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USSR
ELECTRONIC AND PRECISION EQUIPMENT

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I. ITEMS OF SPECIAL INTEREST

A. New Uses of Television

A television camera for observing the vacuum casting of steel has recently been developed in the USSR. The camera is kept cool by being placed in a water-cooled cylindrical jacket. This installation can be used in the immediate vicinity of the molds in the vacuum chamber, thus permitting a broad field of view.

Industrial television (PTU) is being used extensively in the atomic industry, where remote control and observation are essential because of the dangers of radiation.

Television will probably be used to control from earth the unmanned cosmic rockets sent to the moon and other planets. The television camera will permit observation of the instruments in the rockets by which they are controlled. Evaluation of data thus transmitted will permit sending the proper signals to correct the rockets' flight. A television camera aboard a rocket would also permit us to see the far side of the moon. -- Yu. Volkov, Engineer (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 14 Sep 58)

B. Solar Batteries

Various types of solar batteries are already being used in the USSR. Among these is a solar battery made of 19 hexagonal elements. On a bright summer day, this battery produces a voltage of 7 volts and a current of 40 milliamperes. This battery is not only sufficient to supply a radio receiver such as the Kristall or Festival' during the daytime, but can simultaneously charge a storage battery for supplying the radio at night. During 2-3 hours of daytime operation, the battery stores enough power for an hour's operation at night.

The operation of solar batteries on Sputnik III shows that they have proved themselves for operation in space.

So far, the wide application of solar batteries in the national economy is hindered by their high cost. The price of monocrystal silicon, the basic material, is governed by the amount produced and used. If the production of solar batteries could be increased sharply, the price could be lowered substantially. This means, also that solar batteries should be used in those branches of the national economy where they could be utilized most profitably. -- N. Lidorenko, Candidate of Technical Sciences, and A. Landsman, Engineer (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 19 Sep 58.

C. Ion-Exchange Desalination Unit

A scientific research institute of the State Committee for Radio-electronics of the Council of Ministers USSR has developed the IGOM-50 small ion-exchange installation for thorough desalination.

The unit is made of vinyl plastic and is mounted in a metal case. It consists of six filter columns (three cation and three anion), operating according to a predetermined sequence. The columns are put into operation with squeeze-cocks controlled by only two centralized pneumatic taps, which replace 36 valves. The installation removes salt from 50 liters of water per hour.

The IGOM-50 differs from other ion-exchange installations in that it is small in size. It is 850 mm long, 850 mm wide, and 2,800 mm high. The solution of problems in designing that made it possible to develop such a small mechanized installation is truly an innovation. Without a doubt it will be used for the creation of installations of higher productivity. -- R. Rubinshteyn, Candidate of Chemical Sciences; V. Sanderov, Leading Engineer (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 17 Aug 58)

D. Microwire and Microresistors

A plant for the production of microwire and microresistors is being organized in Kishinev. This is one of the six electrical engineering enterprises being organized in the Moldavian SSR. Installation of the main equipment for high-frequency generators is under way at the plant.

Ordinarily, wire is made by drawing through progressively smaller dies, but this is an expensive method. Microwire will be poured out of metal in the new enterprise. The metal will be enclosed in a thin glass tube and will be subjected to high-frequency current. The metal and glass will melt. The lower part of the drop of metal which forms at the end of the tube becomes attached to a spool. The spool whirls and winds up wire filament which has become solidified. The thickness of the wire depends on the spool speed. While it is being poured, the wire is covered by an extra-thin jacket of glass from the melting tube, which serves as a reliable insulation.

This method of manufacturing microwire was developed recently at the All-Union Scientific Research Institute of Electrical Instruments. The Kishinev plant is the first enterprise that will use this method for the large-scale production of wire. It will supply wire from 2 to 10 microns thick to the radio and instrument making industries. It will be possible to produce a filament over 1,000 km long from a kilogram of manganite, an alloy of copper, manganese, and magnesium.

Plant workers have recently returned from Leningrad, where they were in training at the Sevkabel' Plant and at an institute. (Kishinev, Sovetskaya Moldaviya. 6 Sep 58)

E. Semiconductor Photoresistors

The recently organized Tallin Semiconductor Plant (zavod poluprovodnikovykh priborov) has produced its first products: semiconductor photoresistors, which are small tablets of cadmium sulfide. The photoresistors are used in much the same way as photoelectric cells.

Virve Sepp, chief engineer of the new plant, says that its buildings are kept in absolute cleanliness. No products can be touched by hand; many operations are done by microscope.

The plant is series-producing photoresistors, which are processed by thermal and chemical methods and then made to adhere to a small glass plate. These semiconductors will take the place of bulky complex instruments in automatic and telemechanical systems.

Chemists Enn Yumarki and Eyno Linzi, who recently graduated from the Tallin Polytechnic Institute and the Tartu University, are developing manufacturing methods for a new semiconductor, a Varistor, which will look like a button. This "button" will be widely applied in telephony, telemechanics, automatics, and lightning protective installations.

Every day, the plant increases its output and variety of products. (Moscow, Ogonek, No 2, Jan 59, p 29)

F. Plants

A machine building plant (mailing address: Box No 686, Leningrad, K-9) is taking orders for the manufacture and supply of type UZD-7N ultrasonic flaw detectors.

The type UZD-7N flaw detector has operating frequencies of 1.8 and 2.5 mc and is designed for detecting various defects in metal products, for determining the depth of such defects, and for checking welding seams.

The UZD-7N can also be used as an ultrasonic thickness gauge for metal products where there is access to only one side.

The instrument is portable, is supplied by 110-127-220 AC, measures 220 x 300 x 425 mm, and weighs 16 kg. -- Advertisement (Moscow, Svarochnoye Proizvodstvo, Jan 59, back cover)

According to V. Blokh, director of the Moscow Illumination Engineering Products Plant, representatives of more than 350 factories, plants, educational institutions, scientific research institutes, soviet institutions, and party and soviet organizations have visited his plant since it converted its production to a shopless system.

Workers of this plant are representated by the Trade Union of Machine Building Workers. (Moscow, Moskovskaya Pravda, 14 Aug 58)

[Comment: As in all articles concerning the above plant, no mention is made of its operations or production structure.]

After the Illumination Engineering Products Plant went on the shopless system of operation, it was able to master the production of 77 new types of products in 1956 and part of 1957.

This plant has a mixed products-list, with a predominance of medium-series-produced articles. It produces a total of up to 900,000 products of 116 type-designations per year. The average number of parts on each product varies from 90 to 100, but there are some products consisting of 800-900 or more parts. The plant makes its own industrial accessories, such as dies, press molds, and attachments. (Vladimir Georgiyevich Blokh, Opyt perestroyki upravleniya zavodom (Experience in Reorganizing Plant Management), Leningrad, State All-Union Publishing House of the Shipbuilding Industry, 1958, pp 9, 23, 68)

[Comment: This is a 68-page book on the same plant, which also gives no hint as to the nature of its production or specific operations.]

The Leningrad Lengazapparat Plant No 4 produces a four-burner gas stove every 2 minutes. (Leningradskaya Pravda, 7 Aug 58)

[Comment: This plant was formerly under the Ministry of Instrument Building and Automation Equipment USSR. The nature of its products had not previously been noted in Soviet published sources.]

The Tallin Mercury Rectifier Plant (Tallinskiy zavod rtutnykh vypryamiteley) imeni M. I. Kalinin needs various workers for permanent employment.

Applications should be made at the personnel office on ulitsa Telliskivi 60, Tallin. -- Advertisement (Tallin, Sovetskaya Estoniya, 25 Jul 58)

The Orel Instrument Making Plant began production on 31 July 1958. It will manufacture automatic temperature regulators for cold-storage equipment, and automatic thermal instruments for air conditioning and the purification of gases. A scientific research laboratory and design bureau are being constructed at the plant. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 1 Aug 58)

The first stage of the Orel Instrument Making Plant (Orlovskiy priborostroitel'nyy zavod) was opened 29 July 1958. It will manufacture new types of automatic instruments for cold-storage plants, and other equipment. The first stage of the plant was constructed in one year and 5 months and the second stage will be completed in December 1958. (Moscow, Izvestiya, 1 Aug 58)

The Kaluga Pyrometric Instrument Plant (zavod pirometricheskikh priborov) has been constructed on the outskirts of Kaluga. The plant has manufactured its first consignment of electro-pneumatic control instruments which automatically control 12 consecutive operations. Instruments which utilize radioactive isotopes to check the level of liquids and determine the density of various liquids have been series produced. The first pyrometric instruments produced by the plant have been sent to enterprises in Leningrad, Gor'kiy, the Urals, Siberia, the Donbass, and Transcaucasia. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 1 Aug 58)

Construction of the tool shop and machinery and repair shop of the Kirovakan Avtomatika Plant has been completed. In 1958 this plant will produce a consignment of instruments for automating processes in the chemical and nonferrous metallurgical industries. (Riga, Sovetskaya Latviya, 6 Sep 58)

The Tiraspol' Electrical Equipment Plant (Tiraspol'skiy zavod elektroapparatury) requires mechanical engineer for the position of plant chief mechanic.

Applications should be made at ulitsa Zheleznodorozhnikov, 33, Tiraspol'. -- Advertisement (Kishinev, Sovetskaya Moldaviya, 16 Sep 58)

G. Personalities

I. Shiktorov is deputy chairman of the Division of Electrical Industry, Gosplan RSFSR. This division has some jurisdiction over the Scientific Research Institute of the Timepiece Industry. (Moscow, Izvestiya, 27 Aug 58)

[Comment: Shiktorov was formerly chief of the Main Administration of the Power Engineering Industry, Ministry of Electrical Engineering Industry.]

Georgiy Mikhaylovich Bubekin, director of VNITIpribor (All-Union Scientific Research Technological Institute for Instrument Making), died on 12 August 1958. (Moscow, Vechernyaya Moskva, 13 Aug 58)

The late G. M. Bubekin had formerly been the chief technologist of the Moscow Computing and Analyzing Machine Plant. (Moscow, Moskovskaya Pravda, 13 Aug 58)

II. SHORTAGES AND DEFICIENCIES

A. Radio Products

V. A. Lavrinovich is chief of the Radio Division of Glavradiosbyt [Main Administration for the Sale of Radio Products]. A. P. Yermakov is chief of the Vacuum Tube Division of Glavradiosbyt. Both of these officials blame the USSR trade organizations, not the radio engineering industry, for any shortage of radio components for amateur radio builders.

However, the shortage is the fault not only of the trade organizations, but also of certain enterprises of the radio industry and of Glavradiosbyt itself.

It is hoped that Tsentrosoyuz [Central Union of Consumer Cooperatives], and the Collegium of the Ministry of Trade USSR, jointly with Glavradiosbyt and with the help of Gosplan USSR, will get to the bottom of the components shortage and will find a proper solution for it. (Moscow, Radio, Sep 58, p 17)

For a long time the Belarus' radio receivers, radio-phonographs, and television sets made by the Minsk Radio Plant were considered to be of the highest quality, as were the Minsk radio-phonographs. Lately, however, the quality of the plant's products has dropped, and an avalanche of complaints about them has descended. The plant has lost most of its former good reputation.

