasonal variations, was virtually unchanged over most of 1963. A modest upturn began in November. By March of this year the 12 months' growth rate had doubled to 1.0 percent. This was well below the 2.9 percent growth rate attained nationally. Performance was not too bad in the region's nonmanufacturing industry groups such as construction, trade, finance, services, and government. Aggregate employment in these groups, seasonally adjusted, had begun to turn up in the spring of 1963. By March 1964 it had reached an annual growth of 2.6 percent, not too far below the national rate of 3.5 percent.

EMPLOYMENT



SOURCE: U.S. Bureau of Labor Statistics, Adjusted by Federal Reserve Bank of Boston.

New England's lag in employment growth was mostly attributable to rather slow activity in some of its manufacturing industries. Their total employment, seasonally adjusted, showed virtually no change over the first half of 1963, slumped in the second half, and has been hesitant in its early 1964 recovery. In March it was still 1.7 percent less than a year earlier in contrast to the 1.7 percent net rise achieved nationally. While nearly all of New England's manufacturing industries shared in the net decline of 24,100 workers from a year ago, its electrical machinery industry accounted for about one-third of that total decline.

Just as the region's employment has responded slowly to cyclical advance in the Nation's economy, so its unemployment has receded more slowly. In the last week of March,

insured unemployment in its six states was 4 percent less than a year earlier, whereas nationally there had been a decrease of 7 percent. Despite the region's less satisfying recent trend, its March unemployment rate was estimated to be 5.3 percent of the labor force, seasonally adjusted, compared to 5.4 percent nationally.

The recent trend of manufacturing *production* in New England likewise displays a comparative lack of real vigor. This Bank's seasonally adjusted index for March measured only 2.4 percent higher than that for a year ago. Nationally, a comparable index registered a 5.8 percent rise over the same period.

Statistics of total *personal income* are affected by manufacturing payrolls along with other components. While New England per capita income continues to be high, the recent growth trend of its total income has tended to be slower. *Business Week* estimates for the first two months of 1964 indicate that the New England total was growing at an annual rate of 3.6 percent while total U. S. personal income was growing at a 5.4 percent annual rate.

When consideration turns to recent trends in spending and in other financial transactions, the New England region turns out a relatively lively performance.

In formulating *capital expenditure plans* for 1964, New England manufacturers in general are advancing with boldness. A companion article in this Review reports in detail the results of this Bank's survey of such plans as they were reported in March and April. With expectation of a 1.8 percent increase in their sales over 1963, these New England manufacturers planned on an average to spend 16 percent more in 1964 for new plant and equip-

ment than they spent in 1963. This compares favorably with the 13 percent increase expected nationally from the latest quarterly survey conducted by the U. S. Department of Commerce and the Securities Exchange Commission.

The rate of spending on total new *construction* in New England has advanced vigorously in early 1964. F. W. Dodge Company reports the dollar amount of new contract awards for the area during the first three months to be 21 percent greater than that of the comparable 1963 period. On a nationwide basis a 16 percent gain was reported. The New England net increase is derived from gains of 36 percent in residential and 33 percent in non-residential building contracts, which well offset a 6 percent decrease in contracts for public works and utilities. In partial support of this burgeoning activity, reported building permits in Massachusetts for the first three months of 1964 were 12 percent higher in aggregate value than those of a year earlier.

New England *department store sales*, matched to those for comparable 1963 periods, were reported to be up by 3 percent for January, by 14 percent for February, and by 15 percent for March. Factors contributing to the cumulative gain, but difficult to measure were: an Easter date two weeks earlier than in 1963, the extra leap year day, and the spending stimulus generated by or in anticipation of reduced personal income taxes. Not all spring shopping was advanced by two weeks, however. Reported sales at downtown Boston stores for the four weeks preceding the 1964 Easter were 4 percent less than those for the four weeks immediately preceding the later 1963 Easter date.

Most New England *automobile* dealers were enjoying a sustained good sales market. First quarter 1964 registrations of new cars in the area were 5 percent more than those of a year ago, — close to the comparable national gain of 7 percent. Inventories were not considered unduly high in relation to sales. Used car markets were deemed to be in good shape.

Savings in New England financial institutions continued to expand rapidly. During the first quarter annual growth rates approximated 8 percent for savings and loan association share capital and 9 percent for savings accounts at mutual savings banks and weekly reporting commercial banks. At the latter banks other time deposits including certificates of deposits rose more than 50 percent over the 12 months' period.

