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ORGANIZATIONS CONNECTED WITH ELECTRONICS RESEARCH IN THE USSR

Sources: As indicated in project.

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SECURITY INFORMATION

## ORGANIZATIONS CONNECTED WITH ELECTRONICS RESEARCH IN THE USSR

Electronics research in the USSR is conducted primarily by the following organizations: (1) the Academy of Sciences USSR and the union republic academies of sciences; (2) the higher educational institutions under the Ministry of Education; and (3) the scientific-research institutes of the ministries.

### I. The Academy of Sciences USSR and Union Republic Academies

#### A. The Academy of Sciences USSR

Within the Academy of Sciences, electronics research is conducted by the Department of Physico-Mathematical Sciences, the Department of Technical Sciences, and partially the Department of Chemical Sciences.

#### (1) The Department of Physico-Mathematical Sciences

The Department of Physico-Mathematical Sciences has the following organizations working on electronics: the Physics Institute imeni Lebedev, the Leningrad Physico-Technical Institute, and the All-Union Council of Radio Physics and Radio Engineering.

#### (a) The Physics Institute imeni Lebedev

Work in the electronics field appears to be concentrated mainly on radio wave propagation (V. L. Ginzburg and Ya. L. Al'pert), radio astronomy, nonlinear oscillations in radio engineering, underwater sound research (L. M. Brekhovskikh), dielectrics (particularly the development of barium titanates by B. M. Vul' and his group), and infra-red sensitive phosphors. The center of theoretical electronics work in this institute is the Oscillations (Vibrations) Laboratory imeni Mandel'shtam. Further information on the work of this institute is available in FDD Summary 28.

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(b) The Leningrad Physico-Technical Institute

Almost all work on electronics at the Leningrad Physico-Technical Institute reported in overt literature has been in the field of semi-conductors. Some personalities associated with semi-conductor work at this institute are A. F. Ioffe and A. I. Gubanov.

(c) The All-Union Council of Radio Physics and Radio Engineering

This council was identified in FDD Summary 28 as subordinated to the Physics Institute imeni Lebedev, but it is more likely that it is a more-or-less independent organization in the Department of Physico-Mathematical Sciences which coordinates the work of relevant organizations within the Academy with outside organizations. The chairman of the Council is A. I. Berg (June 1951). The Council sponsored a conference in December 1947 on problems of solar radio emission, wave propagation, and ionospheric studies. In addition to scientific personnel of Moscow institutes of the Academy, scientists of Moscow, Gor'kiy, Saratov, and Rostov-on-Don universities, and workers of ministry institutes in Moscow, Leningrad, and other cities participated in the conference.

(2) The Department of Technical Sciences

The Department of Technical Sciences has the following organizations working in the field of electronics: the Institute of Automatics and Telemechanics; the Section for Scientific Development of Radio Engineering Problems; the Institute of Precision Mechanics and Calculating Techniques.

(2) The Institute of Automatics and Telemechanics

A rather complete account of the work of the Institute of Automatics and Telemechanics in electronics is given in FDD Summary 63.

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**SECRET**(b) The Section for Scientific Development of Radio Engineering Problems

This organization, whose chairman in 1947 was B. A. Vvedenskiy, is concerned mainly with research on wave propagation (A. N. Kazantsev, G. M. Bartenov, L. A. Zhokulin, and M. I. Ponomarev) and antenna and waveguide systems (A. G. Arenberg and I. G. Klyatskin).

(c) The Institute of Precision Mechanics and Calculating Techniques

This Institute does some work in electronics in connection with the development of computer elements. Leading personalities in this work are Professor L. I. Gutenmakher, F. V. Mayorov, and N. R. Belyakov

In his introductory speech to the General Session of the Academy of Sciences USSR on 1 February 1952 (Vestnik Akademii Nauk SSSR, 2, 1952, pp 12-16), Academician Nesmeyanov stated "I have no doubt as to the need for establishing a separate Institute of Electronics"(in reference to the work of the Department of Technical Sciences). In the light of the severe criticism of the Institute of Automatics and Telemechanics which has been published recently (see Elektrichestvo, No 11, 1951) and in view of the fact that not one work of the Section for Scientific Development of Radio Engineering Problems was included in the 1952 plan for introducing completed works of the Department of Technical Sciences into the economy (Vestnik Akademii Nauk SSSR, No 11, 1951), it is probable that elements of these two organizations will be used to form the nucleus of a new Institute of Electronics, which will have equal standing with the other institutes of the Department of Technical Sciences.