However, Yudelevich, plant director, and Pumpyanskiy, chief engineer, do nothing about improving production quality. The Laboratory of the plant's OTK [Division of Technical Control] is responsible for quality control, but because of negligence on the part of the plant director, it has neither the facilities nor the staff to do its job properly.

About 200 quality control inspectors work in the plant; however, most of these are under the supervision of the production shops themselves, not the OTK, and are dependent on premium pay from the shop managements. They fulfill inspectoral duties only part time, and are engaged mainly in routine production work.

Usually a chief engineer is responsible for running production in a plant, but this is not the case in the Minsk Radio Plant. Pumpyanskiy, who holds this position, is also chief designer of the plant and moreover, works at the Belorussian State University and the Minsk Polytechnic Tekhnikum. He does not have time to worry about quality control.

Fel'dman, deputy chief designer, and Al'tshuller, a machinist, are working on an important order for the Institute of Physics and Mathematics of the Academy of Sciences Belorussian SSR. They are also members of the institute's staff. "Well," said Fel'dman, "there's no law against a man holding two jobs!" There is no law against holding another job after regular working hours, but Al'tshuller and Fel'dman work on the institute's order during regular working hours in the plant.

Slepyan, chief of the central laboratory of the Division of the Chief Designer, is an assistant to the Chair of Electrophysics of the Belorussian State University. In addition, he and Kaplan, a worker of the experimental shop, are members of the staff of one of the laboratories of the Institute of Machine Studies of the Academy of Sciences Belorussian SSR.

All the above-named persons are directly responsible for production quality, but none of them cares to make any effort to improve quality.

Another complaint made to the plant is that it refuses to make any spare parts for equipment that it no longer produces, even though products such as the Belarus'-53 and Minsk-R-7 are still on sale by trade organizations. (Minsk, Sovetskaya Belorussiya, 7 Aug 58)

A resident of Osh, Kirgiz SSR, recently purchased a Rekord television set produced by the Voronezh [Elektrosignal] Plant. It had not operated more than 15 minutes before it began to smoke and howl and then it went dead. The purchaser cannot have the set replaced, nor can he get his money back. Furthermore, there is no television repair shop in Osh. (Frunze, Sovetskaya Kirgiziya, 9 Sep 58)

B. Photographic Supplies

Among the many complaints addressed to the editors of Sovetskoye Foto are the following:

Interchangeable lenses for the Zenit and Zenit-S single lens reflex cameras are not available. The Gelios-40 lens for the Zenit is a good, powerful lens, but is very expensive and very bulky. On the other hand, the less expensive Yupiter-9 and Yupiter-11 lenses can hardly even be found with mountings for Zenit Cameras. It is also impossible to get short-focus Mir-1 and Gelios-44 lenses for the Zenit.

Many readers also complain that they cannot obtain color or polarizing filters, or correcting filters for color photography. It is also impossible to get supplementary lenses and range finders (proximeters) for close-up large-scale photography.

Some photographic accessories which have been developed and produced by our industry appear in the trade network so seldom that many photography enthusiasts are not even aware of their existence.

One type of filter made for the Industar-22 lens makes it impossible to adjust the diaphragm after the filter is in place. Several years ago, the Krasnogorsk [Machinery] Plant developed a filter which would not interfere with diaphragm adjustment, but this filter has not yet been made available.

Some filters, when placed over a lens, will then not accept other accessories for that lens, such as lens caps and shades. It is necessary to develop a GOST (State All-Union Standard) whereby filters, supplementary lenses, lens shades, and lens caps will have identical inner and outer diameters.

Among the most frequent queries addressed to the editors are those concerning electronic flash units and batteries for them. Even stores in Moscow seldom have these units, and Posyltorg [All-Union Mail Order Office] often refuses to ship them.

One owner of a Molniya electronic flash writes from Sevastopol' that it has been 2 years since there were any batteries for his unit in the stores of Sevastopol'. Many others have similar complaints.

Users of the EV-1 electronic flash complain that the battery must be replaced after every 20-25 flashes, but replacements are not easy to obtain. There is no attempt on the part of the producer plant to make a lighter, more compact unit. The set includes a large, heavy capacitor rated at 800 microfarads. Some currently produced capacitors are rated at 1,000 microfarads per cu cm of volume. Why are these not used in electronic flash units?

Photographers who are initially pleased with their purchase of FIL electronic flash units soon become disenchanted. Suddenly the IFK-120 flash tube or the VS-4 vibrator will cease to function and no replacements can be obtained, nor does a letter addressed to the plant help to find any.

With respect to film, V. Marenko of Kuybyshev complains that, although the quality of film produced by Plant No 3 was remarkably improved before the Sixth World Youth Festival, it has since suffered badly because of poor packaging. Others register similar complaints. (Moscow, Sovetskoye Foto, Dec 58, pp 51-55)

On 1 January 1958, there were more than 6 million cameras in the USSR. This would call for a minimum of 70 million meters of film, yet only 53 million meters were offered for sale. During 1958, 1.5 million more cameras are to be manufactured, yet there is to be no increase in the production of film. (Moscow, Promyshlennо-Ekonomicheskaya Gazeta, 17 Aug 58)

During 1957, Soviet industry produced about 1,280,000 cameras, of which 900,000 were 35-mm cameras. Printing from 35-mm negatives almost invariably requires enlargement, yet there were only 220,000 enlargers produced in the USSR during the same period. (Moscow, Sovetskoye Foto, Dec 58, p 52)

It will soon be a year since any 35-mm film has been available in Semipalatinsk; the choice of photographic papers is extremely limited and there are no filters, extension tubes, or other essential accessories available.

Chemicals for processing color film, and correcting filters have been lying unpurchased in the shops for several years. There is no demand for them because there is no color paper or film available. -- V. Novikov, Semipalatinsk (Moscow, Sovetskoye Foto, Nov 58, p 84)

There has been no 35-mm film in the stores of Irkutsk since April, and now a group of geologists and biologists is setting out on an expedition with empty cameras.

Photographic chemicals such as developer, hyposulfate, and metol are often unavailable. When a buyer seeks one type of photographic paper, another type is offered, with the comment: "This is very good paper; everyone buys it." Of course everyone buys it when there is none other available.

Irkutsk, unfortunately, has no special photography store, and photographic paper must be found in household goods, clothing, and other departments. -- I. Sonin, Irkutsk (Moscow, Sovetskoye Foto, Nov 58, p 83)

III. LOCAL PRODUCTION AND ORGANIZATION

A. Leningrad

During the first half of 1958, enterprises of Leningrad and Leningradskaya Oblast produced 139,000 radios and television sets, 354,000 cameras, 695,000 clocks and watches, 652 X-ray installations, 2,751 km of armored cable, and 3,473 km of marine cable. (Leningradskaya Pravda, 25 Jul 58)

Enterprises of the Administration of Radio Engineering Industry of the Leningradskiy Sovnarkhoz have pledged to develop 65 models of new products during the second half of 1958. These products include a series of new receiver-transmitter units, equipment for airports, industrial television installations, new equipment for long-distance telephony, vacuum tubes for transmitting color television programs, equipment for economical two-channel telephone centers, and a series of new silicon semiconductors. (Leningradskaya Pravda, 16 Aug 58)

Two new enterprises were established in the Leningradskiy Sovnarkhoz in 1958 for the manufacture of semiconductor and ultrasonic instruments and equipment.

The [Leningrad] Vibrator Plant has manufactured new highly sensitive electrical measuring instruments. The plant has introduced 40 new types of ammeters, voltmeters, and phase meters.

The [Leningrad] Lenteplopribor Plant produces equipment which is used in scientific research laboratories, drift stations, and the tropics.

The Leningrad Electrical Machinery Plant, the Gidrometpribor Plant, and the Krasnogvardeyets Plant have also achieved significant production successes recently. (Riga, Sovetskaya Latviya, 10 Dec 58)

B. Novosibirsk

After reorganization of the administration of industry, the Novosibirskiy Sovnarkhoz at first gave particular attention to lagging enterprises in order to bring them up to the level of leading enterprises. For example, the Administration of Radio Engineering Industry fulfilled the plan for the first half of 1957 only 97.7 percent, but during the second half of the year, it fulfilled the plan 100.5 percent. This was 26.3 percent higher than in 1956. It was accomplished by improved management and supply.

In 1958, it is expected that the volume of production will rise 11.4 percent and that 173 new types of products will be put into production, especially diesel locomotive electrical equipment, foundry equipment, and SK-3 grain harvesting combines. The production of consumer goods has

been expanded. For instance, the production of Vostok-57, Baykal, and Rekord radio-phonographs has been increased by 190,000 in 1958. (Moscow, V Pomoshchi Politicheskomu Samoobrazovaniyu, Dec 58, p 36)

C. Moskovskaya Oblast

The Podol'sk Cable Plant, the Podol'sk Storage Battery Plant, the Mytishchi Electric Meter Plant, and a Mosneftekip [Moscow Petroleum Control and Measuring Instrument] Plant are all subordinate to the Moscow Oblast Sovnarkhoz. (Moscow, Leninskoye Znamya, 29 Jul 58)

During the first half of 1958, enterprises of Moskovskaya Oblast [excluding Moscow city] produced 2.9 million low-voltage insulators, 611,700 electric meters, 43,000 television sets, and 9 million standard light bulbs. (Moscow, Leninskoye Znamya, 6 Aug 58)

[Comment: No previous information on the existence of a plant producing television sets in Moskovskaya Oblast, outside the city of Moscow, has been noted in Soviet published sources.]

D. Ukrainian SSR

During the first half of 1958, 162,500 radios and television sets and 133,100 cameras were produced in the Ukrainian SSR. (Kiev, Pravda Ukrainy, 30 Jul 58)

The following plants in the Ukrainian SSR were identified as winners in socialist competition between enterprises of the republic for the second quarter of 1958:

[Kiev] Tochelektropribor Plant of the Kiyevskiy Sovnarkhoz.
[Berdyansk (formerly Osipenko)] Azovkabel' Plant of the Zaporozhskiy Sovnarkhoz.
L'vov Electric Bulb Plant of the L'vovskiy Sovnarkhoz.
[Odessa] Kinap Plant of the Odesskiy Sovnarkhoz.
Odessa Cable Plant of the Odesskiy Sovnarkhoz.
Dnepropetrovsk Radio Plant of the Dnepropetrovskiy Sovnarkhoz. (Kiev, Pravda Ukrainy, 3 Aug 58)

E. Transcaucasus Republics

1. Georgian SSR

At present, 22 plants for the production of electrical equipment are being organized in the Georgian SSR. They will produce a great variety of products, including large electric machines for submersible oil pumps, sewing machine electric motors, electric carts, vacumm cleaners, table fans, electric vibrators, sheep shearing machines, AC magnetic stations, electric motors for tower cranes, enameled wire, light cord, and flashlight batteries. (Tbilisi, Zarya Vostoka, 2 Aug 58)

New instrument-making and electrical engineering enterprises are being established in the Georgian SSR. One new enterprise, the Gruzkabel' Cable Products Plant, is being organized in Zestafoni, in the reconstructed building of the Zestafoni Electric Locomotive Depot. This plant will employ approximately 1,500 persons. Up to 900,000 rubles will be spent for construction work in 1958. The plant management and technical personnel have already been selected and preparatory work has begun. The plant will make its first products early in 1959.

