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THE ECONOMIC LIFE OF SWEDEN



The Swedish Institute

STOCKHOLM

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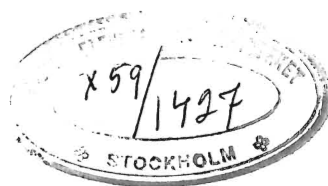
The Economic Life of Sweden

FROM THE SWEDISH MANUSCRIPT BY
BURNETT ANDERSON

THE SWEDISH INSTITUTE
STOCKHOLM 1956

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Introduction

Through the bounty of natural wealth, forests and ores, rivers and waterfalls, the people of Sweden have attained a standard of living higher than in most other countries. The resources are indispensable, but the modern productive economy based on them was achieved only by hard and unrelenting labor and in battle with a severe climate. It is impossible to explain the standing of the steel and wood products industries, for example, without some knowledge of the indisputable technical and organizational talents of the people. Experience has demonstrated that it is difficult for a country without domestic coal deposits to establish iron and steel industries. Sweden is perhaps the only country in the world which has been able to maintain them without a foundation of domestic coal, and this is due in large degree to the high quality of the product based on domestic inventions and an able labor force. The skill of entrepreneurs and engineers has also played a decisive role in the growth of the wood products industries. Valuable aid has come from abroad in various forms. It is worth noting, to take one example, that the country was able to enlist a small number of Walloon smiths during the seventeenth century. They provided an addition of professional skill and new working methods which placed an enduring stamp on Swedish ironmaking.

A country like Sweden, sparsely populated and late in its economic development, has at various times lacked the financial resources needed for expansion, and been in great need of foreign capital. The remaking of the national economy since the middle of the nineteenth century was made possible by extensive borrowing abroad, principally in France, and to a somewhat lesser extent in England and Germany. The Industrial Revolution came to Sweden rather late in comparison

with the progress elsewhere. It began in the 1850's with the expansion of the forest industries, a phase which reached its high point between 1870 and 1875. The trend did not become more general, however, until the 1890's, and since then the country has moved rapidly toward an ever-increasing degree of industrialization.

At the time when it began in Sweden, the comparable process in England had already reached the point where the rate slows down. Simultaneously, the rate of population increase in England began to decline. The capital resources created by the rapid growth of British industries during the first half of the nineteenth century became available to foreign borrowers. For Sweden, however, France occupied first place among the creditor nations. In Sweden, the national and local governments were the principal borrowers, and the main purpose of the loans was the construction of railways and villages. The import of capital to Sweden stopped just before the First World War, and since then it has been possible to supply the capital requirements of the economy from within the country. In fact, there has been room for some export of capital in recent decades.

By international standards, the Swedish economy is characterized throughout by relatively small productive units. The acreage of farms, is, as a rule, very small, and large industrial enterprises are not typical. There are no concentrated, uniform factory areas of the kind common to other countries, which, however, does not mean that certain industries have not tended to group themselves by regions. Thus iron and steel making have long set their stamp on the economic life of central Sweden, while the forest industries dominate the northeastern coast. The fact that industrial enterprises often are located in small villages and towns may fail to give the casual visitor the impression that industry is the most important segment of the economy. It is the largest by a comfortable margin, however,



Fifty per cent of the area of Sweden is covered by forests, consisting principally of coniferous trees. Photo: Gösta Lundquist.

and 41 per cent of the gainfully employed population derives its income from industry. For agriculture, which occupied the leading position as late as the 1930's, the comparable figure is 21 per cent, and for trade and communications it is 24 per cent.

As a background for examining the various sectors of the economy, it may be useful to look at the labor and employment picture in somewhat greater detail. In 1955, the total population of Sweden was in excess of seven million people. The population figure in 1900 was about 5 million, and in 1850 it was only about 3.5 million. The transformation and development of the Swedish economy has thus gone hand in hand with a pronounced increase in population. The newly emerging industries have thus been able to acquire labor without doing so at the expense of other segments of the economy. Since 1940, however, these conditions have changed radically. The substantial increase in population after 1850 was characterized by a pronounced decline in the death rate, while the birth rate continued at a relatively unchanged, high level. Between the First and Second World Wars, a sharp decline in the birth rate set in, and Sweden acquired the static type of population characteristic of several countries of western Europe. The renewed high birth rate from 1940 to 1945 does not essentially change this picture, because the increase was due principally to a climb in the marriage rate. The latter is explained, in turn, by the fact that the population groups reaching marriageable age were relatively large, and by a measurable drop in the average marriage age.

The result of these changes is a less favorable relationship between the productive and non-productive sections of the population, as it affects the standard of living, because the numbers of children and aged have increased while the number of people of working age has hardly changed. These conditions may be expected to continue until near 1960, when the large age classes from the early 1940's begin to enter the labor force.



Sweden is rich in waterpower, with exploitable hydro-electric capacity estimated at eight million kilowatts. Only about half this capacity has been harnessed. Photo: Gösta Lundquist.

On the labor market, these changes were felt in a number of different ways. The declining flow of young people into the labor force, together with the inflationary cycle which prevailed most of the time from 1940 through 1950, resulted in intense competition for labor among various segments of the economy. The agricultural labor force began to decline measurably as early as the 1930's, at the rate of almost 1 per cent per year. During the Second World War, the rate of this migration increased substantially (to between 2 and 3 per cent per year).

With this flow from the land and some immigration, the other segments of the economy—industry, trade, communications, etc.—were able to continue expanding at about the same rate as during previous decades, measured by employment. But this applies only to male workers. A decline in the number of gainfully employed women could be observed during the early 1940's. This was due largely to the greatly increased marriage rate—child-care and housekeeping, of course, hardly facilitate full time employment. The decline in the number of working women affected the supply of domestic servants and agricultural workers in particular, but even industry suffered a slight reduction. The number of women employed in the service industries increased, however. During recent years the number of women gainfully employed in industry has again increased.

The distribution of the working population by occupation is given in the following table:

	Number (In thousands)	
	Men	Women
Agriculture	585.3	54.5
Industry	1,060.6	217.0
Communications	207.4	43.1
Trade	262.6	222.2
Public administration and the professions	160.3	182.0
Domestic service	—	95.3
Miscellaneous	19.5	9.8

Until after the First World War, industry demonstrated the greatest relative increase in the number of men and women employed. Eventually, trade and communications began to expand at a faster rate, but during recent decades these, too, have had to make way in rate of growth for public administration and the professions. These conditions reflect a development of the economy which is, indeed, characteristic of most highly industrialized countries. A higher standard of living has brought with it increased demands on the service industries and more highly developed and complex production techniques, just as the ever more complicated social organization requires increased administrative personnel. These trends are also traceable in the figures for the distribution of the gainfully employed by occupation within various industries. The number of salaried employees has thus increased considerably faster than the number of wage earners. In industry, for example, the number of salaried workers per 100 male wage earners increased from about 11 in 1930 to about 18 in 1950. The trend in other sectors of the economy has been similar.

Agriculture

Agriculture has undergone a profound change since the turn of the century. As late as the 1870's it was possible to describe Sweden as an agricultural nation—about 75 per cent of the people derived their living from farming. Ever since, the relative figure has declined measureably, and by 1950 it was down to 23 per cent. Expressed in absolute numbers the decrease is not as pronounced, yet during the period specified the agricultural population diminished by 930,000 people.

The decline in the farm population is, of course, related to the replacement of home manufacturing by industrial production. The mechanization and modernization of farming has also permitted considerable migration from that segment of

the economy. Further explanations for the relatively smaller importance of agriculture today must, however, be sought in other circumstances. Among them are the limited agricultural potential provided by nature and international economic developments.

From 1800 to 1870 Swedish agriculture expanded greatly. The area under cultivation more than tripled in 70 years. At the same time, however, the population had increased considerably, but in spite of the increased area under cultivation the yield was not sufficient to provide adequate living for the growing rural population and a serious overpopulation resulted.

The incipient domestic difficulties were then aggravated by the international agricultural crisis of the nineteenth century. Improved sea communications had resulted in a substantial reduction in ocean freights. The transoceanic agricultural nations were now able to begin competing seriously on the European grain market. The sharp fall in farm prices which followed engendered a serious crisis for European agriculture.

In Sweden, a large part of the people on the land could now no longer support themselves adequately. A growing industry was, to be sure, able to provide work for some of the surplus farm population, but a large number of farmers felt forced to emigrate, principally to the United States.

To meet the crisis, the government decided in 1888 to introduce duties on grain and other agricultural commodities. The changed market conditions, however, affected the structure of Swedish agriculture. The old extensive methods of cultivation were gradually given up in place of more intensive cultivation of the soil. Another circumstance—the fact that all arable land was now largely under cultivation—contributed to the trend. The productive emphasis also began to undergo gradual but important changes. An increasing demand for animal products came from the growing industrial population, and the increased prices of these products made animal hus-

bandry more remunerative than before. The animal population grew substantially, and a larger percentage of the arable land was devoted to fodder crops.

This trend continued until the 1920's, when a new international crisis again presented the Swedish agricultural economy with immense difficulties. This time the prices of animal products also decreased sharply. In Sweden, where animal husbandry had grown to the point where it yielded an export surplus, the effects of this decline were severe, when the international demand for agricultural products also fell in the late 1920's.

As the next decade began, the government found it necessary to intervene with various support measures. To assist domestic grain farming, mills were required to use a certain percentage of Swedish wheat and rye in their flour output. Government-guaranteed minimum prices for grain were introduced about the same time, and an import monopoly was established to regulate the production and price of sugar.

Animal products were covered in a similar fashion. Small exports of butter were maintained by means of a government subsidy. Domestic prices were increased by a corresponding special excise on milk. Various regulatory measures were adopted for beef and pork, eggs, etc. aimed at stabilizing prices.

By these means, a comparatively high level of production was maintained, and Sweden was by and large self-supporting in food products. Imports of chemical fertilizers, farming machinery and fodder were essential to the agricultural economy, however. During World War II all imports of these commodities were cut off, and as a result, together with unusually small crops during the first war years, some food shortages developed. There were surplus supplies and defense stockpiles to draw upon, of course, but to assure the supply it was necessary to try to stimulate agricultural production further. With this aim, pre-war regulation was broadened. Special calculations

were undertaken to determine agricultural income and costs. The results were used as a basis for fixing prices of agricultural commodities, and these minimum prices guaranteed an increase in income equal to the rise in costs. The system also provided the means for regulation of productive emphasis. If, for example, there was a shortage of wheat, sowing could be stimulated by increased prices or by a special subsidy for each acre put in wheat.

The farm policies later on were co-ordinated in the years 1942—46 by a large agricultural committee, which drew up a program that received the support of all political parties and was adopted by the *Riksdag* (Parliament) in 1947. The program had three main goals: to furnish the country with the necessary food supplies in the event imports are cut off, to permit a gradual improvement in the standard of living of the agricultural population to the level of other population groups, and finally to raise agricultural production.

Higher incomes for the agricultural population are to be achieved partly through government aid in rationalising production, partly by higher prices for agricultural products. The latter are made possible through import duties and tariffs, or when necessary also by quantitative import regulations. To ensure adequate food supplies in case imports are cut off, agricultural production during normal harvest years should cover, calculated in calories, somewhat more than 90 per cent of the country's food requirements. In case of over-production, the farmers themselves must carry the export losses. The government organizations are responsible for the carrying out of the national agricultural program. The Board of Agriculture (*Lantbruksstyrelsen*) is in charge of rationalization, the State Agricultural Marketing Board (*Statens Jordbruksnämnd*) of price policies.

The aim of the agricultural program according to the Act of 1947 is that the cultivator of a well-run farm with about

25 to 50 acres of arable land and some wooded area—a “basic farm”—should be able to achieve the same income as an industrial worker in South and Central Sweden. Barely 30 per cent of all farms are as large or larger than the basic farm. Under certain laws the State buys land and redistributes it, so that selfsupporting units are created. To a considerable extent loans are also granted for the purchase of farms and machinery, as well as for improvements and new building. The number of small farms has lately decreased by about 5,000 a year partly through the action of the farmers themselves, and partly as a result of government rationalization. The total area under cultivation is also decreasing, whereas forest areas are on the increase.

Up to 1955/56 price regulations for agricultural products have been made after yearly negotiations between the State Agricultural Marketing Board and the large farmers' associations. Starting on September 1st, 1956, however, a three-year agreement is in force, according to which prices may within certain limits follow the fluctuations on the world market. As long as prices do not go above or below these limits, imports are unrestricted against payment of a set import fee and certain compensation fees. Funds thus received are used i.a. to cover possible export losses.

It should be observed that the farmers themselves, through their organizations, take an active part in the work of rationalization and exert an important influence on policies. The principal organizations are the Swedish National Farmers' Union (*Riksförbundet Landsbygdens Folk*), which is a policy-making group, and the business, or production and marketing, associations, of which the central organ is the Federation of Swedish Farmers' Associations (*Sveriges Lantbruksförbund*). The government authorities take no important steps affecting agriculture without consulting these organizations.

Internal rationalization must be carried out largely by the farmers themselves. Considerable mechanization has taken place



During the last twenty years, Swedish agriculture has been mechanized to a great degree. Wheat and oats are the most widely cultivated grain. Oats are mainly used as fodder. Formerly, wheat could be grown only in southern Sweden, but now resistant strains have been developed which are able to ripen in northern latitudes. Photo: Tage Ulmerudh.

(from 20,000 tractors in 1939 to 120,000 in 1955), and production per hour has increased 30 to 35 per cent during the last decade. Despite the considerable migration from the land, it has also been possible to increase total production—in fact, to the point where some surplus problems have developed. Current production is in excess of the national caloric requirements. Prices on the world market have declined in recent years, and are now below domestic prices for most commodities.

About 9 per cent of the country's area is arable land. The extent of arable land in different sections of the country varies, of course, with the great differences in composition of the soil and climatic conditions. In both respects, the sea has had a great influence on the nation's agriculture. After the glacial era, large parts of the country were covered by seas, and arable land was formed by deposits of silt consisting principally of clay. The most important agricultural regions, the southeast and southwest plains and the districts around Lake Mälaren, were thus once sea-bottom. The most fertile district of all, however, the Skåne (Scania) plain of the far south, is an exception; it consists of stone-free morainic soil with a high lime content. The climate there is also more favorable to agriculture than in any other part of the country. The winters are comparatively short and mild, and the growing season is as long as 250 days, whereas in central Sweden it is about 210 days, and in northernmost Sweden only 150 days. The climate is remarkably favorable for the northern latitudes because of the warm Gulf Stream, which flows from the Gulf of Mexico across the Atlantic Ocean and up along the northern Norwegian coast. It is this which has given the country its relatively temperate climate and generous rainfall, which in turn make it possible for grain to ripen near the Arctic Circle.

Ownership of the land has always, of course, been of decisive importance in the economic and social structure. There are numerous evidences of this relationship in the history of Swe-

den. Land ownership has undergone great changes through the centuries. At the end of the Middle Ages, large parts of the land were owned by the Church, but during the Reformation these holdings were taken over by the State. Subsequently, they passed into possession of the nobility, through enfeoffment. The State intervened again toward the close of the seventeenth century, through the so-called "Reduction", and the upper classes were deprived of estates and lands, which the State has gradually liquidated in various ways. Since then, there have been no major changes in ownership rights. What is perhaps of greater importance is that the Swedish farmer, in contrast to his counterpart in most other countries, has never been a serf in the real meaning of the word. As a free and, in most cases, land-owning citizen himself, he has held the right to take part in the government and at times has been able to exert a decisive influence on the nation's policies.

In our times, about half of the land is owned by individual citizens. The holdings of the national and local governments, the church, etc., account for almost one third of the total area, and corporations and trade associations own almost 20 per cent. Individuals are much more important in the ownership of arable land, however, with some 85 per cent of the nation's cultivated acres. The remainder is fairly evenly divided between public and corporate ownership.

The most characteristic aspect of land ownership is, however, the tremendous number of individual owners of very small farms. Three-quarters of all farms do not exceed 25 acres in size. Naturally, the situation varies greatly from one part of the country to another. In the southern and central parts, where there are large plains, more than half of the farms are larger than 25 acres. Small farms dominate the northern sections of the country completely, on the other hand.

It is obvious that many of these small farms cannot provide their owners with an adequate income. And about 100,000 of

them are, in fact, supplementary or part-time farms, which provide the proprietors and their families with a source of work and income in addition to other, and more important, gainful employment. A large part of these farmers make their living principally by work in the forests. Most of the part-time farms have some woodland, yielding fuel and lumber for the home and even permitting some cutting for sale. During the winter, when the farm requires less work, the farmer is occupied with logging and hauling.

Aside from part-time farms, it is estimated that there are many small farms which are the proprietor's only or principal source of income, but which do not provide an adequate base for supporting a family. These farms constitute one of the most difficult agricultural problems. By various means, the government supports the combination of these small units into single farms of practical size.

Farms are usually worked by their owners, and only one in six is rented. The land is worked intensively and few countries can show a greater yield per acre. The tiny size of the farms has complicated the use of machines. However, the shortage of labor is forcing increased mechanization. Another development, the shift toward animal husbandry reviewed above, has also brought about great changes in the use of the land. Wheat formerly occupied the greatest acreage, but during recent years feed crops have been in first place. The increased importance of animal husbandry has also led to more widespread use of land for grazing.

An interesting shift in cultivation of bread grains has taken place between wheat and rye. As late as the beginning of the century, five times as many acres were devoted to rye as to wheat. By the beginning of the Second World War, however, the relationship was completely reversed, with the number of acres in wheat nearly double the rye acreage. This trend can be largely credited to plant improvement, through which it

has been possible to develop high-yield, relatively hardy strains of wheat. It has been possible to extend wheat growing to the far north, where formerly it could not survive. Oats are the most popular of the feed grains, which, for that matter, occupy a greater cultivated area than the bread grains. Two-rowed barley is cultivated in the south of Sweden, and in the north of Sweden six-rowed barley, the only grain which is reasonably sure to ripen during the short summer there. Potatoes are the most important of the root crops to the national economy, and cultivation is remarkably evenly distributed throughout the country. Sugar beets are grown only in the south, but to sufficient extent to supply the entire domestic demand for sugar. During the war, the raising of crops yielding vegetable oils (particularly rape) was stimulated. The yield was substantial, and decreased the need for importing vegetable oils.

Milk production is of prime importance to the Swedish farmer, and about 40 per cent of agricultural income is derived from milk and dairy products. In dairy products, as well as other crops, southern Sweden is the major producing area, and boasts the largest and best herds. The small farm regions of the north nevertheless have more cows per 100 acres than the fertile plains, because even the smallest farmers keep cows, if possible, to supply the home with milk.

Agricultural products are sold principally by producer co-operative associations, which are federated in a central organization. The producer co-operative movement in Sweden is of comparatively late date, and it was not until the depression of the early 1930's that membership began to be general. The number of members in the local associations then climbed rapidly, and most of the national organizations were formed—the organizations which have since become important in the formation of agricultural policy.