Further *credit* expansion accommodated needs of the growing economy without undue pressure on the supply of available funds. Weekly reporting commercial banks in the region had at the end of the quarter about 9.5 percent more business loans outstanding than a year earlier. They and other lending institutions accommodated comparable or greater rates of expansion in real estate and consumer credit. The prime business loan rate and the Federal Reserve Bank's discount rate remained unchanged at 4½ and 3½ percent, respectively. Yields at weekly auctions of 3-month Treasury bills ranged somewhat above the discount rate. Typical rates for conventional home mortgage loans ranged from 5¼ in Boston to 6 percent in rural areas. In general, interest rates remained relatively stable with ample credit available.

In the first quarter New England *farmers* faced both rising production and sensitive

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prices. Dairymen were well situated with only modestly increased output for continuing strong sales. Potato growers started with less burdensome stocks, and aided by seed stock shipments, should benefit from moderate price improvement. Broiler operators, however, with strong supplies of hatching eggs and growing birds, faced the threat of sharply lower prices. Egg producers also, with more layers and prospectively more eggs, struggled to keep costs in line with income. There was hope for somewhat lower feed costs, but costs of farm labor, taxes, equipment and financing threatened to pinch more tightly.

In manufacturing, the *electrical machinery* industry, including electronics, continues as the outstanding area of weakness in the region. Employment currently is running about 5 percent less than a year ago. While the decline in activity is especially notable at Massachusetts plants making communications equipment and electronic components, it permeates the industry extensively. Reduced flow of government procurement contracts is an important factor in the industry's reduced sales, profits, and operations.

New England's *nonelectrical machinery* industry is faring somewhat better. While employment is still somewhat less than a year ago, there has been some lengthening in average workweeks. Increased orders are permitting textile machinery producers to expand operations again after cutbacks in 1963. The rapid surge in new orders to the Nation's machine tool producers is commencing to show its impact on operations at New England plants.

In New England's *transportation equipment* industry, aggregate employment has slipped below year-ago levels. This is due to

the sharp decline in employment at the large shipyard in Quincy following its sale and the uncertainty as to its future use by the new owner. Meanwhile operations are continuing to expand at the New London submarine building yard. The region's automobile assembly plant has been very busy and activity has also been quite high in aircraft equipment production at most regional facilities.

The region's *primary and fabricated metals* industries continue to be less active than a year ago as measured by aggregate employment. Foundry operations have some bright spots and scrap exports continue at a good rate. Expanding orders have strengthened markets for brass and copper products considerably with some upward pressure on price structures.

Employment at New England *ordnance* plants in early 1964 continued to be depressed about 13 percent below that of a year earlier. The severest part of the decline occurred last fall with the completion of government contracts for the procurement of guided missiles and had its major impact at Massachusetts plants. The Connecticut ordnance industry, devoted more to the production of small arms, hunting rifles, and ammunition, was less severely affected.

For New England *furniture* producers a good backlog of orders gives expectations for a 5 or 10 percent increase in sales for 1964 over 1963. Operations are somewhat slowed, however, by inadequate stocks of kiln dried hardwood.

New England *textile* employment continues to decline despite some recent stability, and in March was about 4½ percent less than a year earlier. Average workweeks have shown

some recent contraction. Daily average consumption of cotton, however, has tended to be higher than a year ago. Mill operators are hopefully studying the possible benefits which may accrue from the new cotton pricing schedules.

In the New England *apparel* industry continuing cold weather left an "average" first quarter business for women's wear with little stimulus from the early Easter. For the workers in the Providence, Fall River, and New Bedford areas, negotiations this spring led to wage increases and other benefits. Men's wear business picked up from last year's late slump. Contrary to the national experience, employment at the region's shops continued to lag. Producers are renewing efforts for tariff treatment which will give more effective protection to the domestic industry from the increased imports of apparel.

Optimism prevailed in the *shoe and leather* industry during early 1964 for the first time in three years. Output and retail sales of New England leather footwear were running ahead of the 1963 pace, and producers hoped to get their one-third share of the estimated national output rise to 620 million pairs. Imports of foreign footwear, after a rapid rise, appear to have stabilized. Use of Corfam and other synthetics for uppers is a future problem which producers believe they can adjust to. Hide prices have firmed again from their unusually low prices of last year. The industry expects

no major wage problems to develop this year.

