A. RANNES

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A BRIEF SURVEY

PUBLISHING HOUSE "EESTI RAAMAT"
TALLINN 1966

Book cover by G. Pant
Translated by V. Hain

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The beginning of industrial production in Estonia goes back to a rather distant past. Historic sources tell about baking of bricks, slaking of lime and using water power for driving wheels in water-mills for grinding corn and sawing timber as early as in the 13th century. There are also data concerning the foundation of glass factories as well as textile and paper mills in Estonia in the 17th and 18th centuries. Some large-scale industries equipped with machinery were established in the 19th and at the beginning of the 20th century. As Estonia was an integral part of Russia for a long period of time, the production of its best-developed industries — textile mills and metal-working plants — was mainly marketed in Russia. Owing to favourable marketing conditions, industry achieved a relatively high standard in Estonia. Before World War I there were 13.3 industrial workers per 1,000 of the population in the Russian Empire as a whole, whereas in Estonia the corresponding figure was 43.8. At the same time, the all-Russian average of the industrial output per 1,000 of the population amounted to 27.2 roubles, but in Estonia — to 125.2 roubles. Owing to the separation of Estonia from Russia and its becoming a bourgeois state, Estonian industry arrived at a deadlock: the large-scale industries which had developed so as to cover the demands of the Russian market, had no more chances for realizing their output. This resulted in closing down a part of large-scale enterprises (such as the Tallinn Shipyards), whereas the rest were leading a miserable existence, continuing working below their capacity (e. g. the Kreenholm Manufactory at Narva, the Baltic Cotton Mill and the Volta Plant in Tallinn, and many others). This gave rise to unemployment which kept increasing. In later years, some branches of industry (e. g. the shale-oil, cellulose, phosphorite, etc. industries) experienced a certain development since their production was of interest to a number of imperialist powers, and in particular for fascist Germany, which was making preparations for war.

With the re-establishment of Soviet power by the Estonian

working-people in the summer of 1940 and with the country's joining the Soviet Union, conditions for a further industrial development became propitious once again. All the existing industrial enterprises began working at full capacity since there was a lively demand for their production on the market of the Soviet Union. And though the attack on the U.S.S.R. by fascist Germany in 1941 interrupted the creative work of socialist construction in Estonia, the Estonian people were able to complete this task in the post-war years and restore the industrial standards of 1940 within a very short period of time. Increasing the industrial production from year to year, in 1965 Soviet Estonia achieved a volume of industrial output which exceeded the pre-war level more than 18-fold.

Growth of Total Industrial Output of Soviet Estonia
(in per cent, as compared with 1940)

1940	1945	1950	1953	1960	1962	1963	1965*
100	75	342	527	1,150	1,430	1,550	1,830

At the present time, Soviet-Estonian industry yields as much production in about three weeks as it did during the whole year of 1940.

At the same time, the population of Soviet Estonia has increased very inconsiderably, amounting to only 1.24 million in 1963. There have, however, occurred considerable changes in the distribution of the population according to employment and place of residence. During recent years, as a result of an extremely sharp growth of the industry and a wide-scale mechanization of the agriculture in Estonia, about 60 per cent of the population have settled down in towns. It is for the first time in the history of Estonia that there are more people engaged in industry than in any other branch of national economy.

The transformation of Estonia into an advanced industrial country is further characterized by the ratio of industrial workers to the population. In Estonia, there are now 150.5 people engaged in industry, including 125.7 industrial workers per 1,000 of the population. In this respect, Soviet Estonia occupies the first place among the Baltic Republics, the corresponding figures in Soviet Latvia and Soviet Lithuania being 141.1 and 89.8, respectively. The All-Union average, 110.9, too, is now considerably lower than that of Estonia.

However, the volume of the industrial production achieved in Estonia is by no means a result of the mere increase in the number of industrial workers. This figure has but doubled during

* The hereby and later given data of year 1965 are preliminary.

the period of the 18-fold growth of the volume of industrial output. Thus the rise in the industrial production is to a considerable extent due to the growth of the labour productivity and to further improvements in the electrification, mechanization and automation of working processes. In this respect, Soviet Estonia has received considerable assistance from the other republics of the U.S.S.R.

Fuel and Power Industry. Of power generating resources, Estonia lacks in coal and crude oil, but it is rich in oil shale and peat. The exploitable Estonian oil shale deposits are situated in the northeast of the republic, on an area covering 30 hundred square kilometres. The oil shale reserves of Estonia are estimated at 10.4 milliard tons. These deposits, being the largest of their kind in the Soviet Union, play an important part as a source of power generation not only for Estonia, but for the entire northwestern economic region of the U.S.S.R. as well.

The mining of oil shale in Estonia was begun rather late, in the 1920-ies: in 1920, only about 46,000 tons of oil shale were obtained. At that time, the utilization of oil shale developed at a slow pace, the main consumers being the cement industry and the railway. Later on, some power plants, cellulose, paper and textile mills began to utilize oil shale as fuel. At the same time, the retorting (heating in an airproof container) of oil shale was launched, resulting in the production of shale oil which, being a raw material needed for strategic purposes, aroused the interest of fascist Germany.

In 1940, the oil shale output in Estonia already amounted to 1.8 million tons. At the same time, mining was but poorly mechanized, most of the work being done by manual methods, with such primitive tools as the pick and spade.

At the present time, this branch of industry has undergone a radical change. Soviet-Estonian oil shale mining is effected with the help of various machines and devices facilitating the work and raising the labour productivity. The miners are provided with boring machines and electric drills which make their work much more efficient than before. The loading of oil shale into trolleys has been fully mechanized with the taking into use of belt conveyors. The complex mechanization of underground mining has been made possible by replacing the former longwall mining by the so-called chamber system, where the whole bulk of shale is hauled out without any preliminary sorting underground. A number of special installations and mechanisms have been constructed and introduced, such as a loading machine with a capacity of 300—350 t of oil shale mass per hour, liberating the miners from hard manual labour, automatically moving trolleys holding 7.5 cu. m oil shale, etc. All these devices have greatly contributed to raising the labour productivity of the miners. With

the transition to the chamber system of mining, however, it became of prime importance to sort and dress the bulk of oil shale on the surface so as to obtain a material of high caloricity. In order to mechanize this labour-consuming process, a special plant was constructed at a large-scale mine, which is the first of its kind in the whole world. The dressed oil shale possesses a high degree of caloricity — 4,400 kcal/kg, whereas that of ordinary oil shale is only 3,400 kcal/kg.

The oil shale mines of Soviet Estonia are now fully electrified. All the mining machines and means of transport are driven by electric power. Pneumatic energy used formerly was ousted from Soviet mines as an expensive and inconvenient means long ago. Electric light has been installed in all mines. Day-light lamps have also been introduced, meaning a further improvement of the working conditions underground. Next to stationary illumination, miners have been provided with portable lanterns — no more open carbide lamps like in the bourgeois period, but safe and convenient accumulator lamps.

Powerful ventilators installed in underground mines rapidly eliminate the poisonous gases caused by hewing.

Alongside with underground mining, hewing of oil shale by the method of open-cast mining is gaining more and more in importance in Soviet Estonia. This method, of course, can be applied only in such places where the deposits lie immediately under the surface of the earth. At the present time, nearly a quarter of the total yearly yield of oil shale is obtained from open cast mines.

The mining of oil shale in open cast mines results in a much higher labour productivity in comparison with underground mining: already now, the cost price of oil shale is about 40 per cent lower than it used to be. But this is far from being the limit. The cost price of the oil shale to be obtained in the new, thoroughly mechanized large quarries under construction will be much cheaper since there are all the necessary preconditions and possibilities for a complex mechanization in mining on the surface of the earth. Already now there operate excavators with a great bucket capacity as well as walking excavators ЭШ-15/90, with buckets holding 15 cu. m and arrows of 90 m in length.

In this way, the mechanized underground and open-cast mining of oil shale has contributed to a yearly increase of oil shale output in Estonia, in harmony with the rising demand. In 1963, the output of oil shale in Soviet Estonia amounted to almost 13 million tons. During the entire existence of the bourgeois Estonian State — 20 years — the total production of oil shale was but 10.8 million tons. Thus, at the present time, the yearly output of Soviet-Estonian oil shale mines exceeds the yield of twenty years of bourgeois Estonia.

Excavator at work in the oil-shale basin.

Growth of Oil Shale Production in Soviet Estonia 1940—1965
(in thous. tons)

1940	1945	1950	1953	1958	1960	1961	1962	1963	1965
1,892	861	3,543	5,325	8,964	9,246	10,310	11,250	12,900	15,836

The demand for oil shale in Soviet Estonia is high and is steadily increasing from year to year.

Oil shale is first and foremost a fuel, a source of power generation for nearly all the thermal power plants working in our republic, new and reconstructed ones, which are operated by oil shale fuel (Grade III). Therefore, simultaneously with the necessity of increasing the output of electric power, there is a constant rise in the consumption of oil shale.

In bourgeois Estonia, a characteristic trait of the electric power management was the disconcentrated character of the production of electric power which was supplied by quite a number of small all-purpose power plants of inconsiderable capacity and lots of plants attached to industrial enterprises. Oil shale, peat and fire-wood were used as fuel. The largest of these plants was the Tallinn power plant which attained its top capacity — 19,200 kW — as late as in 1938. All the rest worked at lower capacities.

The Baltic Thermal Power Plant.

In 1939 the total capacity of Estonian power plants amounted to 71,000 kW.

In Soviet Estonia, the production of electric power has assumed a truly grand scale. Estonian power engineering which had greatly suffered during the war and the fascist occupation was restored on a novel technical basis during a few years after the war, and a number of new power plants were erected. One of the largest of the latter is the Kohtla-Järve Thermal Power Plant which was taken into exploitation in 1949 and whose capacity is 50,000 kW at the time being. Already in 1950, the output of electric power in Estonia was twice as large as in 1940.

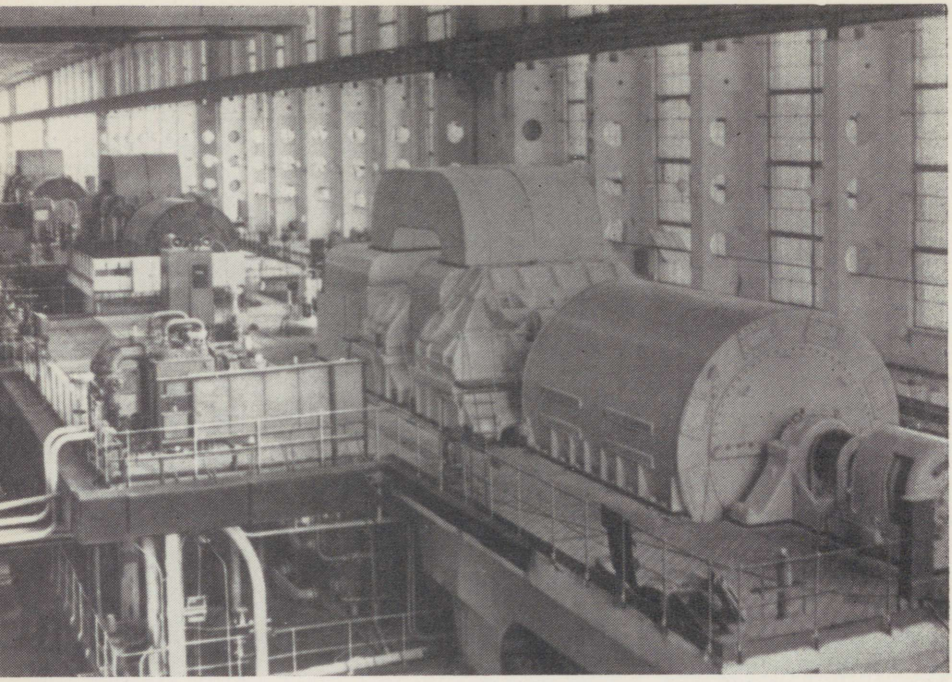
Production of Electric Power in Estonia
(in million kWh)

1940	1945	1950	1953	1958	1960	1961	1962	1963	1965
190	123	435	736	1,159	1,950	3,151	4,200	5,300	7,103

In 1951, the Ahtme Thermal Power Plant was put into operation with a capacity of 72,500 kW. Thereafter, the erection of an electric power giant was started in the vicinity of Narva — The Baltic Thermal Power Plant, whose final capacity, 1,624,000 kW, was attained in 1965. The first section of this plant — one turbine (with two boilers) with a capacity of 100,000 kW — was put into operation already at the end of 1959. In the succeeding years nine more aggregates, of 100,000 kW each were added, and in 1963 — one of 200,000 kW. The rest of the aggregates put into operation in 1964 and 1965 enabled to attain the projected capacity of the plant by the end of 1965. Owing to the launching of the aforenamed power plant, the total capacity of Soviet-Estonian power stations attained 1.8 million kW by the end of 1965, which is 25 times as much as the Estonian total of 1940. In 1965, the output of electric power in Estonia amounted to 7.1 milliard kWh, exceeding the pre-war level more than 37-fold. A striking illustration of the rise in the production of electric power is the output of electric power per capita of the population. Before the war, in 1940, the yearly output per capita of the population in Estonia was merely 168 kWh, whereas in 1965 it amounted to 5,562 kWh, the average of the Soviet Union as a whole being 1,871 kWh. In respect to the production of electric power per head of the population, Soviet Estonia holds the first place among the republics of the Soviet Union.

Already at the present time, work has been started at the construction of another giant thermal power plant of about the same capacity as the Baltic Thermal Power Plant, to be operated on oil shale and completed in 1970. As a result, the production of electric power in Estonia will rise further and attain 14—15 milliard kWh in 1970, which will mean about 10,000 kWh electric power per head of the Estonian population. This figure will obviously be the highest in the whole world, even in consideration of the rate of growth of the output of electric power in other countries as well. Another country with about as high a rate in the corresponding branch is known to be Norway, where in 1955 the output of electric power (hydropower) was 6,410 kWh per head of the population.