Today, practically every farmer is a member of one or more of the marketing associations. The sale of milk and dairy pro-

ducts is concentrated in the dairy associations, which are combined in the Swedish Dairies Association (*Svenska Mejeriernas Riksförening*), and which handles about 98 per cent of all milk and butter and 95 per cent of all the cheese which appears on the market. The farmers control about 70 per cent of the market for meat animals through the Swedish Farmers' Meat Marketing Association (*Sveriges Slakteriförbund*), an association of meat producers. The sale of eggs is co-ordinated by the Swedish Egg Marketing Organization (*Svenska Ägghandelsförbundet*). Another organization in the agricultural co-operative movement the Swedish Farmers' Purchasing and Selling Association (*Svenska Lantmännens Riksförbund*), is both a marketing and purchasing co-operative. It sells vegetable products, and seeks to reduce the cost of farm purchases by joint buying of fodder, seed, chemical fertilizers, etc.

The Fishing Industry

The per capita consumption of fish in Sweden is relatively high. It is lower than in the island nations of England and Japan, but higher than in many other countries with a comparable structure. Nine-tenths of the total catch (almost 450 million pounds annually) is taken from ocean or coastal waters (the Swedish coast is almost 5,000 miles long). There are about 15,000 full-time fishermen. Half of the catch comes from the west coast of Sweden, the Skagerak, and the waters off Iceland. The most important species in this area are the herring, cod, mackerel, and various kinds of flounder. The principal catch in the Baltic Sea is the Baltic herring, which is smaller than its ocean cousin. Here it is not uncommon for fishing to be combined with farming as an extra source of income.

Fresh water fishing is far from insignificant in Sweden, but the size of the catch is much smaller than the salt water catch. The value is comparatively great, however, in that it often

consists of species bringing good prices, such as salmon, whitefish, and char.

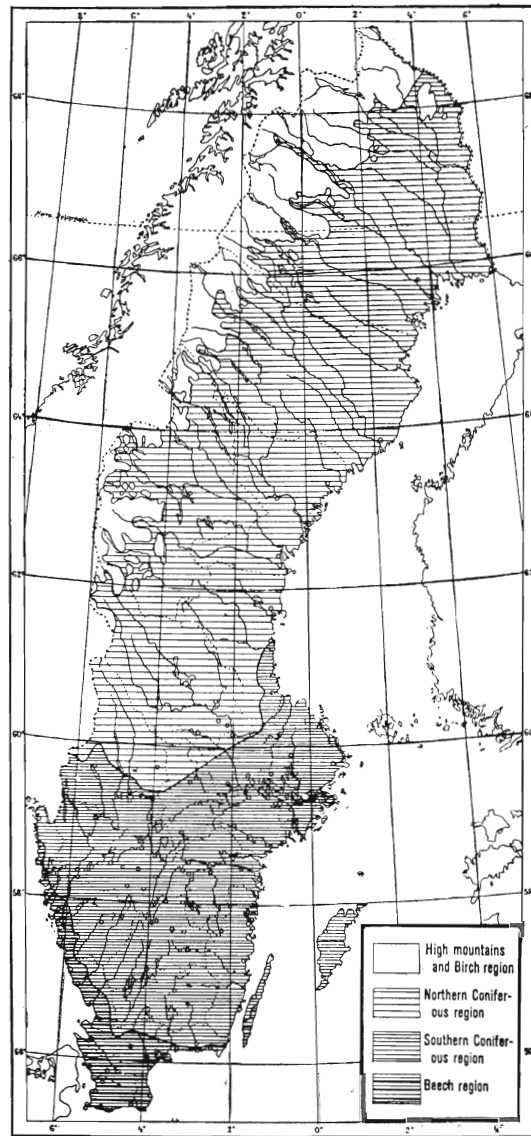
Sweden is, by and large, self-supporting in fish. Salt herring is imported from Iceland and Norway, and fresh cod from Norway. Before the war, fish exports were usually accomplished by Swedish fishing boats unloading their catches directly in English and Danish ports. During recent years, the exports have gone to central European countries. A substantial part of the distribution within Sweden is managed by a co-operative enterprise owned by the fishermen themselves.

Forests and Forest Products Industries

The large forests of Sweden are perhaps the nation's most important natural resource. More than half of the country's surface is covered by woods. Yet it was not until the last hundred years that this resource began to be exploited on any major scale. Formerly the woods were used only as a source of fuel and lumber. The ironmaking industry was, however, long dependent on the forests. Mining required comparatively large quantities of timber and charcoal was needed for processing the iron.

Then, about 1850, a new epoch in the history of the forests began. The demand for timber had increased greatly in Europe, and more efficient technical methods had begun to appear in the lumbering industry. The role of the steam-driven saw was particularly important.

This was the overture to the first great era of Swedish wood, which continued until the beginning of this century. The expansion brought with it a social and economic revolution, which in terms of intensity and importance has few counterparts in the nation's history. There were large virgin supplies of wood throughout the country, principally in the northern regions. Sawmill industries sprang up along the mouths of the rivers on the northeast coast, while logging operations pene-



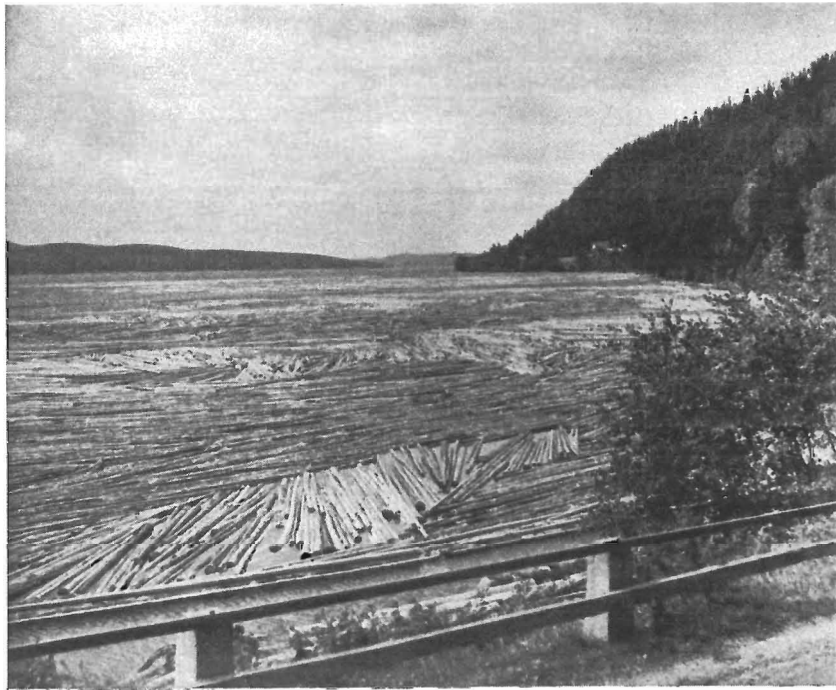
Forest map of Sweden.

trated more and more deeply into the countryside. In return for the wood exported, the nation acquired capital to finance industrial expansion.

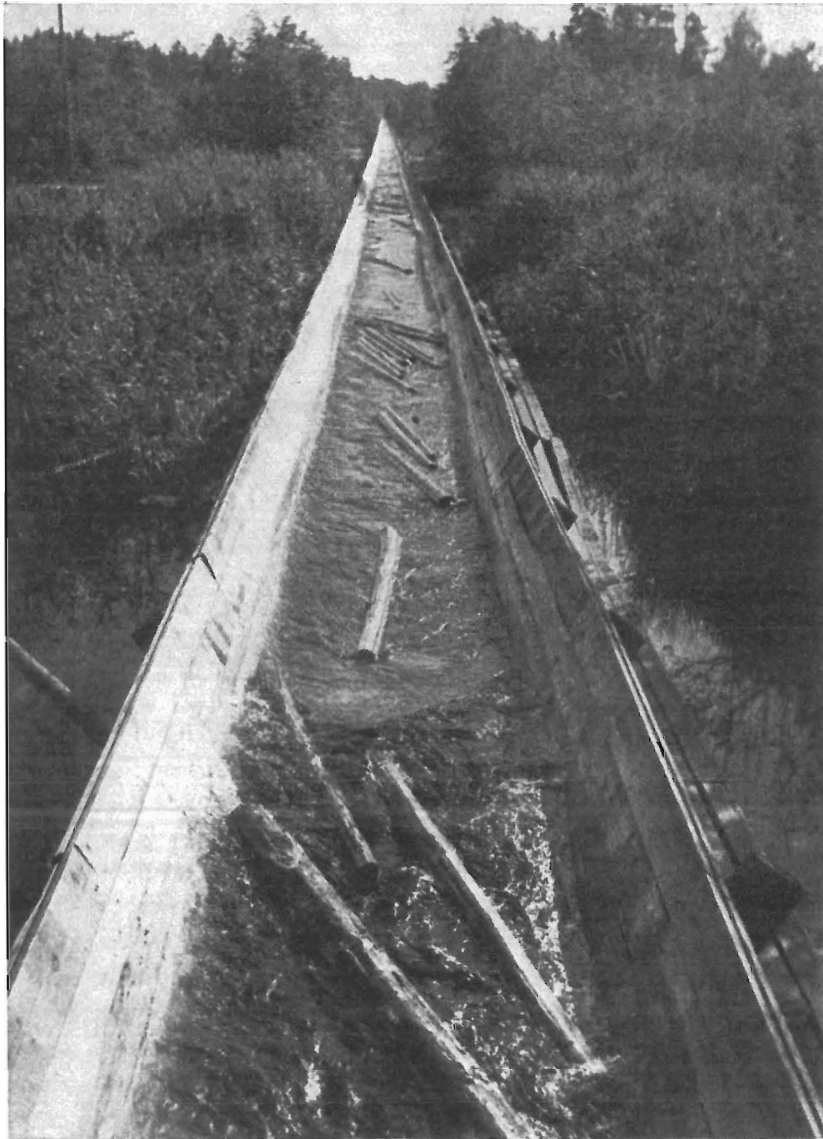
When the forest resources no longer permitted expansion in the sawmill industries, the wood pulp and paper industries began to grow, introducing a second great era. The advantage of these industries was that they complemented the sawmill industries in exploiting forest resources much more than they competed with them. What the sawmills left in edgings and damaged timber could well be used by the pulp mills. Everybody profited by this arrangement, and not least the forest owner, who now began to apply selective cutting and thinning in an effort to provide the tree crop with favorable growing conditions.

The pulp industry began to emerge in the late 1850's, but it was not until the turn of the century that it became big industry by Swedish standards. The volume of production, and the output of industries based on pulp, principally paper, have since expanded steadily. Most of the output is exported. Forest products occupy first place on the list of Swedish exports; since 1900 their share of the total value of exports has regularly amounted to between 40 and 50 per cent.

The success of the Swedish wood industries stems from a rich supply of raw materials, pine and fir. But this is not the whole story, for other countries have even greater forest resources, among them the Soviet Union. Several other favorable factors have contributed. First among these are perhaps good transport facilities. The Swedish forests are traversed by a number of rivers, flowing toward the southeast, which provide good floating channels. Logging takes place in the fall and winter; as traditionally most of the timber is hauled on sledges to the rivers for floating, though lorry transport has nowadays become more used especially for shorter distances and big roads are being built out in the forests. The floating, which is in-



Most of the wood products industries are located along the coast, and the logs are floated down the rivers to the factories. Photo: Bertil Norberg.



Specially constructed flumes carry the logs past obstructed river channels.
Photo: K. G. Kristofferson.

expensive, provides an additional advantage; by locating plants at river mouths along the coasts, finished products may be loaded directly aboard ship for export.

Forests cover 54 per cent of the total area of Sweden, and are heaviest in the central two thirds of the country. The far north is dominated by mountains and bogs, and in the south most of the land is under cultivation.

Pine and fir are the predominating species of trees, and the ones which are important to industry. Birch is the most common of the deciduous trees, while oak and beech are found in comparatively small quantities in the southern regions of the country. The great differences in climate affect the rate of growth: the further north, the slower the growth. In the south, a tree reaches full maturity in about 90 years, but in the north requires up to 150, or even 180 years. The slow maturation is, however, compensated by a better quality of timber. The wood becomes firmer and more durable.

About half the forests of the country are owned by private individuals or belong to privately owned estates. The other half is fairly evenly divided between corporations and public ownership—national and local governments. Before the expansion of the forest industries, individual farmers owned a considerably larger share. The large corporations began to buy forest lands during the latter half of the nineteenth century, to assure their sources of supply. These purchases were extensive in northern Sweden, and created severe social and economic problems. Widespread dissatisfaction arose among the farmers when it appeared that they had sold their holdings at an extremely low price, as compared with the value they subsequently acquired. Furthermore, a number of formerly independent farmers had become renters. To protect the farmers against real and imagined injustices, a law was adopted permitting corporations to purchase forest land only with the approval of the government. It was also decreed that a farm

may not be sold unless it carries with it sufficient woodland to supply the owner's own needs for fuel and lumber. The acquisition of forests by corporations has been of considerable importance, however, by uniting forest lands into holdings large enough to justify modern conservation practices. The greater resources of the corporations permit them to devote considerable work to conserving and improving the forests. The yield of a good half of the privately owned forests is sold through the Association of Swedish Forest Owners' Societies (*Sveriges Skogsägareföreningars Riksförbund*).

To prevent exploitation which might imperil new growth and future yields, the government adopted a special forest conservation law. Under its provisions, forests which are "hard to renew" and "young" are placed in a special category, and may be logged only selectively and with the greatest of precaution. The government seeks to promote good conservation practices in other ways. Subsidies are granted for tree planting, draining of swampy forest lands, and the like. Special "forest conservation boards" carry on extensive informational activities about selective cutting and other good silvicultural practices. Research to bring forth better and more productive strains of trees is also significant.

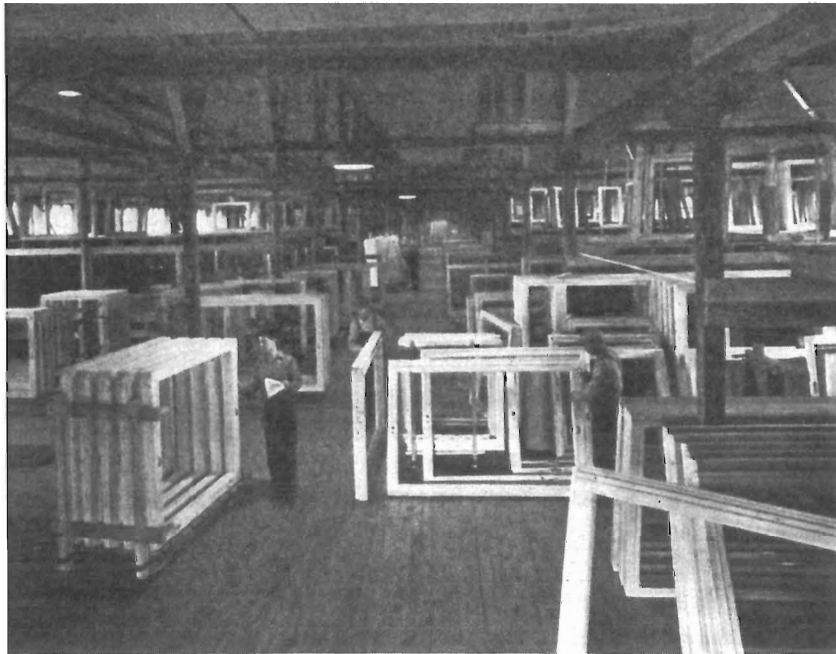
Tree counts have shown an increase in the timber resources of the Swedish woods, and there is room for expansion of the volume of manufacture. It is calculated that the output of wood products is several per cent below the level now permitted by the supply of timber.

This picture of the supply situation must, however, be rounded out with some additional considerations. The domestic supply of fir falls by about 2 per cent to meet the estimated demand, principally because of the huge expansion of the sulphite pulp industry. The supply of fir is, however, increasing more rapidly than pine, and the situation is likely to improve provided caution is exercised in expanding the industry.

These supply statistics apply to the country as a whole. The forest resources in the northern areas where the preponderance of the industry is located diminished by about 4 per cent between the last two tree counts. In the central and southern parts of the country, on the other hand, the forest resources increased simultaneously by no less than 25 per cent. As a result, there is some shortage of timber in northern Sweden and a surplus for the rest of the country. These regional variations in supply have created problems of adjustment for the wood products industries; among other things, they have shifted the geographical center of the industry southward. Several cellulose and mechanical pulp mills in northern Sweden have closed since before the war, result of which cutting was checked, and the chances for increasing the northern forest resources were improved. The latest available reports do, in fact, indicate that these resources are again on the increase.

Although there may be local shortages of one kind or another, giving rise to adjustment problems, the supply situation as a whole appears satisfactory both for the moment and the foreseeable future.

It has already been mentioned that the sawmill industry leveled off at the turn of the century, in fact it declined somewhat. Nevertheless, it remains one of the nation's largest industries, employing some 26,000 workers. Many sawmilling enterprises are located along the northeastern coast, and among the major ones are *Skutskärs Fabriker*, a *Stora Kopparbergs Bergslags AB* mill, *Korsnäs Sågverks AB*, *Kopparfors AB*, and, somewhat further north, *AB Iggesunds Bruk*. The most important single sawmill district is near the city of Sundsvall, site of the mills of the *Skönviks AB* of *Svenska Cellulosa AB* and *Wifstavarvs AB* corporations. The mills of *Kramfors AB* and *Munksunds AB*, both belonging to *Svenska Cellulosa AB*, are still further north. Of the major enterprises in central Sweden, *Uddeholms AB* should be noted. These corporations, and the



The Svenska Cellulosa AB has a number of plants, covering the complete range of forest products. The company is Sweden's largest producer of paper pulp. A window factory is shown above. Photo: Svenska Cellulosa AB.

In addition to traditional wood products, such as the bales of cellulose shown here to the right, the Mo and Domsjö AB, like the other Swedish cellulose industries, has a highly developed program of chemical manufactures based on what were formerly wastes from pulp making. Photo: Gärdets Studio.



sawmills of northern Sweden generally, sell their products to other countries, while the numerous smaller mills further south confine themselves to the domestic market.

Total exports of lumber exceeded 6 million cubic meters annually at the high-water mark around 1900. During the 1930's, the level hovered near 4 million cubic meters annually, and a continued decline is more likely than a new movement upward. To some degree, however, the old sawmill industry may be expected to blossom forth in new forms. A good beginning has been made with new building materials—plywood, masonite, wallboard, and others. Wood also reaches a more advanced state of processing in the cabinet making industry, which is located principally in the southern part of the country and which was originally carried on as a handicraft. The most important products are building materials—finished doors, mouldings, millwork, etc.—and furniture. Prefabricated houses have recently been added. Most of them have found a market within the country, but fairly substantial quantities have been exported from time to time.