First quarter business for *jewelry* producers in New England averaged somewhat better than a year ago. The gain accrued mostly to makers of better quality carat gold jewelry, as customers upgraded their demands and as imports were mostly of lower priced items. Employment at Rhode Island plants was above that of a year ago but down from levels reached in earlier years. The current stabilization of the price of silver at \$1.29 an ounce eased pricing for makers of jewelry and silverware.

Paper mills in New England shared in the increased demand which boosted national output 5 percent for their products during the first two months of 1964 over that of a year ago. Price increases made late last year will be supplemented by others to become effective April 1. New England producers reporting to this Bank's recent survey state their 1964 planned expenditures for new plant and equipment to be 69 percent greater than those made in 1963.

Food Processing was one of the few New England manufacturing industries which in early 1964 employed more workers than a year earlier. Business for manufacturers of confectionery and chocolate products was reported to be substantially improved. The 1963 Maine sardine pack of 1.6 million cases, although less than that of 1962, sustained the recovery from the extremely low 1961 pack and checked the growth in imports of sardines.

New England's Electronic Future

DESPITE recent cutbacks, 1970 employment in New England's electronics industry will exceed present levels by at least 25 percent. Almost all of these new jobs will call for highly skilled technicians and professional workers. The regional industry will probably be concentrating its production in military and industrial products with less emphasis on electronic components.

This synopsis of the future of New England electronics is based upon national projections of the industry developed by the U. S. Bureau of Labor Statistics.¹ It assumes that the region will maintain its present share of national production in the various sectors of the industry. However, the composition of the region's industry has been changing in recent years toward a concentration in products where demand is expected to rise more rapidly. If this structural change continues, the region's industry may show an even greater employment growth by 1970.

The Industry Defined

Electronics is essentially the technique used to direct and control the conduction of electricity in gas, vacuum, liquid, or solid-state matter. The products of this industry fall into four major categories: 1) military and space products, 2) industrial and commercial products, 3) consumer products, and 4) components.

¹ *Employment Outlook and Changing Occupational Structure in Electronics Manufacturing*, Bulletin No. 1363, October 1963, United States Department of Labor, Bureau of Labor Statistics.

The last of these represents the parts and accessories used in the other three product categories.

Region's Past Growth

New England's electronics industry has grown rapidly in recent years. During the 1958-1963 period employment expanded by almost 23 thousand workers, a gain of two-fifths. Over three-fifths of these new jobs were added in the military and industrial product subdivisions with most of the remainder added in electronic components.

The region's electronic components sector, although it added a net of 8 thousand jobs over the 1958-1963 period, has been registering a decline in employment since early 1962. This segment has been adversely affected by overcapacity, foreign competition, and shrinking backlogs of Government orders which have led to reduced prices for components and narrowing profit margins. Between 1962 and 1963 employment in component manufacture dropped by more than 5 thousand jobs.

Massachusetts added a net of 5 thousand workers in its electronics industry over the 1958-1963 time span. This was the result of a 6 thousand gain in military and industrial electronic product employment with an offsetting decline of a thousand jobs in the component subdivision.

The other states in the region added almost 8 thousand workers in component production and 7 thousand in the military and industrial

product portion of the industry. Connecticut expanded employment in components by more than one and a half times and military-industrial product employment by more than half. New Hampshire increased its employment in the components segment by three-fifths.

Present Composition

More than 1 in every 10 electronics workers in the Nation is employed by New England firms. However, the region's proportion of national employment varies widely among the product classifications. Its concentration is in electronic components where in 1963 it accounted for almost 17 percent of the Nation's total electronic component employment. In contrast, it accounted for only 9 percent of employment in military and industrial electronics and 3 percent in consumer electronics.

There has been a considerable shift in New England's employment between the various electronic sectors in the past two years. As the table below shows, employment has been shifting from electronic components to military and industrial electronic products. In the remainder of the Nation there has been very little shift in employment distribution between products over the period.

Employment Change to 1970

The national projections are based on a number of assumptions as to the trend in each sector of the industry. Military and space electronic products are expected to show an expansion because of the increasing complexity of space craft, missiles, aircraft, and other defense items, because of the national objective of a manned lunar flight, and because of the expansion of the military space programs. Even though defense outlays are levelling off, producers of electronics will still find their business expanding.