In 1959, a new alkali storage battery and galvanic battery cell plant will manufacture its first products. This enterprise will be organized in Shorapani on the basis of the locomotive and car depot of the old narrow-gauge railroad. (Tbilisi, Zarya Vostoka, 27 Aug 58)

The USSR government is supporting the proposal of the Central Committee of the Communist Party of Georgia and the Council of Ministers Georgian SSR for creating more than 20 new instrument making and electrical engineering plants within 2 years.

Most of the plants will use local raw materials. A number of them will be in Shorapani, Zestafoni, Kaspi, Gori, and Staliniri. This will make it possible to make the best use of local work forces. The plants will employ mainly young persons just out of secondary school.

Central planning organizations, namely Giproenergoprom [State All-Union Planning Institute of the Power Engineering Industry], Mekhanobr [All-Union Institute for the Mechanical Processing of Minerals], and Glavnauchproyekt [Main Administration of Scientific Research and Planning Institutes of Gosplan USSR], along with the Khar'kov VNIITelektromash [All-Union Scientific Research Institute of Techonlogy of Electrical Machine Building?] and the Leningrad Gipropribor [State Institute for Planning Instrument Making Plants?], are helping the Georgian SSR to organize this new branch of industry. The Gruzgosproyekt [State Planning Institute of the Georgian SSR?] and Gruzgiproshakht [State Institute for Planning Mines of the Georgian SSR?] are also helping in planning the new plants.

The Scientific Research Institute of the Electrical Engineering Industry, which is already being organized in Tbilisi, will play a significant part in the future development of the electrical and instrument industries in the Georgian SSR.

The Georgian Sovnarkhoz and its Administration of Machine Building and Electrical Engineering Industry, with the aid of party and soviet organs of the republic, have actually begun the creation of new plants. Assignments for planning each plant have been defined and distributed; personnel are being selected; and the problems of specialization and cooperation are being worked out.

Directors of all the new plants have already visited similar plants in the USSR. A group of workers and engineers of the new Tbilisi Electric Welding Plant and the Tbilpribor Plant have been sent to equivalent enterprises in other parts of the USSR. Soon workers of the new Poti, Batumi, and other new plants will do the same.

Musvik, deputy chief engineer of the Moscow Dinamo Plant, has come to Georgian to help organize the new crane electric motor and electrical equipment plants in Tbilisi, Kaspi, and Poti.

Capital investment funds allotted by the government for the second half of 1958 have already been distributed to the new plants by the Georgian Sovnarkhoz. A plan for a building with a floor space of 6,000 sq m has been selected for expanding the Tbilisi Electric Welding Equipment Plant. Two buildings with up to 20,000 sq m of floor space are being selected for the Shorapani Galvanic Cell and Alkali Storage Battery Plant. B. Akimenko, Deputy Chairman, Georgian Sovnarkhoz (Tbilisi, Zarya Vostoka, 4 Sep 58)

2. Armenian SSR

A second plant for the production of micropower electric motors under the Administration of Electrical Engineering Industry and Instrument Making of the Armenian Sovnarkhoz is being organized in Goris, on the base of the school building of the Goris Livestock Raising Tekhnikum, which has been transferred to the sovnarkhoz.

The Arzni Precision Industrial Jewels Plant is organizing the production of sapphire needles for long-play record players, the first such products made in the Armenian SSR. The raw material, synthetic corundum, will be produced by the Kirovakan Chemical Combine. In 1959, the Arzni plant will produce 2 million needles; in 1960, 5 million; and in 1961, 10 million. (Yerevan, Kommunist, 29 Aug 58)

3. Azerbaydzhan SSR

During the first half of 1958, 14,200 radio receivers and television sets were produced in the Azerbaydzhan Sovnarkhoz. This is only 91 percent of the amount produced during the first half of 1957.

The Baku Radio Plant did not fulfill its gross production plan for the first half of 1958. (Baku, Bakinskiy Rabochiy, 7 Aug 58)

F. Baltic Republics

1. Estonian SSR

The Tallin Vol'ta, Eesti Kaabel', and Punane RET plants are all subordinate to the Administration of Machine Building of the Estonian Sovnarkhoz.

During the first half of 1958, enterprises of the Estonian SSR produced 3.1 million rubles' worth of electrical installation equipment; 6.9 million rubles' worth of electric light fixtures; 12,400 km of installation wire; 54.2 million rubles' worth of instruments, automation equipment, and spare parts for them; 7,100 taxi meters; 14,400 water meters; and 7,500 radio receivers. (Tallin, Sovetskaya Estoniya, 8 Aug 58)

Three new electrical engineering and instrument making plants are being organized in the Estonian Sovnarkhoz by the Administration of Machine Building. A mercury rectifier plant has been created by using shops of the former Railroad Car Repair Plant imeni Kalinin. (Tallin, Sovetskaya Estoniya, 9 Aug 58)

2. Latvian SSR

During the first half of 1958, enterprises of the Latvian Sovnarkhoz produced the following:

Train-lighting electrical equipment	1,180 sets
Electrical equipment for lift trucks	3,445 sets
Electrical equipment for motorcar sections of electrified railroads	77 sets
Automatic telephone exchanges	68,400 numbers
Radio receivers	251,100 units

(Riga, Sovetskaya Latviya, 6 Aug 58)

L. Bunin is deputy chief of the Administration of Radio and Electrical Engineering and Metalworking Industry of the Latvian Sovnarkhoz. (Riga, Sovetskaya Latviya, 13 Aug 58)

3. Lithuanian SSR

During the first half of 1958, enterprises of the Lithuanian SSR produced 802,000 electric meters, 227,100 electric motors under one kw in power, 8.3 million rubles' worth of electrical installation equipment, 7,500 welding transformers, and 4,800 electric welding units. (Vil'nyus, Sovetskaya Litva, 1 Aug 58)

IV. TUBES AND SEMICONDUCTORS

A. Television Picture Tubes

By 7 November 1958, a constant-flow line for the assembly of Television picture tubes, with a productivity of 100 tubes/hr, will be put into operation in the Television Picture Tube Shop of the Moscow Electric Bulb Plant. This will have the first large conveyer of this type in the USSR, and will take the place of eight rotary exhausting machines now used in the shop. The new line will also have a conveyer for testing the cathode ray tubes. (Moscow, Moskovskaya Pravda, 27 Jul 58)

A cathode ray tube for color television is being developed in the laboratories of the Moscow Electric Bulb Plant. This new tube is different from other such tubes developed in the same laboratories in that it does not have extremely complex parts, such as masks, and has one electron beam instead of three. The new tube should give a much brighter picture than tubes with masks. (Moscow, Vechernyaya Moskva, 18 Aug 58)

B. Cold-Cathode Gas-Discharge Tubes

The Physics Institute imeni P. Lebedev of the Academy of Sciences USSR has developed a cold-cathode method by which so-called "silent" discharge with a current measured in millionths of an ampere occurs in the starter electrode circuits of vacuum tubes. This causes an extremely high initial ionization, which sharply decreases inertness in the tube count and has many other operational advantages.

The "silent" discharge method has made it possible to create reliable high-speed units of electronic apparatus, triggers, multivibrators, pulse amplifiers, quartz oscillators, photoion relays, computers, and other equipment.

Apparatus utilizing cold-cathode tubes is simple, compact, and light. The PK-4 and PK-6 computer units with 20 tubes apiece weigh only 225 grams apiece and can be held in the palm of the hand. The tubes themselves weigh about a gram each. From 1,500 to 2,000 tubes can be installed on a single telephone stand.

Cold-cathode tubes are very economical. For example, the computer unit of the BMA-50 high-speed multichannel amplitude analyzer produced by the [Moscow] Fizpribor Plant has 1,500 tubes, including 600 triggers, but requires an input of only 24 watts.

Unlike transistors, cold-cathode tubes do not break down when electrical overloads occur.

The USSR-made MTKh-90 tube can operate with currents ranging from millionths of an ampere to thousands of amperes. These tubes function as soon as they are hooked into a circuit, and can be used in a wide range of temperatures and under conditions of high radioactivity. Such tubes can have a service life of up to 100,000 hours; for this reason, they can be soldered into a circuit like ordinary radio components. In the latest series of tubes, stability and parameter spread have been improved.

It is important that the glow of a cold-cathode tube can be used for determining the condition of multitube units without the use of any additional control apparatus. This feature distinguishes such tubes from transistors and other components.

Cold-cathode tubes are easy to produce and do not require expensive materials. One-half ton of glass and one-half ton of nickel or molybdenum are sufficent for the production of a million tubes.

The [Moscow] Fizpribor Plant, in collaboration with the Physics Institute imeni Lebedev, has already organized the production of more than ten types of complex equipment utilizing cold-cathode tubes.

The BK-3 and PK-10b scalers are used for detecting radioactivity and measuring its intensity. They are from one tenth to one fifth the size of scalers utilizing ordinary electron tubes. The MSK-2 millisecond meter for measuring the length of single processes in high-speed units, PK-1000 electronic pulse counters, and RS K-1 reversible counters are some of the other instruments being produced.

The cubic telescopes and neutron monitors developed by the plant are used in line with the activities of the International Geophysical Year for 24-hour observation and continuous registration of the intensity of cosmic radiation. Each telescope has approximately 600 cold-cathode tubes. The largest hodoscopic unit in the world, the GK-7, has been built for the Moscow University. This unit has more than 4,000 nuclear particle counters and about 12,000 cold-cathode tubes. In foreign countries, hodoscopes are made with ordinary electron tubes; for this reason, the number of cells on them does not exceed 100.

In Leningrad, an experimental switching unit of an automatic telephone station utilizing cold-cathode tubes has been put into operation. Many such tubes are also used in computers. For example, about one-quarter of the tubes used in the series-produced Ural computer are cold-cathode types. The compact special SMK-3 computer unit for the automatic measurement of energy and mass of elementary particles in nuclear photoemulsions has been developed. This unit is of the same size as a television set and has 500 tubes.

Several new types of tubes have been proposed by a design group of the Moscow Electric Bulb Plant. The type TKh-48 cold-cathode tetrode, which was developed according to a technical assignment of the Physics Institute, is one of the best tubes of this class. The Elektrolampa Plant has developed the high-stability variant of the MTKh-90 tube with a cylindrical grid and a cesium cathode.

The demand for cold-cathode tubes is rising continuously. At least one million per year are needed now, and in the near future, tens of millions per year will be needed. It is proposed that cold-cathode tubes should replace up to one half of all relays, electron tubes, and transistors used in automatic installations. If such tubes are produced in automatic machines, their cost will be no greater or even less than one ruble apiece, whereas electron tubes and transistors cost 5-10 rubles apiece. Consequently, the replacement of the latter by cold-cathode tubes will save 100-150 million rubles per year. The savings actually amount to billions of rubles, if the long service life of cold-cathode tubes is taken into account.