Pulp today occupies first place among the wood products industries, in both volume of production and volume of exports. The manufacturing process requires comparatively little labor, and the number of workers engaged in the pulp industry is smaller than in the sawmills. The first method perfected for extracting paper pulp from wood, and the simplest one, was the mechanical, or grinding, method, and the end product was consequently named mechanical pulp. The volume of mechanical pulp now produced in Sweden is not very great. Mechanical pulp does, however, meet a real need as the raw material for cheap newsprint paper. "Newsprint" has the necessary faculty of absorbing ink at high press speeds.

The chemical methods for producing pulp which now dominate the industry were largely perfected by Swedish engineers. In the 1870's, an engineer named C. D. Ekman arrived

at a practicable sulphite method. Somewhat later, the contributions of another Swede, A. Müntzing, made it possible to use the sulphate method commercially. Both methods, in principle, consist of cooking the wood under pressure in a chemical solution, the formula of the solution varying with the method. Sulphate pulp manufacturing, using pine or fir, is concentrated principally on "kraft" pulp, a highly regarded product from which strong wrapping paper and other articles are made. Sulphite pulp, the most voluminous of the three types, is usually made from pine. Stora Kopparbergs Bergslags AB, however, was the first enterprise in the world to develop a method of using fir. The white color of the wood, further improved by bleaching, lends itself to conversion to book and writing paper. Sulphite pulp of the highest quality is used for making rayon.

Celluloid, lacquer, glue, explosives, and other products are obtained by further chemical processing of sulphite pulp. The output of these products has expanded rapidly during recent years, and there is reason to believe that the trend will continue. In manufacturing pulp, a large share of the raw material—wood—is separated and runs off in the waste liquors. During recent years there have been intensive efforts to exploit these wastes for industrial purposes. Significant results have been achieved, and among the most important by-products are ethyl alcohol, sulphite alcohol, resins, and terpentine.

The paper industry is of ancient origin. The oldest paper mill in existence, *Klippan*, was already operating in the late sixteenth century, and the *Lessebo* and *Grycksbo* mills were founded about a hundred and a hundred and fifty years later respectively. The paper industry did not achieve real importance, however, until the 1870's, when wood began to be used as a raw material. Exports of paper and cardboard began to increase substantially. The principal products for the foreign market are now wrapping paper, newsprint, and card-

board. Writing and printing papers are produced principally for domestic needs. Some of the paper mills producing for export are large, chief among them *Kvarnsvedens Pappersbruk* of *Stora Kopparbergs Bergslags AB* and *Hallstammar* and *Holmens* of *Holmens Bruks och Fabriks AB*.

For obvious reasons, the pulp industry has about the same geographical distribution as the sawmills, and often the same corporation makes both lumber and pulp. *Svenska Cellulosa AB*, situated in Sundsvall, occupies a prominent position in the pulp industry as a holding and sales corporation for a number of northern forest industries. Among them are the *Östrand* sulphite pulp mill, the largest and most modern in the country. Several corporations have carried the work of extracting chemical by-products from sulphite manufacturing to a relatively advanced point. Among them are the Husum and *Domsjö* mills of *Mo och Domsjö AB*, the *Skutskär* mills of *Stora Kopparbergs Bergslags AB*, and the *Skoghall* works of *Uddeholms AB*. Other enterprises with extensive byproducts are *Bergvik och Ala AB*, *AB Iggesund Bruk*, and *Billeruds AB*.

Total production of paper pulp amounted to more than 3 million metric tons in 1953, representing perhaps one-tenth of world production. Most of it (2.2 million metric tons) went to the export market, giving Swedish goods a prominent position in international sales. Between the two World Wars, a somewhat larger share of the total output was exported, but as the domestic consumption of paper and cardboard continued to rise, the domestic paper mills gradually required increased supplies of pulp.

The consumption of wood pulp products is comparatively high in Sweden. In 1947, it amounted to almost 200 pounds per person. The comparable figure for the United States was 250 pounds; for Canada, 176; for New Zealand, 115; for Belgium and the Netherlands, 82; for Switzerland, 68, and for Great Britain, 57. The output of paper and cardboard in

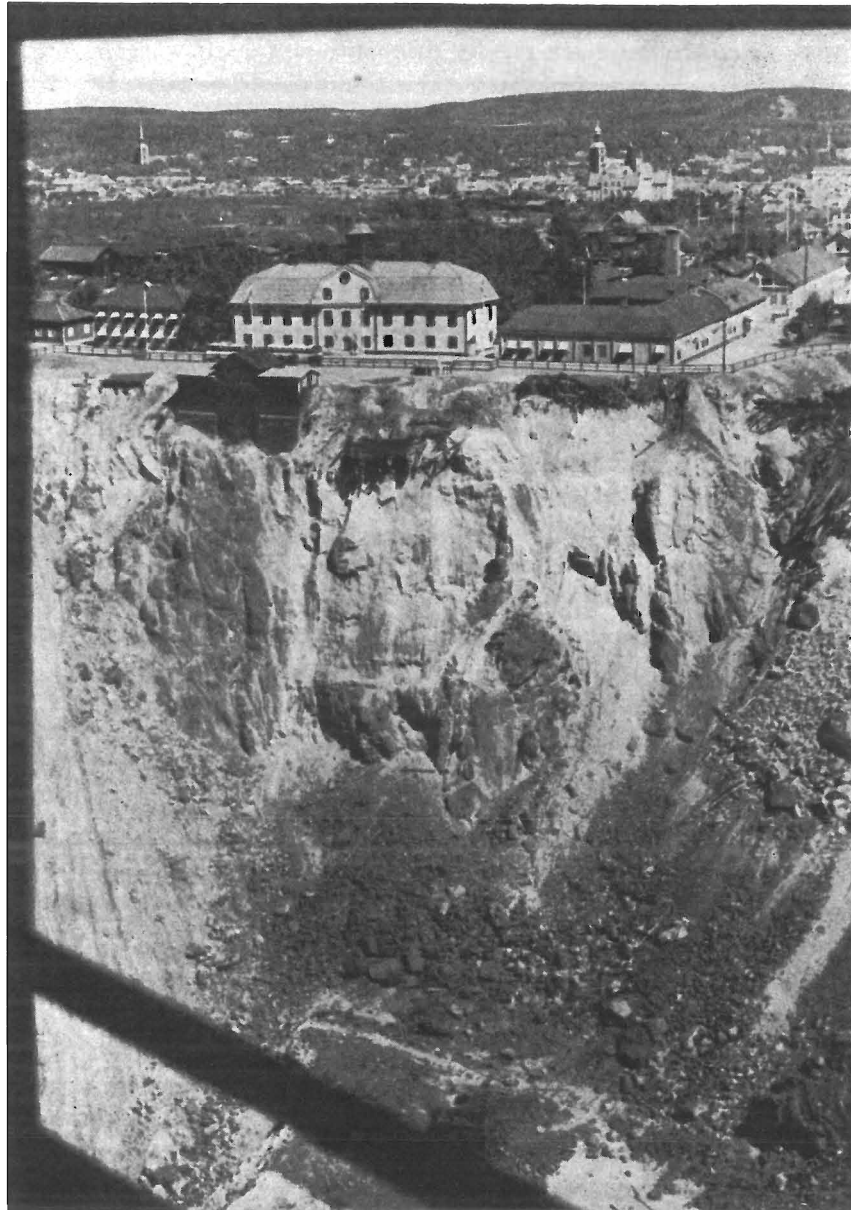
Sweden has increased more rapidly than consumption, however, permitting an increase in exports. This trend should be viewed in light of the efforts of the forest industries toward a more advanced stage of processing, which was mentioned earlier. Sweden is, in fact, second only to Canada in the export of paper, and ranks first in paper exports exclusive of newsprint.

In the years just preceding World War II, a large share of Swedish pulp exports (about $\frac{2}{5}$) went to the United States. During the war and the years immediately following, the United States increased pulp production capacity more than four times, substantially reducing import requirements. This, combined with an increase in Canadian pulp exports to the U.S., made it impossible for Sweden to re-establish the former level of sales, a serious blow to the country's dollar earnings. The new markets which had to be developed were found principally in South America. The geographical distribution of paper exports, too, has changed in comparison with the years before the war, when England was by far the largest consumer. Since the war, sales to England have declined considerably, even though they are still important. However, the transoceanic markets for paper have increased in importance.

Ore Resources and Mining

Ore deposits of commercial importance are located in three relatively clearly defined areas: the Bergslagen region of central Sweden, the Skellefteå field of northeastern Sweden, and the Lappland range in the northernmost part of the country.

The deposits on which the nation's domestic iron and steel industry are based are located in the Bergslagen region, and they also provide some ore for export. The domestic iron and steel industry was localized there because the ores are low in phosphorus, the only type of raw material usable for iron-making of early times. Today these ores are used for domestic manufacturing of high-quality iron and steel. The low-phosphorus



The Falun copper mine has been worked for 800 years. Stora Kopparbergs Bergslags AB, which is the oldest still existing corporation in the world, grew out of this original mine. Photo: Stora Kopparberg.

deposits include Dannemora ore, which is widely known for its extraordinary purity. The phosphorus-rich deposits, which it was not possible to exploit until the basic steel-making process was perfected in 1878, are few in number, but because of their relatively large size they comprise more than half of the resources of the Bergslagen region. The most important of these is the Grängesberg field.

The known iron ore deposits in the Bergslagen region are estimated at 220 million metric tons. Total ore production of the region reaches 4 or 5 million tons in good years, of which most is exported. Domestic consumption is something over 1 million tons annually.

The largest iron ore deposits in Sweden are those of the Lappland range. They are high-grade; 60 to 70 per cent pure iron. The earliest known finds were rich in phosphorus, but later investigations have shown that there are also quantities of ores low in phosphorus. The largest deposit is the Kiirunavaara, which is the biggest known single continuous body of rich iron ore in the world, and which is estimated to exceed 1,000 million metric tons. Other large deposits are the Gällivare, Luossavaara, and Tuollavaara finds, where there are ores low in phosphorus. The open-pit method has been used for mining at Kiirunavaara and some of the other northern mines, but most of the work is underground. The deepest mine is Ställberget in the Bergslagen region, which goes down 2,500 feet. All in all, the northern deposits probably amount to nearly 2,000 million metric tons. Annual production during the early 1950's was near the level of 17 million tons, of which most was exported. The annual rate of iron ore exports in the years 1951—53 was 15 million tons. The most important buyers are West Germany, Great Britain, Belgium, Luxembourg, and the U.S.A.

The reputation of Sweden for mineral resources is based principally on iron ore, and deposits of other metals are limited. Of the ones often known collectively as the "alloy metals for



The center of mining operations in northern Sweden is the Kirunavaara open pit, where digging is now being extended underground. Photo: Lennart Nilsson.

iron", the domestic supplies of tungsten and vanadium are fully adequate for domestic needs, but the small deposits of manganese, molybdenum, and nickel ores are already largely exhausted. Chromium has never been found in sufficient concentration to justify mining.

Of the other industrially important metals, copper, zinc, and lead form something of a natural group, since they are often found in the same deposits. The situation is best for zinc, of which more than enough is mined to cover domestic consumption. The country is largely self-supporting in lead, and domestic copper supplies a substantial part of the domestic demand. The best known non-ferrous deposit in the Bergslagen region is the Falun copper mine, which yielded large quantities of copper in past centuries but which is now a source principally of pyrites and zinc and lead ores. The *Boliden* mine is in a class by itself in the Skellefteå field. In addition to copper, pyrites, and arsenic, there are limited quantities of gold, silver, bismuth, and cobalt. Various smaller deposits of ores are mined all the way from central Sweden to the northern mountain regions.

Iron and Steel—Manufacturing and Fabricating

Iron and Steel Making

Iron-making is the oldest of all major present-day industries. Swedish iron-making goes back so far into history that the beginnings are shrouded in the mists of time. The forests were perhaps as important as the ore itself as one of the foundations for the growth of an independent iron-making industry, because until the beginning of the eighteenth century iron could not be produced without charcoal fuel. As methods were gradually improved, some of them borrowed from other countries, iron-making expanded rapidly, and became an export industry of increasing importance. Sweden became a leader in

the field, and at times held a dominating position in the world market. Swedish "wrought iron" probably amounted to about 35 per cent of the total world production of iron in the eighteenth century, and the share exported accounted for not less than $\frac{3}{4}$ of the value of all Swedish exports. Since then, however, circumstances have changed radically. At the beginning of the nineteenth century, it became possible to use coal to manufacture iron, which made the finished product considerably cheaper. Sweden, which had only expensive charcoal fuel, had no way of competing in price. As a result, Swedish manufacturers turned more and more to high-quality output. This was facilitated by the excellent raw materials in the form of pure iron and charcoal fuel free of sulphur and phosphorus impurities. New trials awaited the industry toward the end of the nineteenth century. The appearance of so-called steel-ingot processes made it possible to exploit the large deposits of phosphorus-rich iron in various parts of the world, which, obviously, further weakened the competitive position of the Swedish industry. These difficulties have been surmounted, and today Sweden is probably the only country without coal resources which manufactures steel successfully. To be sure, the relative Swedish share of the world market is now smaller, but the qualitative position has been further improved. The finest steel in the world still comes from Sweden.

After the Second World War, the iron and steel industry undertook a thoroughgoing program of modernization and expansion, substantially increasing capacity. Capital investments during the most intensive period of expansion, the years 1948—52, amounted to about 500 million Swedish kronor.¹ The production rate in 1953 was about one million metric tons. In recent years, the percentage of charcoal pig iron has declined. During the years immediately following the war it

¹ The official rate of exchange is 14.50 kronor to the pound sterling, 5.18 kronor to the U.S. dollar.



The Swedish steel industry has concentrated on quality products for centuries. The picture shows an electric cast-furnace at one of the major steel works, Fagersta Bruks AB. Photo: Fagersta.

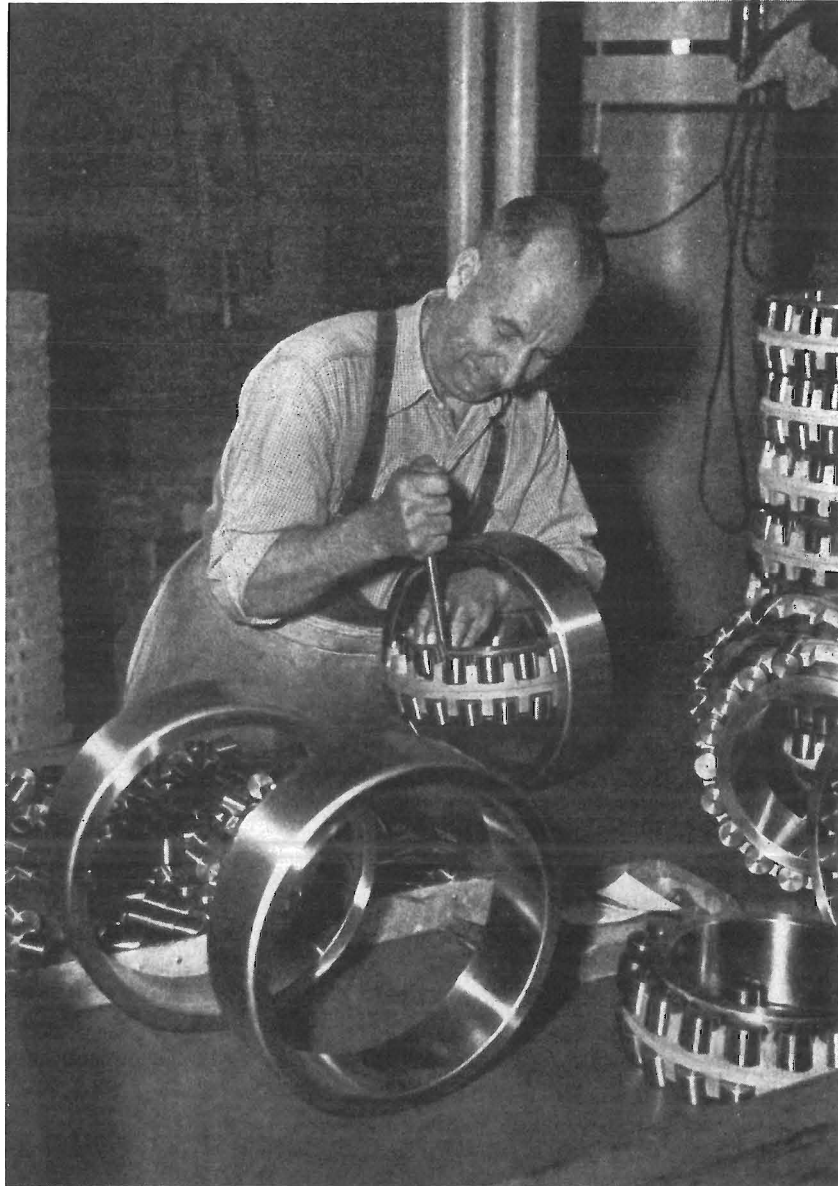
was about 40 per cent, but by 1953 it had diminished to less than 10 per cent.

Pig iron from the blast furnaces is used principally for further refinement domestically, and usually at the same works. The total output of commercial grades of iron and steel amounted to about 1.2 million metric tons in 1953, as compared with about 900,000 annually immediately after the war. Merchant iron, including building steels, beams, rails, and sheet, is consumed largely by the domestic market. A large part of the quality steels, such as profiles, construction and tool steels, ball-bearing steels, rod and tubes steels, and cold-rolled sheet, is exported. The total export of rolled and wrought iron and steel amounted to about 180,000 metric tons in 1953, and exceeded in value the quantitatively larger amount of iron and steel which was imported.

Among the most important of the Swedish iron and steel mills are *Domnarvet*, which has specialized in commercial steel, *Sandviken* (highly refined special steels), *Uddeholm*, *Fagersta*, and *Avesta* (stainless and other alloy steels). Altogether the Swedish iron and steel industry employs more than 30,000 workers, most of them concentrated in the industrial area in the middle of Sweden.

Fabricated Steel Products

The mills themselves do most of the further processing of steel, but the majority of the fabricators of finished iron and steel products are independent. The list of products is extensive, and considerable quantities are exported to almost all countries of the world. Among the export items are locks, hinges, various types of tools, household articles, kerosene stoves, and meat grinders. Many of the enterprises are old—the oldest of them from the sixteenth century. Eskilstuna, the name of the city where the making of knives and other cutting tools has long been concentrated, is now known over much of



Ball bearings are an example of large-scale industrial application of Swedish inventions. SKF (AB Svenska Kullagerfabriken) exports bearings to almost the entire world, and owns a number of subsidiaries in other countries. Photo: Svenska Dagbladet.