The sharp rise in the output of electric power by giant thermal power plants operated on oil shale fuel and provided with up-to-date machinery has contributed to a considerable reduction of



At the Baltic Thermal Power Plant.

the cost price of electric power in Estonia. Simultaneously with the growth of power capacities and the production of electric power, the power per capacity unit (one installed kW) has risen as well. In 1940, the production of power was 2,677 kWh per one kW, whereas in 1963 the figure was nearly doubled (5,273 kWh per capacity of one kW), which is evidence of an improvement of the utilization of the equipment in respect to capacity and time; the number of effective hours has risen immensely, and tension at night is not reduced to any considerable extent. The working processes at the giant plants are mechanized and automatized, such as the feeding of fuel, clearing of ashes, regulating of combustion and water in boilers, etc.

The foundation of power generating giants and the installation of high-tension network have contributed to a considerable improvement of the imperfect heritage of the past: the majority of small and inefficient power stations have been liquidated. At the present time, large-scale power plants of Estonia account for about 95 per cent of the total power output in the republic.

The vast growth of the output of electric power in Estonia is greatly due to the fact that neither the other Baltic republics nor the northwest economic region of the Soviet Union have any further prerequisites for intensifying the production of electric power, whereas the demand for electric power is steadily increasing in these regions. Therefore it is already now expedient to transfer electric power from Estonia to Latvia and Lithuania and to Leningrad as well, and in the future it will be even more so. Thus Estonia is becoming an important base of electric power generation for the northwest and Baltic economic regions of the Soviet Union, in other words — a country "exporting" electric power.

Alongside with the increase in the production of electric power in Estonia, the network of electric lines has been considerably expanded. Owing to the high installation expenses involved, bourgeois Estonia had put few high-tension lines. By January 1, 1939, the total length of high-tension lines in Estonia amounted to 893 km, including but 294 km of lines for a tension of 30—50 kV. By now a dense and efficient network of high-tension lines has been developed, with a total length of lines of 10,427 km (with a tension of 10 kV and more) on January 1, 1964, whereas the total length of the low-tension lines (below 10 kV) amounted to 6,151 km. A powerful high-tension line (330 kV) has been drawn from the Baltic Thermal Power Plant near Narva to Tartu and Riga. Several high-tension lines connect Tallinn with the Baltic Thermal Power Plant: one of 110 kV, another — of 220 kV, and a third one, of 220 kV, is under construction. A high-tension line of 110 kV has been drawn from the Baltic Thermal Power Plant to Tallinn along the route Tartu—Viljandi—Pärnu—Lihula —Risti—Ellamaa—Keila—Tallinn.

Several Soviet-Estonian thermal power plants have begun to put out power for technological and heating purposes. Already in 1950, the plant of Kohtla-Järve began supplying the Group of Oil Shale Enterprises bearing the name of Lenin with thermal power for technological purposes, and the local residential district of Kohtla-Järve — with heat. From 1955 on, the plant of Ahtme started providing the town of Jõhvi and the settlement of Puru with thermal power alongside with electric energy. And a few years later, the Tallinn plant began supplying with thermal power the town centre. In Mustamäe, a new microdistrict of Tallinn, a boiler-house was recently put into operation for supplying the newly-built apartment houses with thermal power. A heating centre is also under construction in Tartu, whereas Narva will be provided with thermal power by the Baltic Thermal Power Plant. Thus, a foundation has been laid for a wide-scale thermofication of Soviet Estonia; the production of thermal power by all-purpose thermal power plants has begun to rise in the last few years in

particular, attaining the figure of over 1,000 megakilocalories per annum.

Production of Thermal Power in Soviet Estonia
(in all-purpose power plants, in megakilocalories)

1940	1950	1953	1958	1960	1961	1962	1963	1965
—	82	186	488	563	643	796	1,071	1,558

Thus more and more dwellings will be provided with economical fuel and hot water as well.

Estonian oil shale is not only a source of electric power, but of heating gas as well. Taking into consideration the immense advantages of gas fuel in comparison with the solid one (in the case of gas heating there is no expensive loading, unloading, transporting by several means of transport, building of storage rooms, clearing of ashes, etc.), and in connection with the necessity of an efficient solution of the heating problem of the larger cities in the northwest economic region of the U.S.S.R., the building of a large-scale gas plant, unique in the whole world, was begun in Soviet Estonia immediately after the war. It is unique because here, for the first time in the world, the machinery for a large-scale gasification of oil shale was projected, built and given into operation. Special technological devices, intended for the thermal decomposition of oil shale were designed and installed, such as a chamber oven equipment for cooling down the gas coming out of chamber ovens (so as to condense the tar and steam vapours), devices for washing the chemical compounds out of the gas mixture and for eliminating poisonous hydrogen sulphide. At the same time with the construction of the gas plant, pipelines for transporting the gas were laid, which ran in straight lines across woods, plains and lakes. One pipeline was conducted from Kohtla-Järve to Leningrad (203 km), another one — from Kohtla-Järve to Tallinn (150 km). And already in 1948, the giant gas plant of Kohtla-Järve began producing household oil-shale gas of a high caloricity, the output of which grew from year to year, attaining the annual amount of 515 million cu. metres in 1965.

The Production of Household Gas in Soviet Estonia
(in million cu. metres)

1940	1950	1953	1958	1960	1961	1962	1963	1965
1.7*	173.0	353.1	415.2	432.0	444.8	468.8	477	515

* Produced from coal at gas plants in Tallinn and Tartu.

Oil-shale gas is not used for household purposes only (where it is also used in the shape of liquid gas in cylinders), but it also finds application as a fuel in numerous industrial enterprises, institutions, public baths, etc. Besides, oil-shale gas is also a valuable raw material for the chemical industry (in this capacity it will be discussed below).

Another important fuel for power generating purposes in Estonia is peat. There are 950 peat bogs in Estonia covering an area of about 560,000 ha, which makes 13 per cent of the republic's total territory. The industrial peat reserves are estimated at about 18.8 milliard cu. m of raw peat. The existing peat resources offer wide possibilities for a development of peat industry in Estonia, producing peat for heating purposes as well as for use in agriculture (as litter and fertilizer).

The utilization of peat in Estonia goes back to a much more distant past than the utilization of oil shale. Peat was also produced in bourgeois Estonia, by both the state and private enterprises. However, at that time the technical equipment for producing peat was poor. In the production of piece-peat, mostly elevator peat machines were applied, which required a lot of manual work. Therefore, at peat-cutting seasons additional workers had to be employed, who lost their jobs at the season's end. And though at that time the production of milled peat and peat briquettes (made of milled peat) was started, the majority of the working processes involved were effected by manual methods, e. g. the digging and clearing of ditches in the peat field, stubbing, preparing of peat for milling, loading of milled peat into trolleys and unloading, etc.

Nowadays, great improvements have been made in the working methods in this branch, as well. Peat industry has undergone a complex mechanization in Soviet Estonia.

All the operations connected with the production of piece peat are nowadays mechanized: the digging, stacking of peat cakes, drying and clearing away. The digging is now accomplished by efficient peat-excavating machines.

The technology and organization of milled peat and peat briquette production has undergone great changes as well.

The production of peat briquettes was started during the bourgeois period, in 1939, when a peat briquette plant with a projected yearly capacity of 50 thous. briquettes was put into operation at Tootsi (near the sea-resort of Pärnu). Owing to the disproportion of different phases of work at that plant (the labour-requiring and cumbersome processes were too poorly mechanized and therefore it was impossible to produce the amount of milled peat needed for the output of briquettes), the plant was not able to attain the projected capacity, in spite of favourable weather conditions: the output of briquettes was but 24 thous. tons in 1939, and 32 thous. tons in 1940. During the war the enter-

The Tootsi Peat Briquette Plant.

prise was partly demolished, the machinery park pillaged, the milled peat fields, ditches and drainage were neglected.

After the war, the most important achievement at Tootsi, next to the restoration of the plant, was the entire mechanization of the production of milled peat and briquettes, beginning with preliminary work in the peat-bog and ending with the delivery of the briquettes to the customer. Manual labour has been done away with altogether — man but controls and checks up the work of the machinery.

Labour Productivity per One Worker at the Production of Peat in Soviet Estonia

1940	1963	
Working with an elevator machine	At complexly mechanized production of piece peat	At mechanized production of milled peat
100—120 t of peat	350—400 t of peat	2,000 t of peat

The producing capacity of the Tootsi plant is at present two and a half times higher than it was before the war. In addition to the factory built earlier, another factory was constructed and equipped with corresponding mechanisms, and in this way the total producing capacity of the enterprise has been raised to 120,000 t

of briquettes per annum. A few years ago the construction of another briquette factory was begun at Oru (in the vicinity of Jõhvi), and in the near future this enterprise is expected to yield 250,000 t of peat briquettes per annum. The first section of the plant at Oru is about to be put into operation.

The geological researches into peat bogs of Soviet Estonia have shown that the peat-bog massive situated between Puhja and the lake of Võrtsjärv can be advantageously exploited for producing milled peat. This will lead to the establishment of a third enterprise, putting out an amount of 60,000 t peat briquettes per annum to cover the demand for this valuable solid fuel of South-east Estonia (the town of Tartu including) in the first line. Thus the total producing capacity of Soviet-Estonian enterprises putting out peat briquettes will rise to 430,000 t briquettes a year, which, together with other kinds of fuel, will satisfy the requirements of the population of the republic.

Chemical industry. In Soviet Estonia, chemical industry is being developed on the basis of local natural resources (oil shale,

The Oru Peat Briquette Plant.

phosphorite, timber) and imported raw materials as well. It was already mentioned above that oil shale in Estonia is not only a fuel resource for producing electric and thermal energy and heating gas, but also a raw material for chemical industry.

At the time being, two large-scale plants producing chemicals from oil shale are in operation in Estonia — the Group of Oil Shale Enterprises bearing the name of Lenin at Kohtla-Järve, and the Group of Chemical Enterprises at Kiviõli.

In the output of these combined enterprises, the significance of chemicals is steadily rising, and that of oil shale as a fuel — decreasing. This shows that there is a growing tendency to utilize oil shale in chemistry, and less as a fuel. Next to oil-shale gas and gasolene, both the combined enterprises mentioned begin to put out more and more chemicals needed by our national economy. Thus, from shale-oil phenols synthetic tanning media are now produced as well as pesticides and glue resins; of the latter, the glue resin DFK has won great recognition for it can be used in both cold and heated shape for gluing most miscellaneous materials and has found a wide application in the Republic's furniture and plywood industry. As in earlier years, impregnating oil is produced for treating railway sleepers, and therefore the demand for this product is still very high. Besides, the above-mentioned enterprises also produce formalin (used in Estonia for making carbamide resins), carbamide resins (used for gluing together panels from timber-shavings), benzol, solvents, sulphur, etc. At the Group of Chemical Enterprises of Kiviõli, a workshop for the production of synthetic detergents is now under construction since it has proved possible to obtain sulphonol from shale oil. Tests and check-ups have shown that sulphonol obtained from oil shale as well as the synthetic detergent made from it possesses good qualities; in connection with this, it will be possible to utilize for other purposes 30,000 tons of food fats yearly, which were formerly used for making soap in the republic hitherto.

In earlier years, the heavy fractions of shale oil were usually applied for producing heavy oil (for heating) and bitumen. At the present time this is no more considered as economically efficient since shale oil cannot compete with crude oil in this respect. The researches and industrial tests effected in Soviet Estonia shaw that it is more advantageous and economically more efficient to coke the heavy shale oils and utilize the coking products for making electrode coke. The electrode coke obtained from shale oil is of high quality as it contains an inconsiderable amount of sulphur and no vanadium compounds. It is of great importance that Soviet Estonia is beginning to put out electrode coke since this product used to be mostly imported to the Soviet Union from abroad. The production of both electrode coke and synthetic detergents in Soviet Estonia will greatly con-

The Group of Oil Shale Enterprises, bearing the name of Lenin at Kohtla-Järve.

tribute to raising the rentability of the republic's oil shale industry.

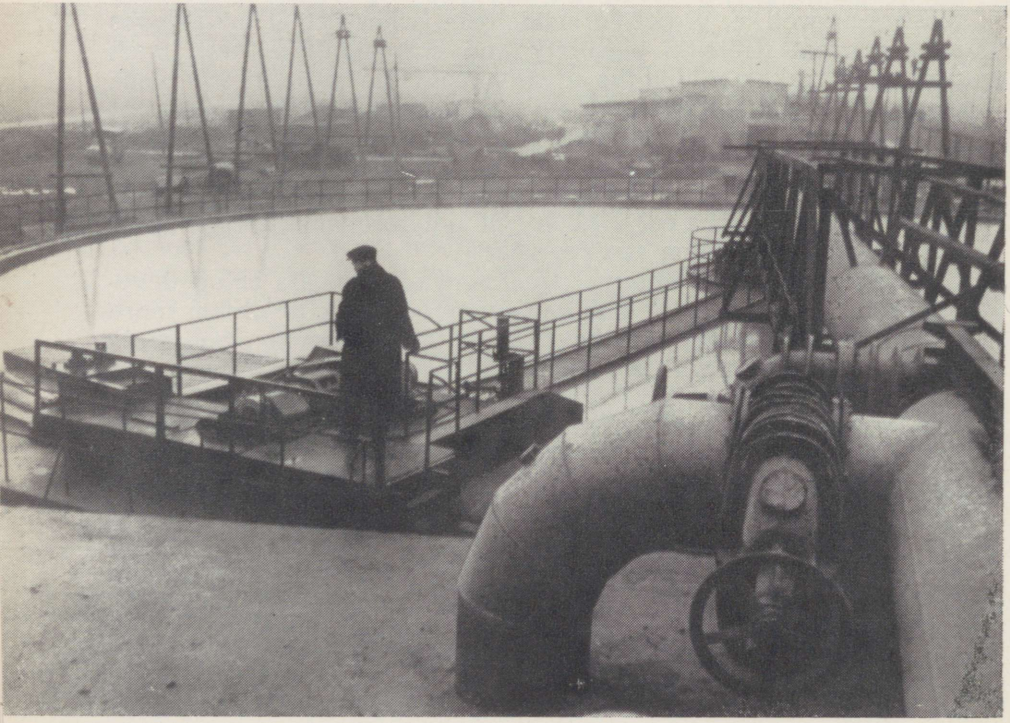
The possibilities of utilizing oil shale in chemical industry are steadily widening. Scientific researches and tests prove that, on the basis of processing oil shale, it is possible to produce plastics as well, e. g. polyformaldehyde, whose chief advantages are its great strength, plasticity and corrosion-proofness. Such properties make possible the advantageous use of plastics in place of special melts and scarce metals in the production of different parts of machinery. These plastics are required by the developing machine-building industry of our republic, and by the apparatus-building industry in particular. Calculations have shown that in prevailing conditions each 1,000 t of polyformaldehyde gives an economy of 2.8 million roubles yearly.