Less space and equipment are needed for series-producing cold-cathode tubes than for making electron tubes and transistors. One shop of the Moscow Electric Bulb Plant or a small specialized enterprise such as the Elektrolampa Plant of the Moscow Oblast Sovnarkhoz could produce 2-3 million cold-cathode tubes per day. The Fizpribor Plant should specialize in the development and production of equipment utilizing cold-cathode tubes.

Cold-cathode tubes and methods for utilizing them are being developed by various branches of science and industry: physics, electronics, automatics, computer and vacuum tube technology, and instrument making. Because of this, the development of new tubes and equipment is dispersed among many different organizations. In the near future, Gosplan USSR and the State Committee for Radioelectronics should solve the problem of coordinating work in this field. In addition, the study of physical processes in cold-cathode tubes should be intensified and the field of application of these tubes should be expanded. Special laboratories should be created for this purpose. --L. Korablev, Candidate of Technical Sciences (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 18 Jul 58)

C. Semiconductors

High-speed semiconductor components are being developed in the Laboratory of Precision Semiconductor Devices of the Institute of Automatics, Gosplan Ukrainian SSR. These high-speed components are designed for replacing electron tubes in the units of special-purpose mathematical machines.

A mathematical machine with the new semiconductor components will be able to perform more than one million operations per second.

Engr Rostislav Kuz'menko assembles these components with the use of a microscope. (Moscow, Komsomol'skaya Pravda, 17 Sep 58)

The Tashkent Electric Bulb Plant has begun the mass production of highly efficient semiconductor devices. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 21 Sep 58)

D. Svetlana Plant

The Leningrad Svetlana Plant has a gas-discharge tube shop. (Leningradskaya Pravda, 8 Aug 58)

The [Leningrad] Svetlana Plant manufactures miniature radio tubes. It began the production of germanium transistors after the 20th Congress of the CPSU. (Leningradskaya Pravda, 13 Sep 58)

V. RADIO AND TELEVISION

A. General Information

Radio receivers and television sets produced in the USSR improve as the years go by. The industry of the Latvian Sovnarkhoz has produced models of the new Akvamarin, Sakta, Festival', Latviya, and Rubin radio receivers. The Estoniya radiophonograph, the Belorussian-made Druzhba-210 radiophonograph, the Oktava radiophonograph made in the Gor'kiy Sovnarkhoz, and the Baykal radiophonograph made in Novosibirsk are examples of beautiful and handy sets.

The All-Union Institute of Radiobroadcast Reception and Acoustics has developed the light portable Almaz, Kristall, and Svet battery radios, which weigh about one kg apiece. (Riga, Sovetskaya Latviya, 10 Sep 58)

In 1955, 3,474,000 radio receivers and radiophonographs were put on the market in the USSR; in 1958, it is planned that 3,877,000 will go on the market.

In 1955, 483,000 television sets were put on the market in the USSR; in 1958, it is planned that 844,000 will go on the market. (Moscow, Sovetskaya Torgovlya, Dec 58, pp 42-43)

B. Manufacturing Methods

The radio industry has progressed from the closed-cycle production of equipment and components by a single plant to the specialized production of standard components which can be used by several plants for making many different kinds of equipment. Now the industry is on the threshold of using standard functional blocks for building up various kinds of radio equipment.

The new method of designing radio equipment is being experimented with. Dummy models of 12-channel television receivers, the Komosomolets with a 35-cm screen and the Leningradets with a 43-cm screen, have been built. These models have 13 tubes apiece and are broken up into five functional blocks. The number of blocks would be increased for receivers with more tubes.

Some specialists are afraid that the new method will cause the USSR industry to produce only one type of a given piece of radio equipment; this fear is not justified, however, since the gradation of parameters requires a minimum of two blocks for each function, and such blocks can be combined to form dozens of different models.

Some people seem to fear that the use of functional blocks will make it difficult to utilize modern multifunction vacuum tubes. This fear is also without foundation, since with the proper designing approach, complex tubes can easily be used in functional blocks.

What advantages will be gained by using the functional block system? The development and production of new models of electronic apparatus cost several million rubles and require 2-3 years. Since electronics is in a state of rapid development, a new model is in demand for 18 months at the most. Then it must be taken out of production and modernized. In using functional blocks, the process of modernization can be accelerated. Blocks can be modernized continuously without interrupting the production or the sevicing of already-produced equipment. Functional blocks can be produced centrally with the use of printed circuits, and with automatic installation of parts; and even, perhaps, the assembly process may be automated.

Recently, the State Committee for Radioelectronics of the Council of Ministers USSR and the All-Union Industrial Exposition sponsored an All-Union Scientific and Technical Conference which appraised innovations and outlined future tasks in the development of radiobroadcasting equipment. Participants at the conference noted the long-range prospects of the functional block method. Enterprises are already intending to use this method in the development of economical television models in 1958-1959.

Thus, one of the most important problems of electronics engineering, the creation of modern radiobroadcasting equipment for mass use, will be solved. -- Engr K. Runov, Leningrad (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Jul 58)

TsNIITOP (Central Scientific Research Institute of Technology and Organization of Production) of the State Committee for Radioelectronics of the Council of Ministers USSR has developed a high-frequency method of drying paint on manufactured parts and products. The TsNIITOP has developed an inductor suitable for products of various thicknesses and sizes, which produces a field the same as that produced by a soleniod inductor. A type VE355-G vacuum-tube generator serves as the source of high-frequency current for the drying unit. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Jul 58)

A group of engineers of Design Bureau No 3 in Leningrad has designed a mechanized line for producing radio tube grids. This line has 42 automatic devices, two unit-type machines, and three conveyers. (Moscow, Izvestiya, 30 Aug 58)

C. Prices

The Novosibirsk base of Posyltorg [All-Union Mail Order Office] has the following battery radio receivers on sale:

Rodina-52, seven-tube, Class-2, four-band receiver with a wooden cabinet and a set of dry batteries and antenna No 1; price: 619 rubles.

Voronezh five-tube Class-3 receiver with keyboard band switches and plastic cabinet. A set of dry batteries and an antenna No 1 are included; price: 403 rubles.

The above prices include handling and shipping costs. (Frunze, Sovetskaya Kirgiziya, 1 Aug 58)

The following articles were included in a prize list for second state lottery of the Estonian SSR:

Prize	Value (in rubles)
KVN-49 television set	850
Znamya television set	2,500
Temp-3 television set	2,600
Estoniya radiophonograph	2,200
Akkord radiophonograph	1,150
Daugava radiophonograph	1,100
Rekord radiophonograph	495
Strela radio receiver	250
Yauza tape recorder	1,800

(Tallin, Sovetskaya Estoniya, 22 Aug 58)

The following prices were quoted in an official prize list for the second 1958 state lottery of the Tadzhik SSR:

Prize	Price (in rubles)
Lyuks or Druzhba radiophonograph	2,300
Irtysh radiophonograph	1,100
EG-2 electric phonograph	450
Start television set	1,950

(Stalinabad, Kommunist Tadzhikistana, 31 Aug 58)

The following items were listed in a prize list for the second state lottery of the Armenian SSR for 1958:

Prize	Price (in rubles)
Rekord television set	1,750
Riga-10 Class-1 radio receiver	1,180
Akkord radiophonograph	1,150

(Yerevan, Kommunist, 10 Sep 58)

D. Radios

The New Suliko transistor radio was developed by scientific workers of the Institute of Electronics, Automatics, and Telemechanics of the Academy of Sciences Georgian SSR. This receiver weighs 375 grams and is fed by a small battery which is sufficient for 20-30 hours of continuous operation. The radio has a built-in antenna. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 6 Aug 58)

According to the 1958 production plan, the Riga Radio Plant imeni Popov was to produce 15,000 new Festival' radio receivers. The plan was finally cut down to 8,000. However, the material and technical supply plan was not changed, and despite the plant's protests, excess materials continue to pour in. During the first half of 1958, the plant had already received more than 3 million rubles' worth of excess materials, and 3.5 million rubles' worth more is expected during the third quarter. The plant has been put into extremely difficult financial straits. -- V. Molodtsov, Senior Economist of Administration of Radio and Electrical Engineering and Metalworking Industry, Latvian Sovnarkhoz (Riga, Sovetskaya Latviya, 20 Aug 58)

E. Television Equipment

The All-Union Scientific Research Institute of Television has finished making the equipment for a television center under construction in Vorkuta. This is the beginning of the series production of equipment for so-called small television centers, which are designed for transmitting wide and narrow-film motion pictures and small concerts. High-quality video and audio are provided by first-class television projection and sound apparatus.

In the future, when radio relay lines have been developed, small television centers will handle intercity broadcasts. (Leningradskaya Pravda, 8 Aug 58)

Enterprises of the Leningrad economic region have completed the manufacture of two PTS-3 mobile television stations for the television centers of Chelyabinsk and Odessa.

These television stations are mounted in ZIL-158 buses, and extensive use is made of semiconductors, new types of camera tubes, and compact portable equipment. (Leningradskaya Pravda, 11 Sep 58)

The Class-1 Znamya television set is well known in the USSR. It has a large screen and a low power input. The Leningrad Plant imeni Kozitskiy is mastering the production of a modernized version of this television set, the Znamya-58.

The Znamya-58 is designed for the reception of 12 channels, and has improved audio and video controls. It also has sockets for plugging in earphones.

Several thousand of the Znamya-58 should be produced by the end of August 1958. These sets are produced on a continuously moving conveyer. (Yerevan, Kommunist, 19 Aug 58)

The new Almaz-102, Rubin-102, Rubin-201, Rubin-202, and Kristall-104 television sets made by the Moscow Television Equipment Plant received high ratings at the Brussels World's Fair. During the third quarter of 1958, the plant will begin their series production. (Moscow, Trud, 21 Aug 58)

The Moscow Television Equipment Plant of the Moscow City Sovnarkhoz is the producer of the Kristall-104 combination set, which consists of an Almaz television set, a Class-1 Lyuks radio receiver, an El'fa-10 tape recorder, and a two-speed record player. The television has a screen measuring 340 x 450 mm. The Rubin-102, Rubin-202, and Almaz-102 are to be put into series production soon.

Within a very short time, the radio engineering industry must master the production of television sets utilizing printed circuits and transistors. Moreover, the production of color television sets is not too far off. (Moscow, Vechernyaya Moskva, 30 Aug 58)

The L'vov Television Plant has designed the new Trembita television set, which has two speakers, a 43-cm screen, and a picture tube deflection angle of 110 degrees. This set, which is enclosed in a plastic cabinet, is slated for production in 1959. (Moscow, Moskovskaya Pravda, 29 Jul 58)

The L'vov Television Plant is the producer of the L'vov television set. The plant has a line for producing transformers (1). Television sets are assembled (2) and aligned (3) (4) on benches or tables. Picture tubes are mounted in frames in one part of the plant (5). (Moscow, Radio, Sep 58, facing p 33)

(1) Photo available in source, facing page 33, top
(2) Photo available in source, facing page 33, second from top
(3) Photo available in source, facing page 33, third from top
(4) Photo available in source, facing page 33, bottom, right
(5) Photo available in source, facing page 33, bottom, left

VI. COMPUTERS

Various USSR organizations are developing a number of machines for the automatic regulation of certain production processes. One of these machines, an automatic engineer, has successfully undergone industrial testing. It is one of the first cybernetic machines for controlling the movement of a train. Another machine developed in the USSR is one for controlling switching operations in railroad humpyards.