(3) The Department of Chemical Sciences

Some work on electronics is conducted in the Department of Chemical Sciences, e.g., the Institute of the Chemistry of Silicates includes a Laboratory of High-Frequency Equipment.

**SECRET**B. Union Republic Academies of Sciences

The Physics Institute of the Ukrainian Academy of Sciences has been particularly active in electronics, with special emphasis on semi-conductor research (V. Ye. Lashkarev, K. M. Kosonogova, and S. I. Pekar), special cathodes (P. G. ~~xxx~~ Borzyak), and photocells (V. Ye. Kosenko). The Ukrainian Physico-Technical Institute, Ukrainian Academy of Sciences, has done some work on electronics, particularly research directed by A. A. Slutskiy<sup>u</sup> on the generation of decimeter waves. In addition, the Institute of Electrical Engineering of the Ukrainian Academy of Sciences ~~xxx~~ does some research in the communications field. The Uzbek Academy of Sciences is supposed to be active in the development of photocells and selenium rectifiers. Not enough information is available to generalize on the activities of other union republic academies and affiliates of the Academy of Sciences.

II. Higher Educational Institutions under the Ministry of Education

Scientific research on electronics in educational institutions may be divided into two broad classes: a) research conducted at state universities and polytechnical institutions; b) research conducted at specialized higher educational institutions.

A. State Universities and Polytechnical Institutes(1) The Moscow State University imeni Lomonosov

Probably more research on electronics is conducted at the Moscow State University than at any other higher educational institution. It was in the Laboratory of Electromagnetism here that Glagol'yeva-Arkad'yeva developed the mass radiator (wavelengths down to 0.086 mm). Works published recently by scientists of this university include the following subjects: wave propagation (P. Ye. Krasnushkin), electron microscopy, antenna and waveguide systems, and magnetrons (S. D. Gvozdover and V. M. Lopukhin).

**SECRET**(2) The Leningrad State University

Recent works published by scientists of the Leningrad State University cover the fields of piezoelectrics and field emission.

(3) The Gor'kiy State University

M. L. Levin has recently done considerable research at Gor'kiy University on the theory of slot antennas and I. L. Bershteyn of this university was awarded the 1949 Mandel'shtam prize for his work on vacuum tube oscillators.

(4) The Saratov State University

In the Scientific-Research Institute of Mechanics and Physics, some work has been done on microwave components (magnetrons, klystrons, cavity ~~resonators~~ resonators) by V. I. Kalinin, B. M. Zamorozkov, V. N. Shevchik, V. L. Patrushev, and O. V. Romanova.

Similar work is probably being conducted at other state universities, although only isolated examples have been found in periodical literature, e.g., S. I. Gorelik of the Dnepropetrovsk State University published a work on "~~The~~ Electron Conductivity in ~~Polycrystalline~~ Polycrystalline Baked Titanium Dioxide" and G. A. Ostroumov of Molotov State University published a work on "The Problem of the Linear Theory of the Polarized Relay". It is difficult to determine the amount of research being done in polytechnical institutes, but it is known that V. T. Renne has done considerable work on capacitors at the Leningrad Polytechnical Institute and some work on network theory has been published from the L'vov Polytechnical Institute.

B. Specialized Higher Educational Institutions [refer to FDD Summary 53 for subordination, curriculum, and addresses of these institutes]

(1) The All-Union Electrical Engineering Institute imeni V. I. Lenin

The amount of work being done on electronics at the VEI at present is problematical, since future tasks listed for the Institute in

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in 1946 included only the development of and production engineering for electron microscopes and powerful electron and X-ray tubes as tools for analysis in various basic research and applied fields of science and engineering. However, it is claimed that the scientific associates of the VEI (Ye. D. Grekhov, V. N. Kaptsov, I. S. Gvozdover and others) were the first ~~xxx~~ in the USSR to develop methods of obtaining ultra-short waves. Work of the VEI on electronic instruments was awarded a Stalin Prize in 1946 (Professor P. V. Timofeyev, V. I. Arkhangel'skiy, V. I. Krasovskiy) and Ye. S. Ratner). Considerable work has also been done at the institute on the physics of the gas discharge and new insulating materials. G. R. Gertsenberg of the institute developed an electronic voltage regulator to increase the static stability of large generators operating in parallel.