A new method of thermal treatment of oil shale being developed in Soviet Estonia, simultaneously enabling to obtain more and more of necessary raw materials, is the processing of oil shale in retort furnaces with a solid heat carrier. In the processing methods applied formerly, combustion gas was used as a heat carrier, whereas according to the above-mentioned method gas is replaced by heated oil-shale ashes. Corresponding industrial tests made in Soviet Estonia prove the great advantages of such processing. The greatest advantage is that it is possible to use fine oil shale (Grade III) for processing, which could not have been done in processing equipments in use hitherto. Moreover, the

processing with a solid heat carrier warrants a higher quality of the processing products (oil and gas) which, in their turn, serve as valuable initial materials for various chemicals.

In Soviet Estonia, there exist favourable conditions for a production of mineral fertilizers. On the north coast of the republic (from Paldiski to Narva) lie rich deposits of phosphorite ore containing a considerable amount of phosphoric acid. The reserves are evaluated to be about 150 million tons. The phosphorite ore was to a certain extent exploited in bourgeois Estonia as well; thus, in 1940, a little over 19,000 t of phosphorite ore were mined. Taking into account the vast importance of phosphorite fertilizers for raising the fertility of soils, it was planned to produce 100,000 t of enriched milled phosphorite in Soviet Estonia at the Group of Chemical Enterprises of Maardu near Tallinn in 1941. During the war and the fascist occupation of Estonia, the mining of phosphorite at Maardu was intensified, but the whole produce was sent to Germany. After the war the Maardu enterprises were expanded at a rapid rate. At the present time the yield of the Maardu enterprises have increased 34 times over in comparison with 1940. The whole amount of the mined phosphorite is worked into enriched phosphorite powder which is marketed in Estonia and also exported to Latvia, the Ukraine, and elsewhere.

Oil shale processing in the oil-shale basin.



Mining of Phosphorite in Soviet Estonia
(in thous. tons)

1940	1950	1953	1958	1960	1961	1963	1965
19.0	173.2	180.2	514.1	589.7	658.2	648.1	777.4

A score of years ago the Group of Chemical Enterprises of Maardu were extended by two more factories producing acid and superphosphate. For the production of sulphuric acid, pyrite brought from the Urals is used, whereas the raw material for superphosphate is apatite coming from the Kola Peninsula (a concentrate containing 39.4 per cent of P_2O_5). Such organization of production at Maardu has proved in every way efficient at the time being.

Production of Mineral Fertilizers in Soviet Estonia
(in thous. tons)

1940	1950	1953	1958	1960	1961	1963	1965
0	77.8	89.3	404.9	464.6	504.8	614.8	804.0

The phosphorite powder can also be used as a fertilizer without its being worked into superphosphate, whereas apatite must be processed. Apatite as a raw material of superphosphate is more than twice cheaper. At the present time, as mineral fertilizers, both dressed phosphorite powder and superphosphate are produced in Estonia, the yearly total amounting to over 800,000 t. During the bourgeois period, however, superphosphate used to be imported, the yearly amount not exceeding 50,000 t.

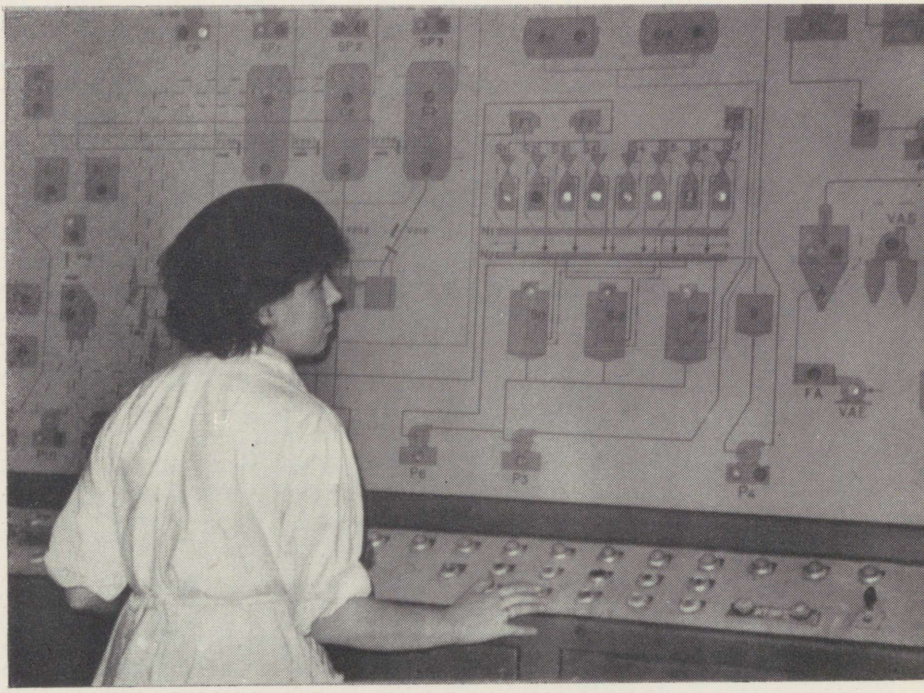
In Soviet Estonia, the production of nitric fertilizers is also being organized. A corresponding plant is under construction at the Group of Oil Shale Enterprises bearing the name of Lenin at Kohtla-Järve. At the beginning natural gas will be used as the initial product since with the present methods it is not possible to produce granulated carbamide out of oil-shale gas as cheaply as out of natural gas. But already now the Estonian scientists have proved that when treated at a high temperature, shale-oil gas can successfully replace natural gas and compete with it in respect of economy; therefore it is likely that already in the nearest future the very product of the Kohtla-Järve enterprises — shale-oil gas — will be used for the production of nitric fertilizer — granulated carbamide.

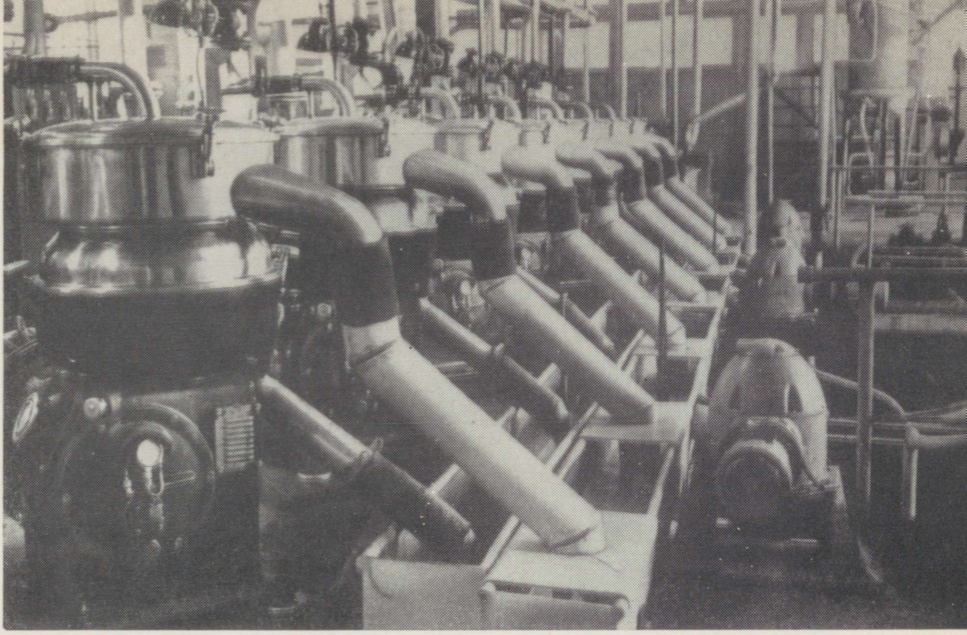
In former times, wastes remaining after the boiling of woodpulp were led into the Baltic Sea, whereas now a fodder-yeast plant has been established at the Group of Cellulose and Paper Enterprises, bearing the name of Kingissepp in Tallinn, which uses these wastes as a raw material. During the last four years fodder-yeast

has been produced in an amount equivalent to 8,400 t of proteins. The utilization of fodder-yeast in Soviet-Estonian stock-breeding has proved the high efficiency of this product. It suffices to state that 1 kg of fodder-yeast rich in vitamins and proteins affords to get additional 2.5 kg of fowl meat, or 30 eggs, or 7 l milk, while the expenses on fodder are reduced. Further on it will be possible to increase the production of fodder-yeast at the Group of Cellulose and Paper Enterprises in Tallinn by a more exhaustive utilization of wastes. The fodder-yeast plant established in Tallinn and entirely automatized is one of the largest in Europe at present. Another fodder-yeast plant is under construction in Estonia — at Püssi, where hydrolysis fodder yeast will be produced of timber wastes.

The producing capacity of this plant will be about 18,000 t of yeast per annum. This amount equals to 11,000 t of proteins; its utilization in the republic's stock-breeding will mean an economy of about 130,000 t of concentrated fodder and contribute to a vast improvement in the corresponding branch of national

Switch-board at the Cellulose and Paper Plant in Tallinn.





Separators at the Fodder-Yeast Factory.

economy. Next to fodder-yeast, the plant is to put out, as secondary products, furol, a fraction of methyl alcohol, and lignine briquettes as fuel from the wastes.

Great advances have been made by Soviet-Estonian pharmaceutical industry. Instead of several small laboratories where work was chiefly done by manual methods, a large-scale plant has been established — the Tallinn Chemical and Pharmaceutical Plant, an enterprise with a concentrated productional space and mechanized and automatized working processes. This plant has been specializing in the mass production of small-sized ampules, tablets and tinctures.

Considerable changes have occurred in the technology of the production of remedies. In earlier years, the washing of ampules was effected with the help of a special device equipped with a needle, and only one ampule was washed at a time. At the present time, however, washing is effected with the help of a vacuum method, which is controlled automatically and allows to wash 10 hundred ampules at a time. Formerly, the filling of ampules used to be performed with the help of burettes, whereas now this operation, too, is done by the vacuum method. The sealing of ampules, formerly performed manually, has now been mechanized as well, and so has the printing of inscriptions on the ampules.

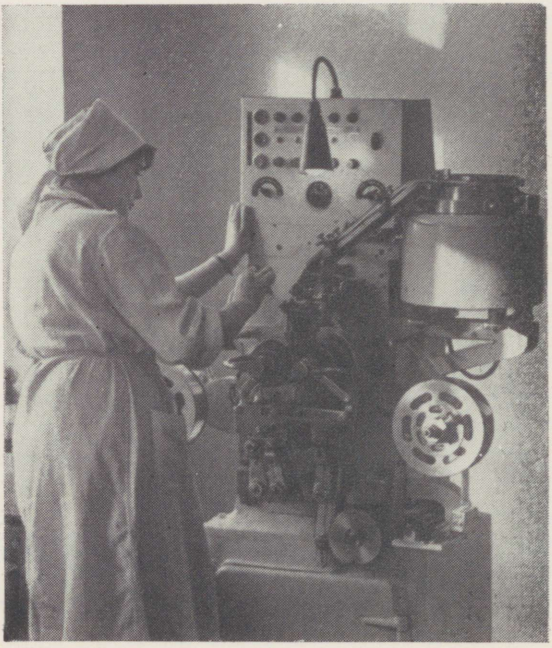
At the production of tablets, the granulating of the tablet mass has become an entirely mechanized process. The old eccentric machines have been replaced by a much more efficient apparatus working on the principle of rotation.

The packing of tablets at the above-mentioned plant is carried out by an automatized process.

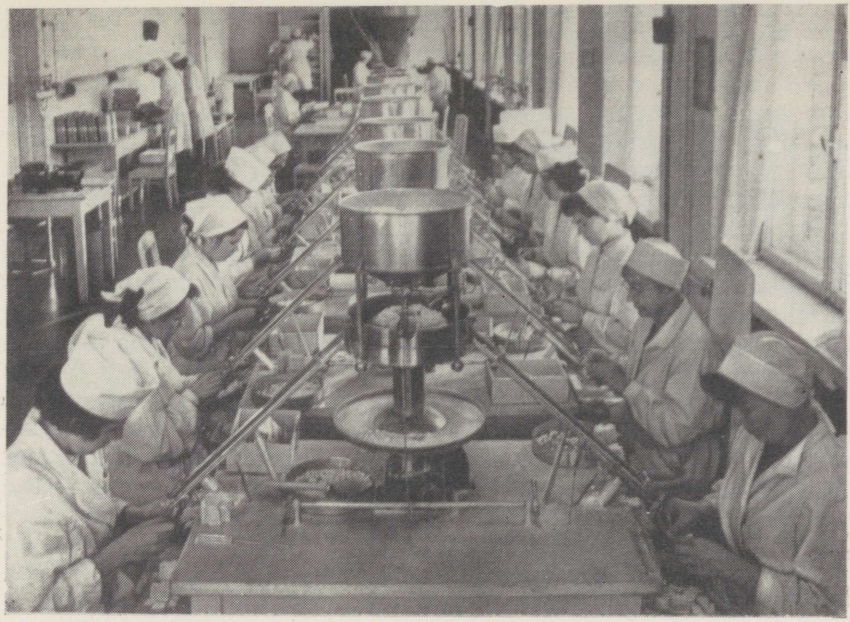
As a result of employing all these up-to-date methods, the producing capacity of the Tallinn Chemical and Pharmaceutical Plant has vastly grown and continues growing.

The possibilities of realization of the production are extensive and favourable.

