BRANCHES OF THE ACADEMY OF SCIENCES OF THE USSR. II

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SEVERAL institutes and branches of the Academy of Sciences widely avail themselves of the agricultural methods evolved by Academician Lysenko.

On the basis of Lysenko's methods, for instance, the collaborators of the Armenian Branch have attained a sharp increase in the crop of beets, a branch of agriculture practically new to Armenia. In 1938 the area of sugar-beet cultivation here was about 2,500 acres, whereas to-day it has been doubled. The experiments conducted by Manaseryan, a collaborator of the Armenian Branch, have shown the full feasibility of planting beets in the lowland areas after the harvesting of the cereal crop. This method of post-harvest planting of beets has been introduced in a number of districts, and some of the collective farms reap a crop of up to 24 tons per acre.

Another worker of this Branch—Ter Saakyan, has obtained a second crop of potatoes (after summer planting), the yield reaching as high as 11.2 tons per acre.

In addition to this the Armenian Branch has accomplished valuable research on topping cotton plants, on raising high-crop yield rust-immune wheat and also drought-resistant fodder cultures.

Interesting work conducted by collaborators of this branch include that establishing the beneficial influence wielded by intra-sort crossing of winter wheat in regard to its frost-resistance, the formation of ears, the absolute weight of grains and other commercial features. By decision of government organs of the Armenian Republic, the collective farms, under supervision of the Biological Institute of the Armenian Branch, are working on intra-sort crossing of winter wheat and on multiplying the resultant seeds with the aim of universally introducing sowing with such intra-sort cross seeds within the next few years.

One of the collaborators of the Armenian Branch has raised a new sort of winter wheat yielding a maintained harvest and resistant to yellow- and stalk-rust.

Based on these same methods worked out by Lysenko, the collaborators of the Kazakh Branch have bred an interesting hybrid sheep, yielding a fine-fleece wool.

As is common knowledge, not a single breed of fine-fleece sheep is adapted for existence at high altitudes above sea level. As a result of crossing merino sheep with the wild Arkhar Mountain ram, 600 head of second, third and fourth generation offspring have already been obtained. This new breed of sheep has a considerably better wool yield than the local breed, the average shearing yield per two-year hybrid sheep equaling 3 kilograms and from the hybrid ram 4½ kg. as compared with 1–2 kg obtained from the local breed.

Under the charge of Academician Pavlovsky, the Tajik Branch has done interesting work on the prophylaxis of recurrent typhus caused by ticks. The tasks set by Pavlovsky—to ascertain the distribution of the tick vector of recurrent typhus, to study the ecology of the carrier of this disease and to work out a system of prophylactic measures suited to the conditions of Tajikistan—have been successfully accomplished. Research investigations (Khorezm and West Pamir) found that the causal agent of this disease—the spirochaeta—is carried by ticks, from which it is transmitted to humans. The department of parasitology of the Tajik Branch has worked out methods for prophylactical measures against recurrent typhus, which, in 1940, were tested in practice, with positive results.

Botanical gardens, experimental plots, natural preserves and research stations of the Academy of Sciences branches are to be found in the sub-tropical regions, in the area beyond the Arctic Circle, in the Far East, etc. Intensive work on remaking nature is proceeding in all latitudes.

Vast and thick growths of wild fruit trees and shrubs are to be found on the territory of the Tajik Republic, and the scientists resolved to transform these dense jungle growths into cultivated orchards. Sweet almond, peach and plum were grafted to the wild, bitter almond. By similar means, a local variety of medlar, yielding no fruits, was made to serve as a parent stock for raising quince and pear fruit.

The first crop of peaches raised on the site of former wild growths was obtained last year on the experimental plots of the Tajik Branch.

The Pamir Biological Station of the Tajik Branch of the academy—the only station of its sort in the world—conducts very interesting work. This station has proved that barley can be cultivated at an altitude of 11,500–12,500 feet above sea level. In 1940 this crop yielded from 10.4 to 19.2 cwts per acre here and up to 2–6 tons of straw per acre, the latter, thanks to its high sugar content and soft fibers, forming a particularly good fodder.

Truly bumper crops of radish—8 to 10 tons per acre—are obtained in East Pamir, as well as fine turnip crops of 16 tons per acre.

The problem of introducing the cultivation of potatoes and vegetables in West Pamir, at altitudes ranging from 6,500 to 10,000 feet, has now been solved. Agriculture existed here formerly too, but on a very small scale. Some of the potato growers here have obtained a harvest reaching 40 tons of centifolia potatoes per acre.

The academy branches play an important role in mustering and linking up scientific forces on the spot.

Nearly all the branches and bases convene scientific conferences, sessions and gatherings. The Urals Branch, for instance, convened a special session which met at the Chelyabinsk Tractor Works. Jointly with the workers of this engineering plant, the session outlined interesting problems in the sphere of heat treatment of metal and methods of mechanical casting.

In Tbilisi the Georgian Branch held a conference on mathematics, dealing with the theory of elasticity. The Kola Peninsula Base convened five conferences—in Kirov, Moscow and Monchegorsk—dealing with several important problems of this region.

The Georgian Branch likewise conducts work in the sphere of astronomy. The first mountain astrophysical observatory in the USSR is now under the auspices of the Georgian Academy of Sciences. This observatory, situated not far from the Abastumani health resort, stands on a mountain 5,500 feet above sea level, where the atmosphere is particularly clear. This observatory, which nestles amid greenery, is equipped with a 16-inch refractor and camera for observing and photographing the stars and minor planets, a spectrohelioscope for studying the solar surface, an aberration telescope for observing remote nebulae, etc.

Last year the scientific workers of the Abastumani observatory discovered three new minor planets.