(2) The Leningrad Electrical Engineering Institute imeni Ul'yanov (LETI)

Considerable research has been done at the LETI in the most diverse fields of electronics. In the period 1932-1937, a group of radio engineering specialists in the LETI completed a number of scientific-research works on ultrashort-wave techniques. Also in the 1930's, Yu. A. Katsman and L. A. Dudnik began work on the design of super-high-frequency tubes and the analysis of phenomena in these tubes. A Laboratory of Television was organized within the LETI in 1940 by V. A. Gurov after Ya. A. Ryftin had established this specialization. The Vacuum-Tube Laboratory of the LETI, with the help of the "Svetlana" plant, produces experimental series of thyratrons, cathode-ray oscilloscopes, photocells, etc. A group headed by Professor S. Ya. Sokolov was awarded a 1950 Stalin 1st Prize in Instrument

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Building for inventing an ultrasonic microscope and for the development and industrial use of ultrasonic defectoscopy.

- (3) The Leningrad Institute of Electrical Engineering Institute of Communications (LEIS) ~~(LIEE)~~ imeni Professor M. A. Bonch-Bruyevich

Two institutes have been referred to in periodical literature, the ~~LEIS~~ and the Leningrad Institute of Communications Engineers (LIIS), but these are probably the same institute. Titles of some 13 research papers published by workers of this institute do not reveal any predominant research problem. Most of the papers deal with general communications theory, e.g., transients, neutralization circuits, Adcock antenna systems, pulsed tubes, high-power broadcasting transformers, long-distance communications equipment, etc. Some personalities identified with the institute (1949) are N. L. Bezladnov, E. V. Zelyakh, G. A. Zeytlenok, and N. N. Khlebnikov.

- (4) The Moscow Electrical Engineering Institute of Communications (MEIS)

This institute is probably also called the Moscow Institute of Communications Engineers (MIIS). The institute has four faculties, i.e., radio engineering, electrical engineering, electrical communications, and engineering economics. As is true of other educational institutes, the main function of the MEIS is pedagogical, but some research is undoubtedly conducted here. The staff includes <sup>(1950)</sup> A. A. Pistol'kors, A. D. Ignat'yev, V. V. Furduev, N. A. Bayev, P. K. Akul'shin, I. A. Kashcheyev, Ye. V. Kitayev, ~~xxx~~ A. I. Romanovskiy, and V. S. Mel'nikov. Mel'nikov is a 1950 Stalin Prize winner who specializes in trunk-line radio communications. The institute has numerous well-equipped laboratories and a large technical library. The most popular laboratories at the institute are as follows: Theoretical Fundamentals of Radio Engineering; Construction of Radio

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Receivers; Radio Broadcasting and Sound Recording; Construction of Radio Transmitters; Television; and Long-Distance Communications.

(5) Odessa Electrical Engineering Institute of Communications

No information is available on this institute.

(6) The Scientific Research Institute of Communications Engineering, Ground Forces (NIIS SV)

The following papers were published in Trudy NIIS SV, Nos 4 and 5, 1947: "The Theory of Magnetic Antennas" by A. A. Pistol'kors" and "Effect of Climatic Conditions on the Stability of a Vacuum-Tube Oscillator and Methods of Reducing Instability" by G. T. Shitikov. V. N. Kessenikh was also identified with this institute in 1947.

III. Scientific-Research Institutes of the Ministries [In this section, the ministry subordination of the institute is given where known. If no information is available on the institute, it is merely listed].

A. All-Union Scientific Research Institute of Television

In 1947, it was stated that every effort should be made to increase the personnel of this institute.

B. All-Union Scientific Research Institute of Acoustics and Sound Recording [Questionable title] (VNAIZ), M. Nikitskaya Ulitsa 24 (1/29/1948 Moscow Directory)

C. Central Scientific Research Institute of Communications (TsNIIS), Ministry of Communications USSR, Ulitsa Zamorenova 16 ~~(1/29/1948 Moscow Directory)~~

The volume of work published by workers of the TsNIIS indicate that this is one of the most active institutes in the Soviet Union in the communications field. In 1946, it was reported that the institute had developed quartz oscillators in cooperation with the Crystal Shop of the Plant imeni Kazitskiy. Also in 1946, the institute produced batteries with high ampere-hour ratings for radio needs. In 1947, a group of engineers at