Machine-building and metal-working. Already at the beginning of the present century, there existed quite a few large engineering plants on Estonian territory, and particularly in Tallinn, which were rather considerable at that time. They specialized in ship-building, railway-carriage construction and different branches of machine-building. Altogether, these industries employed a total of over 14,500 workers. Owing to the restricted marketing conditions of the bourgeois Estonian state, these industries were almost ruined: the ship-yards and railway-carriage works ceased existing altogether, and the machine-building



Tablet-packing automat at the Chemical and Pharmaceutical Plant in Tallinn.



Packing of tablets at the Chemical and Pharmaceutical Plant.

plants were leading a precarious existence, working mainly as repair shops with but a few orders to execute. The number of workers fell abruptly, fluctuating between 30 and 60 hundred. It was only in the conditions of a Soviet state that Estonia obtained new possibilities for a wide development of machine-building and metal-working, in spite of the lack of corresponding metallurgical resources on the spot. Estonia was supplied with metals by the sister republics of the Union, and mainly such branches of engineering industry were developed which required relatively small amounts of metal, and rather highly qualitied labour. These branches of Estonian industry disposed of wide marketing possibilities since the mechanization and automation of Soviet industry stipulated an ever-increasing number of corresponding equipment, telemechanical and electronical apparatuses and measuring instruments as well. Soviet-Estonia's share in meeting the ever-rising demand for the machinery and tools mentioned is rather considerable.

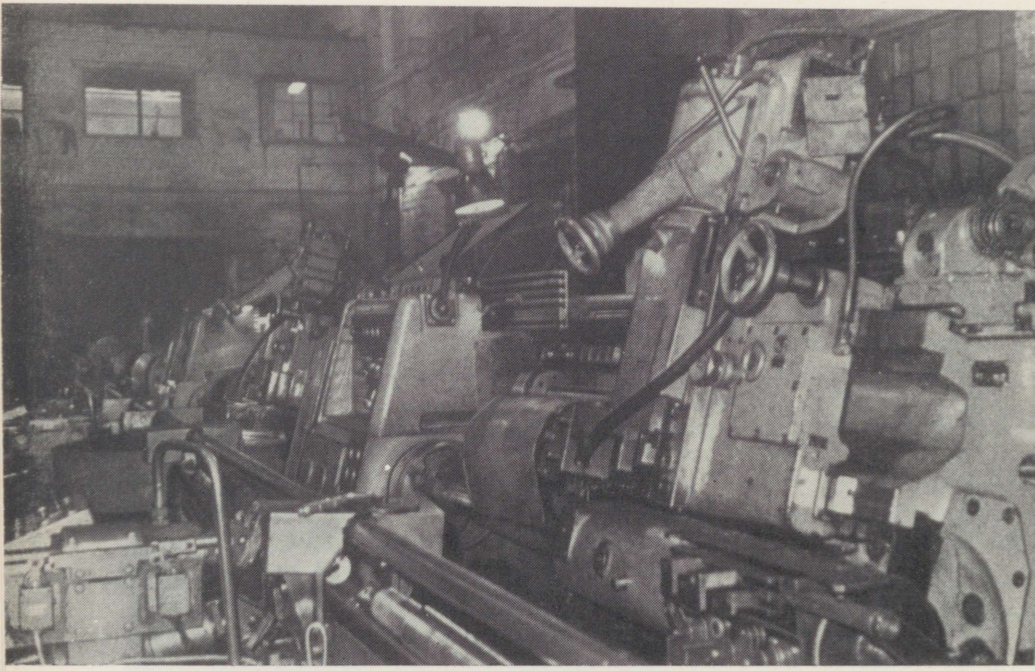
During the post-war period, the volume of the output of Estonian engineering and metal-working industry has grown scores of times and this branch of industry, now one of the leading in Estonian national economy, employs more workers than ever before.

Growth of Total Output of the Machine-Building and Metal-working Industry
in Soviet-Estonia during the years 1945—1965
(in per cent)

1945	1950	1953	1958	1960	1961	1962	1965
100	550	784	1,671	2,322	2,859	3,431	4,943

At the time being, one of the most important branches of Soviet-Estonian engineering is the electrotechnical industry, chiefly represented by the electric motor plant "Volta" in Tallinn. This plant was established at the turn of the century as a large-scale enterprise for the production of electrical machines. In the bourgeois period, there was no market for the output of the plant, and therefore the production had to be cut to a great extent: even part of the premises were let to other enterprises, and the former large-scale plant kept functioning as a small workshop. After the war, in Soviet conditions, the plant was resuscitated. All the pro-

Automatized production of electric motor shafts at the "Volta" plant.



ductional premises were now taken into exploitation for a mass production of electric motors, the main issue of the plant. An automatic line was installed for the production of axles, as a result of which the labour productivity at the plant increased more than seven times. The finishing of motor cases is now effected on aggregate benches, and the bearing-boxes are made by six-spindle semi-automats. The stamping of stator and rotor plates is done by automatic presses, and the coiling of stators and assembling of motors is effected by the conveyor method. A chain-conveyor has been installed, which transports the assembled motors to the painting shop, and from there — to the storage room. As a result of all these improvements, the production of electric motors in Estonia has grown to a vast extent. In the pre-war year of 1940, only a little over 10 hundred electric motors were produced in Estonia, whereas now the yearly figure exceeds 250,000. Next to alternating current motors of 0.25—100 kW, the "Volta" plant has started a mass production of 120 W-motors, the output of which increases from year to year.

Growth of the Production of Electric Motors of 0.25—100 kW in Estonian S.S.R.
(in thous. items)

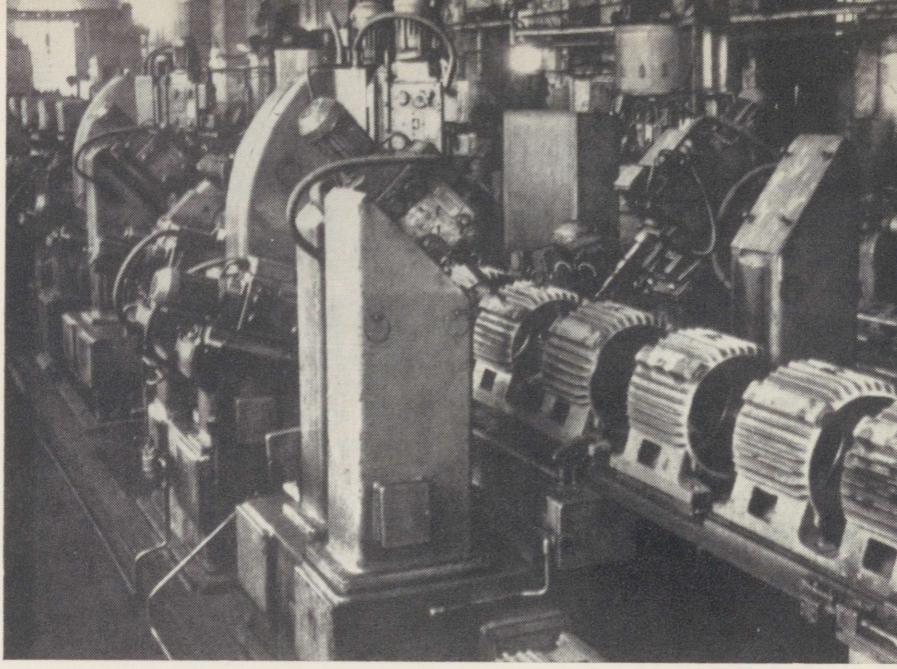
1940	1950	1953	1958	1960	1961	1962	1963	1965
1.1	76.7	98.0	186.3	216.1	226.2	236.1	242.3	258.0

The motors of such a small capacity are widely used for supplying various equipments with individual electric power. The Estonian motors enjoy a high reputation all over the Soviet Union and in a number of foreign countries as well.

At the time being, the "Volta" plant is being reconstructed into an experimental and exemplary enterprise. A number of new productional premises have been erected, and several most up-to-date technological processes and mechanization and automation schemes are being introduced, which do not concern the main production only, but also the auxiliary operations, such as transport, loading, unloading, storing, etc. The organizing and directing work at the plant is also being improved.

In earlier years, there were repair shops in Tallinn, repairing railway carriages and steam locomotives and catering for the needs of the railway. These workshops bore the name of Central Railway Works and employed a staff of highly qualified and experienced metal-workers.

In connection with the wide-ranged electrification of Soviet railways, an acute demand arose for mercury arc rectifiers and power transformers used in electric locomotives. It proved neces-



Electric motors at the "Volta" plant.

sary to reconstruct, among others, the former railway-carriage and locomotive repairs shop in Tallinn into a giant plant, where since 1961 both mercury arc rectifiers and electric power transformers have been produced. In regard to these products, the Tallinn Mercury Arc Rectifier Plant bearing the name of M. I. Kalinin has become one of the most important in the Soviet Union, providing several electric locomotive works with mercury arc rectifiers as well as transformers.

Production of Mercury Arc Rectifiers and Electric Power Transformers in the Estonian S.S.R.

	1940	1950	1958	1961	1962	1963	1965
Mercury arc rectifiers, thous. kW	—	—	—	1,978	2,733	3,458	4,072
Transformers, thous. kW	—	—	—	1,862	2,684	2,916	3,287

The Estonian electrical engineering industry continues developing in other directions as well.

After the reorganization of the machine-and-tractor stations in Estonia in 1958, it became possible and efficient to utilize some

suitable, but old premises and equipment of these stations in the interests of some other industries. In this way, several electrical engineering enterprises were established, such as the high-tension equipment plant at Puurmani, the electromechanical plant at Rõngu, etc.

One of the biggest and generally best known branches of electrotechnical engineering in Estonia is the cable industry.

A small plant, "Urania", formerly engaged in the production of electric batteries, and later also electrical wires, was transformed into a large-scale enterprise "Estonian Cable" during the Soviet period. At the present time it is situated in newly erected and specially equipped factory buildings, producing various kinds of cable, including installation and light ducts, power cables with rubber and plastic insulation, radio and communication wire, assembly wiring and enamel wiring. The largest part of the produce is exported beyond the boundaries of the republic.

Output of Cable Products in Soviet Estonia
(in thous. kilometres)

1945	1950	1953	1958	1961	1963	1965
0.2	7.3	34.3	74.3	119.4	138.5	152.0

Another branch of engineering in Estonia, the apparatus-building industry, is making rapid progress as well. At the present time, the apparatus and electrotechnical industries together account for over a half of the total production of the engineering and metal-working industry in Estonia.

Next to electrotechnical and apparatus-building industries, power-machine production has made great progress in Soviet-Estonia, the main representative of this branch being the plant "Ilmarine" in Tallinn. This enterprise looks back at a development of over a century it was founded as a coppersmith's workshop and later turned into a plant producing spirits destilling and rectifying equipment. During the bourgeois regime in Estonia it represented a metal-working plant of a very vague and changing productional profile. At the present time "Ilmarine" is a specialized plant for the producing of auxiliary boiler-equipment and low-tension apparatuses. The auxiliary boiler-equipment — soot blowers, combustion hearths, heavy-oil pulverizers, cleaning devices, etc. — are mostly intended to cover the demand of the thermopower plants of the Soviet Union. It ought to be mentioned, for example, that for a complex cleaning of the heating surfaces of one single large boiler aggregate, as much as 70—80 soot blowers of different types have to be installed, which are connected with each other, forming an automatically operated system.

The blowing devices produced at the "Ilmarine" plant safeguard an uninterrupted work of the boiler aggregates at our power plants and contribute to raising the efficiency coefficient and reducing the expenses on fuel. The produce of the plant is being successfully marketed in foreign countries as well, such as Poland, Hungary, China, India, Vietnam, etc.

The entirely new branches of engineering in Soviet Estonia are those dealing with the mass and serial production of excavators, road-planers, tractor-loaders, wagon-houses, crude oil working equipment, iron-working and stamping machines and a number of technological devices for the foodstuffs industry.

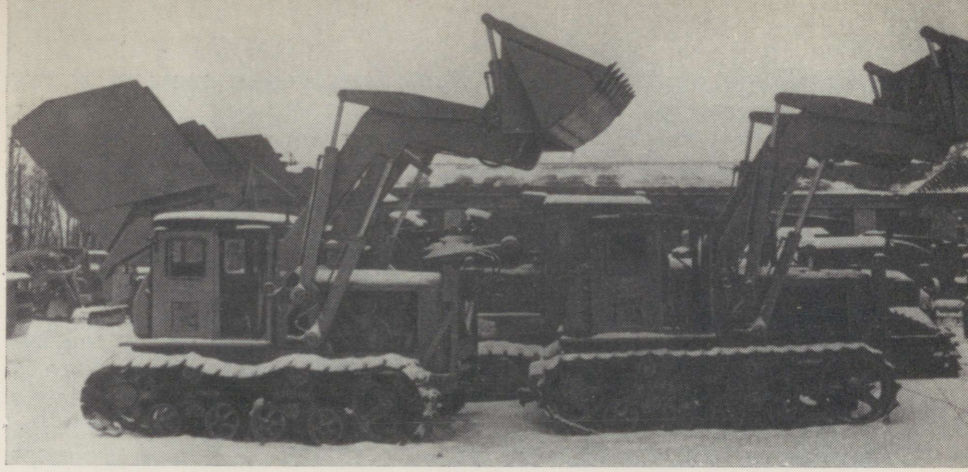
The first multi-bucket trenching excavator was produced at the Tallinn Excavator Plant in 1956. At present, the plant puts out two or three types of such excavators as well as tractor-loaders and road-planers. These machines are mostly marketed in Soviet Estonia or in neighbouring economic regions, where they replace to advantage the hard manual labour at the digging of ditches, hoisting of loads and lifting them from one spot to another, or at the building and maintenance of roads.