Projections for industrial and commercial products are based on expectations of greater outlays on business plant and equipment, including electronic items, as population and incomes increase. More automation systems are expected to be installed. Product quality control, as well as the automatic operation of metalworking machinery, will be accomplished by means of electronics.

In the consumer products field, such as television sets, radios, and phonographs, production is expected to expand because of rising income per capita, increased family formation, and greater use of laborsaving devices in the home, much of which will be electronic.

**Electronics Employment in New England
1961-1963**

Electronic Product Sector	January 1961 Employment	Percent Distribution	January 1962 Employment	Percent Distribution	January 1963 Employment	Percent Distribution
Military and Industrial	24,998	33.5	28,730	35.8	31,898	40.8
Consumer	2,843	3.8	3,064	3.8	3,196	4.1
Components	46,750	62.7	48,387	60.3	42,980	55.1
All Products	74,591	100.0	80,181	100.0	78,074	100.0

Source: U. S. Department of Labor, Bureau of Employment Security.

The components category is expected to show a much smaller employment growth than the three end product classifications even though its demand is a reflection of the demand for end products. The major reason for this is the rapid advance in productivity. Shipments per employee have been advancing at a rapid rate in recent years; and this trend is expected to continue over the remainder of the 1960's.

The only sector of the electronics industry where annual employment growth is expected to increase over the 1961-1970 period in comparison with that of 1958-1961 is in military and space products. The rate is expected to advance by about 14 percent. The other three product categories will each show a substantial decline in employment growth rates. The rate for electronic components, the most significant for New England, is expected to fall from 10.9 percent a year in the 1958-1961 period to 1.5 percent a year in the remainder of the 1960's.

If the region were to maintain the share of the electronics industry that it held in 1961, these projected growth rates applied to New England data would give the region an employment total in electronics of 96.7 thousand in 1970, an annual growth of 2.9 percent. This is below the 3.8 percent rate for the Nation because of the region's concentration in electronic components.

Allowance for the changes in employment

New England's Projected Electronics Employment, 1963-1970

(In Thousands)

	January 1963	January 1970	Employment Growth	Percent Growth
Massachusetts	49.1	61.4	12.3	25.0
Connecticut	13.0	16.5	3.5	26.9
New Hampshire	8.2	10.5	2.3	28.0
Vermont	3.4	4.6	1.2	35.3
Rhode Island	2.7	3.4	0.7	25.9
Maine	1.7	2.1	0.4	23.5
New England	78.1	98.5	20.4	26.1

Source: Federal Reserve Bank of Boston.

which have occurred in New England since 1961 from components to the other, faster-growing sectors would increase the employment growth rate to 3.1 percent per year. This would give the region a total of 98.5 thousand workers in electronics in 1970. This would be an increase of 20 thousand jobs over present levels with two-thirds of the increase in the military and industrial product sectors.

Looking into the future there are indications that the region's composition will change even more in this direction, raising the growth rate even higher. For example, the NASA center in the greater Boston area may further increase employment in the military and industrial products sector.

By 1969 the center will be in full operation and is expected to employ some 2,100 professional and supporting personnel. At that time its budget for research at the center will be in the neighborhood of \$35 million, and it will be making some \$45 million in grants and contracts for space electronics research to universities, nonprofit research institutions, and

industrial laboratories across the Nation. This research will be directed toward improving the reliability and capability of advanced space systems.

The Boston area is well adapted to the center's needs and can be expected to participate actively in this space research. Three universities in the area are currently conducting electronics research. Moreover, about 15 thousand people in the area are employed in some 120 established firms which are engaged in electronic-related research and development. This type of activity can be expected to develop further as the center becomes fully established.

Three-fifths of the region's growth in electronics employment over the remainder of this decade will occur in Massachusetts, excluding the impact the center may have upon the State. Of the 12 thousand new jobs expected in this State's electronics industry, over 8 thousand will be in producing military and industrial electronic items. However, electronic components will continue to play a major part in the State's electronics complex. In 1970 this subdivision will still account for half of total electronics employment.