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the TsNIIS developed a method for converting radiotelegraph communications to frequency-shift keying by adding comparatively simple adapters to existing transmitters and receivers. In some cases, addition of this adapter was equivalent to increasing transmitter power 5-8 times. The institute also completed work in 1947 on an end-fed mast antenna which was claimed to be efficient, cheap, and reliable. Some research on wired television systems is known to have been done at the institute. Papers published by personnel of the TsNIIS reveal interest in the following fields: wave propagation (K. M. Kosikov), narrow-band filters (E. V. Zelyakh and Ya. I. Volikin), pulse-time modulation systems (L. I. Teumin, S. V. Borodich), communications cables (V. N. Kuleshov and V. O. Shvartsman), and design of centimeter-band cavity resonators (V. P. Minashin and N. I. Kalashnikov). The institute has a branch in Leningrad (LONIIS), located at Ulitsa Soyuza Svyazi, 7.

D. Institute for the Development of Power Engineering, Automatics, and Communications, All-Union Scientific, Engineering, and Technical Society of the Textile Industry (Address of institute as of 1939: Moscow, Center, Ulitsa Kuybysheva, 6)

E. Institute of Radio Reception and Acoustics (IRPA), Leningrad (?)

A. K. Godzevskiy, representing this institute, addressed a joint meeting of the Vacuum-Tube and Broadcasting Sections of the Scientific and Technical Council, Ministry of the Communications Equipment Industry, on problems confronting vacuum-tube designers with particular reference to efficient cathodes, variable- $\mu$  ~~with~~ tubes for af amplification, high- $\mu$  output tubes, etc. The Institute was reported to be active in magnetic recorder development in 1949.

F. Leningrad Electrical Engineering Institute of Railroad Signalling and Communications Engineers (LETIIS), Ministry of Transportation

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I. N. Kosolapov was chief of the LETIIS in 1949. Some 11 titles of papers published by personnel of the institute indicates that its work is what would be expected from the title. P. N. Ramlau, who wrote the book "Radio Engineering: Transport Communications" (FDD Report U-1420), is a member of this institute.

G. Leningrad Electrophysics Institute (Scientific-Research Institute No 9)  
 N. N. Andreyev, leading Soviet specialist on acoustics, was a member of this institute sometime after 1926. The institute was subsequently reorganized as Scientific-Research Institute No 9.

H. Scientific-Research Institute No 1 (NII-1), Ministry of the Aviation Industry

In Trudy NII-1 of about 1946, the following works were published: "A Selective Amplifier With Feedback" by R. I. Popov and "Voltage Regulator Using Incandescent Lamps" by E. D. Press and V. N. Mil'shteyn.

I. Scientific Research Institute of Communications Engineering, Ministry of the Navy [This title is questionable] (NIIST VMS)

A. A. L'vovich's dissertation (1947) on "The Sensitivity of Radio Telegraph Receivers" is filed at the institute's library. The abbreviation for this institute is correct, but the full title has never been discovered in periodical literature.

J. Scientific Research Institute of High Frequency Currents (NII TVCh), Ministry of the Automobile and Tractor Industry

L. I. Kontor was deputy director of this institute in 1949.

K. State Scientific Electro-Ceramic Institute (GIEKI), ~~Witi~~ Ulitsa Pravdy 3  
 (1/20/1948 Moscow Directory)

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I. Military (Red Banner) Academy of Communications imeni S. M. Budenny (VKBAS)

Up until January of 1947, this institute was called the Military Electrical Engineering Academy of Communications imeni S. M. Budenny. The volume of research published by this institute in the immediate post-war period indicates that it is one of the more active military communications institutes. K. Kh. Marav'yev, Lieutenant General of the Technical Services, was director of the Academy in 1946. Leading personnel of the Academy with their main field of interest (as indicated from their publications) are as follows: A. G. Arenberg (propagation of ultra-short waves, with particular attention to radar); G. A. Kisun'ko (wave guides); L. A. Meyerovich (pulse-forming networks); N. M. Izyumov (pulse techniques); B. V. Braude (antennas); A. A. Kolosov (receiving equipment); G. S. Ramm (antennas).

J. Naval Academy of Shipbuilding and Armaments imeni A. N. Krylov, Administration of Naval Educational Institutes, Ministry of the Navy USSR

The paper "High Vacuum and Gas Discharge Devices", authored by N. V. Vasil'yev and A. V. Kershakov of this academy, was published in November 1950.

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