High measurement precision becomes particularly important in places where unique instruments and equipment are being produced and advanced technological processes developed, i.e., in the laboratories of scientific-research institutions, at experimental plants of special design offices, etc.

The Latvian SSR Academy of Sciences' stock of measuring instruments has now attained 35,000. The metrological servicing of such a large number of instruments is complicated by the fact that they are located at 30 different places in 150 laboratories of the Academy's institutes. It should also be borne in mind that not all the institutes have the required conditions for organizing their metrological services. Moreover, the stock of instruments is increasing constantly. The organizations, enterprises, and scientific-research institutions receive every year new measuring equipment to a value exceeding 300,000 rubles.

The establishment of a single metrological service for the Latvian Academy of Sciences started in 1971 according to the resolution of its Presidium. The service includes three basic measuring-equipment laboratories and the metrological services of ten institutes, two Special Design Offices (SKII), and five experimental enterprises.

Each of the basic measuring-equipment laboratories established at the institutes has a specific purpose of repairing and testing one type of instruments in the institutions assigned to it. Thus, a basic laboratory of the Institute of Physics specializes in dosimetric instruments, that of the Physical and Power Institute in electrical measuring instruments and that of the Institute of Electronics and Computers in radio-measuring instruments. However, in future it is intended to extend the measuring instruments' nomenclature at the Institute of Physics' basic laboratory in order to repair and test electrical measuring instruments of the institutes located at the Salaspils Academic City.

It is envisaged to provide the Academy's metrological service organization with another basic measuring-equipment laboratory for repairing and testing analytical and microanalytical balances.

The basic laboratories are financed from the Academy's budget appropriations. This eliminates the requirement for mutual settling of accounts among the allocated institutions. The measuring instruments are received and delivered after repairs and testing on the basis of agreed schedules without writing out warrants, making calculations, and presenting accounts. Owing to this simplification the overhead expenses are reduced to the minimum. It can be assumed that the results of the first year's operation of our basic laboratories will confirm the efficiency of the method we selected.

In establishing the basic laboratories the main attention was paid to staffing. Owing to a well organized system of training our experts at the All-Union Institute for Raising the Qualifications of the Leading Personnel, Engineers, and Technicians in the Field of Standardization, Production Quality, and Metrology (VISM), it became possible to provide all the required testers for the metrological service. However, a considerable impediment in their normal work consists of the lack of qualified repair experts. They are not being trained in our republic. Therefore, the personnel of radio-measuring instrument repairers must, unfortunately, be replenished at present with radio fans. It is very difficult to find experts for repairing and adjusting analytical balances. We think that in order to improve this condition it will be necessary to plan the training of control and measuring instrument repairers in the trade and technical educational system.
In view of the sharp rise in the number of precise measurements it has become pressing to provide all the Academy institutions with appropriate measuring equipment. However, it is not always advisable or economically advantageous to acquire a large number of the same type of instruments. This problem can be solved in two ways, namely, by organizing the hire of instruments, or establishing stationary locations for unique measuring equipment.

The hire service can raise considerably the measuring-equipment utilization factor only if it has in addition to a large stock of instruments also well-equipped stores with the required personnel, a large repair depot provided with trained experts, and specialized transport for effective servicing of customers. The Latvian Academy of Sciences does not possess such facilities at present and, therefore, the centralized hire service can be organized only when the new Academic City is established. Local hiring of measuring equipment is entrusted to the metrological services of various institutes.

The work of the Institute of Physics metrological service is well organized and its functions considerably extended to include the provision of all the Institute's laboratories with the required measuring equipment. For this purpose a given portion of the total budgetary allocations of the institutes is assigned to the metrological service for acquiring new measuring equipment. The order for them is approved on the basis of demand, with the availability of appropriate instruments taken into consideration. The new instruments after their testing and adjustment are delivered to the stores for hiring out to laboratories. This experience of the Institute of Physics is being applied to other Academy Institutes.

At present the Academy institutes are extending the seven locations where the unique measuring equipment is concentrated. They are provided with trained experts. Orders for determining the physical and chemical characteristics of materials and substances are accepted not only from other Academy institutes of the republic, but also from institutions in such cities of our country as Kiev, Tbilisi, Perm', L'vov, Kubyshev, Leningrad, and Irkutsk.

As a result of strengthening the Academy's metrological service, good economic indexes have already been obtained. Thus, adopting the measuring equipment's registration on the basis of institutes instead of laboratories, some of the institutes have discovered and obtained extra measuring equipment to the value of 70,000-100,000 rubles. These laboratories are permitted to order new instruments with the consent of the metrological services. These facts indicate the advantage of establishing a metrological service. However, there exists a certain psychological barrier for protecting the self-interest of certain laboratories. This is one of the reasons why not all the institutes have as yet adopted the above procedure.

Despite the fact that the ultimate aim of the Academy institutes' scientific-research work does not consist in creating new measuring equipment, certain of their investigations can be used as a basis for producing unique instruments and for developing new measuring methods.

Several instruments have been produced in the experimental workshops of the physical and power institute.

The VIIS-1P high-frequency inductive meter of semiconductor resistances is intended for measuring the resistivity and thickness of semiconductor plates. The instrument can also be used for checking the thickness of metal coatings on a metal backing. Its measurement range of semiconductor resistivity amounts to 0.01-5 $\Omega \cdot cm$, that of the semiconductor plate thickness to 50-2000 $\mu m$ of silver and copper coatings to 0.01-0.5 $\mu m$ and of zinc and nickel coatings to 0.1-5 $\mu m$.

The VTMS-2P instrument for measuring the thickness of a gold layer on a silicon plate serves to determine the above thickness on semiconductor plates in the range of 0-8 $\mu m$ under workshop and laboratory conditions.

Ultrahigh frequency instrument for analyzing the properties of semiconductor structures is used for analyzing the properties of laminated semiconductor structures by means of their electromagnetic impedance in the millimeter wavelength range.

The Institute of Electronics and Computers has developed and produced among others the following instruments. High-velocity pulse counter intended for counting arbitrary sequences of positive and negative pulse signals and of sinusoidal signals. Its counting resolution is not worse than $4 \cdot 10^{-9}$ sec.

The IPDM meter of microcircuit dynamic parameters is intended for digital measurements of switching delays and leading edge durations in integrated microcircuits with up to 14 outputs, and it can be used in production for acceptance testing integrated microcircuits.

The experience gained in the operation of the Latvian Academy of Sciences metrological service is taken as a basis for developing a plan of measures for a further improvement of the metrological servicing of scientific-