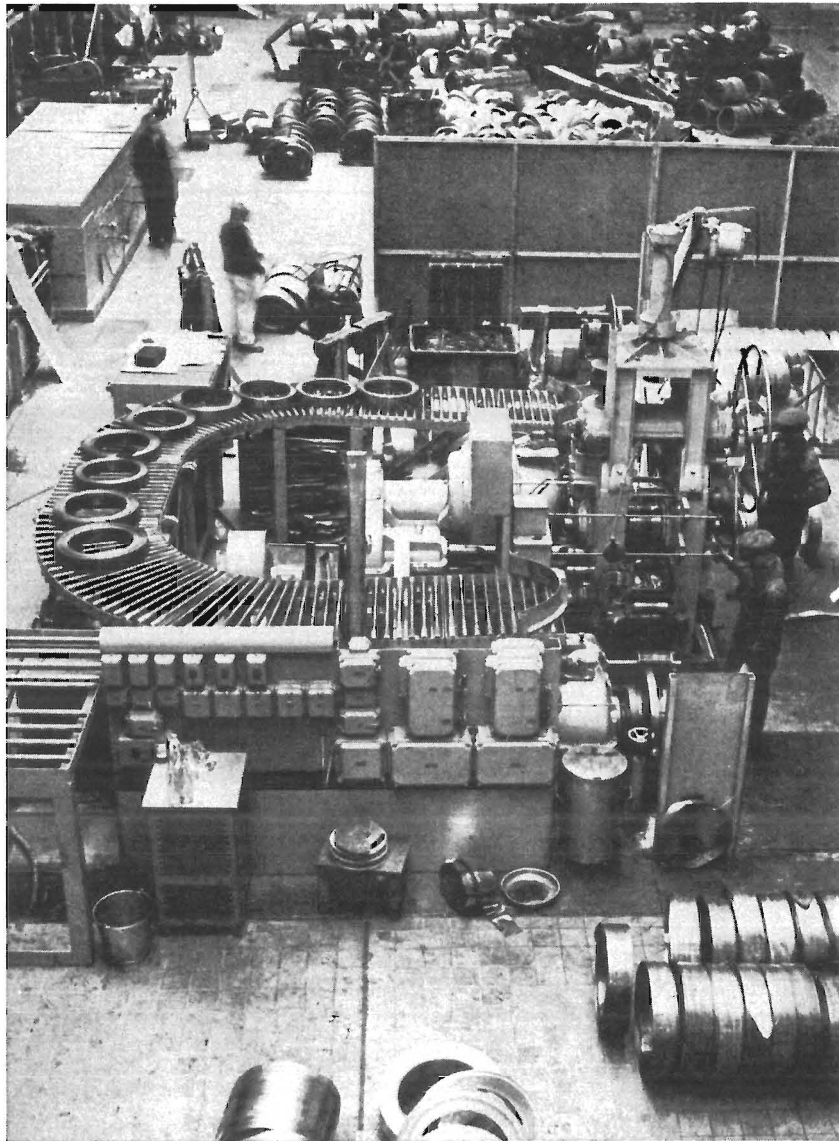
the world. In addition to a few large plants, there are many small and medium sized enterprises. Altogether, they employ some 40,000 workers.

Shop and Machine Industries

The mechanical industries did not come into being until near the end of the nineteenth century. The demand for their products had previously been restricted, to a large degree because of inadequate communications. This limited sales to the local market made specialization impossible. The rapid development of communications, of other industries, and, to a lesser degree, of agriculture which began in the 1870's, brought with it a strongly growing demand for various types of machine products. The old shops continued their traditional varied activities, but by their side arose new and more specialized enterprises. Standardized products began to become common about the turn of the century. To the extent that it contributed to familiarity with the use of iron and helped to develop a bent for mechanics, the old ironworking industry was of great importance in the growth of the machine industry. Many of the best known enterprises are based on domestic inventions or technological improvements. The high quality of Swedish iron and steel have also, of course, played an important part.

Today, the mechanical industries employ something like 200,000 workers, in 3,500 enterprises of varying size. About 25 firms have more than 1,000 workers. The value of the manufactured product is about one quarter of the country's gross industrial product.

The most important grouping in this sector are the machine shops, including foundries, which have grown with unusual rapidity during the last twenty years. The volume of production was doubled during the 1930's, and about the same rate

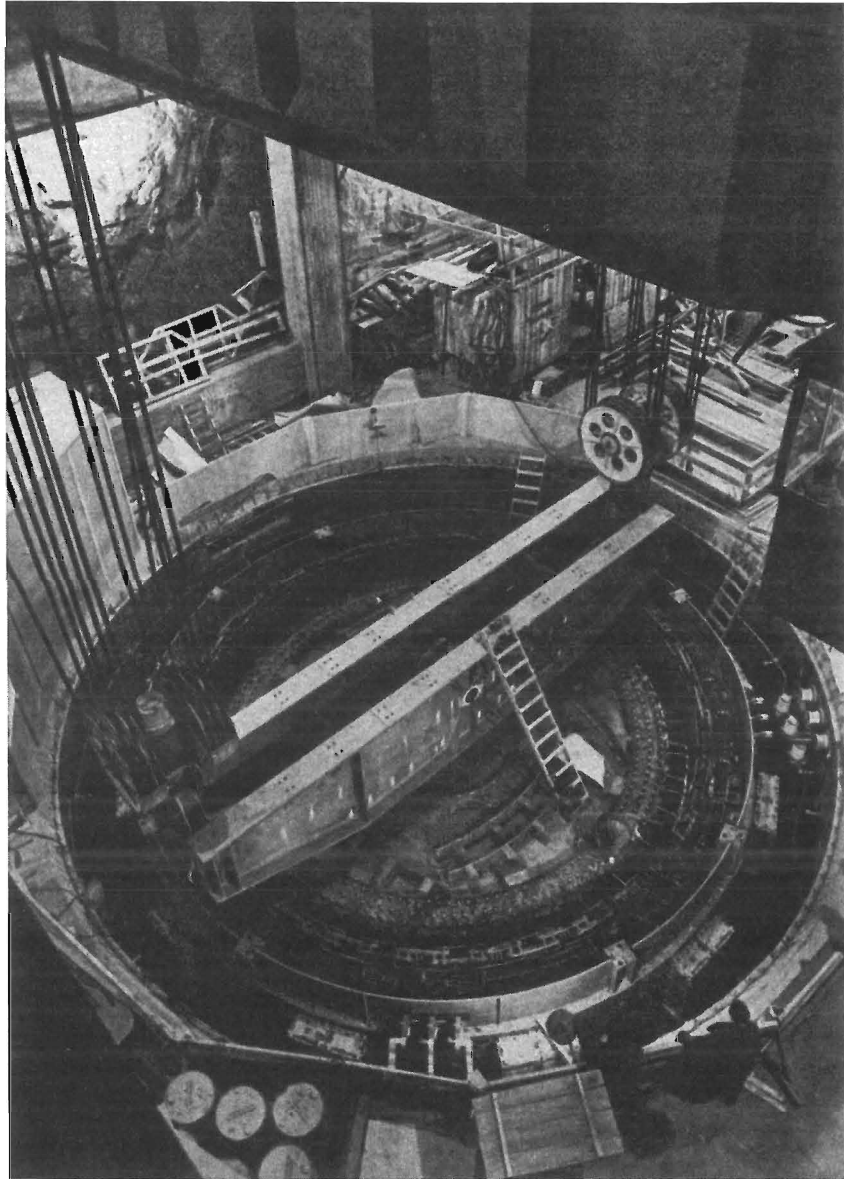


From the Svenska Metallverken in the city of Västerås, makers of semi-finished metal products. Photo: Inge Holm.

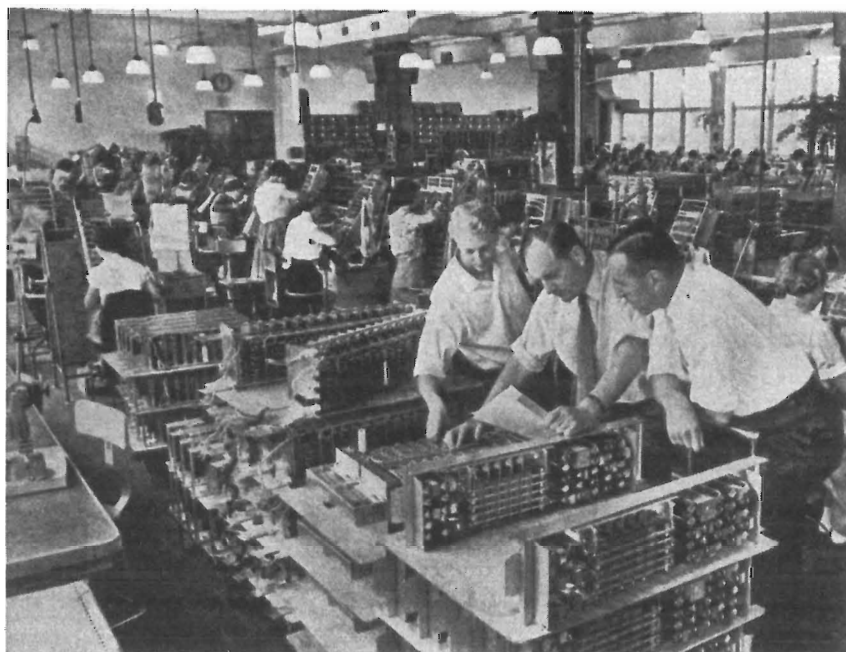
of development was maintained during the 1940's. Most of the plants are located in the southern part of the country, spread over one large region between Stockholm and Gothenburg and another in the southernmost province, Skåne. The biggest plants are often located in cities—principally Stockholm, Gothenburg, and Malmö—but a comparatively large number are in the country. The products cover a wide range, and in many fields are not only sufficient for domestic demand but are exported to all parts of the world. The SKF company (*AB Svenska Kullagerfabriken*), in Gothenburg, which makes ball bearings based on the designs of Sven Wingquist, Swedish inventor, is the largest exporter of ball bearings in the world. The company is also one of the largest exporters in Sweden, with a sales organization embracing some 61 countries. Altogether, the corporation employs 30,000 people, of which 10,000 within Sweden.

Another of the largest export corporations is *AB Separator* of Stockholm, which manufactures cream separators, other dairy machinery, and industrial separators for the purification of oils, beer, ale, gasoline, and other fluids. The first continuous cream separator was invented by Gustaf de Laval, a Swede, who also worked out a number of other inventions and designs, including a steam turbine produced by a corporation created for the purpose, *AB de Laval's Ångturbin*. Other enterprises in related fields, whose manufactures are based on Swedish inventions are the *Svenska Turbin AB Ljungström*, which makes steam turbines under the trade names Stal, and *AB Babco*, makers i.a. of the primus stove.

All of the products of the *Svenska AB Gasaccumulator* (AGA) are based mainly on the inventions of one man, Nobel Prize Winner Gustav Dalén. The principal manufactures are marine navigation signal lights and signal equipment for other fields of communication. The company also makes the fuel-saving AGA stoves, which are sold throughout the world.



Swedish factories supply most of the domestic industrial demand for electric and electrically powered machines. The ASEA factories in Västerås manufacture generators, transformers, and the like, which are also marketed in some fifty other countries. Photo: Lennart Nilsson.



The Telefon AB L. M. Ericsson (above) has made Swedish telephonic equipment known throughout most of the world. Photo: L. M. Ericsson.

The manufacturing program of AB Elektrolux has been erected partly on the basis of a Swedish invention—the fully automatic refrigerator. It and the other electrical products of the company are sold in many parts of the world (right). Photo: Elektrolux.



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During recent years, the AGA company has also begun manufacturing optical instruments, sound film equipment, and anesthetizing equipment.

Other products which are exported in volume are locomotives, trucks and busses, bicycles, combustion engines, steam boilers and steam engines, farm machines, office machines, machine tools, water turbines, war material, and gas and electric welding equipment.

The Electro-Technical Industry

Generous resources of water power have helped bring the electrical industry to a position of international rank. The first major hydro-electric installation was constructed during the 1890's, and the country today is covered by a network connecting practically all producers and distributors. Several of the electrical industries are based on inventions or improvements in design made within the country; the transmission of three-phase alternating current over long distances was perfected by Jonas Wenström and applied practically on a major scale beginning in 1893. Wenström, one of the pioneers in the technique of electric power transmission, was associated early with the corporation which was to become the largest in the country in the high-tension field, ASEA (*Allmänna Svenska Elektriska AB*). Gradually, a number of other enterprises were absorbed by ASEA, and today, with 30,000 employees, it is the largest corporation in the country. The value of the corporate product amounted to about 1,000 million Swedish kronor in 1952, and included generators and other power equipment, transformers and high-tension equipment, motors, steam turbines, electric locomotives, trolley busses, cables, electric stoves and household equipment, elevators, fans, air-conditioning equipment, welding equipment, and lighting fixtures. Most of the output stays in the country, but ASEA has a sales

organization embracing some 50 countries and sells some of its manufactures abroad.

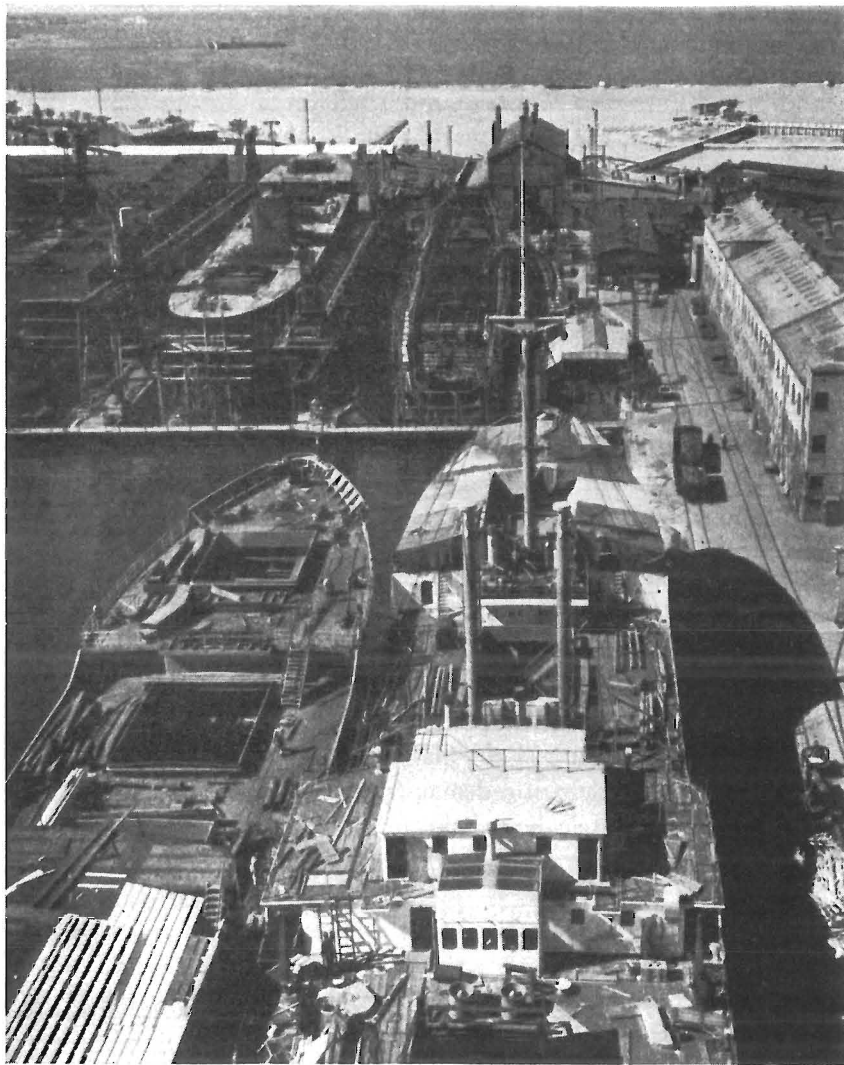
The dominating position of ASEA in the high tension field is matched by *Telefon AB L. M. Ericsson* in the low tension field. The corporation, which began on a modest scale late in the 1870's, has developed into a whole family of enterprises, the "L. M. Ericsson group", with manufacturing subsidiaries in a number of European countries and a sales organization that reaches over almost the entire world. The L. M. Ericsson automatic telephone system is used not only in Sweden, but in Finland, Holland, Italy, Norway, Poland, Russia, Turkey, Mexico, and North and South America. The manufacturing program includes telephone and telegraph equipment, fully automatic dial telephone systems, electrical measuring instruments, fire and burglary alarm systems, radio receiving sets, and commercial radio equipment.

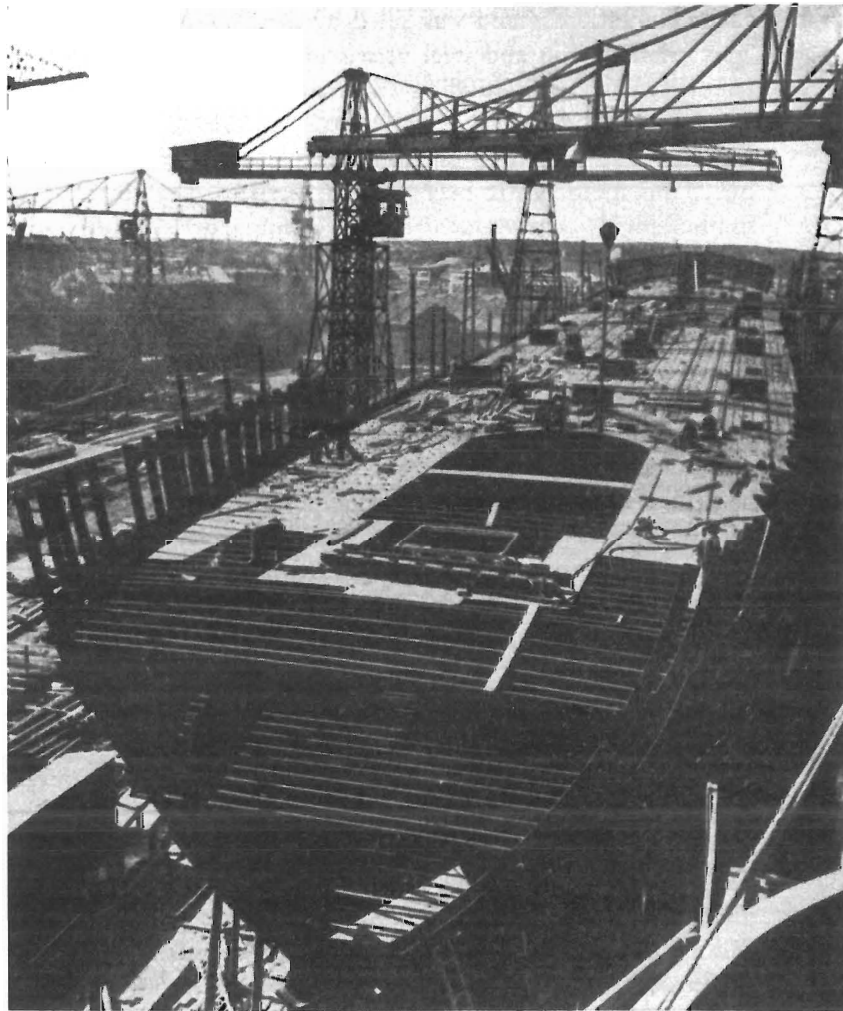
A third internationally known enterprise in the electrical field is *AB Elektrolux*. One of its principal products is the fully automatic refrigerator invented by two Swedes, von Platen and Munters, which can be operated on electricity, gas, or kerosene. Other Elektrolux products are vacuum cleaners, floor polishers, household appliances, and small universal motors. A large share of the output is exported and, because of problems of foreign exchange and customs duties, some manufacturing is carried on in other countries, including France, England, and the United States.