Production of Excavators, Road-Planers and Tractor-Loaders in Soviet Estonia (units)

	1940	1953	1958	1961	1963	1965
Excavators	—	—	456	600	750	880
Road-planers	—	21	262	352	451	500
Tractor-loaders	—	—	—	450	602	720

Some years ago the construction of comfortable trailing dwelling-wagons, canteen-wagons and shop-wagons was begun. Those wagons are needed on non-stationary building-sites (e. g. at the installation of gas pipelines). The production of the trailers was entrusted to one of the largest and oldest machine-building enterprises in the republic — the Tallinn Machine-Building Works (the former F. Krull's works). This production constitutes now about one third of the value of the plant's total output. For a number of years already, the Tallinn Machine-Building Works have also been supplying the crude oil industry with different special devices, crystallizers, compressors, etc. The works also make miscellaneous non-standard equipment to order. In recent years, they have begun to launch various devices operated by ultrasound (in the first line, ultrasound baths).

The small seaside town of Pärnu, too, possesses a thriving engineering industry. The premises of the former boat-motor workshops were reconstructed and extended, and the Pärnu Machine-Building Works were established, whose most important



Tractor-loaders of the Tallinn Excavator Plant.

output at the present time are the mechanical presses, hydraulical presses (for the production of plastics), and technological equipment for the food industry, such as milk pasteurizers, automatized milk-cooling apparatuses, machines for loading herring into barrels, fish-salting machines, etc.

Technological equipment for the food industry is also produced by the industrial enterprises of the consumers' cooperative organization. For example, a descendant of the former Kopli Machine-Building Works of the Estonian Union of Consumers' Cooperatives in Tallinn, but on a new site, on the hill of Maarjamägi and in new specially erected buildings, is the Commercial Inventory Plant subordinated to the Consumers' Cooperatives. At first, this plant used to make agricultural tools, weighing scales and weights, but soon it began to specialize in the mass production of complex equipments for bread-baking factories (bread-ovens, dough-mixing machines, dough-dippers, dough-distributors, flour-sieves); the bread-baking enterprises run by the consumers' cooperatives all over the Soviet Union are provided with equipments by this plant. Thus the small, obscure Estonian workshop making simple tools has grown into a large-scale enterprise producing intricate devices. A special constructing bureau has been attached to the plant, designing up-to-date machinery for small-scale bakeries, taking into account corresponding experience obtained at home and abroad, and being the only one of its kind in the Soviet Union.

Another plant belonging to the system of the Consumers' Cooperatives is the Rakvere Commercial Inventory Plant, the only one in the republic, which has specialized in the mass production

of refrigerating equipment for shops (refrigerator counters, showcases and cupboards). This plant, too, has evolved from a former small metal-working shop in the jurisdiction of the cooperatives, employing a small staff of skilled labourers.

Interesting production is put out by the plant "Teras" in Tallinn. Next to non-standard equipment, it makes steel cases in a large scale — safes for money and archive documents. At the time being, the plant yields sufficient production to meet local requirements, but as fireproof safes are in great demand in other Union republics too, therefore the major part of these items are marketed beyond the borders of Estonia. In the Soviet Union, there is also a high demand for another produce of the plant — electric hair-drying equipment (together with wiring and armchairs) for hairdressers' shops. Further, the plant "Teras" is a mass-producer of perambulators, push-sleighs and handicraft tools.

Of rather great importance in Soviet Estonia is also the production of agricultural machinery, its centre being the town of Tartu. Here potato harvesters, tractor cultivators, potato-planting machines and fertilizer- and lime-sowing machines are made.

Alongside with various engineering plants, there are quite a number of enterprises engaged in the production of different metal articles for the consumer. The latter are in great demand not only in Soviet Estonia, but also in the other Union republics and abroad. There is, for instance, the plant "Norma", evolved from several small enterprises, mainly iron-working ones. The staff of this plant, consisting of highly qualified and experienced labourers, has specialized in the production of fine toys made of combined materials and provided with spring and electrical mechanisms, as well as of lithographed sheet-metal boxes, flashlight batteries and impulse-lamps for photographers, which are in great demand on the all-Union market.

The metal-working enterprises of Soviet Estonia also produce sheet iron articles, nails, door- and window-hinges and other parts, locks, spades and various gardening tools, metal household utensils, enamelled cast-iron baths, stamped aluminium utensils, jewellery, etc.

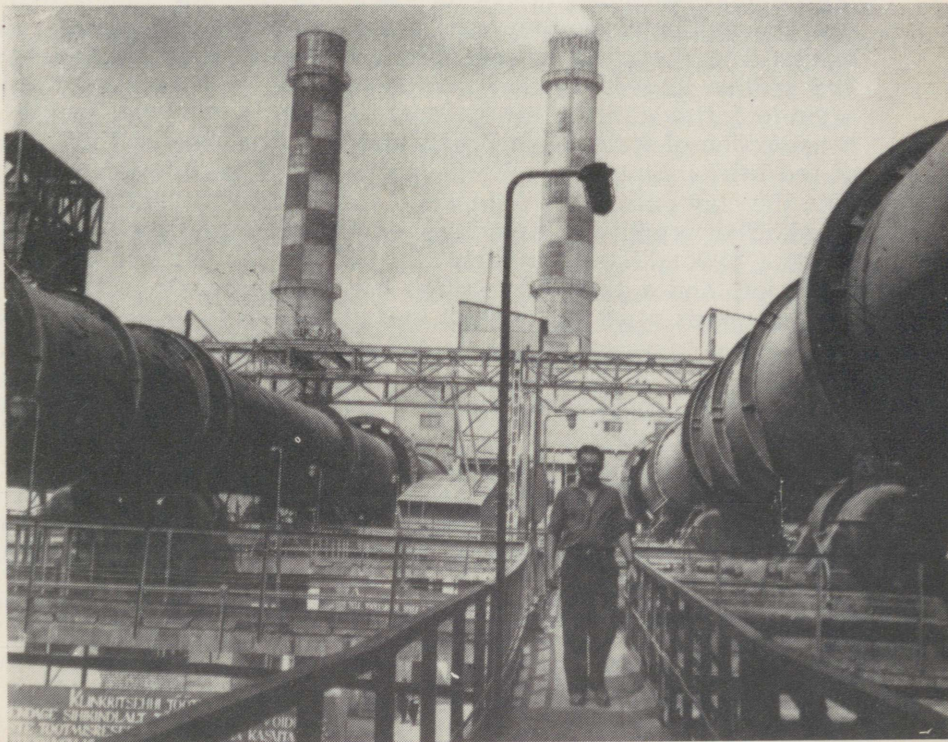
Next to the production of new articles, a number of Estonian specialized enterprises are engaged in capital repairs of machinery. The following lines of capital repairs deserve mention: ship-repairs, effected by several enterprises in Soviet Estonia; motor car repairs, in which four enterprises have specialized (according to the type and make of cars); repairs of agricultural machinery (mainly tractors and harvesting combines); repairs of metal-cutting machines and iron-working presses. Such a centralization and specialization of repairs allows for more efficient organization of repairs, taking into use of better elaborated, efficient working methods, and a full utilization of labour and equipment.

It is also typical that simultaneously with repairs at those specialized plants, modernizing of the equipment being repaired is effected as well.

Production of Building Materials. There are favourable conditions for a production of building materials in Estonia: the country is rich in resources of limestone, clay, gravel and quartz sand, and therefore cement, lime, bricks and other well-known building materials can easily be made. But there are also possibilities of using industrial oil-shale wastes (semi-coke, ashes) for a number of building materials, and of timber wastes (shavings, sawdust) and peat likewise, and of utilizing glass fibre and synthetic resins for the production of building materials as well.

Nowadays, one of the most important and demanded building material is cement. Cement enables an industrial production of construction components and an industrialization of construction activities. In Estonia, cement was already produced as far as almost a century hence. In 1870, a cement factory was established at Kunda, being the first of its kind in Russia. Later on, in the restricted marketing conditions of the bourgeois Estonian state, the cement factory was almost ruined. Under Soviet power, however, wide vistas opened for the cement industry. At Kunda,

The new cement plant at Kunda.



a new, large cement plant has been erected. Three technological lines have been launched, each of them with a producing capacity of 313,000 t of portland cement per annum. The revolving kilns of 150 m in length and 4 m in cross-section, are in operation. The plant has begun to operate on oil-shale dust fuel. It is the first time in the world that this kind of fuel is applied in the case of revolving kilns of such a great length. As a result of the expansion of the cement industry in Estonia, the total output is to rise to 1,000,000 t per annum; as it is known, only 70,895 t of cement were produced in Estonia in 1940.

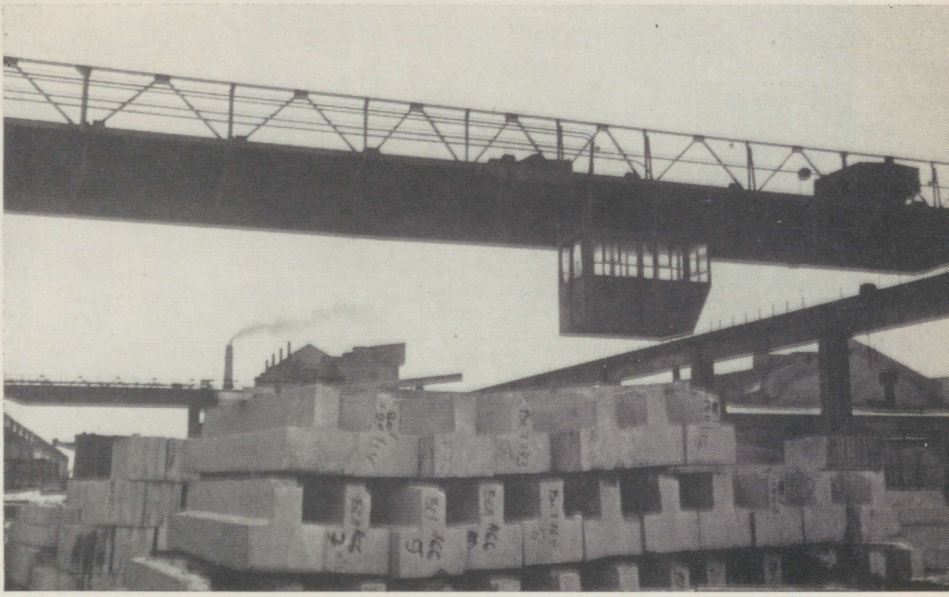
Growth of Cement Production in Soviet Estonia
(in thous. tons)

1940	1950	1953	1958	1960	1961	1962	1963	1965
70.9	90.6	98.6	99.1	101.0	313.5	483.5	526.0	675.0

Of traditional building-materials, whose production has been carried on in Estonia on a wide scale up to the present days, bricks deserve particular mention; they are baked of clay (red bricks) and also made of sand autoclaved with an admixture of lime (silicate bricks). The production of both kinds of bricks has considerably increased. In 1940, for example, 59.6 million bricks were produced in Estonia, with 37.0 million (or 62 per cent) of this amount being red bricks; in 1965, however, the annual total was 255 million, including only 44 million or 18 per cent of red bricks. The output of silicate bricks has immensely risen: from 22.5 million in 1940 to 210.7 million in 1965, which means about a ten-fold rise. Silicate bricks are used to advantage for the construction of walls; their production is twice cheaper than that of red bricks. Since the silicate bricks are of no inferior quality than the clay ones, their production has been considerably intensified. The producing capacities of the existing silicate brick plants ("Silikaat" and "Kvarts" in Tallinn) have been greatly increased, and a third large plant has been erected — the building-materials plant "Männiku" in Tallinn.

Production of Building Bricks in Soviet Estonia
(in million pieces)

	1940	1950	1953	1958	1960	1961	1962	1963	1965
Silicate bricks	22.5	41.5	69.5	149.0	207.0	227.2	213.4	205.0	227.6
Red bricks	37.0	67.8	89.3	103.9	102.5	83.8	73.3	41.0	53.6

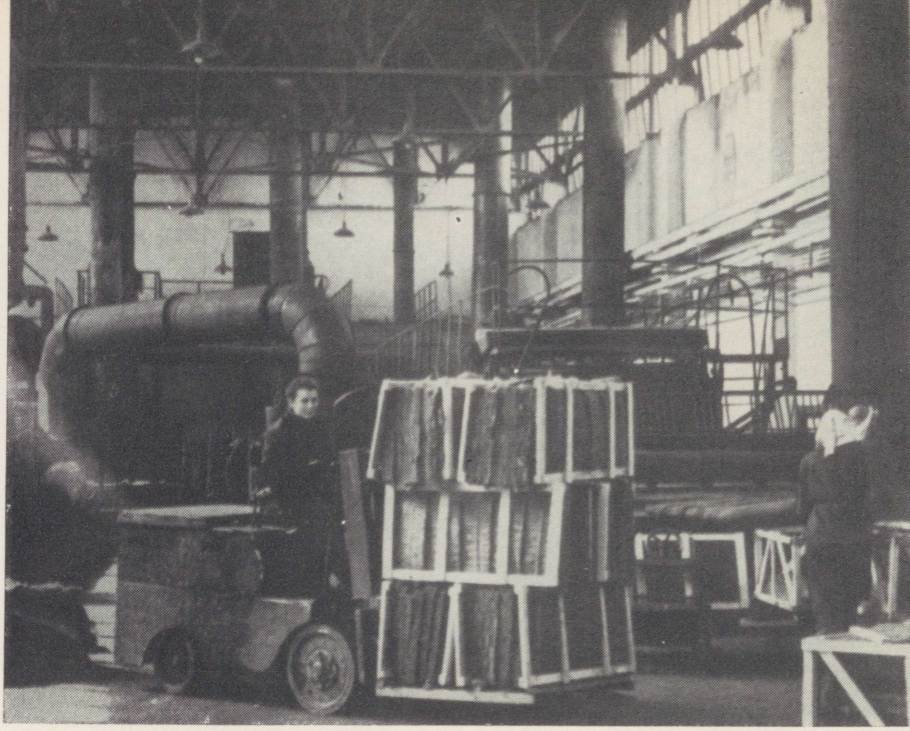


The "Männiku" building-materials plant.

In recent years, the production of structural details in Estonia has achieved dimensions entirely sufficient for meeting the republic's demands within the limit of the capital investments foreseen, furthermore, there are bricks even left for export. But brick as wall material has no perspectives; as a "mosaic" wall-facing material, it is now mostly replaced by wall materials of new kind — big blocks and panels, and therefore the production of building bricks in the republic is not to be increased any longer.