A machine is being designed for eliminating losses incurred in the metallurgical industry in cutting conditioned rolled metal. In 1957, the Elektrostal' Plant tested the dummy model of an electronic computing unit for maintaining a steady amount of input current for electric furnaces. On the base of this dummy model, a machine for controlling the operations of ferrous alloy arc furnaces is being developed. -- V. Loskutov, Candidate of Technical Sciences (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 Aug 58)

A design bureau for automatic equipment is located on the premises of the Moscow Tizpribor Plant. Workers of the bureau are engaged in experimental production of new instruments and equipment for various branches of industry. One of its greatest successes has been an electronic machine produced on order for the chemical industry. This machine, based on a new unique system developed and built for the first time in the USSR, takes the place of a multitude of instruments.

In describing the machine's operation, D. V. Ukladov, chief designer of the bureau, states that all signals from transmitters are sent not to individual indicator instruments, but to a single automatic machine, which checks, signals, stores, and sends out control commands.

The new machine, called the Mars-200, can be seen in operation in one of the rooms of the bureau. It is based on standard, easily replaceable relay and electronic blocks. All of the machine's units are rated for many years of interruption-free service, and for that reason the number of vacuum tubes has been kept to a minimum. The Mars-200 plays a great part in automation of the chemical, petroleum refining, power engineering, and other industries.

A recently assembled machine will soon be installed in the hot-presses section of the [Moscow] Krasnyy Bogatyr' Plant, where it will regulate the processes involved in the manufacture of rubber footwear.

Recently, a more powerful machine, the Mars-300, was assembled at the design bureau. It is destined for the Yefremov Synthetic Rubber Plant.

Besides Ukladov, participants in the development of the new electronic machines include Ye. M. Yakovson, chief engineer of the bureau; G. Z. Makulov, A. S. Edel'shteyn, and Yu. V. Babakin, chiefs of divisions; G. K. Dmitriyev, laboratory chief; and B. A. Panyukov, leading engineer.

Another new machine is the Mars-200R, which was designed by G. Dmitriyev. (Moscow, Moskovskaya Pravda, 2 Sep 58)

The installation of a MARS-300 electronic computer is under way at the Yefremov Synthetic Rubber Plant. This computer will check processes at 300 control points. -- K. Kil'shtedt, Chief Engineer, Administration of Chemical Industry, Tul'skiy Sovnarkhoz (Moscow, Sovetskaya Rossiya, 8 Aug 58)

Recently, a high-speed electronic machine for controlling the operations of resistance furnaces was installed in one of the shops of the Yefremov Synthetic Rubber Plant in Tul'skaya Oblast. This machine takes the place of 36 operators. In 30 seconds it measures the temperature and pressure at 300 points, and in case something goes wrong with the process, it signals the operator.

Experience in the operation of this machine has demonstrated that such machines can reliably be used for the over-all automation of complex chemical processes. (Moscow, Agitator, No 24, Dec 58, p 18)

Boris Sergeyevich Yegorov is the leading inventor of the [Moscow] Computing and Analyzing Machine Plant. The plant has organized the production of complex tabulating machines. -- Engr N. Bazhenov, Administration of Design and Scientific Research Organizations, Moscow City Sovnarkhoz (Moscow, Vechernyaya Moskva, 10 Sep 58)

The Ural electronic computer was developed in a design bureau for electronic computers. This machine has been submitted to plants for series production.

Adol'f Kondrashev, a graduate of the Faculty of Automation of the Moscow Power Engineering Institute, participated in designing this computer. (Moscow, Radio, Sep 58, p 12)

A Ural electronic computer has been installed in the computing center of the Academy of Sciences Uzbek SSR. The over-all adjustment of the machine is under way now. During the fourth quarter of 1958, the center will begin solving complex mathematical problems necessary for the activities of the institutes of the Academy of Sciences Uzbek SSR. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 17 Sep 58)

In 1956, a computer laboratory was created under the Institute of Physics of the Academy of Sciences Latvian SSR. During the same year, institute workers developed plans for an electronic computer, but were unable to make the parts and units of such a machine because they had no suitable production facilities.

In 1957, the institute made the appropriate contracts with the Riga VEF Plant and the Riga Etalon Plant for the production of individual units of the machine. The training of specialists to run the new computer was begun at the Latvian State University.

According to the agreement, the VEF Plant was to finish the production of the main section of the machine by 1 August 1957, but it is still unfinished. In July 1958, the main section was sent to the plant's paint shop, and it still lies there unpainted.

The Etalon Plant is also failing to fulfill its obligations. It was to have supplied the machine's storage unit in July 1958, but has not yet manufactured it. This enterprise is to produce the input and output sections of the machines, but the production of these stands in danger of disruption.

The electrical installation of the new machine depends on when its units are received from the VEF and Etalon plants. After installation, at least 6 months are required to adjust the machine. Thus, there will be quite a long delay before the computer goes into operation.

Computer technology is progressing so fast that machines become obsolescent in a very short time and must be replaced. Alekseyev, director of the VEF Plant, and Bocharov, director of the Etalon Plant, should realize how necessary timeliness is in this case.

The Latvian Sovnarkhoz is of no help to the institute in solving the problem of manufacturing the necessary computer parts and units. The sovnarkhoz does not even pay lip service to the importance of the computer.

Our electronic computer is the first such machine in the Baltic republics. Its creation is a matter of honor to the scientists and industrial workers of Latvia. -- Ya. Daube, Manager, Computer Laboratory, Institute of Physics (Riga, Sovetskaya Latviya, 17 Sep 58)

VII. INSTRUMENTS

A. Industrial Instrumentation

The SKBPSA (Independent Design Bureau of Instruments and Automation Equipment) has been established in Tbilisi. The scientific research and design divisions of the bureau have put instruments for the sulfite cellulose industry into experimental production. They will be used for determining the degree of fogging of sulfur dioxide gas and the degree of transparency of tower acid, and for checking the coloration of cooking liquor. These divisions have also developed a smoke indicator with a sensitive photoelectric type transmitter for analyzing gaseous mediums having a small volume of aerosol.

The SKBPSA has designed a mobile rod type pH meter with a combination glass electrode. It has developed another pH meter with a measuring range of 5-10 for use in agriculture.

The bureau has also developed automatic concentrate measurers with non-electrode high-voltage transmitters. They will be used in the chemical industry for determining acid concentration. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 12 Sep 58)

The "NIIAvtomatika" Scientific Research Institute for the Automation of Production Processes in the Chemical Industry and Nonferrous Metallurgy of Glavniiproyekt [Main Administration of Scientific Research and Planning Institutes] of Gosplan USSR needs electrical engineers and specialists in telemechanics, and computer engineers for permanent employment. Living accommodations are available.

Apply at Proyezd Kirova 7, Kirovakan, Armenian SSR -- Advertisement (Yerevan, Kommunist, 6 Aug 58)

The Leninakan Independent Design Bureau for Industrial Instruments manufactures electronic hygrometers and automatic moisture regulators for measuring and regulating the moisture content of solids, friable materials, liquids, and gases; continuous-action viscosimeters with remote transmission of readings for automatic checking and regulating of manufacturing processes; and continuous-action viscosimeters (rotational, vibration, and ultrasonic types).

Instruments are developed with the production of experimental models according to contracts specifying the technical needs of the consumer. -- Advertisement (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 6 Aug 58)

The Moscow Fizpribor Plant has finished the production of a consignment of MIR-3A radioactive manometers (6) which are capable of taking measures between 0.1 and 10 mm of the mercury column. Other manometers were unable to make such measurements.

The MIR-3A is designed for controlling industrial processes in the radio industry. (Moscow, Vechernyaya Moskva, 12 Aug 58)

(6) Photo available in source, p 2, top

The type MGK-2 thermomagnetic gas analyzer with a ring-type chamber is suitable for the control and regulation of oxygen content ranging from 0 to 40-50-percent. This gas analyzer is produced by the OKBA (Experimental Design Bureau for Automatics). The OKBA is developing two types of new magnetic gas analyzers: The MGK-3 for analyzing oxygen in multicomponent compounds (in an explosion-proof version) and the MGK-4 for checking the purity of oxygen.

The type MGK-2 gas analyzers have already been approved by the Committee on Standards, Measures, and Measuring Instruments, and are in series production. The first experimental models of the MGK-3 gas analyzer are undergoing industrial testing. The first instruments of an experimental consignment of MGK-4 gas analyzers are undergoing industrial testing also.

(Source gives detailed descriptions of the new gas analyzers, along with diagrams and an illustration.) (Moscow, Priborostroyeniye, Sep 58, pp 3-7)

The Khar'kov Control and Measuring Instrument Plant has successfully completed the testing of compact installations for the automatic maintenance of the level of liquid fed by pumping stations of enterprises into tanks.

The new equipment utilizes contactless measuring methods, using a gamma-ray emitter on one side of the tank and a gamma-ray receiver on the other. If the oil level in a tank rises too high, it cuts the flow of radiation, and the electric motor of the pump is shut off automatically. When the level starts getting lower, a special relay puts the pump back into operation. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 Aug 58)

The Leningrad Lenneftekip Plant produces more than 120 different control and measuring instruments, which are used on a wide scale in the chemical, oil, gas, food, and ferrous metallurgical industries, and in other branches of the national economy.

The plant ships pneumatic liquid level regulators, laboratory instruments for analyzing petroleum products, and other instruments in great quantities to India, Afghanistan, Vietnam, Czechoslovakia, Poland, Rumania, and other People's Democracies. (Leningradskaya Pravda, 20 Aug 58)

Thermal gauges are still not made for extended continuous use. New instruments are heavier than older ones. For example, an automatic potentiometer made in 1940 weighs 30 kg, but an electronic automatic potentiometer of the same quality made in 1955 is 20 kg heavier. Synchronous motors heat up to a temperature of 80-100 degrees, with the result that the insulation on the connecting wires dries up. The connecting wires in the type EPP-09 instrument weat out after 2-3 years of use. In 1957 the Sverdlovsk Uralmash Plant notified the Leningrad Teplopribor Plant about defects in the EPP-09, but since then, the instrument has not been improved. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 27 Jul 58)

The Ryazan' Thermal Engineering Instrument Plant has manufactured level indicators for checking and regulating the level of liquids in various receptacles. The instruments are equipped with contact units which make remote control of the manufacturing processes possible. (Vil'nyus, Sovetskaya Litva, 26 Aug 58)

By the end of 1958, the Moscow Komega Plant expects to produce several consignments of new instruments for automating boiler units. One of these is the EKP-T heat process regulator for new high-power boiler units. (Frunze, Sovetskaya Kirgiziya, 8 Aug 58)

The series production of electroacoustical regulators has begun in the automatics shop of the Leningrad Reduktor Plant, which is subordinate to the Leningradskiy Sovnarkhoz. Ball mills of cement plants are being equipped with such regulators. Until now, the loading of these mills was done "by ear." Now the new regulators serve as "electrical ears," and regulate loading much more accurately and rapidly than was previously possible. (Moscow, Sovetskaya Rossiya, 30 Aug 58)

An original automatic unit for controlling the loading and unloading of friable materials in bunkers has been installed at the Tashkentkabel' Plant, where it is used in the production of raw rubber. This automatic, which utilizes radioactive isotopes, was developed at the Laboratory for Industrial Application of Radioactive Isotopes of the Institute of Nuclear Physics, which was recently founded at the Academy of Sciences Uzbek SSR in Tashkent.