Domestic production of light bulbs, radio receivers, and the like is adequate for domestic demand by and large. There are some exports of electric household appliances, heating equipment, etc.

Shipbuilding

Shipbuilding has old traditions in seafaring countries like Sweden, and during the era of wooden ships practically the





The shipbuilding industry has expanded its capacity since the war, in some years reaching second place in international ranking by volume of construction. The yards have to a great extent built for export—and particularly for Norwegian buyers—but the Swedish merchant fleet has also added a large number of ships to its roster. At left, the Kockum yards in Malmö; above, the Götaverken of Gothenburg. Photo: Studio Dittmer and Studio Gullers.

entire domestic demand was filled by Swedish yards. After the conversion to iron and steel vessels in the middle of the nineteenth century, shipbuilding suffered a temporary reverse in Sweden. Since the turn of the century, however, progress has been rapid in regard to both production capacity, and equipment and methods. It may be said, perhaps, that interest in shipbuilding was re-aroused by the opening of Swedish trans-oceanic lines in 1904, but the real expansion took place during the First World War under the compulsion of building ships at home. Since then, the shipbuilding industry has expanded further, and the yards now probably stand in the very front rank in terms of capacity and competitive strength. By specializing mainly in certain types of vessels—fast ocean-going freighters, tankers, and ore carriers—they have been able to hold their own in international competition, and a good share of the finished tonnage goes to foreign shippers, particularly in Norway. Among the shipbuilding nations producing for foreign buyers, Sweden ranks second only to England. The total value of Swedish ship exports amounted to 365 million Swedish kronor in 1953, representing 550,000 gross tons. This is twice the annual volume at the end of World War II.

The shipbuilding industry employs more than 20,000 workers, distributed among some 150 companies. Of these, however, only about 15 are of major size. Close to 90 per cent of the shipbuilding industry is located on the west coast, as well as all the large yards, including *AB Götaverken*, *Eriksbergs Mekaniska Verkstads AB*, and *AB Lindholmens Varv* in Gothenburg, and *Kockums Mekaniska Verkstads AB* in Malmö. In size, these four are fully comparable to the major yards in other countries.

Stone and Earth Industries

This heterogeneous industrial sector includes the stone quarrying industry, the cement and brick industries, and the

ceramic and glass industries. Altogether, this group of activities accounts for somewhat more than 50,000 employees, and production is directed principally at the domestic market. Cement, fine glass, and ceramic products are, however, exported.

Granite is among the many kinds of stone deposits in Sweden. Even in ancient times it was used for engineering and fortification works; later for road surfacing and, in somewhat more finished form, for building surfaces and allied purposes. Both production and export were important during the 1920's, but since then there has been a rapid decline. Other stones worked in Sweden are limestone, chalk, marble, and sandstone, all of which are used industrially, and for building construction in particular.

The cement industry dates from the 1870's and 1880's, and uses limestone as its principal raw material. It enjoyed a major period of growth and modernization in the 1930's, and production per man-hour is today nearly three times what it was 25 years ago. The eight factories now in production satisfy a growing domestic demand, and there are substantial exports. Production in 1953 amounted to 2.3 million metric tons, of which 390,000 tons were exported.

Brick manufacturing also began to develop into an independent industry toward the close of the nineteenth century. The raw material, clay, is present in large quantities, and the finished products—building brick, roofing tile, hard-burnt brick, soil pipe, and the like—are consumed principally within the country.

The Swedish ceramic industry, which dates from the beginning of the eighteenth century, has grown rapidly during recent decades, and is now one of the most modern in the world. It is dominated by a few large enterprises, of which some have succeeded in making themselves known for fine china both at home and abroad. Among them are *AB Rörstrands Porslinsfabriker*, *Uppsala-Ekeby AB*, and *AB Gustavs-*



The Swedish cement industry has been modernized and centralized to meet the growing domestic demand, which now requires some fifteen furnaces. Shown here is one of the enterprises of AB Skånska Cementgjuteriet. Photo: Inge Holm.

bergs Fabriker. The improving housing standard has occasioned a large expansion in the production of ceramic building materials, such as plumbing fixtures, electro-technical porcelain, etc.

The glass industry, which dates back as far as the sixteenth century, is largely concentrated in the heavily-wooded regions of the province of Småland. Glass making, which in other countries is often based on cheap fuel or readily available raw materials, enjoys no special advantages in Sweden. Nevertheless, there is a considerable export of fine glass. This development is in large part due to the professional skill of Swedish glass-workers—manufacturing is done almost entirely by hand—and intimate co-operation between the companies and prominent designers. The *Orrefors* and *Kosta* companies are well known as exponents of modern Swedish handicraft.

Household glass, bottle glass, and other utility products are manufactured in sufficient quantities to supply domestic demand.

The Textile Industries

The textile industry is today by far the most important producer for the domestic market. As early as the Middle Ages, woolen fabrics were made in Sweden by primitive methods, but not in any quantity until the seventeenth century. When the principles of mercantilism became popular, the weaving industry began to expand, and by the middle of the eighteenth century it employed about 15,000 workers. But it was not until the nineteenth century that factory-type operation was definitely adopted, and a large number of enterprises were formed on the English pattern, particularly cotton spinning and weaving mills. At first the cotton industry enjoyed an outstanding position, which disappeared gradually with the technological progress in other fields of textile manufacture.

The modern textile industry covers a wide range, cotton and

wool textiles, linen and jute, knitting, clothing, silk and rayon, etc. As late as 1930, cotton processing led the field, and furnished employment to more than 25 per cent of all textile workers. The rapid expansion which then began and which continued until the outbreak of the Second World War swept the entire sector, but was especially marked in the relatively new clothing and knitting industries. Today clothing is the largest single section in the textile field, in terms of employment, with some 40,000 workers, or more than 40 per cent of the total. Several factors have contributed to this development. The general improvement which has characterized the economy during recent decades is perhaps of prime importance. Increased buying power and the rapidly improved standard of living have, in other words, made possible a gradual broadening of the domestic market for textile products. Among other things, they provided the prerequisites for the great expansion of the clothing industry. Furthermore, the wartime blockade and the consequent great reduction in imports, particularly of finished goods, contributed to the development. Despite the fact that scarcely one-fifth of the textile industry's demand for raw materials is covered by domestic supplies, the cotton and wool industries meet nearly 80 per cent of the demand for cloth and yarn, and domestic producers supply about 90 per cent of the knit-goods and ready-made clothes consumed on the domestic market. Swedish consumption of textiles per capita ranks third in the world, after the United States and Canada, which is a good indicator of the standard of living.

The cotton industry began producing on a serious scale during the first half of the nineteenth century, when the great English inventions in the field of textile manufacturing began gradually to be exploited. Most of the mills are concentrated in areas near Gothenburg and Borås in southwestern Sweden, where textiles were long made by hand and later by home industries. The rapid increase in production during the last



The ready-made clothing industry has expanded with the improved standards of living, and its products are of unusually good quality. Above, a picture from Junex AB. Photo: Rom-foto.

20 years has been made possible by extensive modernization and without any increase in the number of workers, which amounts to some 17,000. Large scale production is the rule, and the three largest weaving mills are responsible for half of the total production of cotton cloth.

The wool industry has also developed rapidly. As a result of continuing modernization, the number of mills has been gradually reduced. The trend is toward large-scale industrial production, although it has not proceeded as far as in the cotton industry. The number of workers is about 14,000.

The linen and hemp industries, which have old traditions in Sweden, at one time processed domestic raw materials exclusively. Toward the end of the nineteenth century, however, the cultivation of flax diminished and it was necessary to import a major part of the supply. During the two World Wars, however, domestic flax production increased again, and it was possible to operate the linen mills at full capacity. This is still the case. Manufacturing methods in the linen industry are highly advanced. Swedish artists are encouraged to create indigenous patterns, independent of foreign models.

The jute industry is of much later origin than the sections of the textile industry discussed above. It is entirely dependent on imports of raw fiber, but during normal times it supplies the entire domestic demand for jute products, cloth, etc.

The manufacture of *rayon*, based entirely on domestic raw materials, was begun before World War II, but as late as 1939 it was of relatively small importance. Most of the demand for rayon was met by imports. During the war, however, production was increased to the point where rayon ranked with wool and cotton. Rayon fibers were mixed extensively with cotton and wool in making cloth, and helped greatly to overcome the wartime shortages of cotton and wool fiber, which were extremely difficult to get.

The knitting industry has evolved out of handicrafts, and



Constructing a "Facit" calculating machine, perhaps the most famous of the many well known office machines made by Åtvidaberg. Photo: Åtvidaberg.

the oldest factories were founded at the beginning of the nineteenth century. The list of products, which began with stockings, now includes all sorts of underwear, dresses, and the like. The yarn comes mainly from domestic spinning mills. The knitting industry employs more than 10,000 workers.

The clothing industry has grown almost explosively in recent decades. Like the knitting industry it presents a heterogeneous picture in regard to the size of individual enterprises. There are many small productive units side by side with plants employing more than 1,000 workers each. The business requires relatively little capital investment, and this, combined with the expanding demand, has resulted in a high rate of new business formation. At the beginning, the output consisted mostly of work clothes, but now covers the whole range of ready-made articles and meets almost the entire domestic demand. The clothing industry fabricates mainly domestically produced cloth.

Textile exports, once relatively insignificant, have begun to expand substantially during recent years. They now cover both a wider range and a more advanced state of manufacture; in other words, in addition to rayon, silk, wool, and cotton cloth, knit goods and finished clothing are sold abroad. The value of textile exports in 1954 was about 120 million Swedish kronor.

The economic conditions of the textile industry have varied considerably since the war. Demand, competitive conditions, production, and imports have all fluctuated.

During the first postwar years, until 1948, the consumption of textile goods increased in what was definitely a seller's market. During 1949, however, the demand for textile products showed a trend toward stagnation, at the same time as the supply continued to increase, as a result of both increased production and increased imports. A buyer's market developed, and some selling difficulties were encountered. Toward the

end of 1950, however, the demand increased again, introducing a period of strong fluctuations in productions and imports. During this period the supply of textile goods has sometimes exceeded consumption, sometimes fallen below. This, in turn, has given rise to fluctuations in inventories, which have further helped to keep production and imports in a state of flux.

The erratic production trends may be illustrated by the following comparison. With 1950 representing 100, the index for total production of textiles was only 98 in 1949. In 1951 it was 103, in 1952 it was 87, and in 1953 it was 96. From 1953 to 1954 production declined by 2 per cent. This production curve, of course, also shows that the textile industry has not kept pace with the total industrial expansion in recent years.

Leather, Shoe, and Rubber Industries

Until the end of the nineteenth century, leather tanning was a handicraft carried on at more than 500 separate places. Since then the work has been greatly modernized, and leather manufacturing is now confined to only 40 enterprises—some of them fairly large—employing about 2,500 workers. There is considerable foreign trade in raw hides. South American hides are imported for sole-leather, and a large part of the thinner Swedish hides are exported. Leather production is varied and, among other things, covers almost the entire demand of the domestic shoe manufacturers. Some types of leather for shoe uppers are, however, imported.

Factory production of shoes dates from the last decades of the nineteenth century, when the hand-made article began to decline and the relatively inexpensive standardized product began to win an increased market. There are now a number of shoe manufacturers, varying in size. More than half the industry is concentrated at Örebro and Kumla, cities in the province of Närke, and once the center for hand-made shoes.

Altogether, the shoe industry employs about 10,000 workers, with a production rate of about 10 million pairs in 1954. Both imports and exports are relatively insignificant. The consumption of leather footwear is low in proportion to the otherwise high standard of living—about 1.6 pair per person per year, compared with 2 pair in England and more than 3 pair in the United States. It should be noted, however, that the consumption of rubber footwear is considerably higher in Sweden than in these countries.

The leather and shoe industries, like the textile industries, have had difficulties to contend with in recent years, and the production index is irregular. Production declined during the latter half of 1951 and the first half of 1952, but climbed again in 1953, only to decline 2 or 3 per cent again during 1954.

Among the leather industries are gloves, clothing, and the like. There are no exports of these products to speak of, but imports are somewhat more extensive. The fur industry is somewhat larger, employing about 3,500 workers. Sweden imports principally raw furs, and exports raw furs of approximately equal value.

The Swedish rubber industry was founded at the end of the nineteenth century as part of the general domestic industrial expansion. The first factories were devoted entirely to rubber footwear, but during the years additional plants have been established for pneumatic tubes, bicycle and automobile tires, technical rubber products of various kinds, and the like. There are 7,000 rubber workers, of which most are employed by a few relatively large companies. Most of the raw materials are obtained from abroad, and particularly natural rubber, of course. But synthetic rubber is being made at home in increasing quantities. Rubber exports, principally of footwear, were once substantial, but have been insignificant since the war. Finished rubber imports are restricted largely to automotive tires.

The Chemical Industry

The chemical industry has drawn extensively on the experience of the major industrial nations, but it has also demonstrated the power of initiative. The latter is true particularly of electro-chemical manufacturing and the explosives and match industries. The country lacks many of the major raw materials for the chemical industries, notably coal, petroleum, raw phosphate, and common salt. The resources of wood, however, form a favorable base for a limited organic chemical industry. Despite the absence of raw materials, the chemical industry is now highly varied, after expansion and development during and after the war, which were much more rapid than ever before. During the blockade, it became apparent how damaging a lack of chemicals and chemical products can be to other sectors of the economy, and against this background the rapid expansion was only natural. It is not possible here to discuss the many individual chemical industries, but it may be noted that some of them have substantial exports. This applies not only to the products of the match and explosives industries, but to calcium carbide, cellulose lacquers, pharmaceuticals, chemically pure alkalis, super-phosphate fertilizers, and the like.

Match manufacturing is perhaps the most widely known Swedish chemical industry. Safety matches are a Swedish invention, dating from 1844. The first factory was established in Jönköping, and this city has remained the center of match manufacturing ever since. Safety matches soon won a world-wide reputation, because of their superior quality, and exports were emphasized from the very beginning. More than 30 match factories were started in Sweden in the 1870's and 1880's, and competition developed in the form of factories in other countries on the Swedish pattern. A reorganization of the Swedish match industry gradually became indicated, if it were to main-

tain its leading position. After a series of mergers all the companies were united in a single trust, the Swedish Match Company (*Svenska Tändsticksaktiebolaget*), under the direction of an internationally known financier, Ivar Kreuger. Today there are only a few factories in operation, and both production and exports have declined substantially. The Swedish Match Company has, however, established manufacturing subsidiaries in many countries, and maintains a substantial technological lead over most competitors.

The explosives industry is based in large degree on the inventions of philanthropist Alfred Nobel. His name is closely associated with the *AB Bofors*, which is known abroad for its high quality artillery weapons and other war materiel. Nobel also founded factories at Bofors to make powder and explosives. The production of explosives exceeds the domestic demand, and permits extensive exporting. A number of explosives factories have been established abroad under Swedish direction, among them one for the Government of Iran.

The Food Industry

The food industry in Sweden, as in most other countries, is an important sector of the economy drawing mostly on domestic raw materials. Imported raw materials are used by the tobacco, oleomargarine, chocolate, and brewing industries. Sugar is processed by a monopoly corporation, which enjoys government support. For a number of years, Sweden has been self-supporting in sugar. Tobacco products are made only by a government monopoly corporation, which is also the sole importer of finished tobacco products. Intoxicating liquors are produced under private management, but sales are conducted solely by the government. Tobacco, spirits, and wine are subject to high taxes, which yield considerable income. Imported foods



Matches are among Sweden's most widely known exports. The picture is from Svenska Tändsticks AB in the city of Jönköping. Photo: Studio Gullers.

consist principally of items which are more or less luxuries—tropical fruits, coffee, chocolate, tobacco, wine and spirits.

Since the end of World War II, the preserved foods industry has expanded greatly, and particularly frozen foods.

Handicraft and Small Industry

A large part of the Swedish population still derives its income from what may be described as small business. The competitive resistance of these people to larger productive units is explained by a number of factors. Mass production is not practical for all kinds of manufacturing, and capital investment cannot replace the manual skills which have long set their mark on the Swedish handicrafts. The extent of small business in modern Sweden, however, should probably be ascribed primarily to the rapidly rising cultural and material standards, which has led to a continuing increase in the number of repair and service shops. Another important factor is the expansion of subcontracting in industry, a trend which will probably continue. Small industry often commands the special skills and special machines needed for making a small, complicated part used in the output of large manufacturers, but of which any individual manufacturer requires too small a quantity to justify the investment required to produce it himself. Finally, it should be pointed out that the wartime blockade and the resultant shortages stimulated the establishment of small industries.

Construction Industry

The construction industry differs from most other sectors of the productive economy, to some degree, and it is only in recent times that a more or less permanent and skilled corps of

construction workers has come into being. Formerly, building activities came almost to a complete halt during the winter months. The cold made foundations difficult to construct properly and increased the costs. Building was done in large part during the summer, and by people who held other jobs during a large part of the year. Gradually a force of skilled workers developed, but because operations were still concentrated in the summer months, there was a good deal of seasonal unemployment.

Today, however, these organizational difficulties have been almost entirely eliminated. The mechanization of foundation work with power shovels and other tools, and the development of new and more flexible building materials such as cement which hardens even at low temperatures, have modified considerably the difficulties and high costs formerly associated with winter construction. The present practicality of year-round construction can also be ascribed to the determination of the authorities and of construction enterprises to achieve an organization of the work that would eliminate temporary unemployment periods to the greatest possible extent.

The construction industry employed about 250,000 people in 1950, a figure exceeded only by the mining and metal-working industry. Another indication of the size of the construction industry is obtained from the following statistic: from 1950 to 1955 some 15 to 20 per cent of the gross national product was attributable to investment in residential and other construction. Residential construction—the largest entry—alone amounted to about 6 per cent of the gross national product. This 6 per cent average figure represents an annual rate of new construction of 40,000 to 45,000 units—and in 1953 and 1954 the actual rate was close to 50,000. However, the production rate was by no means adequate to meet the demand. It is estimated that the gap amounts to about one full year's additional production at the current rate. Several circumstances

are responsible for the shortage. During the war years, for example, residential construction was relatively small. During the postwar years, with the exception of 1946, the construction sector of the economy was sharply limited by the restrictions on investment imposed by the government as an anti-inflationary measure. Furthermore, the demand for housing has risen sharply in comparison with the pre-war years. A higher marriage rate was a contributing factor, but popular demand for higher standards and more room per person, resulting from the higher level of real wages, was perhaps even more important. The relative decrease in the rent level since before the war, in comparison with other consumer prices, had a comparable effect. Continuing rent controls may be described as one feature of an extensive government housing program, aimed at raising housing standards throughout the country, which also includes substantial loans on good terms, rent subsidies, and other aids to people in the low-income groups.