Soviet Estonia was the first country in the world to produce a valuable and highly important warmth-insulating material — mineral wool — from oil-shale semicoke. A corresponding plant has been working for the last seven years in the neighbourhood of Kohtla-Järve, putting out over 120,000 cu. m mineral wool per annum. Mineral wool is also used for making mats and panels. Thus, a foundation has been laid in Estonia for the industry of warmth-insulating material.

Soviet Estonian scientists have been carrying out wide-ranged researches into the binding properties of oil-shale ash and its utilization for the production of binding agents. A corresponding technology has been elaborated for making different building



The workshop of mineral wool at Kohtla-Järve.

materials with oil-shale ash as a binding agent. A combined works for building materials has been erected at Ahtme, whose yearly output includes thousands of tons of kukermite, a binding agent obtained from oil-shale ash, and up to hundred thousand cubic metres of oil-shale ash panels and warmth-insulation panels as well. The oil-shale ash products find a wide application in the erection of both agricultural and industrial structures by industrial methods. These building materials are cheap and of a good quality, and they help to economize scarce materials and contribute to a reduction of building costs and time, and to a rise in the economic efficiency of capital structural building.

But the researches effected by Soviet-Estonian scientists have also shown that if oil-shale dust is turned into a liquid state in combustion ovens at an extremely high temperature (1800—2000°C), the product obtained is a valuable cement clinker, the so-called energoclinker, with properties no worse than those of portland cement. In this way, a combined production of electric power and cement clinker can be organized at Estonian large-scale thermal power plants operating on oil shale. The economic

effect of such a combined method will be very considerable indeed: the oil shale will be utilized to the greatest possible extent, its organic part being used as fuel for obtaining electric power, and the inorganic one being melted into a cement clinker of fine properties. By this method it will be possible to obtain, in addition to well-known portland cement, immense amounts of extremely cheap clinker of an excellent quality. The Second Baltic Thermal Power Plant, which is under construction at the present time, will be the first enterprise to apply the combined method on a large scale.

Another branch of the building-materials industry in Soviet Estonia is the production of the so-called TEP warmth-insulation panels, which were already made in 1940, but in inconsiderable amounts — about 50 hundred cu. m per annum — and by manual method. At the present time, the production of these panels is entirely mechanized, and the annual output amounts to about 50,000 cu. m, being ten times higher than in 1940.

Mechanized production of TEP warmth-insulation panels.

Production of TEP (warmth-insulating) Panels in Soviet Estonia (in thous. cu. m)

1940	1950	1953	1958	1960	1961	1962	1963	1965
5.0	11.2	7.7	10.1	16.9	45.4	49.0	49.1	56.0

The production of lime has also considerably increased in Estonia in comparison with the pre-war data, which is mostly due to the expansion and intensification of structural building and to the growth of the silicate-brick industry. The chief consumer of lime is the structural building, which uses about 50—55 per cent of the lime production, whereas the rest is consumed by the silicate-brick and silicalcite industries. In connection with the intensified application of industrial methods in structural building, the consumption of lime in this line is bound to decrease to a certain extent.

Production of Lime in Soviet Estonia (in thous. t)

1940	1950	1953	1958	1960	1961	1962	1963	1965
37.0	71.1	99.5	169.6	190.3	193.7	192.6	174.2	186.9

In order to safeguard a successful application of industrial methods in structural building, several large ferroconcrete plants have been put into operation in Estonia — in Tallinn, Kohtla-Järve, Narva, Tartu, and elsewhere. From 1953 onwards, the production of prefabricated ferroconcrete constructions and components has been constantly growing in the Estonian S.S.R.

Production of Ferroconcrete Products in Soviet Estonia (in thous. cu. m)

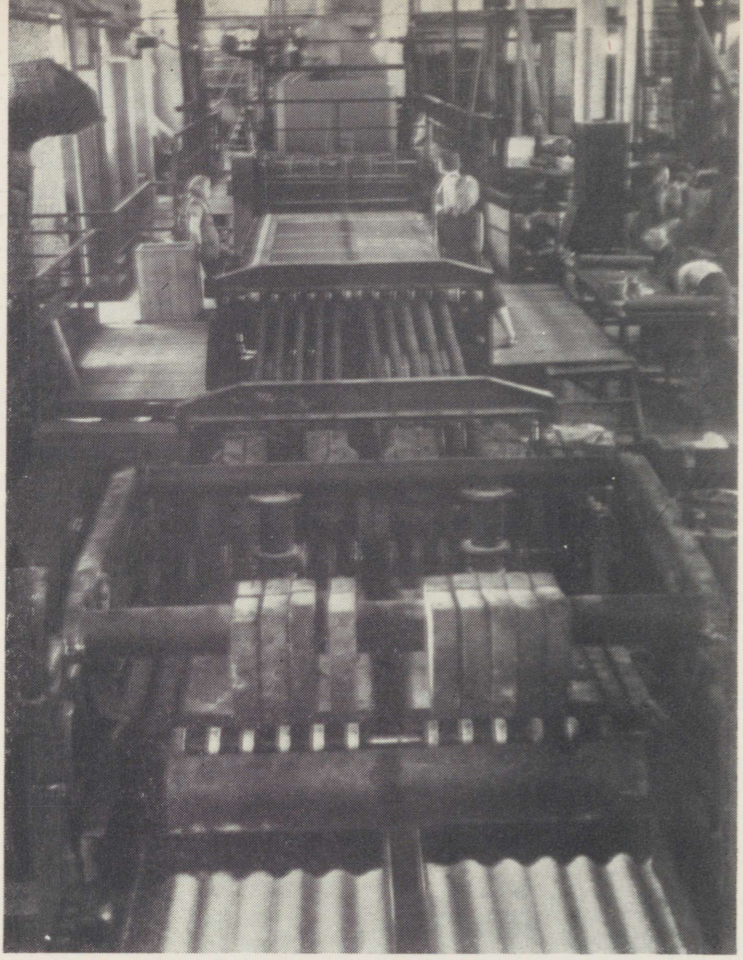
1940	1950	1953	1958	1960	1961	1962	1963	1965
—	—	6.0	106.4	193.9	241.2	281.6	295.0	404.0

For an even higher degree of industrialization of structural building in Estonia, some building organizations have founded combined works for housing construction. Thus a combined works for housing construction has been operating in the system of the Tallinn Trust of Structural Building for a number of years, erecting 4—5-storey buildings by industrial methods in series; this means that all the necessary constructions and components —

walls, ceilings, roofs, staircases, doors, windows, sanitary installations, etc. are either produced at the combined works itself, or obtained by way of cooperation from some other specialized plant, assembled at the combined works and thereafter transported to the building site, where the structure is assembled from constructions and components by the workers of the combined works. The assembly cycle of a five-storeyed house of 80 apartments (finishing work included) does no longer exceed 1.5—2 months, after which the tenants may settle down in their new homes. The producing capacity of the above-mentioned combined works is 120.000 sq. m living space at the time being.

The production of roofing materials in Estonia is also gaining in scope. In earlier years, only clay and cement roof tiles and tar-board were produced in Estonia, and part of the requirement was covered by imported iron and zinc sheet. At the present time, too, certain amounts of roof tiles are produced. However, a roofing material which has gained a mass application in Estonia is now eternite (roofing plates made of asbest and cement), produced at a special shop at the Kunda Cement Plant. This factory

Prefabricated apartment houses at Tallinn-Mustamäe.



Eternite roofing workshop at Kunda Cement Plant.

has two well-mechanized production-lines, each of them producing tens of millions of plate units per year. This amount suffices not only for meeting the local demand for roofing, but also for exporting to the other Union republics.

In Soviet Estonia, tar-board roofing is also produced and namely at the tar-board shop of the silicate factory "Silikaat" (the former tar-board factory "Järve"). The output of tar-board in Estonia has immensly increased under the Soviet system: in 1940, the total output was 0.9 million sq. m, whereas now the annual figure is 18 million sq. m, the major part being exported to other Union republics. In the next forthcoming years, the production of tar-board is not to be increased any more since another roof-

ing material, ruberoid, also produced in Estonia, is found to possess better quality than tar-board. A corresponding ruberoid factory, attached to the "Silikaat" factory, has a producing capacity of 12 million sq. m of ruberoid per annum, already at the present time. Next to these materials, pergamine is produced, which is an efficient means for moisture insulation.

Production of Roofing Materials in Soviet Estonia

	1940	1950	1953	1958	1960	1961	1962	1963	1965
"Eternite", million plate units	—	—	—	—	—	—	3.2	22.5	44.1
Tar-board, million sq. metres	0.9	3.3	6.8	16.5	17.8	18.5	21.6	29.6	35.1
including: ruberoid, million sq. m	—	—	—	—	—	—	—	5.3	13.9
pergamine, million sq. m	—	—	—	—	—	—	2.4	7.2	1.3

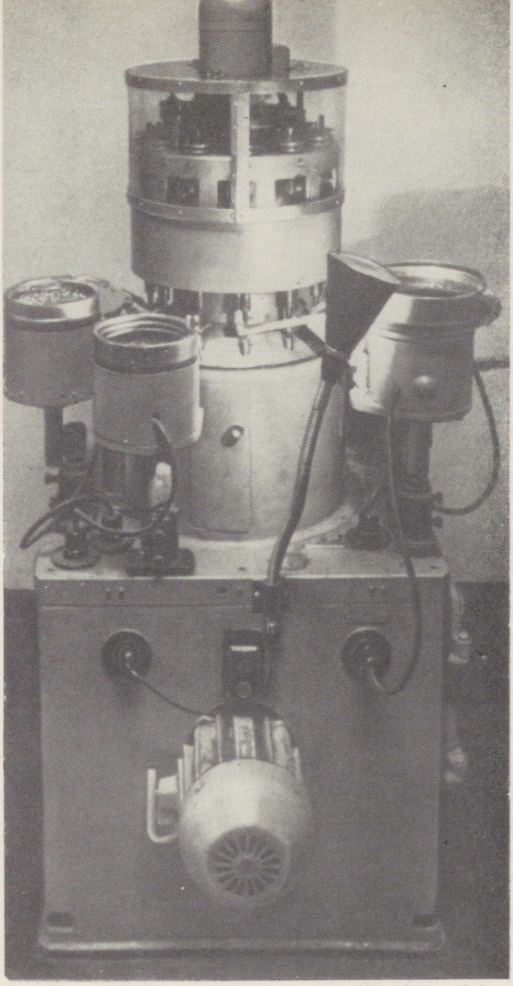
Of flooring materials, next to timber parquet, novel synthetic flooring plates — "metlahh" plates are put out in Soviet Estonia, by the Tallinn Building Ceramics Plant, and timber-fibre plates, by the Combined Works of Timber of Pärnu. For an even completer utilization of timber wastes, a production of timber-shaving plates has been started in Estonia. Different types of plates are made, according to their volume weight (light, semi-heavy, heavy, and extremely heavy). The light timber-fibre plates are widely used for warmth- and sound-insulation, the semi-heavy ones — mainly as panels for partition-walls and furniture, and the heavy and extremely heavy plates — for flooring. A workshop is under construction for producing rubber linoleum from rubber waste and bitumen, the so-called "relic". The yearly output of this shop will be 500,000 sq. m at the beginning, but soon it will rise to 2.5 million sq. m of "relic" rubber linoleum per year.

The production of broad glass in Estonia has experienced a considerable increase as well. The "Järvakandi Works" are the producers, as they were of old. But in comparison with the data of 1940, their production in this line has increased three times over, owing to the modernization of technological methods.

Production of Broad Glass in Soviet Estonia
(in thous. sq. m)

1940	1953	1958	1960	1961	1962	1963	1965
602.2	794.4	1,511.9	1,831.6	1,804.7	1,852.0	1,980.0	1,915.0

In Soviet Estonia, the production of building materials made from plastics is also being developed. Now it is concentrated at



Automat at the "Estoplast" plant.

the plant "Estoplast" in Tallinn, established as a result of a fusion of several small factories and productional cooperatives. At the present time, the "Estoplast" plant is a leading enterprise in the Soviet Union, which elaborates new types of constructions and products made of plastics, and passes them on for production at other plants. Its main issues, which are of an all-Union importance, are plastic electrical installation equipment, electric fixtures and sanitary equipment. Its significance for Estonia is that it makes use of plastics and introduces them into industrial production. The "Estoplast" plant puts out tens of thousands of square km of polystyrol walling panels yearly; of sanitary equipment — siphons for washing basins, sinks and baths, cold-water taps; of electric installation materials — switches of differ-

ent types and colours. The yearly output of the latter makes about 20 per cent of the total production of this article in the Soviet Union. At the same time, the plant produces over one million of various kinds of plastic electric fixtures per annum.

Textile and clothing industry and other branches of light industry. The textile industry is one of the oldest industrial branches in Estonia. As far back as the first quarter of the 19th century, several textile mills were established on Estonian territory. Thus, for instance, the Narva Cloth Mill was founded in 1821, and a few years later cloth manufactories were established at Hiiu-Kärdla and Sindi as well. In 1857, in the vicinity of Narva, the Narva Kreenholm Cotton Manufactory was erected, which became one of the largest of its kind in Europe. The separation of Estonia from the all-Russian market called forth a crisis in Estonian textile industry: in this branch, too, large-scale enterprises were practically ruined, continuing to work far below their capacities. In the conditions of a Soviet state, however, textile industry began to develop once again. Though the war and fascist occupation had inflicted serious damages to the republic's textile industry — about three quarters of its producing capacities were destroyed — it was rapidly restored within a few post-war years.