The laboratory has also designed a universal radioactive regulator for regulating the thickness, density, and concentration of industrial products. This design provides a solution for the problem of automating the grinding and classification of ore at the Altyn-Topkan Polymetals Combine. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 22 Aug 58)

The Groznyy Electrical Machinery Plant has produced experimental models of stationary and portable radioelectronic instruments for checking the quality of liquid fuels. They can check the sequence of petroleum products being pumped in pipelines, detect impurities pumped into tanks, and automatically turn off a pump when separating and pumping petroleum products.

V. Roshchin, chief power engineer of the plant, said that it has also manufactured a set of stationary remote control instruments (7). (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 8 Aug 58)

(7) Photo available in source, p 3, top

B. Telemechanical Equipment

Leningrad plays the leading role in the USSR manufacture of telemechanical equipment. The Leningrad Elektropul't Plant is doing important work in this field. In recent years, the plant has developed up to 70 types of telemechanical and dispatcher apparatus for electric power systems, including long- and short-range telemetering apparatus, dispatcher boards and panels, and telemechanical panels. The organization of industrial production of telemechanical equipment made it possible to telemechanize more than 35 electric power systems within a very short time.

Dispatcher boards and telemechanical apparatus produced at the Elektropul't Plant are installed in such large power systems as the Donbassenergo, Dneproenergo, Kiyevenergo, Chelyabenergo, Sverdlovenergo, and Rostovenergo [Donbass, Dnepr, Kiev, Chelyabinsk, Sverdlovsk, and Rostov electric power administrations]. The control and regulation systems of the Kuybyshev Hydroelectric Power Station and the Kuybyshev-Moscow Power Transmission Line have been telemechanized.

There is a great demand for telemechanical equipment from enterprises of the chemical, gas, metallurgical, petroleum, and coal industries, as well as from water resources organizations and city electric transport systems. Orders have come from the Magnitogorsk, Chelyabinsk, and Karaganda metallurgical plants; the Lisichansk, Stalinogorsk, and Chirchik chemical combines; construction administrations of the irrigation systems of the Tadzhik, Kirgiz, and Uzbek SSR; and the construction workers of the Stavropol'-Moscow gas line and the Moscow Subway.

However, many orders have to be turned down now, since there is not enough telemechanical apparatus to go around. It is expected that the 1965 need for this apparatus will be approximately 12 times the 1957 level. It is obvious that Gosplan USSR should take immediate measures for expanding the production of telemechanical equipment.

It is wholly possible to increase the production of telemechanical apparatus at existing plants, including the Elektropul't plant. However, the plant's premises have to be reconstructed; if this were done, it could triple its output. It is the duty of the Leningradskiy Sovnarkhoz to see that the plant is reconstructed; however, the plant has received nothing but agreement from the sovnarkhoz, and nothing concrete has been done to solve a task that must be started immediately.

The Elektropul't Plant is developing new improved telemechanical equipment in which semiconductors are used on a large scale in place of vacuum tubes. Many large industrial enterprises and construction projects are very interested in receiving such equipment. However, preparations for the production of the new equipment are proceeding under very difficult conditions. The plant was not allotted sufficient funds in 1959 for acquiring equipment and organizing an experimental section for contactless components. The centralized production of contactless magnetic components should be organized, since many plants producing automation equipment, telemechanization apparatus, and computers need such components.

It would be a good idea if the Leningradskiy Sovnarkhoz took the initiative in bringing the feasibility of specializing instrument-making enterprises before Gosplan USSR. There should be a sharp definition of the products-lists of each enterprise.

Plant design bureaus, research laboratories, and experimental shops must be enlarged. -- L. Shugayev, Chief Engineer, Elektropul't Plant (Leningradskaya Pravda, 4 Sep 58)

C. Geophysical Apparatus

The Institute of Machine Studies and Automatics of the Academy of Sciences Ukrainian SSR has designed the new type ETA-1 instrument for prospecting. In contrast to existing instruments, it uses transistors, which are powered by one flashlight battery. It has been put into series production.

The institute has also designed the type IMA-2 magnetometer, which operates even when it is being moved. It is now in production at a Leningrad plant. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 30 Jul 58)

Explorers need an instrument for the rapid and precise determination of the depth of an oil-bearing stratum. Leningrad scientists and oil workers of the Tatarskaya ASSR are cooperating in this matter. Physicists, in collaboration with engineers of the Krasnyy Khimik Plant, and specialists of the Institute of Applied Chemistry have developed an instrument for finding oil. The industrial production of a luminescent compound which glows under the influence of neutrons has been started. This compound was developed by Timofeyeva, a scientific worker of a laboratory of the Leningrad Optical Institute.

The first oil-exploration unit, the RKLS-57, was produced by the Moscow Nefteprибor Plant. Experimental operation of this unit has shown that it determines the depth of oil-bearing strata rapidly and accurately. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 15 Aug 58)

The Leningrad Geologorazvedka Plant has begun the series production of the RVS-1 radiometer for high-speed prospecting for mineral deposits. This instrument, which was developed by the Leningrad Design Bureau of the Ministry of Geology and Mineral Conservation USSR under the leadership of leading designers A. S. Kudryashev and V. P. Porfirov, is installed on MI-1 and KA-15 light helicopters. It consists of a sensitive-receiver unit, an amplifier-metering unit, a two-channel recorder, and a control panel. Its electronic circuit assures stability of operation. The instrument, which weighs 60 kg, operates by continuously measuring and recording the intensity of gamma radiation. (Yerevan, Kommunist, 29 Aug 58)

The Experimental Workshops of the Main Geophysical Observatory imeni A. I. Voyeykov have produced several series of modern instruments and units. The most important from a scientific standpoint are the balance meters (balansomer)for studying the heat balance of the sun. Several hundred of these instruments are being used in the USSR, China, Poland, Czechoslovakia, Rumania, and other countries.

The workshops have produced an experimental model of a new original condensation hygrometer for measuring atmospheric humidity. This instrument is on exhibit at the Brussels Fair. (Leningradskaya Pravda, 15 Aug 58)

D. Electrical Instruments

A. Saakyan, chief designer of the Yerevan Elektrotochpribor Plant, said that his plant is preparing to manufacture high-voltage snap-around amprobes for measuring currents up to 600 amps without breaking the circuit. Similar instruments with the same degree of precision have not been produced before in the Soviet Union.

The plant has designed microammeters which have a measuring mechanism with a magnet inside the frame. They will be used for special installations in the radio engineering industry.

The plant produces several types of measuring instruments for India, Vietnam, and other countries. (Yerevan, Kommunist, 5 Aug 58)

The Yerevan Elektrotochpribor Plant has produced a set of high-voltage snap-around amprobes for measuring network currents up to 600 amps and voltages up to 10,000 volts without disrupting any circuits. The new instruments, which were developed at the plant, make it possible to combine safety with high measuring accuracy. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 Aug 58)

The Kiev Tochelektropribor Plant has produced experimental models of new type M-502 ammeters, milliammeters, and voltmeters, which are of precision class 0.1. Until now, USSR industry has never produced such high precision instruments. The new instruments, which were developed by plant designers, are destined for important research laboratories. Soon their mass production will begin.

In 1958, the Tochelektropribor Plant will master the production of 13 types of new electrical measuring instruments. It has begun series production of precision class 0.5 laboratory instruments. It has also produced dozens of relays for the automatic control of komsomol'-run blast furnaces in the Ukraine.

The plant is now developing universal instruments utilizing germanium semiconductors. These instruments will be used on a large scale in radio engineering and electronics. The plant is developing, among other instruments, highly-sensitive voltmeters with electronic systems, and an automatic unit for determining the properties of materials. (Leningradskaya Pravda, 9 Aug 58)

The Moscow Elektroschetchik Plant (Moskovskiy zavod "Elektroschetchik") is a small plant founded several years ago which has a shopless system of operation. It is a producer of electric meters. Every 27 seconds, a finished instrument comes off the conveyer of its assembly section. Five workers can test up to 1,300 instruments in 8 hours.

The plant has the first automatic meter-checking device in the USSR. (Moscow, Moskovskaya Pravda, 17 Aug 58)

Panel ammeters are produced on conveyers (8) at the Leningrad Vibrator Plant. (Leningradskaya Pravda, 4 Sep 58)

(8) Photo available in source, p 2, top

E. Test Equipment

The Moscow Power Engineering Institute has developed and produced several complex automatic electronic recorders (9) for measuring volt-ampere characteristics of low-power electron tubes. (Moscow, Vechernyaya Moskva, 25 Aug 58)

(9) Photo available in source, p 2, top

A machine for analyzing both designed and installed relay circuits has been developed by laboratory engineer P. Parkhomenko of the Laboratory of Remote Control of the Institute of Automatics and Telemechanics, Academy of Sciences USSR, under the guidance of M. Gavrilov, Doctor of Technical Sciences. This is the best such machine in the world. It is compact and analyzes 20 elements, whereas an equivalent American machine analyzes only 4 elements. Whereas the Soviet machine can analyze relay circuits of any complexity, the American one can measure only two-pole contact circuits.

The Institute of Automatics and Telemechanics of the Academy of Sciences USSR, jointly with the All-Union Scientific Research Institute of Electric Power, has developed a contactless remote control and signaling system which has been operating successfully for 18 months in the system of Mosenergo [Moscow Regional Electric Power Administration]. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 10 Aug 58)

The [Moscow] Kalibr Plant series-produces instruments based on the principle of a rotameter.

The Bureau of Interchangeability has designed and produced a pneumatic instrument (10) with a water manometer and an experimental model of the BV-884 pneumatic indicator (11). (Moscow, Avtomobil'naya Promyshlennost', Nov 58, pp 38-39)

(10) Photo available in source, p 39, left

(11) Photo available in source, p 39, upper right

Telephotometers were developed in the Design Bureau of the VNISI (All-Union Illumination Engineering Institute) under the leadership of engineer A. M. Yudin. From 1953 to 1957, three series of model TF-1 and TF-2 (12) telephotometers were produced.