From time immemorial residential housing in Sweden was constructed principally of wood. Subsequently brick became, and still remains, the most important building material. During recent decades, concrete and light concrete have begun successfully to compete with these time-tested favorites. Simultaneously, there have been significant shifts in architecture and design. Further, there has been and continues to be a perceptible improvement in the standard of residential housing. Running water and bathrooms are now standard equipment in even the smallest new housing units, at least in urban areas. Fireplaces and stoves have been replaced by central heating of buildings or groups of buildings, and the old wash-tubs have been succeeded by laundry rooms with mechanical equipment or by central laundries. In recent years, particular emphasis has been devoted to making the kitchen, the working center of the home, both practical and efficient.



Developments in food preservation are an example of the Americanization of the Swedish food industries. The Findus company (above) has been a pioneer in Sweden in the frozen food field. Photo: Studio Gullers.

Fuel and Energy

The two principal sources of energy in Sweden are water-power and wood. Other sources of energy are insignificant. There are no known deposits of petroleum, and the coal deposits, concentrated exclusively in southern Sweden, are neither of first-class quality nor sufficient to meet more than a fraction of the national demand. There are large reserve supplies of energy in the peat bogs. It has been estimated that the peat resources are equal to at least 4,000 million metric tons of coal, which would supply the entire fuel needs of the country for 500 years. It is not possible, however, to exploit the peat commercially, and production is normally insignificant.

The resources of wood fuel are extensive. The annual estimated new growth of about 50 million metric tons equals the heating value of some 12 million metric tons of coal. The entire annual demand for all fuels is estimated as the equivalent of 15 million metric tons of coal. It would, thus, be conceivable to meet most of the demand for fuel with wood. This is not technically possible, however, and economically, of course, it would be unsound to use more than a small part of the annual growth for fuel. Much greater value can be obtained from the forests by producing cellulose pulp, alcohol, and other organic chemical products. However, some wood is used for fuel, principally in homes but also industrially. Alcohol is obtained as a by-product in the manufacturing of sulphite cellulose, and this is used in combination with gasoline to power engines. Other refined wood fuels are charcoal and wood tar. Charcoal is used principally in industry, mainly to make charcoal pig iron. All wood fuels consumed annually equal scarcely a third of the national demand.

The most important source of energy in Sweden is water-power. It has become more and more important as the forest



One of the four one-phase transformers in the large hydro-electric installation at Harsprånget. The transformer units each have a capacity of 115,000 kW at the transformation 16,000/380,000 k and are the first in the world with such high tension for commercial use. Photo: State Power Board.

resources are increasingly devoted to manufactured products. Water-power was used in the iron industry as early as the fifteenth and sixteenth centuries, and during the years many brilliant mechanical means were devised to transmit power from the waterfalls to iron mines and mills. The longest of these artificial "works" measured almost 8,000 feet. Some of them are still to be found in the Bergslagen region, although they are no longer used. This restriction to the immediate neighborhood of the waterfall, imposed by the direct application of power, did not disappear until the end of the nineteenth century, when it became possible to transmit electric power over long distances.

One-eighth of the surface of Sweden is covered by rivers and lakes. These are often joined in such fashion that natural reservoirs are formed above the waterfalls. The average height of the falls is less than in Switzerland and Norway. The total exploitable resources of hydro-electric power are estimated at 80 milliard kilowatt hours, which is exceeded in Europe only by France and Norway. Almost 70 per cent of the harnessed resources are found in the northernmost part of the country, as well as most of the unharnessed reserves. The water-power in the southern part of the country is now almost 100 per cent exploited.

The harnessing of hydro-electric power began in the 1890's, and has continued at an ever-increasing rate. In 1954, the production of hydro-electric power amounted to about 22,600 million kilowatt hours. It is estimated that production must be increased by an additional 2,000 million kilowatt hours by 1960, to keep pace with the growing demand. Harsprånget (Hare's Leap) near the Arctic Circle, has been completed since 1950. Once a major tourist attraction, the falls have now become the largest hydro-electric installation in Sweden, with a capacity of 350,000 kilowatts.

Only a lesser part of the power produced in northern Sweden

is consumed there. Eight main high tension lines carry the surplus to industrial regions in the south. An additional line was constructed in connection with the Harsprånget dam, and it transmits 380,000 volts of alternating current a distance of more than 600 miles. Another line with the same tension is also in operation. All the major sources of electric power are co-ordinated in a voluntary organization under the direction of the government, by means of which high-tension current can be transferred from one end of the country to the other according to need. Industry is the largest consumer of electric power, taking 62 per cent of the total output. Electrified railways and street railways use another 8 per cent. The retail consumption, 30 per cent, has increased greatly during recent decades and only the most isolated dwellings are now without electric power.

Even if it were technically possible to replace coal, coke, and petroleum with electricity, the nation's resources of water power would not permit it. It is clear, however, that the increase in hydro-electric power production will decrease the import requirements for these fuels. In 1953, about 6 million metric tons of coal and coke were imported, and the imports of mineral oils, including gasoline, amounted to almost 6 million metric tons. Imports of petroleum have increased considerably since the war, as a result of the expansion in automobile traffic and oil heating of residential buildings.

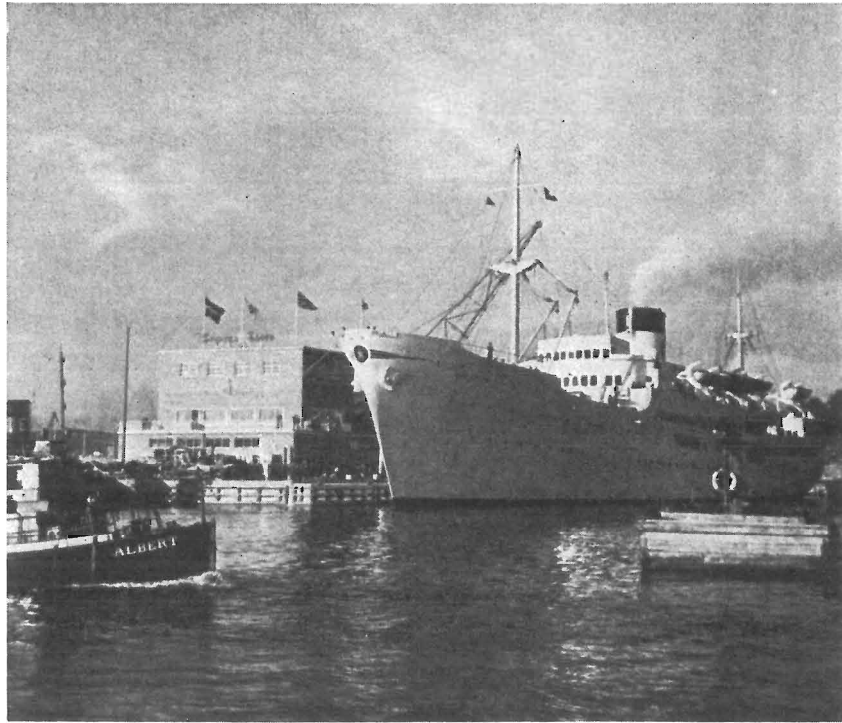
Shipping

Sweden may almost be regarded as an island in terms of communications. Counting the exports of ore by way of Narvik, Norway, no less than 99 per cent of all foreign trade moves by sea. About two thousand Swedish ships, manned by some 25,000 sailors, are constantly in motion on the oceans of the world and along the seaboard. About half of the nation's foreign trade

is carried in Swedish bottoms. The gross income of the Swedish merchant fleet from shipping amounted to about 1,200 million Swedish kronor in 1953, of which some 75 per cent was earned in trade abroad. This 75 per cent was divided almost equally between trade involving Sweden and other countries on the one hand, and trade between purely foreign points on the other.

Although the Swedes have long been a seafaring nation, it was not until the end of the nineteenth century that the merchant fleet began to expand to any extent. The growing increase in foreign trade after the turn of the century was largely dependent on the establishment of Swedish transoceanic shipping companies. Regular connections were soon established with South Africa, Australia, South and Central America, North America, and the Far East. Shipping lines to European countries, which were started to some ports as early as the 1870's, also grew rapidly. The merchant fleet expanded at a great rate, and by the beginning of the second World War included 2,250 ships totalling some 1.6 million gross register tons. One third of this tonnage was lost during the war, but the merchant fleet is nevertheless today both larger and more competitive than ever before. By the end of 1953 the number of vessels was about the same as just before the war, but the tonnage had increased by about two thirds to some 2.7 million tons. As a result of extensive new construction during and after the war, a majority of the ships are modern, fast, and equipped with the latest technical devices. Shipping capacity has thus increased considerably more than the tonnage figures would indicate. It is an illustrative sidelight that tonnage has been multiplied ten times during exactly 100 years, while the number of ships has simultaneously been reduced by almost 500. The shipping capacity has been increased 50 times over during the same period.

The presence of many good natural harbors has been im-



Gothenburg is the country's largest port, and the base of a number of European and trans-oceanic lines. Passenger service to England is maintained by Swedish Lloyd, whose ship *Patricia* is shown at the pier in Gothenburg. Photo: Svenska Lloyd.

One of the liners of the Swedish American Line entering the port of New York. Photo: Thomas Airviews.





Scandinavian Airlines System (SAS) is an interesting example of practical economic co-operation between countries. The association was formed in 1946 by the merger of the three main airlines in Sweden, Norway, and Denmark. Today SAS is one of the largest airlines in the world, and the first to open regularly scheduled service over the North Pole (Scandinavia—Los Angeles). Photo: SAS.

portant in the growth of shipping. Most of the ports were constructed specifically for the needs of the export industries. The sawmills and cellulose factories situated at the mouths of the northern rivers have erected their own loading installations, and iron ore is shipped exclusively via two Swedish ports, Luleå and Oxelösund, and Narvik, Norway, all specially equipped for the purpose. The three largest ports are Gothenburg, Stockholm, and Malmö, in that order. Trade with transoceanic countries proceeds principally via Gothenburg, on the west coast. It is the home port of a number of the Swedish lines. Stockholm is the major port for traffic on the Baltic Sea.

Communications

Communications within Sweden have posed the many problems that inevitably appear in a large, relatively sparsely populated country. And the wooded, stony surface is not particularly suited to the construction of railways, highways, and airports. Providence was generous in one respect. The many lakes and rivers facilitated water transport, and during the first half of the nineteenth century a number of waterways were constructed. The most important of these was the Göta Canal, which connected the west and east coasts. Railway construction began comparatively late, which was advantageous to the extent Sweden was able to utilize the experience gathered in other countries. It was decided from the beginning that the government would be responsible for the main lines, while private enterprise was permitted to construct local roads. The main lines were built during the latter half of the nineteenth century, connecting Stockholm, Gothenburg, Malmö, and the northernmost provinces. Gradually they were joined by a network of private lines. These were most extensive in the Bergslagen region, where the iron and steel industry took pains to establish good connections, and in the southernmost province

of Skåne. Most of the privately-owned lines have since passed into the hands of the government. On a per capita basis, the railway network is surpassed in length in only a few countries, including the United States. The Swedish railways are comfortable, modern, and well-equipped. During recent years more and more of the lines have been adapted to electric power, and all the main lines are now electrified.

Because of the country's relatively large area, automobiles, like the railways, are important. But the construction of highways has occasioned high per capita costs. The broad express highways found in some countries are absent in Sweden. The construction of national highways has been started, but because of the war it has been possible to complete only part of the plan. Only a small part of the highways are permanently surfaced with concrete or asphalt. Both passenger and truck traffic increased greatly during the 1930's. With the outbreak of war, drastic reductions were imposed, because the country is highly dependent on imports for automobiles, fuel, and above all rubber. By converting to producer gas as a substitute for gasoline—using both wood and coal—it was possible to maintain some volume of automotive traffic.

Not until several years after the war did automotive traffic regain a high level. Starting about 1950, the growth was rapid, and between 1950 and 1954 the number of automobiles and trucks on the road more than doubled. In 1954 there were 650,000 vehicles registered, of which some 540,000 were passenger cars. This is one passenger car for every thirteen inhabitants—which is probably more per capita than in any other European country.

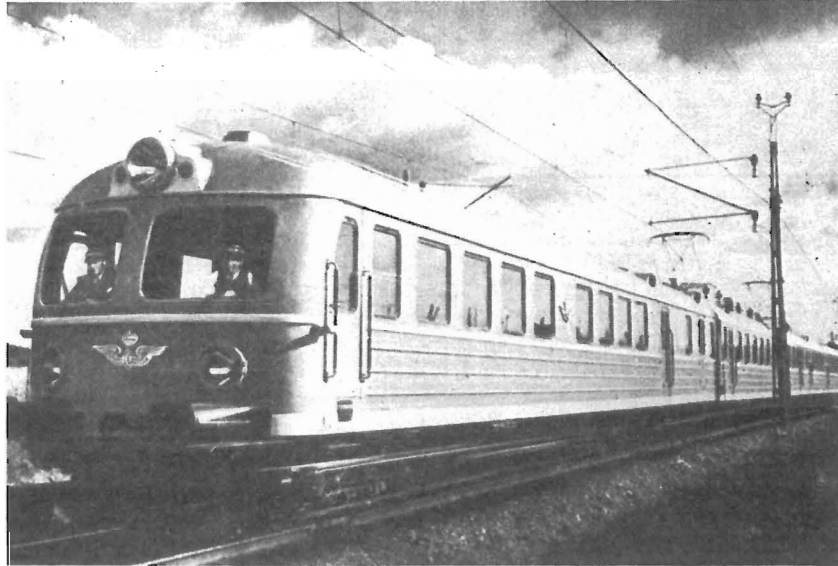
Automotive transport plays a large part in the distribution of foods, principally milk, but trucks are being used to an ever-increasing extent for heavy goods as well, including timber. Truck-transport companies maintain scheduled cross-country freight services. Cross-country bus lines have also

grown rapidly, and are particularly vital in the northern regions. They transport mail and freight as well as passengers to and from isolated communities which do not have rail service.

The Distribution System

The distribution system in Sweden is not particularly different from other highly industrialized countries with high standards of living. The modern versatile network evolved rapidly. From 1870 to 1950 the share of the population deriving its income from trade increased from 1.5 to 13 per cent. Retail trade is distributed among some 100,000 shops owned by 80,000 individuals and corporations. The average shop is small, and the number of large enterprises is limited. The branch or chain store system is common in the food retailing field, including some national chains. One of them is ICA, an abbreviation for *Inköpscentralernas AB*, which may be described as a voluntary chain of 6,000 retail enterprises. It provides for co-operative purchasing, and particularly of imported products. The consumer co-operative movement represents another form of integration. The central organization, the Co-operative Union (*Kooperativa Förbundet*, abbreviated KF), which also owns and operates a variety of industrial enterprises, functions as a wholesale buyer for the local consumer associations. There are some 800 consumer co-operatives, with a total membership of nearly 1.1 million people. The intensive competition which has developed between individually owned businesses and the co-operative movement has contributed actively to the improvement of the distribution system. New retail sales methods, including self-service shops, are becoming more and more popular in the cities.

There are department stores in the major cities. The two largest are *AB Nordiska Kompaniet (NK)* and *Paul U. Berg-*



Because Sweden covers a relatively large area and is sparsely populated in the North, the communications system faces special problems. Sweden's wealth of electric power has however made electrification of the railways possible. Photo: State Railways.

The domestic demand for automobiles is met principally by imports. However, domestic production of cars has been increasing in recent years. On the opposite page the AB Volvo plant in Gothenburg. Photo: Wezäta Studio.

AB Scania-Vabis manufactures trucks, busses, and diesel engines, of which a substantial part is exported (below). Photo: Bergne Reklamfoto AB.





ströms AB (PUB), both in Stockholm. Chain stores not unlike small department stores are found in most cities. The two largest of these, *Tempo AB* and *Epa*, specialize in inexpensive goods. The mail order business has declined in importance with the development of communications and transport, but still fulfills a function for the sparsely populated areas.

The wholesale business is conducted principally by independent enterprises, of which there were some 10,000 in 1945. There are wholesale chains in the fields of gasoline and oil, groceries, home furnishings, and office machines.

Monetary and Financial Policies

Swedish monetary policy was limited until 1931 in both its application and its effects. It was confined, by and large, to changes in the official discount rate. The depression of the early 1930's, however, was to bring with it great changes in the country's economic policies. The depression reached Sweden comparatively late, and, as usual, the deterioration in economic conditions was induced by way of foreign trade. Exports dropped off, with reverberations on the price and income structure and on the labor market. Imports continued at a relatively high level, leading to a serious imbalance in international payments. When the short-term capital investments placed in Sweden from abroad during the first years of the depression began to be withdrawn late in the summer of 1931, and when, further, the crisis in England reached the point where the pound was freed from gold, Sweden was forced to depart from the gold standard. Maintenance of the purchasing power of the Swedish krona in the hands of consumers was then established as the prime goal of national fiscal policies. At the same time, however, the Bank of Sweden (*Sveriges Riksbank*) was charged with keeping the rate of foreign exchange as stable as possible. In 1933 the krona was tied to the pound. At the same time, it

was slightly depreciated, and from then until the Second World War its value was maintained at a level about seven per cent under the old pound rate. The 1933 depreciation of the currency was to have a favorable effect on exports, and, consequently, on domestic economic trends.

To overcome the depression, an effort was made to complement the traditional fiscal measures with new policies. The government stimulated purchasing power, and employment, by investments, loans to private enterprise, and unemployment relief. These measures were financed by borrowing, and the deficit in the national budget during depression periods was to be matched by a surplus during good years. This conscious policy, which was to arouse considerable attention abroad (Sweden was one of the first countries to adopt it), was never really tested because of a conflict in the construction industry.

The economic course of Sweden during the 1930's was characterized by growing foreign trade and a large surplus in the international balance of payments. The Bank of Sweden's reserves of foreign exchange rose from 350 million kronor in 1932 to more than 2,000 million in 1938. This helped to create an easy money policy on the domestic market, and the low discount rate of $2\frac{1}{2}$ per cent was maintained until 1939. The price level did not vary greatly, and the goal of the fiscal policies, maintaining the purchasing power of the krona, was largely realized.