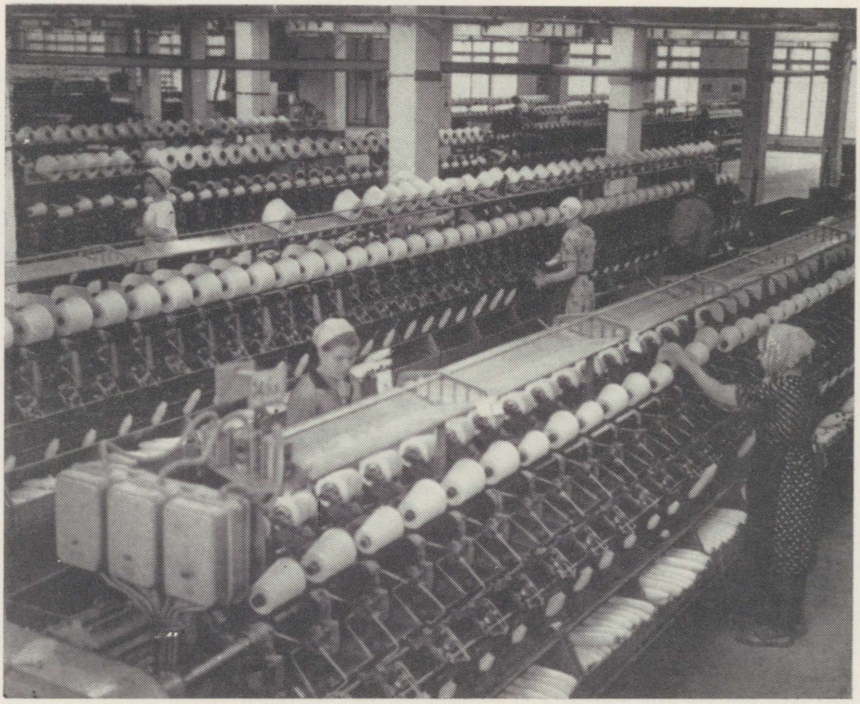
Conveyor line for the assembly of fixtures at the "Estoplast" plant.

In 1940, the production of cotton fabrics in Estonia was 22.8 million metres, whereas the present annual output exceeds 140 million m. Soviet Estonia developed into the largest producer of linen fabrics in the Baltic economical region of the Soviet Union. Its production is exported to a number of countries in Europe, Asia and Africa. As to the volume of the production of cotton fabrics on an all-Union scale, Estonia places third after the R.S.F.S.R. and the Usbek S.S.R., whereas in respect to the production of cotton fabrics per capita of the population, it occupies the first place in the U.S.S.R.

The Production of Cotton Fabrics in Soviet Estonia (in million m)

1940	1950	1953	1958	1960	1961	1962	1963	1965
22.8	26.8	71.6	113.4	121.9	121.6	124.2	124.4	140.2

Narva Kreenholm Manufactory.



In order to solve the problem of finishing of raw cotton fabrics in Estonia the construction of a new up-to-date finishing shop was begun at the Group of Cotton Enterprises of Narva Kreenholm; it will soon begin functioning, yielding 500,000 m of finished cotton fabrics in a 24-hour day. With the launching of the finishing factory in Estonia, the assortment of cotton fabrics will be considerably widened, and it will be possible to meet the demands of the population for cotton fabrics in an even more efficient way. At the Kreenholm works, the historical building of George's factory was restored, where spinning, twining, dying and weaving workshops were established. Now work at George's factory is in full swing, and this, too, has contributed to the widening of the assortment of cotton fabrics in Estonia. With the reconstruction of George's factory, all the productional buildings of the Kreenholm works have been restored. The interior of the buildings, however, has undergone great changes. All the old-fashioned spinning machines at both the Kreenholm and Baltic Cotton Works have been replaced through up-to-date circular-spinning machines, which are, besides, provided with high-stretching apparatus. The mechanical weaving-looms have been replaced by automatic ones all over the republic.

The Soviet-Estonian flax and wool industries, too, yield unprecedented amounts of production.

At the present time, there are six raw-flax manufactories (situated in the most important flax-growing parts in South and Southeast Estonia), and three flax-spinning and weaving mills, the largest of the latter being the Group of Flax Enterprises in Pärnu, whose prime issue is decorative fabric for furniture; in this line, it is unique in the entire Soviet Union. All the Estonian flax mills have been reconstructed in the Soviet period and equipped with the newest spinning machines and automatic looms. The flax industry of Soviet Estonia has to rely in the major part on local raw material resources which are not sufficient for meeting the entire demand. Therefore flax stalks have also to be imported, and namely from Latvia, Byelorussia and the Ukraine. At the time being, the amount of linen fabrics produced in Estonia exceeds the corresponding figure of 1940 about 4-fold.

At the present time, there are two large enterprises engaged in the production of woollen fabrics in Soviet Estonia, viz. the 1st December Mill at Sindi, and the "Keila" in Tallinn. The Sindi mill is the older of the two, having been established as far back as 130 years hence.

But next to mechanized industrial production of woollen fabrics on a grand scale, another branch in Soviet Estonia is the production of knitted goods by manual methods. Knitting is a traditional national handiwork popular in almost every district

The new building of George's Factory at the Kreenholm Manufactory.

of the republic; nowadays, knitted woollen articles are also made with the help of some technical devices, such as small hand-knitting machines, etc. There is constantly a high demand for pretty, masterfully knitted woollen articles, and they are marketed in Estonia and other republics of the Soviet Union as well.

In the post-war period, the manufacture of knitwear has made striking progress. At the present time, the annual output of knitted underwear exceeds the pre-war level (that of 1940) by more than five times; per one head of the population, about 7 items of knitted underwear are produced yearly. As to knitwear clothing articles, their annual output has grown 8-fold in comparison with that of 1940. The largest and best-known knitwear factory in Estonia is the Tallinn enterprise "Marat", which is about to move into spacious new productional buildings especially built and equipped for this factory.

"Marat" is a combined enterprise with a wide-ranged production: it manufactures over forty knitwear articles of different denominations, each article being executed in several fashions and shades of colour; altogether, the number of various articles made by "Marat" exceeds two hundred and fifty.

A well-developed branch of the textile industry in Estonia is the manufacture of stockings and socks. In comparison with 1940, their output has increased more than 5-fold.

Besides, Soviet-Estonian textile industry deals with the production of rope, household and packing string, different kinds of band, lace, fishing nets, net-flax, drifting herring-nets and capron wire.

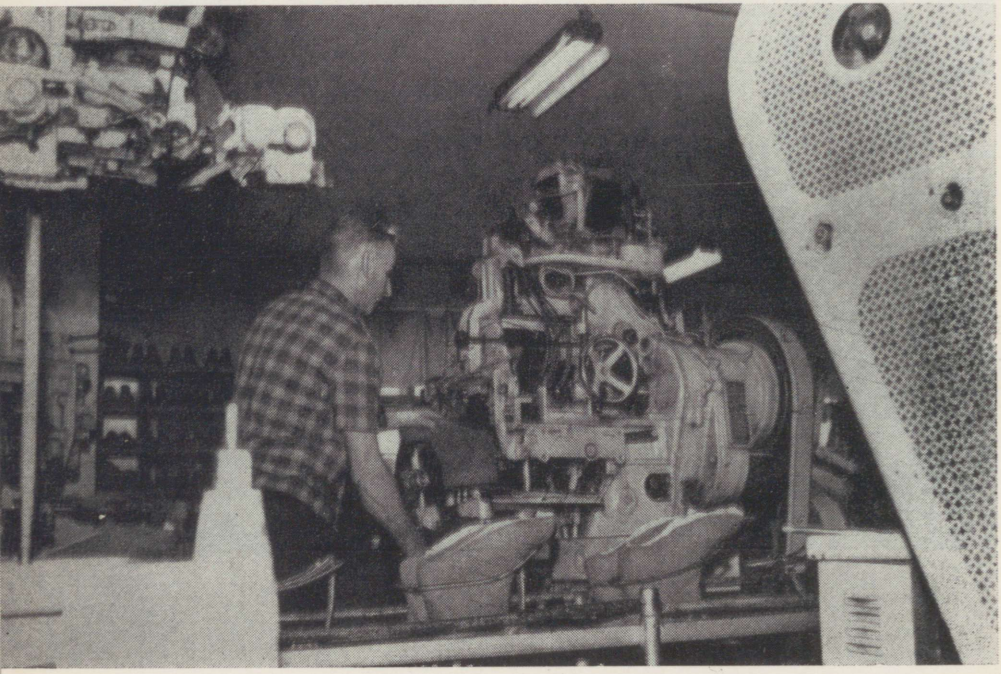
Alongside with textile industry, Estonian clothing industry has undergone a considerable development. In this branch, mass production has begun to prevail, with many clothing factories having risen to the fore as the main producers. The largest Estonian clothing factory at the present time is "Baltika" in Tallinn, with concentrated productional premises covering a floor-space of more than 10,000 sq. m. The factory, launched in 1960, is equipped

Conveyor line at the clothing factory "Baltika".

with conveyor lines for the production of suits and overcoats of superior quality; besides, there are efficient sewing machines, different presses and cutting machines; the productional capacity of the factory amounts to almost a million articles of clothing per annum. There are also other clothing factories in Estonia, working in Pärnu, Tartu, Valga, Sillamäe, etc. The Tallinn Fashion House, established in 1957, renders considerable assistance to the clothing industry in the way of constructing and modelling fashions. The models of clothing made at the Tallinn Fashion House have already been displayed at several international exhibitions and fashion congresses. However, next to the mass production of clothes, individual tailoring also plays an important part in the republic. A great number of tailors' and dressmakers' shops have been organized all over the republic to attend to the needs of the population. But, since mass tailoring is developing in the line of semi-finished products as well, the need for shops making clothes to individual order is decreasing. Furthermore, the difference in the technologies of enterprises putting out mass production and of those making clothes to order is gradually being reduced to a minimum.

In Soviet Estonia, the production of footwear made of both leather and rubber has also strikingly grown. In 1940, the total output of leather footwear was 599,000 pairs, and that of rubber

Semi-automatic press at the footwear factory "Kommunaar".



Leather-stamping semi-automats at the "Kommunaar" factory.

footwear — 137,000 pairs, whereas now the corresponding figures amount to 5,500,000 and over 1,800,000 per annum. Thus, the pre-war level has been exceeded nearly 10-fold in the case of leather footwear, and more than 13-fold — in the case of rubber footwear. The largest footwear producers in the republic are the "Kommunaar" in Tallinn and the Combined Works of Leather and Footwear in Tartu.

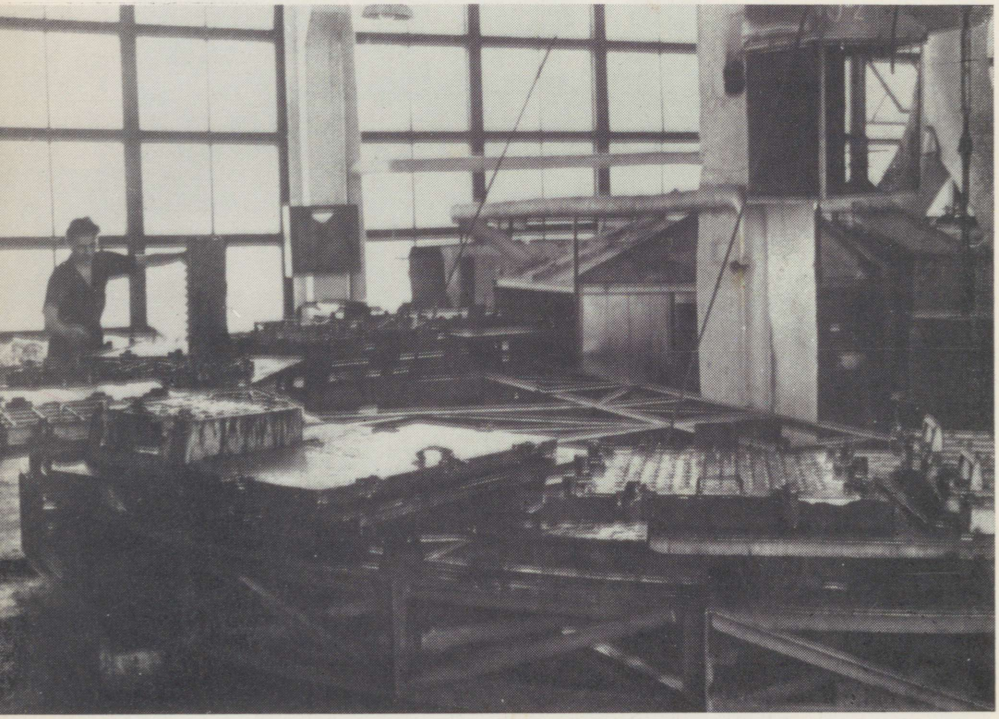
All these enterprises existed in one or another form in 1940. In the meanwhile they have been thoroughly reconstructed and their technological processes as well as equipments have been modernized to a considerable extent. According to the output of leather footwear per capita of the population, Soviet Estonia places first among the republics of the Soviet Union: at the

present time, 5 pairs of leather footwear are produced per one head of the Estonian population yearly.

Rubber footwear, too, is being produced at a factory in Tallinn, which was established long ago; it is the footwear and rubber factory "Põhjala", founded in 1924. During the Soviet period, this factory has been reconstructed, mechanized and equipped with conveyor lines, all these improvements being reflected in the immense rise in its production. Next to rubber footwear (rubbers, winter boots, shaft boots, tennis and sports shoes), "Põhjala" now also produces rubber parqueting and flooring materials as well as various rubber articles for the needs of the industry and agriculture (rubber pipes, hose, rubber parts of milking machines, and many others).

There is another factory producing rubber articles in Soviet Estonia, and namely "Tegur" in Tallinn. This factory has evolved from a former producing cooperative established soon after the

Production of rubber articles at the factory "Tegur" in Tallinn.



end of the war. It has mainly specialized in rubber toys, inflated, pressed and also finished with fur. It has won particular recognition throughout the Soviet Union as well as in some foreign countries for its large inflated rubber animals which can be used for floating and learning to swim. Another side line is being developed at this factory, and namely the production of foam rubber, which is put out in a rather wide assortment (for upholstering furniture and motor cars, saddles for motor cycles and scooters; toys, and many others).

A large assortment of celluloid articles — combs in particular — is put out by the Tartu Comb Factory. These articles are marketed all over the Soviet Union. In recent years, this factory has begun to produce articles made of polyethylene and polystyrol as well (such as hair-brushes, purses, combs, etc.).