Measurements of light distribution from various lighting optical systems, such as powerful searchlights, beacons, floodlights, and headlights, were made with telephotometers at searchlight plants and at scientific research institutes. Some organizations are using telephotometers successfully for the study of transparency to light of the atmosphere. (Moscow, Svetotekhnika, Dec 58, p 18)

(12) Photo available in source, p 18

Special Design Bureau No 1 for Weight Measuring Instruments of the Leningradskiy Sovnarkhoz is developing scale mechanisms for weighing with a precison to 0.001 mg and even to 0.0001 mg. Such scales are in great demand.

The maximum capacity of these microscales is one gram. They are equipped with miniature pans connected to quartz balances and can follow increases or decreases in the mass of a substance while it is undergoing chemical reaction. A change in the mass changes a specially created magnetic field. The final value is retained and amplified by a special electronic unit and is transmitted to a mirror scale, on which a reading withing 0.001 mg is taken.

The first USSR-made electronic microanalytical scales will be produced by the Leningrad Gosmetr Plant. (Leningradskaya Pravda, 9 Aug 58)

Workers of the Central Laboratory of Automatics of the Ministry of Construction RSFSR have developed an electronic recording polarograph. Series production of this device has been started at the Leningrad Geologorazvedka Plant.

This polarograph is designed to perform qualitative and quantitative analysis of materials, and is capable of distinguishing 0.0001 percent of various components in a solution.

The laboratory has made 120 sets of these highly sensitive instruments, many of which are used successfully at enterprises of the metallurgical, chemical, petroleum, and food industries.

An electronic polarograph was recently given to the Moscow Scientific Research Oncological Institute imeni P. A. Gertsen, where it will be used for the diagnosis of cancerous ailments in their early stages. (Moscow, Vechernyaya Moskva, 4 Sep 58)

F. Plant Information

The Tartu Instrument Making Plant is the newest plant in the city. It was created on 1 August 1958 on the basis of the Tartu AGE Plant and the Tartu Termoavtomat Plant. The merger of the two plants has brought significant benefits.

In August, the plant began the production of ignition inspection stands. Its products are known beyond the confines of the Estonian SSR. In August, a consignment of thermoregulator parts was sent to Mongolia. The same types of instruments, but adapted for tropical operation, were sent to India for installation at the new metallurgical plant. (Tallin, Sovetskaya Estoniya, 6 Sep 58)

The Tartu AGE Plant and the Tartu Termoavtomat Plant have been consolidated to form a large instrument making plant. This will reduce administrative expenditures and allow a more efficient use of production space and equipment. (Tallin, Sovetskaya Estoniya, 18 Nov 58)

The Frunze Physical Instrument Plant needs various workers for steady employment. Applications should be made to the personnel division at ulitsa Novo-Sovetskaya 79, Frunze. -- Advertisement (Frunze, Sovetskaya Kirgiziya, 30 Aug 58)

The Armavir Armalit Machinery Plant needs a metallurgical engineer for the post of chief metallurgist.

The plant is located at ulitsa K. Marksa 72, Armavir, Krasnodarskiy Kray. -- Advertisement (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 30 Jul 58)

VIII. PRECISION EQUIPMENT

A. Optical Equipment

The Experimental Optical Machinery Plant of the Administration of Instrument Making of the Leningradskiy Sovnarkhoz has produced its first series of type DD-3 differential range finders. These instruments are designed for geodesists and surveyors for measuring the distances between points.

The differential range finder was designed by workers of the Leningrad Trust for Geodetic Operations and Engineering Explorations and by the All-Union Scientific Research Surveying Institute jointly with workers of the Experimental Optical Machinery Plant. The new instrument has received a high rating from geodesists and surveyors. (Leningradskaya Pravda, 19 Aug 58)

The Moscow Television Center has been using various non-specialized lenses, chiefly photographic lenses, for television cameras. Now, the first group of television lenses has been made.

The manufacture of these lenses fully satisfies current demand. They have high resolving power at large relative apertures. The Yupiter-200T and Tair-3 lenses are particularly high in quality. The MIR-1T, MIR-2T, Yupiter-8T, Yupiter-100T, Yupiter-200T, and Tair-11T have iris diaphragms, while the OT-500, OT-750, and OT-100 have removable diaphragms which are mounted in front of the lens.

Specifications of lenses used on television cameras are as follows:

	Focal Length [mm]	Relative Aperture	Linear Field of View*	Resolving Power [lines/mm] Center	Edge
MIR-2T	29	f:2.8	30	45	16
MIR-1T	37	f:2.8	40	50	16
Yupiter-8T	52.4	f:2	40	40	20
Gelios-40T	85	f:1.5	40	35	17
Yupiter-100T	100	f:2.5	40	38	18
Tair-11T	135	f:2.8	40	30	18
Yupiter-200T	200	f:4	40	38	30

	Focal Length [mm]	Relative Aperture	Linear Field of View*	Resolving Power [lines/mm] Center	Edge
Tair-3	300	f:4.5	40	35	26
Two-element OT-500	500	f:5	35	35	15
Two-element OT-750	750	f:5.6	40	32	16
Two-element OT-1000	1,000	f:6.3	40	30	20

* Unit not certain

	Coefficient of Transmission (%)	Coefficient of Dispersion (%)	Brightness Fall-Off Center to Edges (%)
MIR-2T	75	3	55
MIR-1T	70	3	65
Yupiter-8T	86	2	50
Gelios-40T	75	2	60
Yupiter-100T	78	3	30
Tair-11T	85	2	45
Yupiter-200T	82	4	20
Tair-3	87	2	13
Two-element OT-500	84	4	10
Two-element OT-750	58	4	5
Two-element OT-1000	58	4	5

(Source contains further information about the functions and properties of these lenses and diagrams of three of them. (Moscow, Tekhnika Kino i Televedeniya, Dec 58, pp 59-60)

The Krasnogorsk Machinery Plant has mastered the series production of Tair-3 and Mir-1 camera lenses.

Lenses such as the Mir, MTO, Tair, and MR, which are produced by this plant, were acknowledged to be the best in the world at the Brussels World's Fair. (Moscow, Leninskoye Znamya, 2 Nov 58)

The Leningrad camera made by the Leningrad State Optical Machinery Plant won a grand prize at the Brussels Fair. This is a high-class camera with a Yupiter-8 lens.

The designing of the Leningrad began at the end of 1955 and the first consignment of these cameras was produced within a year. In May 1958, the plant began the constant-flow assembly of this camera.

I. G. Shapiro, a designer of the plant's Central Design Bureau, was one of the developers of the new camera. (Leningradskaya Pravda, 22 Aug 58)

In 1957, NIKFI [Scientific Research Motion-Picture Photography Institute] developed the TK-16 television film projector. It is designed for projecting 16-mm sound film with either magnetic or optical sound tracks onto the light-sensitive layer of Vidikon tubes for black-and-white or color television transmissions. (Moscow, Kinomekhanik, Dec 58, p 24)

During the third quarter of 1958, the Moscow Electric Bulb Plant will begin the series production of the new Luch-57 electronic photoflash lamp, in place of the obsolete model EV-1. (Moscow, Leninskoye Znamya, 30 Jul 58)

In reply to numerous complaints from owners of FIL electronic flash units, Z. I. Poslavskiy, director of the Tallin Norma Plant, claims that many of the defective parts and units are received from the Moscow Electric Bulb Plant, the Voronezh Radio Parts Plant, the Tallin Tarbeklass Plant, and the Tallin Esti-Kabel' Plant.

Poslavskiy states that during the coming year, the Norma Plant will produce a new model FIL flash powered by flashlight batteries with a selenium rectifier to permit use of 110-220-volt AC. The casing, handle, and reflector are expected to be made of plastic. Another version of the same model will be based on transistors. The price of FIL units will be reduced from 700 rubles to 500 rubles during 1959. However, a long-requested model with a movable flash head will sell for 700 rubles.

Engineers are designing a new model of an electronic flash which will operate on current supplied by a generator. This unit will be considerably smaller and lighter than those currently in production. A model of the generator, which is expected to be produced by the Norma Plant itself, is now being manufactured and will be tested later.

Although the Tallin Norma Plant is subordinate to the Tallin City Executive Committee, it has been assigned the production of galvanized cooking ware, jars for shoe polish, and jars for preserving various grains, by Gosplan of the Council of Ministers Estonian SSR. The production of FIL units is not planned by Gosplan, but by the planning commission of the city executive committee. Consequently, the plant can get state funds for only 40 percent of such materials as condensers, flash tubes, wiring, moire lacquer, rolled copper, and aluminum sheet, and for only 3 percent of its requirements of textolite. The plant must get the remainder of these materials as best it can from various enterprises, which sometimes means accepting scrap which does not meet specifications. (Moscow, Sovetskoye Foto, Dec 58, pp 57-59)

B. Timepieces

The Leningrad Electric Timepiece Plant has manufactured a printer chronograph for measuring time accurately to .0002 second.

The plant is now making a series of chronographs for use in Soviet observatories to observe artificial earth satellites. Some of them have been sent by air to Kishinev, Dnepropetrovsk, Tashkent, Vladivostok, and other cities. The plant has sent two more printer chronographs to cities in the Transcaucasus. (Leningradskaya Pravda, 21 Aug 58)

The Leningrad Electric Timepiece Plant has started production of a clock which tells not only the correct time of day, but also the day of the week and day of the month. This clock is powered by ordinary flashlight batteries. Series production of these clocks will be started in 1959. (Leningradskaya Pravda, 12 Sep 58)

A. Arutyunyan, director of the Yerevan Timepiece Plant, said that the special production of watches made from gold, platinum, diamonds, and other materials has been organized at the plant in accordance with a decree of the Council of Ministers USSR. R. Kocharyan, deputy chief engineer of the plant, is managing the development of production methods for the experimental models.

The Yerevan plant will have manufactured its first experimental consignment of 500 custom-made wrist watches by the end of 1958. It plans to produce 10,000 wrist watches in 1959 and 500,000 in 1965. (Yerevan, Kommunist, 9 Sep 58)

The Chistopol' State Timepiece Plant has begun to produce a new type of nautical watch with a high-precision movement. (Moscow, Komsomol'skaya Pravda, 21 Sep 58)

The Chistopol' Timepiece Plant has begun mass production of 22-jewel Volna waterproof and shockproof wrist watches. (Moscow, Moskovskaya Pravda, 10 Aug 58)

C. Firearms

The Tula [Arms] Plant has mastered the production of the new TOZ-21-1 and TOZ-21-2 hunting rifles. The TOZ-21-2 has provision for the use of a telescope sight. The magazines hold ten 5.6-mm cartridges which feed automatically into the firing chamber. These rifles weigh 2.5 kg. (Moscow, Tekhnika Molodezhi, Dec 58, p 14)

The gunsmiths of Izhevsk are mastering production of a new IZh-58 double-barreled shotgun, which weighs 2.75-3 kg and costs 700 rubles.

Another new product is a single-barreled, 16-gauge, three-shot automatic shotgun.