Conditions on the money market changed completely with the outbreak of war. There was a forced import of essential materials during the first months of the conflict. The exchange reserves showed a marked drop, which led to a tightening on the money market. The Bank of Sweden raised the discount rate for a time to $3\frac{1}{2}$ per cent, but as the liquid position of the market improved it was soon lowered to 3 per cent. To finance the increased costs of defense, the government arranged defense loans—between 1939 and 1945 the national debt was

increased by about 9,000 million kronor—which were offered on the open market and to credit institutions. There was a large supply of liquid funds in the banks throughout almost the entire war, which made it possible for the government to place a considerable amount of short-term paper with them.

Price increases followed the outbreak of hostilities and the subsequent blockade. A general price freeze was introduced in 1942 to stem the trend, and labor and management organizations offered their co-operation in attempting to stabilize wages. An increase in the prices of some consumer goods was, however, allowed as an adjustment to higher import prices.

The goals of government economic policies after the war departed in some degree from the pre-war aims. Maintenance of the purchasing power of the krona was given priority before the war, but now full employment became the prime goal. It was generally thought in Sweden that a major depression would follow upon the heels of the war. Accordingly, extensive plans were perfected for government investments and other measures by which full employment could be provided during the expected crisis. To stimulate production, and particularly building activities, the Bank of Sweden lowered the discount rate to $2\frac{1}{2}$ per cent early in 1945. The liquid position of the money market deteriorated in 1947 and 1948, largely because of the financing of import surpluses. In this situation, the credit institutions reduced their holdings of government bonds. To support the low discount rate, which was deemed desirable to avoid the increase in rents which would follow an increase in interest rates, the Bank of Sweden bought up the bond offerings. This supplied the market with liquid resources, and the authorities sought to limit investment activities by other means.

After the price freeze of 1942, prices and wages remained relatively stable until the end of the war. With peace, an effort developed to re-establish real wages at the pre-war level. From

1945 to 1950, wage levels rose between 30 and 40 per cent. The resulting increase in purchasing power obviously exerted strong pressure on prices, but rigid price controls at first prevented major increases. The krona was revaluated in the summer of 1946, raising its purchasing power by about 16 per cent in relation to other currencies, in order to prevent price increases abroad, and particularly those in the United States, from penetrating the Swedish market and further aggravating the domestic price situation.

Despite these measures, it was not possible to prevent a continuing increase in wages and prices. The dammed-up purchasing power of the war years and the accumulated investment demands exerted great pressure on the level of prices. The first years after the war were characterized by an extremely high level of economic activity with a shortage of labor and excessive mobility on the labor market. The government attempted to combat the inflationary tendencies with various controls. In addition to the rigid ceilings on prices, one of the most effective weapons was strict control of new construction—an effort to limit investment. Higher taxes were imposed to drain off surplus purchasing power. Furthermore, corporations were required to deposit a proportion of their earnings in savings accounts at the Bank of Sweden—another restraint on investment. The same purpose was behind negotiations with credit institutions for restraints on the granting of credit. It was clear that these measures would lose their effect if there were no limitations on the upward spiral of wages. Fully aware of this fact, the government approached labor and management organizations, and succeeded in obtaining their co-operation in an effort to stabilize prices and wages. At the same time, industrial and agricultural production were increasing, principally as a result of the large investments made in the first postwar years. The net impact of all these factors was a trend toward balance in 1949 and 1950. It was then

possible to relax the restrictions somewhat, but the situation was still too fluid to permit eliminating them completely.

The outbreak of the Korean conflict in June of 1950 changed the situation, with increased economic activity and inflationary pressures. Industrial investments, particularly in business inventories, increased greatly as they did elsewhere under the pressure of international price increases. Despite government restrictions, designed among other things to discourage investment, the value of the currency deteriorated. The cost of living climbed a good 30 per cent between 1950 and 1952.

The "inventory boom" was followed by a reverse in 1951, when contradictions developed. First to suffer were some of the consumer industries—the shoe, textile and clothing industries—while heavy industry and the export industries continued to operate at capacity levels. The demand for Swedish paper and pulp was at an extraordinarily high level, and high prices prevailed on the export market. In 1952, large sectors of the economy, including the forest industries, began to decline, and exports of paper and pulp diminished.

In 1953 and 1954, the level of economic activity was high, with full employment and stable price levels. Industrial production, which remained largely unchanged in 1953, increased by 4 per cent in 1954. Using the year 1935 as a base (1935 equals 100), the index of industrial production reached 210 in 1954. Heavy industry has continued to expand more rapidly in recent years than the consumer industries, which are still struggling with difficulties. Production in the textile industries decreased by 3.5 per cent in 1954.

Sweden, like Western Europe generally, was largely unaffected by the mild recession in the United States. At the beginning of 1954, there were some predictions of a trend toward lowered economic activity, but comparatively strong inflationary pressures appeared instead. A substantial increase

in investments and in the purchase of automobiles were important features of this trend.

The government deemed it necessary to adopt measures aimed at inhibiting expansion. Late in 1954, bonds were issued at a higher rate of interest, with the aim of drawing off funds from the banks and dampening commercial credit. There was no general upward adjustment of the interest rate; only some types of rates increased, and those only slightly. Furthermore, a tax of 12 per cent was applied on business investment from the beginning of 1955, together with a special excise tax on automobile purchases. Additional measures were taken to confine the expansion to available resources, partly to meet the pressure of relatively large wage demands proposed in contract negotiations as the year 1955 began.

The unsatisfactory balance in the domestic economy affected foreign trade, of course. The great postwar surplus of purchasing power gave rise to a huge flood of imports. The nation's foreign exchange reserves, which amounted to more than 3,000 million kronor early in 1946, were rapidly drained. The government deemed it necessary to introduce general restrictions on imports in March of 1947, but the drain on gold and foreign exchange continued during the year following. It was necessary to continue to reduce imports, at the same time as efforts were made to stimulate exports. By the end of 1948, an improvement was noted. In that year, the value of exports surpassed even the pre-war percentage of the national income, and the relationship continued to improve during the year immediately following. A favorable balance of payments was achieved in 1949. The devaluation of the Swedish krona in relation to the dollar which took place in September, 1949, and which followed the 31 per cent reduction in the pound sterling rate, contributed to an increase in exports to the dollar area.

The Bank of Sweden

The Bank of Sweden (*Sveriges Riksbank*) is the oldest existing central bank in the world. It was founded in 1656 by Johan Palmstruch, and within five years began to issue paper money, probably the first in the Western world. The bank soon became insolvent and was taken over by the Parliament. The issuance of paper money ceased for a time, but was resumed at the beginning of the eighteenth century. The bank is still supervised by the Parliament. A board of directors elected by the Parliament, with a chairman appointed by the Government, is responsible for its administration. It should be noted that the bank enjoys formal independence from the Government. The need to co-ordinate the fiscal and foreign exchange policies of the bank and the general economic policies of the Government has nevertheless led to intimate co-operation.

The Bank of Sweden is exclusively authorized to issue paper money. This authorization is regulated by law, which specifies a maximum figure, but one no longer dependent on the bank's holdings of gold. Since September, 1931, the bank has been freed from the obligation of redeeming paper money with gold.

The most important means at the disposal of the Bank of Sweden for regulating interest and credit conditions are buying and selling bonds on the market. The bank has important policy making functions in regard to foreign exchange, through its administration of the central gold and exchange reserves. During and after World War II, with extensive regulation of foreign payments, these functions were unusually demanding. The Bank of Sweden is a source of credit for the government, in its capacity as a central bank, which it usually manages by buying short term treasury notes. It is also a source of money for various credit institutions, which can obtain liquid funds by rediscounting notes or by borrowing on their bonds. Gener-

ally speaking, the discount rate of the Bank sets the norm for the interest rates of the other banks. The Bank of Sweden is also important as a clearing-house for the commercial banks.

Banking and Insurance

The oldest existing commercial banks in Sweden were founded in the 1830's, at a time when there were as yet no real commercial banks on the European continent. There are now 16 commercial banks in Sweden, as compared with 80 in 1910. The decline in the number is the result of a process of concentration which took place principally between 1904 and 1925, and which led to the creation of the four biggest banks. They are *Svenska Handelsbanken*, *Skandinaviska Banken*, *Göteborgs Bank* och *Stockholms Enskilda Bank*. There are also a number of smaller banking corporations with comparatively extensive networks of branch offices. A government commercial bank, *Sveriges Kreditbank*, was established after the war. Because industrial production is so decentralized, and because the banks follow the economy, the branch offices are widely distributed. There are more than 1,000 banking offices, an average of one for every 7,000 inhabitants.

The preponderance of borrowing from Swedish commercial banks is short term credit for trade and industry. The commercial banks are practically alone in this field. Since the end of the nineteenth century, they have played an important part in the development of Swedish industry by furnishing starting capital. In the passage of time, however, loans to industry have changed character, more and more taking the form of operating credits. As in many other countries, the trend in Sweden has followed the continuing improvement in the liquid position of industrial enterprise. The banks have also acted as brokers for industry in floating bond issues, and at times have even underwritten stock issues by lending against new shares. It

is characteristic that the direct ties between industry and banks found in some countries are illegal in Sweden. Since 1933, it has been against the law for banks to acquire corporate shares except under conditions where it is essential to avoid substantial losses. Corporate shares which are nevertheless acquired must be sold as soon as possible, and in any event as soon as they can be sold without loss. The relatively large blocs of shares acquired by the banks in the early 1930's as a result of the depression have gradually been liquidated, partly by forming holding corporations. Loans on corporate shares have also decreased. In addition to supplying credit, the most important activities of the commercial banks are foreign business and bond brokerage.

Deposits in the commercial banks amounted to slightly over 13,000 million kronor in 1955 and are largely (about 60 per cent) long term in nature, thus forming a good counterweight for the loans, which are fairly firm. The most important type of deposit is the so called capital account, which generally requires a withdrawal notice of four months. The banks also receive savings accounts, to a maximum of 15,000 kronor each, which can be withdrawn without notice. Short term deposits consist principally of checking accounts. Checks are not nearly so widely used as a means of payment as they are in the Anglo-Saxon countries and on some parts of the continent.

Loans to industry and trade carry certain risks. The Swedish commercial banks suffered fairly large losses after the first World War and during the depression of the 1930's. However, the banks were able to cover most of these losses with their own resources. Their funds were reduced substantially, but since then their position has improved greatly.

The Swedish savings banks also trace their origins to the beginning of the nineteenth century; the first one was founded in 1820. They now number about 450 with more than 1,000

branch offices. Unlike the commercial banks, the savings banks have no shareholders to receive the profits. These revert entirely to the capital funds, or possibly are appropriated for the promotion of saving and public or charitable purposes. The local character of the Swedish savings banks is another distinguishing characteristic, and they never extend beyond the borders of a single province.

The deposits in savings banks have increased rapidly during recent decades, and in 1954 amounted to almost 10,000 million kronor. To this may be added postal savings—insured by the government—which are in the neighborhood of 3,000 million kronor. Total deposits somewhat exceed the domestic loans of the commercial banks. The savings banks carry on an energetic campaign for saving. Savings clubs are a rather new method of saving, which has become highly popular and which is supported by the government. These clubs are associations of people in a business or organization. Their purpose is to collect the savings of members and convey them to a savings bank, and thus to encourage regular saving.

Most of the credits granted by the savings banks are mortgage loans, but they also have fairly extensive bond holdings.

There have been special supervisory agencies for both commercial banks and savings banks for a long time. Government supervision of commercial banks, formerly exercised by the Department of Finance, has been entrusted to a special agency since 1907, the *Bank- och Fondinspektionen*. This agency also supervises the securities exchange and the stock and bond brokers. In 1929 a comparable agency was established for the savings banks, called the *Sparbanksinspektionen*.

There are two special, semi-official credit institutions which grant loans against first mortgages on real property. They are *Sveriges Allmänna Hypoteksbank*, founded in 1861, and *Konungariket Sveriges Stadshypotekskassa*. The former is the only financial institution in Sweden authorized to issue bonds

against mortgages on rural property, while the latter finances principally city property. The government has supplied these two institutions with starting capital in the form of government bonds. In addition to the savings banks and insurance companies, these two institutions are the largest sources of credit against first mortgages on real property. The *Svenska Bostadskreditkassan* is organized like the two institutions mentioned above, and also has capital furnished by the government. It was established to meet the need for inexpensive second mortgages on municipal properties. There is a government loan fund to supply comparable credit in the country. A co-operative organization, of which the central agency is the *Svenska Jordbrukskreditkassan*, supplies operating credits to agriculture.

Government social insurance programs are extensive in Sweden. Social security now embraces universal, compulsory health insurance, compulsory industrial accident insurance, voluntary unemployment insurance, general child allowances granted without proof of need, and general disability and old age pensions, granted in part without reference to need.

During 1953, a total of 1,867 million kronor was paid in premiums to private insurance companies for various other forms of insurance. Of this sum, a good 1,000 million kronor represented life insurance premiums, and the remainder casualty insurance. Development in this field has been very rapid since the pre-war period, and total income from premiums in 1938 amounted to only 406 million kronor. Thus, the amount of premium income has multiplied four to five times during a period when the price level has increased somewhat more than twice.

The premiums for life insurance in 1953 included 550 million kronor for ordinary life, and 165 million kronor for industrial life insurance programs. Group pension insurance for employees covered about 140,000 privately employed persons,

for whom their employers paid some 315 million kronor in premiums in 1953. Group life insurance, introduced in 1949, is simple term insurance negotiated between the insurer and employee or organizational groups. The face value of group life policies amounted in total to 98 million kronor at the end of 1949, and by the end of 1954 had risen to 1,400 million kronor. Savings in life insurance rose from 2,200 million kronor in 1938 to 7,300 million kronor in 1953.

The rapid expansion in casualty insurance in recent years is due in part, of course, to the decline in the purchasing power of the currency, but is also related to the high rate of general economic development since the war. Fire insurance and combined forms are still the largest of the casualty insurance groupings, with about 270 million kronor in premiums in 1953. Motor vehicle insurance, however, following the great expansion in the number of motor vehicles, is now not far behind, with a total premium income of almost 250 million kronor in the same year. These two groupings together account for about two-thirds of all casualty insurance premiums.

The total capital assets administered by insurance companies amounted to about 11,000 million kronor in 1954.

A trend toward merging individual corporations into larger units has been characteristic of the private insurance business for some decades. This concentration had reached a point by 1953 where eleven groups and four independent companies accounted for about 85 per cent of the 1,800 million kronor paid in premiums, and administered about the same percentage of all insurance company assets.

Trade and Tariff Policies

Because foreign trade is so important to the economy, free commerce with other countries is of vital national interest. This fact is back of the trade and tariff policies. The principles of

free trade, which made their triumphal march across Europe in the middle of the last century, were gradually accepted in Sweden, and were expressed in the country's participation in the French trade treaty system in 1865. Soon, however, there was a return to intensified protectionism. Under the pressure of increasing international competition in the agricultural field, duties on various agricultural products were introduced in 1888, and this step was followed in 1892 by increased protection of industry. The tariffs then introduced were gradually revised, and in 1911 the tariffs which are still the foundation of Swedish trade policies were adopted. In structure, the schedule is a so-called simple tariff, based on weight, and may be characterized as a moderate system of protectionism. Adjustments, both up and down, have been made repeatedly, but the rates have always been comparatively low, and the present Swedish duties are probably among the lowest in the world.

As a result of the simple tariff structure, trade agreements calling for reductions or freezing of applicable duties have been rare. The tariff agreements reached with Germany before and after World War I, and the trade agreements with England in 1933 and the United States in 1935, are important exceptions to this rule. The Swedish treaty system consists of agreements based on the most-favored-nation principle.

Despite the trends toward self-sufficiency which affected foreign trade in the 1930's, in the main Sweden was able to follow a free trade policy based on the most-favored-nation clause. A few variations from this policy, including supports for domestic agriculture and clearing agreements with Germany and Italy, were essential departures from the general policy. With the outbreak of war, however, there was a complete about-face. A series of export embargoes were promptly issued, followed by a general embargo from which exceptions might be authorized by government agencies established at the same time. These measures were complemented by a partial embargo

on imports and the regulation of foreign exchange. The restrictions were eased after the war, but import restrictions had to be resumed some years later because of the foreign exchange situation. The bilateral trade agreements occasioned by the war, precisely specifying the quantity and value of the goods involved, were usually tied to payment agreements. During the last years of the war these agreements often provided for credit in one form or another, and during the years immediately following Sweden granted fairly extensive credits to her Scandinavian neighbors, England, Holland, France, Poland, and Russia, among others. A credit of 1,000 million kronor granted to Russia was not used to the extent anticipated. Credit deliveries to Russia came to an end in 1952, by and large, at which time goods worth about 500 million kronor had been delivered.

In the Organization for European Economic Co-operation (OECE), Sweden subscribed to the agreement reached in November of 1949, under which member countries were required to free at least 50 per cent of their imports. Free-listing was to apply both to food and agricultural products and to raw materials and semi-fabricated goods. Subsequently, free-listing was applied more extensively, and now a good 90 per cent of imports have been freed. Sweden has also participated in the efforts of the European Payments Union (EPU) to facilitate equalization of surpluses and deficits in payment balances. The country is, further, a member of the International Trade Organization (ITO), and a party to the agreement reached under its aegis, the General Agreement on Tariffs and Trade (GATT), which contains bilateral agreements for the reduction and fixing of tariffs. These agreements guarantee most-favored-nation treatment for the parties concerned, and also provide that the member countries will not introduce or maintain quantitative restrictions except in certain exceptional cases.

Sweden has negotiated with Denmark, Norway and Iceland

toward creation of a common Scandinavian market. To date, however, these negotiations have not led to any notable results.

Foreign Trade

Sweden is highly dependent on foreign trade. Between the two World Wars, export activities were responsible for 15 to 20 per cent of the national income, and the comparable figure for imports was about 20 per cent. The export share of industrial production, where foreign sales are even more essential, amounted to 25 to 30 per cent. The per capita value of foreign trade is high, and is exceeded in only a few other countries. Consequently, the economy is highly sensitive to disturbances in foreign trade, as indicated by the fact that domestic economic cycles are usually engendered via exports or imports.

Imports are characterized by great variety, in terms both of goods and their geographic origins. Exports, on the other hand, are dominated by a few categories, pulp, paper, and iron ore, plus some highly refined machine products. The demand for the latter is limited in any given country, of course, but, in return, there is some market for them in a great number of countries.

