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AMATEUR EXHIBITS IN THE INDUSTRIAL ELECTRONICS SECTION OF THE NINTH ALL-UNION RADIO EXHIBITION

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The number of exhibits in the industrial electronics [i.e., use of radio methods in the national economy] section of the Ninth All-Union Radio Exhibition was nearly double that of the previous exhibition. There was also an improvement in the quality of the exhibits in design, detail, assembly, and appearance.

The exhibitors showed many original devices for various branches of the Soviet economy, e.g., geology, weather forecasting, metal defectoscopy, diesel building, streetcar and bus transportation, medicine, remote control of electric power stations, the textile industry, wire communications, etc.

Recently, many industries have begun to use a method of painting metal parts in a high-voltage electrostatic field. This method is based on the well-known attraction of positive and negative electric charges. The practical use of this method is as follows: an atomizer gun is attached to one terminal of the installation and the part to be painted is attached to the other terminal. Under these conditions, the paint particles shot from the gun fly at high speeds to the part and stick fast to its surface. However, since the use of high-voltage (60-100 kv) electric equipment in production is dangerous, designers are working on devices which will automatically cut off the high voltage when a breakdown is threatened.

A fairly simple device of this type was exhibited by I. K. Sletov, Gor'kiy radio amateur. His automatic cutoff (Invention Certificate No 419917-Sh), called an electronic fuse for electric breakdown, uses an ingenious circuit consisting of three thyratrons, a low-voltage rectifier for supplying them, and several resistors and capacitors. The merit of this device is that it cuts off the high voltage just before breakdown occurs.

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This electronic fuse may find many uses -- for example, in X-ray machines, high-voltage precipitators for gas purification, etc. Sletov received first prize for this device.

G. I. Leskov, radio amateur from Bezhitsa, received a fourth prize for his original instrument, called a current and voltage integrator (ampere-hour meter), which permits one to calculate with an accuracy of 0.5% the energy consumed by electrical equipment in pulse operation (welding equipment, for example). The design of the ampere-hour meter is comparatively simple, its principal merit being high accuracy of measurements.

P. A. Otstavnov, a radio-amateur inventor from Penza, used a tuning indicator of the 6E5 type for dimensional control of various small parts made in plant machine shops. His electric contact measuring instrument (Certificate of Authorship No 84524) is supplied from the ac line. Its special features are simplicity of design and absence of a rectifier to supply the only tube (a 6E5) in the instrument.

One of the most interesting exhibits was the industrial interference locator designed by V. A. Bazikaylo of L'vov, which received second prize. It is the result of many years of work on storm phenomena and sources of industrial radio interference. The original circuits and design of this direction finder permit one to make a permanent record of radio interference, to determine with an accuracy of 8-10° the direction of the interference source, to distinguish local and remote interference sources, and to establish the type of interference.

V. I. Felonik (Sverdlovsk Palace of Pioneers), a young radio amateur, exhibited a blocking oscillator for automatically changing the slides of a projector. This device has only two tubes and automatically changes slides every 5 sec.

Some interesting instruments for various magnetic measurements were shown by V. V. Burtsev, from Stalinsk. The characteristic feature of these instruments, all employing unbalanced bridge circuits, is the original reference element used in them. This was a 6C5 or UB-107 tube, placed in the field of a permanent magnet or electromagnet. When the magnetic circuit of the latter is closed by the magnetic material to be tested, the number of magnetic lines of force crossing the tube decreases, and, as a result, the current through the tube and its plate resistance changes. Since the tube is connected as a load in one of the arms of the bridge, the nature of the magnetic material may be judged from the value of the internal resistance.

The instruments designed by Burtsev can be used to check the quality of ore on a conveyer belt, to follow the operation of magnetic separators, to measure the thickness of magnetic materials, etc. Burtsev was awarded a fourth prize for these instruments.

V. I. Parfenov, of Tbilisi, a prize winner at the Eighth All-Union Correspondence Radio Exhibition, was awarded third prize for a new model of a tensometer, which had many improvements over his previous model. For this new model, Parfenov built a special cathode-ray oscillograph, by means of which the deformation of an object can be observed visually.

Among the many tensometers exhibited were the comparatively simple tensometer designed by V.B.Skvarkovskiy, Rostov-on-Don, and the tensometer of Yu. I. Kuroyedov, Ivanovo. Kuroyedov's instrument was designed to measure the tension of threads on winding machines used in the textile industry.

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The description of a fault detector for underground cables in Radio No 8, 1949, inspired many amateurs to exhibit similar devices this year. Among those shown were an instrument for tracing underground power cables (A. S. Gorbovitskiy, Rostov-on-Don), a fault detector for underground cables (I. Boretz, Groznyy), an instrument for locating cables and defects in them by an inductive method (P. V. Bogoslovskiy and A. G. Matveyev, Ivanovo), and a detector of underground metal lines and water-pipe leaks (Ye. N. Kuznetsov, Ufa). Characteristically, all these detectors were designed with an eye toward extending their area of application.

Many instruments designed for use in medicine were shown at the exhibition. The following were of particular interest: instruments for electronarcosis, designed by V. P. Chizhmakov, Kiev; V. N. Gornin, Novosibirsk; and G. A. Palachev, Tashkent; instruments for studying the stimulation of nerves, by V. Ya. Eskin, Frunze; S. I. Mikhalev, Chelyabinsk; and V. L. Mal'tsev, Minsk; amplifiers for bioelectricity, instruments for measuring ozone in the blood stream, etc.

The most original instrument in the telemetering section was an electronic telewattmeter designed by R. I. Sabinin, Tashkent. Similar instruments exhibited by G. V. Vartan'yan, Yerevan, used bridge circuits and different types of reference elements to measure and control at a distance the flow velocity of water, soil moisture, and fluctuations of the water level in a reservoir.

Also shown at the exhibition were a number of ac bridge circuits used for measuring the conductivity of electrolytes, determining the content of salts in water used for steam boilers, checking the process when an acid solution is neutralized by adding an alkali to it, determining the transparency of liquids, measuring the pick-up time of electromagnetic relays, etc.

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