As the table on page 14 shows there may be substantial differences in the growth of the electronics industry among the states of the region to 1970. Those with the higher relative growth rates, such as Vermont, have a larger proportion of their work force engaged in producing military and industrial electronic items.

Impact Upon Occupational Needs

As the region's electronics industry shifts more to the production of military and industrial products, a higher level of skills will be required in its work force. National data show that only 27 percent of the workers in the military and space products sector are semiskilled and unskilled whereas in consumer products the proportion is 63 percent. Engineers and other technical workers account for a third of the work force in military products compared to only a tenth in consumer products. The components sector would tend to have a distribution similar to consumer products since both involve mass production techniques.

The proportion of employees who are engaged in production is an indirect measure of this difference in skill needs between sectors. Nonproduction workers include engineers and technical workers, administrative and executive personnel, and clerical and stenographic workers. In New England's military and industrial electronic sector, nonproduction workers account for 44 percent of total employment. In the consumer product and electronic component sectors, on the other hand, they account for slightly less than 20 percent.

Clearly, as New England's electronics industry changes its composition, more of the new jobs created will be in these skills of the nonproduction type. The training emphasis will have to be placed on these nonproduction skills if the region is to avoid structural unemployment as these job needs change.

Here's New England -

MANUFACTURING INDEXES (seasonally adjusted) 1957-59 = 100	NEW ENGLAND			UNITED STATES		
	pMar. '64	Feb. '64	Mar. '63	Mar. '64	Feb. '64	Mar. '63
All Manufacturing	120	121	119	129	129	122
Nonelectrical Machinery	132	130	123	136	133	123
Electrical Machinery	123	127	128	135	134	131
Transportation Equipment	138	139	144	130	131	122
<i>Textiles, Apparel, Leather</i>	100	103	104	123	123	116
Textiles	102	105	111	119	119	114
Apparel	108	112	106	n.a.	132	122
Leather and Shoes	92	94	93	n.a.	100	99
Paper	113	115	115	n.a.	128	124
	<u>Percent Change From:</u>			<u>Percent Change From:</u>		
BANKING AND CREDIT	Mar. '64	Feb. '64	Mar. '63	Mar. '64	Feb. '64	Mar. '63
Commercial and Industrial Loans (\$ millions) (Weekly Reporting Member Banks)	1,708	+ 4	+ 9	37,853	+ 1	+ 8
Deposits (\$ millions) (Weekly Reporting Member Banks)	5,312	+ 1	+ 7	139,654	+ 1	+ 7
Check Payments (\$ millions) (Selected Cities)	12,151	+ 7	+ 6	197,708	+14	+14
Consumer Installment Credit Outstanding (index, seas. adj. 1957-59 = 100)	143.0	+ 1	+ 9	161.9	+ 1	+12
DEPARTMENT STORE SALES (index, seas. adj. 1957-59 = 100)	127	- 3	+ 9	n.a.	n.a.	n.a.
EMPLOYMENT, PRICES, MAN-HOURS & EARNINGS						
Nonagricultural Employment (thousands)	3,754	0	+ 1	57,336	+ 1	+ 3
Insured Unemployment (thousands) (excl. R.R. and temporary programs)	175	- 6	- 5	2,102	- 9	-11
Consumer Prices (index, 1957-59 = 100) (Mass.)	109.5	0	+ 1	107.8	0	+ 2
Production-Worker Man-Hours (index, 1957-59 = 100)	94.0	0	- 2	101.3	+ 1	+ 2
Weekly Earnings in Manufacturing (\$) (Mass.)	93.13	0	+ 4	101.40	0	+ 3
OTHER INDICATORS						
<i>Total Construction Contract Awards* (\$ thous.)</i>	138,651	+17	+19	3,587,319	+ 8	+16
Residential	59,181	+18	+36	1,596,674	+16	+17
Nonresidential	51,685	+15	+24	1,163,751	+ 5	+10
Public Works and Utilities	27,785	+18	-12	826,894	- 1	+24
Electrical Energy Production (4 weeks ending Mar. 21, 1964) (index, seas. adj. 1957-59 = 100)	139	+ 1	+ 5	148	+ 1	+ 7
Business Failures (number)	77	+26	+64	1,320	+ 6	+ 2
New Business Incorporations (number)	991	+28	- 6	17,631	+14	+ 8

*3-mos. moving averages Jan., Feb., Mar.

p = preliminary

n.a. = not available