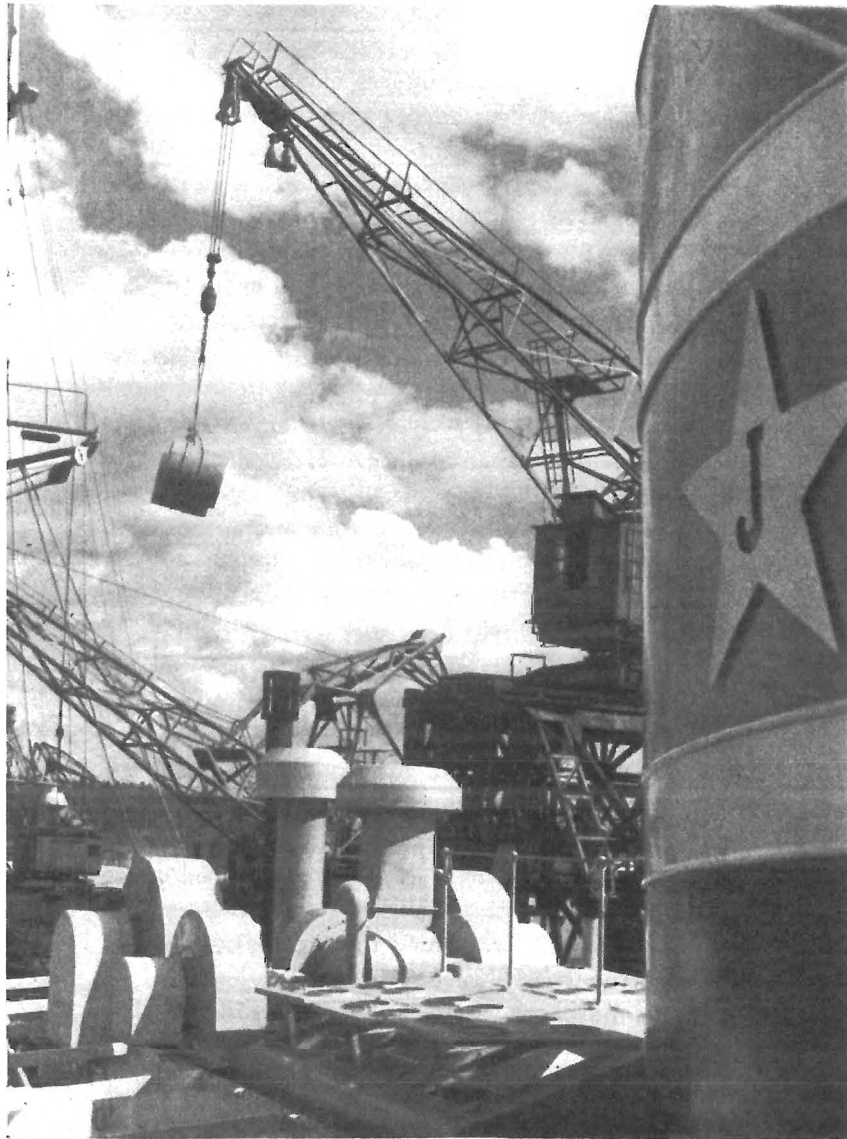
In early times, Swedish exports consisted almost exclusively of iron, and during one long period of copper and tar as well. In the eighteenth century, Sweden sometimes enjoyed an international iron monopoly, and the same was true of copper in the seventeenth century. Salt, hops, and clothes were the most important import products. Foreign trade was managed by large merchant houses in Gothenburg and Stockholm, and only in exceptional cases were producers in direct contact with foreign buyers.

The nineteenth century, and particularly the latter half of it, brought thoroughgoing changes in foreign trade, as it did to the economy as a whole. Commerce with other countries

expanded rapidly, stimulated by the general popularity of free trade. The influence of the merchant houses declined, and the manufacturers themselves sought buyers in foreign markets. The capacity of the country to import a variety of necessities was increased by the development of new exports. Wood products, in particular, contributed to the increase in foreign sales. The sawmills played the major role in the early phases of this trend, but pulp subsequently attained the leading position. Iron exports also changed toward the end of the nineteenth century. The machine industry became one of the most important export sectors, and exports of iron ore began to increase about the same time.

The First World War partially severed foreign connections, but a new era of intensive expansion began after the armistice. The volume of exports almost doubled during the 1920's, as a result principally of increased sales in transoceanic markets, particularly in the United States. This shift in the distribution of foreign trade continued through the next decade. World trade as a whole showed a marked decrease during the thirties, but in the main, Sweden was able to maintain its position. Compared to domestic production, however, Swedish exports showed a somewhat declining tendency. Trends before the war were also characterized by a shift toward a more advanced stage of refinement of export products. Imports increased somewhat during the 1930's. The increase would have had to be much larger, if there had not been a shift from finished goods to the import of comparable raw materials. These changes were undoubtedly bound up with the trend toward self-sufficiency enforced in other countries, but may be partially ascribed to increased domestic purchasing power, facilitating production for the domestic market.

The outbreak of the war was immediately followed by a drive for imports, partly for government inventories. When the war reached Scandinavia, Sweden was almost completely



Imports and exports move entirely by sea, and to a great extent in Swedish bottoms. More than half of the Swedish merchant fleet, however, is in freight service between foreign ports. Two of the major shipping companies—with freight service to all parts of the world—are Nordstjernan and Transatlantic (left and below respectively). Photos: IFA and Bengt H. Malmquist.



cut off from foreign markets. The shortage of goods and the purchasing power which accumulated during the war brought a flood of imports as soon as connections with other countries were resumed. But exports did not begin to approach their former level. The resulting deficit in the balance of payments imposed a drain on foreign exchange reserves, and necessitated new restrictions on imports. The comparatively low export figures of the first postwar years were, of course, partly a result of the wartime conversion of the economy to domestic production. Other factors were a shortage of labor and raw materials, including coal and oil. The low rate of exports during this period was, however, due in substantial degree to shifts in the structure of the Swedish economy. The lowered capacity of the forest industries, resulting from a shortage of raw materials, was of the greatest importance.

Exports have increased again in recent years. Wood products, machines, ships, and ore are principally responsible for the increase. This has brought about a better balance in trade with other European countries, but the problem remains of increasing exports to the United States to a level sufficient to pay for the desired imports from the dollar area. However, the balance of payments with the dollar area has also been improved, and trade with the dollar area was liberalized somewhat in 1954.

More than half of all Swedish exports consist of products derived from two domestic raw materials, wood and iron. Before the war, the forest industries were responsible for about 40 per cent of all exports. About half of these consisted of cellulose pulp, and the remainder was fairly evenly divided between sawn goods on the one hand and paper and pulp on the other. Iron and steel products were the next major export group, at a level somewhat under the forest industries. In this grouping, iron ore was the largest single product (about 15 per cent of total exports), and other important items were electric motors, ships, ball bearings, hot-rolled steel, and steel tubes.

Some food products, such as butter, pork, and eggs, were also exported before the war.

Swedish imports, of both raw materials and finished goods, are highly varied. Fibers, petroleum, coal and coke are among the important raw materials acquired abroad. Foreign foods—coffee, tea, cocoa, spices, tropical fruits—and wine and tobacco are also important on the import list. Agriculture is partly dependent on imports of fodder concentrates, such as peanuts and maize, and on various fertilizers. Sweden also imports fairly large quantities of merchant iron, pig iron, and steel plate for ships.

Despite a shift toward transoceanic countries, Europe was by far the largest market before the war. About $\frac{3}{4}$ of exports went to European countries, and about $\frac{2}{3}$ of imports came from them. Germany was the largest single supplier, followed by the United States. England was first on the export side, with almost 25 per cent of total Swedish deliveries. Germany was also a large buyer, and the United States took some 10 per cent. The exchange of goods with the other Scandinavian countries, Denmark, Norway, and Finland, was very lively, as it was with the Netherlands, Belgium and Switzerland.

During the first postwar years, the situation was completely different. Trade with West Germany was relatively insignificant, but commerce with the transoceanic countries had expanded. During these years the United States was the largest supplier. Subsequently, trade with the United States shrank, while the exchange of goods with West Germany expanded at a rapid pace. Exports to other countries on the continent of Europe also increased. Trade with Great Britain has been at a high level in both directions. By and large, the trend from 1949 to 1954 was toward the same geographical distribution which prevailed before the war.

Foreign trade between the First and Second World Wars usually resulted in an annual import surplus of varying size,

but payments were more than balanced by other entries in the ledger, shipping income, interest, tourist traffic, and the like. Immediately after World War II, on the other hand, there was an annual deficit in the balance of payments, but this relationship, too, has moved toward "normal".

Public and Co-operative Enterprise

The government has played an important part in the economic life of Sweden for centuries. During recent years, government enterprise has expanded and broadened. Unlike France and England, the additions to the government sector have been relatively modest, and to date there has been no question of socialization or nationalization of entire industries. In many instances, the government has absorbed enterprises for reasons of social policy, and in some cases the motivation has been to increase government revenues. There is naturally no standard pattern for the structure of government enterprises, which have come into being under the changing conditions of three centuries. There are, however, two main types: those directly under a government department or agency, and those organized in corporate form with the government holding the majority of shares. The most important of the former are the railways (of which the state owns 80 per cent and has reached a decision in principle to acquire the remainder), the postal system, the telegraph works (telephone, telegraph, and radio), and electric power works.

The Bank of Sweden, the central bank, has been owned by the government since 1668. To avoid bankruptcy, the government took over the majority of shares in two commercial banks, which were later absorbed in the establishment of a government commercial bank. In the field of real estate loans, there are four semi-public institutions which furnish an important part of primary and secondary credits on residential properties.

Direct government participation in the insurance field was formerly limited to industrial accident insurance (which is compulsory), but as of January 1, 1955, compulsory government health insurance was introduced.

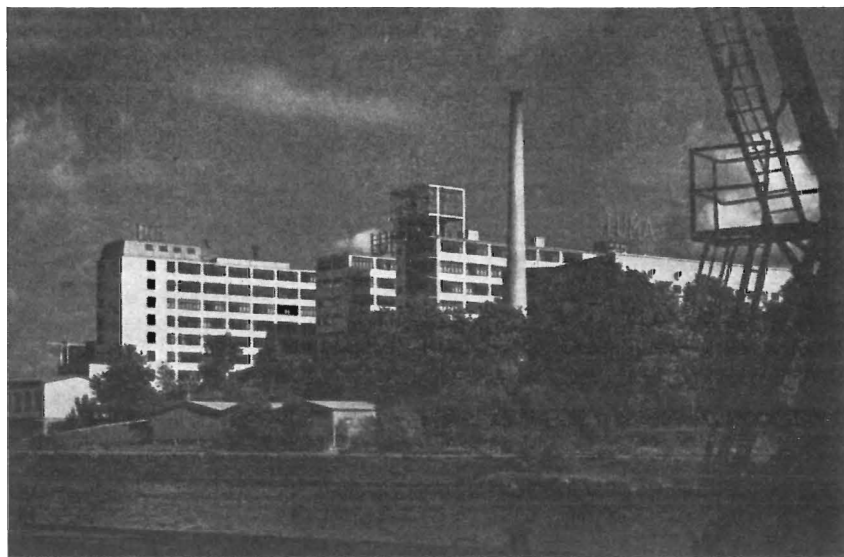
Aside from certain defense industries, most of the government's industrial enterprises are of relatively recent date. The government has owned a substantial share of the forests for centuries (about 25 per cent). It now operates its own saw-mills, pulp industries, and the like, through corporations acquired to prevent unemployment in the depression of the 1930's.

Government owned electric-power works now produce about 43 per cent of all energy, and municipal works some 5 per cent. The government owns about half of the hydro-electric potential which has not yet been harnessed.

The government owns half the share capital of the corporations which mine the large iron ore deposits of northernmost Sweden, *Luossavaara-Kiirunavaara AB*, and has an option to buy the remainder. In 1955 the Riksdag decided to make use of its right by buying the remaining shares in 1957. After the war, the government also acquired a number of iron mines in central Sweden, formerly under German ownership. These deposits represent about 15 per cent of the resources of that area, and with this acquisition government influence now extends to some 85 per cent of the total iron ore resources of the nation (estimated at 2,200 million metric tons). The government is legally empowered to become half-owner of all new mines.

During the Second World War, two government corporations were established to increase the supplies of essential raw materials. One is an iron and steel mill in northern Sweden, relatively near the iron mines. The other produces gasoline and oil from the shale deposits of central Sweden.

The government monopoly corporations in the luxury goods field are of older date. The Swedish Tobacco Monopoly (*Sven-*



The Luma light bulb factory of the Co-operative Federation. Photo: G. E. Kidder Smith.

ska Tobaksmonopolet) is the sole manufacturer and importer of tobacco products. They are retailed through privately owned shops but prices are fixed by the monopoly. Private persons own about 3 per cent of the share capital, but they have practically no influence on the policy of the monopoly.

The wine and spirits monopoly (*AB Vin- och Spritcentralen*) has sole rights for distribution of intoxicating beverages. Spirits may be produced by private companies, but distribution must take place through government shops.

The government owns several industrial enterprises of various kinds. Altogether, some 5 per cent of industrial workers are employed by publicly owned corporations, national and municipal. The relative share of total production is perhaps even smaller.

Building activities of the national government have been largely those normally associated with the state; fortifications, hydro-electric dams, offices for government corporations and agencies, and dwellings for some categories of employees. Local governments, however, have been taking an increasing interest in housing and particularly in accommodations for the aged, large families, and the like. Individuals and corporations still are responsible for about 25 per cent of all new multiple dwellings, but they are subject to more and more competition from co-operative and public corporations. More than $\frac{3}{4}$ of the residential construction itself, however, is carried out by private building firms.

The government railways have already been described. The government also owns half of the share capital and occupies the dominating position in the only corporation operating scheduled domestic airlines. All airports are owned and operated by the national government. The interests of the government in commercial shipping are insignificant; they are limited almost entirely to train ferries and to passenger traffic between southern Sweden and Denmark.

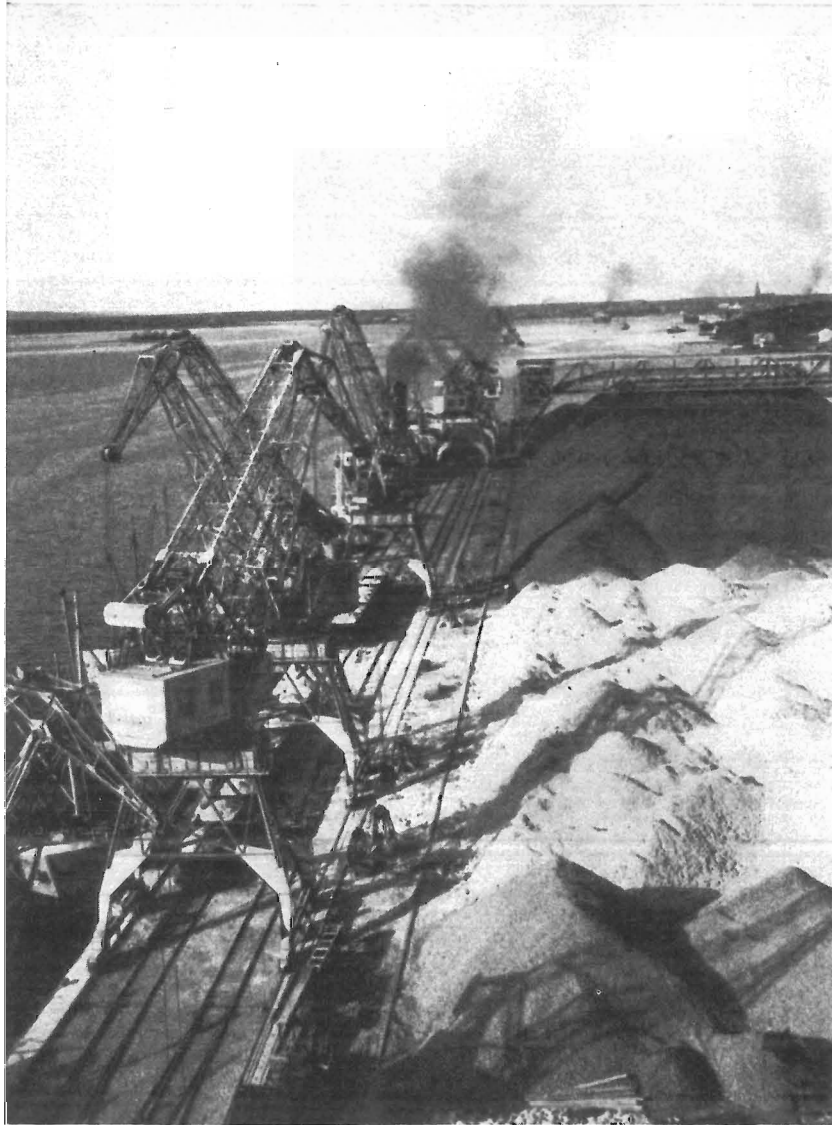
Radio broadcasting is restricted to a single corporation, *AB Radiotjänst*, owned by the manufacturers of receiving sets, the newspapers, and the government, with the government holding final powers of decision. Broadcasting facilities and transmitters are state-owned under an agency called *Telegrafverket*, and used by the broadcasting corporation. There is no commercial advertising, and broadcasting costs are financed by a fee of 20 kronor levied annually on each receiving set owner.

Proposals for a television network are under consideration, to be operated on much the same lines as radio. Experimental telecasting has begun.

Aside from the forest holdings mentioned earlier, the national government owns comparatively little land—and only 4 per cent of all arable land.

Government corporations include a national chain of hotels and restaurants, and monopoly corporations for soccer betting and a cash lottery. As in many other countries, most of the gas, water, and electricity is distributed by municipal corporations. Many bus and tram lines are municipally owned.

Co-operative enterprises are more extensive than they are elsewhere. The retailing activities of the co-operative movement have already been described. The Co-operative Union (*Kooperativa Förbundet*, KF), which began as a wholesaling company, soon moved into the food industry, with oleo-margarine factories, flour mills, bakeries, and meat packing houses. This part of the movement has grown, both by acquisition of existing enterprises and by the establishment of new ones. Some 2 per cent of the nation's industrial production now comes from the more than 40 industries owned by the co-operative movement. In addition to food, the output includes china and porcelain, light bulbs, rubber footwear and other rubber products, paper, washing machines, and fertilizers. The co-operative movement also operates an insurance cor-



Government activities in the industrial field are comparatively small. After World War II, the government founded two companies, of which one, a steel mill called Norrbottens Järnverks AB, was started to provide increased employment opportunities in the northernmost part of the country, where there had been unemployment. Here is the port of the steel mill. Photo: Reichberg.

poration, a publishing house, and a correspondence school, and does a limited amount of banking.

The central organization of the producer co-operative movement—which is entirely separate from the consumer movement—is Sweden's Agricultural Federation (*Sveriges Lantbruksförbund*). It consists of 12 separate organizations with a combined membership of 360,000. Practically every Swedish farmer is a member of one or more of these organizations. Sales from the organization's 550 dairies, 60 meat packing houses, and other enterprises amount to more than 2,000 million Swedish kronor annually. Through them passes 98.5 per cent of all milk and butter sold, 94 per cent of all cheese, 72 per cent of all meat animals, 65 per cent of all grain and eggs, and more than half of all wood. A large share of farm machines, fertilizers, building materials, fuel, and other items is purchased through these organizations. A mortgage credit institution and a bank are closely associated with the Agricultural Federation.

The following books have been published in English by the Swedish Institute for Cultural Relations:

Ingvar Andersson and others: Introduction to Sweden

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