Foodstuffs industry. The production of foodstuffs has grown to an important branch of industry in Soviet Estonia, employing about 16 per cent of all the industrial workers of the Republic. In former years it also used to play an important part, but much has changed as to the organizational and technical sides the industrial methods and standards of production of many foodstuffs. In bourgeois Estonia the industrial production of such foodstuffs of prime importance as bread, meat, sausage, and tinned food was almost exclusively effected at dwarf enterprises, where work was done manually, with low labour productivity and as often as not in antisanitary conditions. With such a state of the productional and technical basis of the foodstuffs industry it was, of course, impossible to meet the requirements of a developing socialist national economy, in which the share of participants in productional processes was steadily growing, both in towns and in the countryside. The demand for the industrilization of the production of foodstuffs rose abruptly, and therefore the corresponding branch of national economy had to be reorganized at a rapid rate. The Soviet-Estonian enterprises producing foodstuffs were reconstructed, the production concentrated, organizations working in the same branches were amalgamated into combined works, and new productional buildings were erected and equipped with up-to-date machinery.

A number of large new bread factories were erected in Tallinn, Narva, Kohtla-Järve, Rakvere, Pärnu, and elsewhere. Within a short period of time, the Republic's bread industry has become a well-mechanized branch of industry, equipped in harmony with up-to-date standards. At the large-scale combined works of bread, most working processes have been mechanized, such as the sieving of flour, mixing of dough, lifting the dough out of receptacles, distributing of dough, shaping of loaves, etc., as well as the dosing of the basic and auxiliary materials.

The old-fashioned ovens with an antiquated heating system have been replaced by highly efficient conveyor ovens. The ready production is both taken out of the ovens and transported to the expedition rooms by mechanisms. At large plants devices are being constructed, with the help of which it will be possible to do away with the transporting of flour in sacks; this measure will contribute to considerable economy in the transport of flour.

At the factory "Tegur" in Tallinn.

Volume of Output of Bread Products in Soviet Estonia
(in thous. tons)

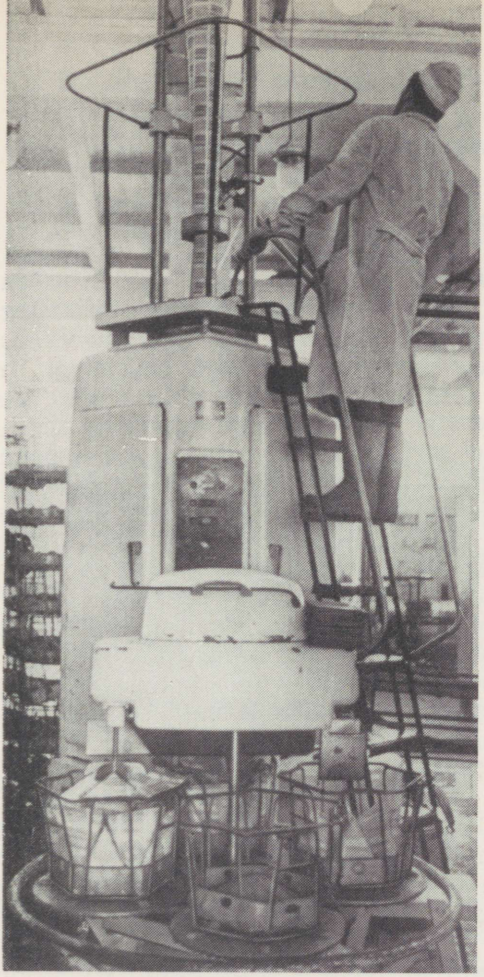
1940	1953	1958	1961	1962	1963	1965
26.9	164.9	188.7	167.6	195.1	213.7	214.0

Milk industry, too, has undergone considerable reconstruction in Soviet Estonia. There are dairy enterprises operating in all the larger cities of the Republic. The old equipment has mostly been replaced by new machinery of high efficiency. In Tallinn, Tartu, and other centres, the dairy enterprises are provided with powerful pasteurizers operated by automatic regulators. New automatic filling and packing machines have been taken into use, which afford a mass output of milk products in small receptacles. At the Tallinn Dairy Enterprise (operating on new productional premises), next to automatic lines which fill bottles, a new automatic device has been installed for filling milk into half-litre packs ("tetra-packs") made of paper covered with a film of polyethylene. These packs mean a considerable economy dispensing with cumbersome and expensive bottles and are more convenient for the customer. The production of such "tetra-packs" will soon be introduced to other combined dairy enterprises as well, and, as a result, about 45 per cent of the total amount of the milk put on market will be sold in paper packs, and 31 per cent in bottles; the rest will be marketed in larger receptacles.

In Soviet Estonia, meat industry is the domain of large combined works of meat where most of the working processes are mechanized. In all the meat factories of the combined works there are conveyor lines for the slaughtering of animals and preliminary working-up of meat. At sausage factories, the hashing of meat and fat, mixing of the sausage mass and making of sausage are entirely mechanized. Automatic devices also facilitate the manufacturing of different other meat products.

One of the best-developed branches of the foodstuffs industry in Soviet Estonia is the fishing and working up of fish products, which have undergone vast changes during the Soviet period. In bourgeois Estonia, the yearly catch fluctuated between 15 and 20 thous. tons, being even lower in years of depression. At the present time, however, the annual catch equals 150 thous. t and more, thus 7 or even 10 times the amount of the catch of the bourgeois period. It makes 120 kg per capita of the Estonian population, this figure being the highest in the Soviet Union.

Such a mighty rise in fish catches could be effected only thanks to radical improvement of the conditions, possibilities and methods of fishery. In bourgeois Estonia, fishery used to be



Equipment for making "tetra-packs" at the Tallinn Dairy Enterprise.

dispersed, being mainly an individual trade. Fishing in the sea used to be effected mostly in the coastal zones, mainly by small sailing and rowing boats and small-powered motor cutters, and with the help of primitive fishing tackle made by the fishermen themselves. Before 1940, for instance, stationary seines were not used in Estonia at all.

After the war, a systematic development of fishery enterprises was carried out in Soviet Estonia. At the beginning, fishermen joined fishing artels, and later on — collective fisheries. Fishing tackle was purchased collectively, which offered better possibilities for obtaining improved implements; the application of sta-

Increase in Fish Catch in Soviet Estonia
(in thous. tons)

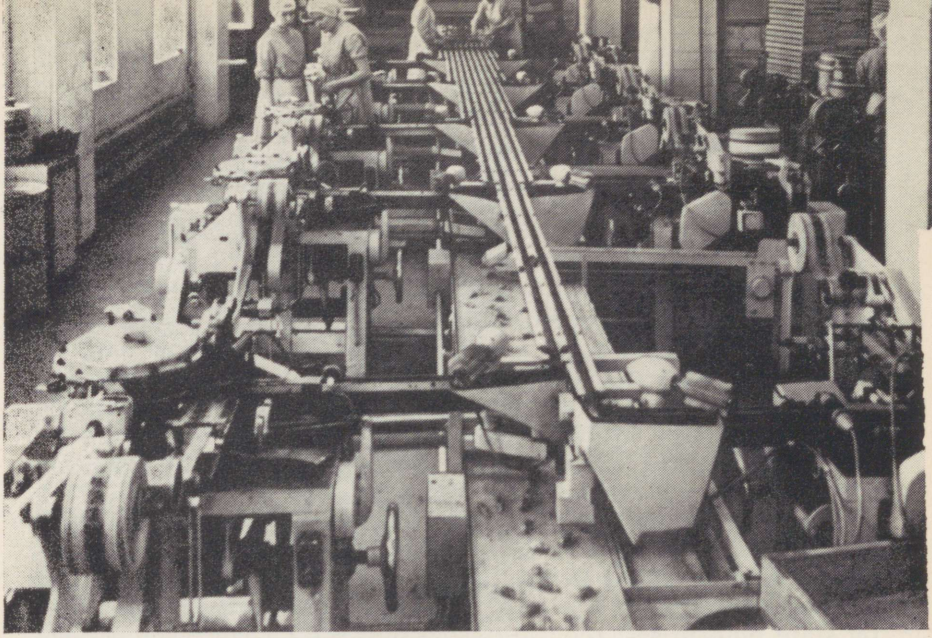
1940	1953	1958	1961	1962	1963	1965
22.8	35.3	58.4	85.4	108.9	143.0	181.0

tionary seines resulted in an abrupt increase of catches in coastal zones. Further, the government rendered effective assistance to fishermen by organizing motor fishery stations which supplied the fishers with tackle and vessels. Of great importance was also the organization of trawling fishery. The collective fisheries became prosperous within a short time; they were soon able to buy the tackle and fishing vessels loaned to them by the state, and the motor fishery stations could be liquidated.

Next to off-coast fishing, mostly effected by collective fisheries and resulting in a yield of about 40—50 thous. t of fish per annum, active fishing in the open sea and oceans was developed in Soviet Estonia. In this line, fishery is predominantly organized by state enterprises: the Tallinn Base of the Ocean Fishing Fleet, the Tallinn Base of Refrigerator Ships (which is also engaged in transporting the fish caught in oceans to native ports) and the Pärnu Base of the Fishing Fleet (engaged in fishing in the Baltic Sea). The capacity of the Soviet-Estonian fishing fleet and the quality of its fishing equipment have been systematically improved on. Thus, for instance, hydroacoustic devices have been taken into use in herring fishing, which help to establish the whereabouts of herring shoals. A mighty fleet of auxiliary vessels — refrigerator ships, tankers, tugs, etc. — has been attached to the fishing fleet. Soviet-Estonian state fisheries steadily increase and expand their activities in distant seas and oceans; their fishing expeditions are effected in the Atlantic, reaching as far as the coasts of Canada, Greenland, North and South Africa. Owing to this, the share of the active fishery has greatly increased in Soviet Estonia; the growth of active fishery was effected at more rapid rates than that of the passive fishery, and its yield now accounts for the major part of the total catch.

In accordance with changes in fishing methods, the yields of fish have also undergone mutations as to the species caught. The yields of herring, Baltic herring, sprat, plaice and sig as well as small-sized scaled fish have greatly increased, whereas the catches of big scaled fish, eel, lamprey, cod and salmon have lost in importance. In earlier post-war years, Soviet-Estonian fishery collectives were responsible for the basic portion of the catch, but now the share of the state fishery enterprises in the yearly total is by far larger than that of collective fisheries.

In harmony with the intensive growth of fishery, the working



Producing of sweets at the confectionery factory "Kalev" in Tallinn.

up of fish, and in particular the fish-canning industry, is being developed in leaps and bounds in Soviet Estonia.

One of the most important achievements in the organizing of fish production was the mechanization of the delivery of the catch at ports, which used to be the most labour-requiring procedure: at all the larger fish-reception centres, hydrolines were taken into use, which considerably facilitated the work of both fishermen and the staff of the receiving station and made their labour by far more efficient that it had been before.

Production of Canned Fish in Soviet Estonia
(in million can-units)

1940	1950	1953	1958	1961	1962	1963	1965
1.8	3.9	13.7	35.6	49.4	56.6	58.3	72.1

In place of the former small enterprises working up fish with the help of primitive manual methods, several combined fish-canneries have been built and put into operation in Soviet Estonia. Labour at these canneries is partly mechanized, and partly automatized.

The largest of the canning factories is the Combined Fish-Cannery in Pärnu, built and given into exploitation in 1958. Its yearly output is 30—35 million canning units, and in addition it produces refrigerated and smoked fish, works up herring etc.

A new-built enterprise is also the Combined Fish-Cannery in Toila, the producing capacity of its canning workshop being 7—8 million can-units per year. Further, the following new-established enterprises deserve mention: the Combined Fish-Cannery in Kingissepp on the Isle Saaremaa, whose canning factory at Läätsa produces 6—7 million can-units yearly, and the Kõrgessaare Canning Factory on the Isle of Hiiumaa, yielding a yearly output of 4—5 million can-units. The already existing fish-preserving enterprises have been reconstructed and expanded, such as the Combined Fish-Cannery in Tallinn, evolved from a number of former canning factories, whose output is now 10 million can-units per annum. And so as to fully utilize the canning equipment at seasons when the catch of fish is smaller, these factories also engage in the canning of meat, fruit and vegetables.

Remarkable results have also been achieved in the confectionery industry of Soviet Estonia. In 1957, a new ensemble of productional buildings was erected for the confectionery factory "Kalev" in Tallinn. All the existing confectionery enterprises in Soviet Estonia were amalgamated with "Kalev". The manufacturing of confectionery products at "Kalev" was in part mechanized and in part automatized. The preliminary working-up of initial components, forming, packing and labelling is effected by the conveyor method. As a result, the output of the confectionery products in the Republic has considerably increased. In 1940, the total production of all the confectionery factories in Estonia was but 4—5 thous. tons, but now "Kalev" alone puts out 24.5 thous. tons of production per year, 50 per cent of this amount being marketed in Estonia. Thus the production of confectionery made in Estonia by industrial methods is at least 20 kg per head of the population per annum at the time being.

This is a brief survey of industrial production in Soviet Estonia. The workers of Estonian S.S.R. have achieved high standards in many branches of industrial production as well as in power generating, which can compete with many industrial countries.

All these achievements have become possible owing to the efforts of the workers of Soviet Estonia, of her labourers, engineers and scientists.

They have become possible thanks to the unselfish help of the sister republics of Soviet Union.

РАЗВИТИЕ ПРОМЫШЛЕННОСТИ В СОВЕТСКОЙ ЭСТОНИИ
На английском языке
Обложка Г. Пант
Издательство «Ээсти Раамат»
Таллин, Пярнуское шоссе, 10

Toimetaja E. Sündeva. Kunstiline toimetaja H. Keigo
Tehniline toimetaja M. Tammes. Korrektorid S. Aron ja M. Amon

Ladumisele antud 29. VI 1965. Trükkimisele antud 5. IV 1966. Paber 60×90, 1/16. Trükipoognaid 3,5. Arvestuspoognaid 3,72. Trükiarv 2000. MB-02465. Tellimise nr. 2674. Trükikoda «Punane Täht», Tallinn, Pikk tn. 54/58.

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