Both of these guns will be made available to consumers in 1958. (Moscow, Komsomol'skaya Pravda, 6 Sep 58)

IX. ELECTRICAL PRODUCTS

A. Motors

The Kaunas Elektra Electrical Machinery Plant is trying to organize the production of new 14-kw electric motors on schedule. The plant is receiving equipment from Moscow, Kishinev, Krasnodar, and other cities. More than 20 of its workers have undergone training at the Yaroslavl' Electrical Machinery Plant. (Vil'nuys, Sovetskaya Litva, 16 Aug 58)

On 2 September 1958, the Kaunas Elektra Electrical Machinery Plant finished producing and testing its first 10-kw electric motor. It is in the final stages of assembling a 14-kw motor. Soon the plant's products will be sent to enterprises of the metalworking, textile, knitting, and other industries.

Enterprises in Moscow, Kishinev, Krasnodar, and Sterlitamak have sent high-power crank presses, vertical boring machines, lathes, turret lathes, milling machines, drilling machines, grinding machines, and other machine tools to the Kaunas plant.

By the end of 1958, the Elektra Plant will have produced at least 1,000 electric motors. In 1959 it will produce 10,000. By 1965, it will be producing 320,000 electric motors per year.

The plant is having difficulties in obtaining enough cast iron. The Lithuanian Sovnarkhoz ordered the Administration of Machine Building to organized the supply of castings. However, Speychis, chief of this administration, stated that it was not possible to cast parts at enterprises of his administration.

The Administration of Supply of the Lithuanian Sovnarkhoz is slow in seeing that the Elektra plant receives sufficient materials.

The Kaunas Litproyektas [Lithuanian Planning?] Institute is delaying the production of blueprints for the reconstruction of the plant.

Genrikas Vladishauskas is chief engineer of the plant. (Vil'nyus, Sovetskaya Litva, 18 Sep 58)

The KD-30 cash register electric motor developed by engineers of the Vil'nyus El'fa Plant is smaller and lighter than the AVD electric motor developed by the Moscow Institute of the Electrical Engineering Industry, although both motors are of equal power and are intended for the same purpose.

The difference in weight is only 200 grams per motor, but since the El'fa Plant will produce 6,000 such motors in 1958 and more than 25,000 in 1959, thousands of kilograms of scarce materials will be saved in manufacturing the KD-30.

The KD-30 is simple to manufacture and has an efficiency of 60 percent. On 30 July 1958, the El'fa Plant finished assembling the first consignment of these motors. (Vil'nyus, Sovetskaya Litva, 31 Jul 58)

Products of the Vil'nyus El'fa Plant are shipped to Riga, Alma-Ata, Dnepropetrovsk, and other cities. The plant has a motor shop, where there is a section for the assembly of DAO electric motors (13). (Vil'nyus, Sovetskaya Litva, 24 Aug 58)

(13) Photo available in source, p 2, bottom

A plant in Armavir is the producer of DAG-1 electric motors. (Moscow, Radio, Sep 58, p 16)

B. Fixtures

The Leningrad Elektrotekhpribor [Electrical Instrument], Elektroarmatura [Electric Fixtures], and Liftoborudovaniye [Elevator Equipment] plants all produce electric fixtures. These plants and other plants throughout the USSR must work through the All-Union Scientific Research Institute of Illumination Engineering in Moscow, a lengthy complicated procedure.

All work in regard to approving products for production now done by the Moscow institute should be transferred to organizations within the Leningradskiy Sovnarkhoz. -- S. Butman, Chief Engineer, Leningrad Elektrotekhpribor Plant (Leningradskaya Pravda, 13 Aug 58)

Electric light fixture plants No 1, 2, and 3 of the Administration of Local Industry of the Moscow City Executive Committee are merging into a single Electric Light Fixture Plant No 1.

All claims should be sent to Plant No 1 at Oruzheynyy pereulok 17-a, Moscow. -- Advertisement (Moscow, Vechernyaya Moskva, 26 Aug 58)

The production of electric fixtures has been considerably increased at the Moscow Elektrosvet Plant imeni P. N. Yablochkov.

The Ardatov and Gusev plants have also started to produce such fixtures and are steadily increasing their production.

The All-Union Scientific Research Illumination Engineering Institute and the Elektrosvet Plant are developing a series of lights made of unified parts for schools, hospitals, and other public buildings.

Inasmuch as electric bulb plants and illumination engineering fixtures plants are subordinate to many sovnarkhozes, the scientific research work in this field must be coordinated by the State Scientific and Technical Committee of the Council of Ministers USSR. -- B. Lyubetskiy, Director, Moscow Elektrosvet Plant imeni P. N. Yablochkov (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 14 Sep 58)

C. Cable

The first cable industry enterprise in the Azerbaydzhan SSR is being organized in Mingechaur, a new industrial center of the republic. The first stage of the new plant, known as the Azerkabel' Plant, has begun the production of aluminum cable 70 sq mm in gauge.

The personnel of the [Berdyansk] Azovkabel' Plant in the Ukraine are helping the Azerkabel' Plant to install its equipment and to furnish tools for the shops. Azerkabel' Plant workers were trained at the Azovkabel' Plant. (Moscow, Trud, 6 Sep 58)

The Moscow Moskabel' Plant has begun production of cable on which 180 simultaneous telephone conversations can take place. The plant's low-current cable shop has already produced more than 100 km of such conductors. (Moscow, Moskovskaya Pravda, 9 Aug 58)

During the first half of 1958, the Moscow Moskabel' Plant failed to produce a part of its planned quantity of aluminum-core cable. In addition, it failed to produce 4,742 electric flatirons. (Moscow, Moskovskaya Pravda, 29 Jul 58)

Products of the Podol'skkabel' Plant are used extensively in the electrical industry, instrument making, and the production of radio and television equipment. The plant consistently fulfills its plan and increases its production. Its shops have high-production equipment and automation is applied extensively.

The plant has a new building, in which there is a mechanized cable production section (14). (Moscow, Leninskoye Znamya, 8 Aug 58)

(14) Photo available in source, p 8

The installation of a continuous vulcanizing unit at the [Sverdlovsk] Uralkabel' Plant has enabled the plant to save about one million rubles per year. An automatic constant-flow line for the production of rubber compound has also brought about favorable results.

However, the plant facilities for transporting friable materials such as carbon black are poor.

The plant needs electronic micrometers for the automatic control of thickness and roundness of cable conductors in shops where they are being coated with chlorvinyl.

Special attention should be paid to mechanization and automation in the high-voltage power cable shops of plants.

Only intermittent lead presses are used in the USSR cable industry; it is time for the cable industry to convert to continuous units.

The future development of over-all automation and mechanization in cable plants must be promoted by the Scientific Research Institute of the Cable Industry and by the machine building industry. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 18 Jul 58)

D. Batteries

The USSR coal industry is unsatisfied with domestically produced nickel-iron storage batteries, which are used for lighting purposes. The 2-ShZhN-15 storage batteries have too little gas space between the plates and the cover: a total of 30 cu cm. This causes overconsumption of electrolyte and dirtying of charging units. According to data from the Donets [Scientific Research] Coal Institute and Dongiprouglemash [Donets State Planning, Design, and Experimental Institute for the Over-All Mechanization of Mines], almost 500,000 rubles is spent monthly as a result of the overconsumption of electrolyte.

The defects are not eliminated in new models. Recently the Saratov [Alkaline Storage Battery] Plant developed a plateless (bezlamel'nyy) battery with self-contained charging. The gas space in this is also smaller than normal.

There are other serious defects in storage batteries. For instance, the 2-ShZhN-15-1 has caps made of thick nonelastic rubber. Its contact unit is poor; the springs on this unit wear out quickly and the voltage on the caps of incandescent lamps is thereby lowered.

These and other battery defects are responsible for greater numbers of personnel working in the lamp [supply] divisions of mines.

Battery manufacturers of the USSR should be ashamed of not using foreign know-how. Batteries made by Edison and by Freeman and Wolfe have accurately gauged gas spaces; electrolyte is put in only once a week; and these products are safe, convenient, and long lasting. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 Aug 58)

The Leningrad Leninskaya Iskra Plant is located in Zhdanovskiy Rayon of that city. (Leningradskaya Pravda, 29 Jul 58)

E. Other Products

Aluminum plants are dissatisfied with the mercury converters produced by the USSR electrical industry. Enterprises of the electrical industry are still making such converters with efficiencies not exceeding 92 percent, although compact mechanical rectifiers with efficiencies of 96-97 percent have been used in foreign countries for several years.

The RMNV 1,000 x 6 mercury rectifiers produced by the Sverdlovsk Uralelektroapparat Plant in 1955-1956 have basic design defects. They are not reliable in operation, even when they work at partial load. The rectifiers installed at the Ural Aluminum Plant have 450-500 flashbacks apiece per month instead of the normal 18. -- V. Kal' chenko, Engineer, Administration of Nonferrous Metallurgy, Sverdlovskiy Sovnarkhoz (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 20 Aug 58)

On 2 July 1958, Promyshlenno-Ekonomicheskaya Gazeta carried an article on diffusion welding in a vacuum, a new method invented by N. Kazakov, Candidate of Technical Sciences. The article stressed the necessity for the widespread usage of this method.

On 10 July 1958, F. Trebin, chairman of the State Scientific and Technical Committee of the Council of Ministers USSR, signed an order on organizing a temporary commission for working out recommendations on developing diffusion welding in a vacuum, and for introducing this type of welding in industry. The commission is to set up the basis guides for scientific research and planning work on welding in a vacuum; to determine the branches of industry where diffusion welding is most useful; and to prepare the proper recommendations for the permanent commission on welding production of the State Scientific and Technical Committee of the Council of Ministers RSFSR. (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Jul 58)

Industrial electric furnaces in the USSR are produced by enterprises in Biysk, Khar'kov, Moscow, Leningrad, Novosibirsk, and Saratov. The Novosibirsk Electrothermic Equipment Plant is being expanded with the construction of additional facilities. The Saratov Electrothermic Equipment Plant is being reconstructed. Furnaces for drying and heat-treating electrodes are designed by the Special Design Bureau of the Moscow Elektropech' Trust and by the Scientific Research Institute of the Cable Industry. Branches of the Special Design Bureau of the Elektropech' Trust exist in Khar'kov, Leningrad, and Saratov.

It is about time to establish a scientific research institue of electrothermy. -- A. Pchelintsev, Director, Saratov Electrothermic Equipment Plant (Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 6 Aug 58)

The Khar'kov Transsvyaz' Electrical Engineering Plant of the Ministry of Railways USSR is the producer of the KDRSh plug-socket type of relay. (Moscow, Avtomatika, Telemekhanika, i Svyaz', Dec 58, inside back cover)

The Vinnitsa Electrical Engineering Plant has produced new type EV-3 electric spindles, which have speeds up to 10,000 rpm. The use of these spindles by synthetic fiber plants has increased labor productivity 20-25 percent. (Kiev, Pravda Ukrainy, 6 Aug 58)

The Minsk Instrument Repair Plant (Minskiy pribororemontnyy zavod) has organized the production of heating fans and small table fans. Models of these products have been accepted by the Chamber of Commerce. The plant will produce 6,000 table fans per year; in addition, it will produce 80,000 transformers. (Minsk, Sovetskaya Belorussiya, 9 Aug 58)

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