Information concerning the results of Abastumani astronomical observations are published in the USSR and abroad. This observatory also publishes a special bulletin of its transactions.

The republican branches and bases of the Academy of Sciences of the USSR also conduct considerable research in the history of culture, lettering and arts of the peoples of the Soviet Union.

The academy branches have amassed interesting data on material culture. Excavations conducted under the supervision of the late Academician I. Djavakhishvili unearthed at Mtseti-Santavro (Georgia) 400 burials of various types, relating from the twelfth century before our era to the sixth century of the present era. A necropolis of high dignitaries and Iberian kings, relating to the second and third centuries of the present era, has been unearthed in Armavir. Exceedingly valuable historical material has been collected—decorations of gold, silver and precious stones, domestic objects, weapons and articles of cult.

I. Khoshtaria, a scientific collaborator, has unearthed and investigated a Neolithic dwelling in the village of Urta, where polished and hewn implements were found, as well as the most ancient pottery known so far in Georgia.

Equally deserving of mention are the archeological investigations on the site of the ancient city of Ganja, where considerable numbers of artefacts have been unearthed, relating to the pre-feudal and feudal life of ancient Azerbaijan.

Excavations at the ancient Armenian town of Dvina have furnished archeologists with interesting objects referring to the culture and production of Armenia in ancient times. During the centuries-long existence of the Armenian nation a vast amount of material has been amassed characterizing the development of science and the production in various periods of time. This collection, in particular, numbers about 23,000 documents. The collaborators of the Armenian Branch have commenced the systematization and publication of this priceless cultural heritage of the talented Armenian nation.

Under the direction of Professor Ter-Avetisyan, one of the collaborators of this branch, Kafedaryan, is conducting excavations in the ancient state of Urartu. Palaces, granaries, capital walls, shields, arrows, seals, utensils and other valuable objects have been so far unearthed, all this substantially extending our knowledge of the Urartu kingdom and its times.

The Armenian Branch recently convened a special session dedicated to the millennial of the great folk epic "David of Sasun."

In connection with the preparations being made to celebrate the eight hundredth anniversary of the birth of Nizami Ganjawi, the Azerbaijan Branch is putting out a number of interesting publications of works and essays about Nizami and his days.

Another important sphere of work conducted by the academy branches is that relating to language and literature. Corresponding member of the Academy of Sciences of the USSR Shanidze—a collaborator in the Georgian Academy of Sciences—has prepared for publication "An Okshuk Ms. of 978" and a "Papyrus-Parchment Mineus of the Ninth Century," both of which represent ancient monuments of the Georgian language.

Several collaborators have compiled a dictionary of the Georgian language, embracing about 14,000 words.

This branch has accomplished a major undertaking in drawing up a new alphabet. A group of philolo-

gists of the Azerbaijan Branch has completed the compilation of the new Azerbaijan alphabet, based on the Russian lettering, and has reworked the orthographical dictionary.

Besides this the workers in this branch have compiled an Azerbaijano-Russian and Russo-Azerbaijan dictionary, more than 120 printer's signatures in size.

Major work is likewise being done on preparing a catalogue of ancient Armenian MSS—a rare collection of literary monuments of Armenia and neighboring countries.

Considerable work has also been accomplished in putting out text-books in the languages of different nationalities—university and secondary-school textbooks having been published on the history of the peoples of Georgia, Azerbaijan and Armenia.

A five-volume "History of the Armenian People" is at present being prepared under the supervision of Academician A. Manandyan.

The importance of the work accomplished by the branches and bases of the Academy of Sciences of the USSR in 1940 was highly appreciated by the governments of the USSR and of the Union republics, 38 scientific workers of the academy branches having been awarded orders and medals and the title of Merited Scientist being conferred upon some of them, while others were awarded certificates of honor.

The growth and progress of national cadres in the scientific research institutions of the academy branches speaks of the flourishing of science in the national republics of the Soviet Union and of the rapid development of the productive forces in these former backward regions.

OBITUARY

KARL LANDSTEINER

DR. KARL LANDSTEINER, member of the Rockefeller Institute for Medical Research, died on June 26, 1943, after a very brief illness which came upon him in his laboratory at the height of his activity, depriving the world of a great immunologist and, in the broader sense, of a truly great scientist.

Born in Vienna in 1868, Landsteiner grew up in the period of rapid development of the biological sciences. A doctor of medicine at 23, he sensed the importance of organic chemistry and studied with Emil Fischer before turning to research in bacteriology and pathology. Just at this time these fields of investigation were seething with excitement over the successes of antitoxins, the applications of bacterial agglutination and the complexities of hemolysis.

Within ten years, Landsteiner had announced the subtle but incalculably important differences in human bloods, the knowledge of which has saved countless lives, and for which he received the Nobel Prize in Medicine in 1930. He was also the first to transmit poliomyelitis to monkeys, a procedure which made experimental study of the disease possible. Early investigations with Donath on cold agglutinins resulted in the development of a most valuable and frequently used diagnostic test. Still studying blood relationships in 1940, Landsteiner, with Wiener, discovered the so-called *rhesus* factor in blood cells, the great practical importance of which is rapidly becoming evident largely from the work of Levine.

During all Landsteiner's activity in Europe and in the United States he kept pace not only with medicine and the biological sciences, but with the intricacies of rapidly expanding chemical and physical thought as well. Shortly after coming to this country in 1922 he proposed a study of the solubility of pure crystalline oxyhemoglobin of one species in a saturated solution of that of another species as a means of establishing the identity or chemical difference of the two proteins. The idea and its successful execution were the natural outgrowth of his comprehension of a section of Planck's treatise on the "Quantum Theory," which he was reading at that time. This method of studying protein solubilities was later modified and developed by Northrop and his school into one of the most rigid criteria of the purity of proteins.

Landsteiner early in his career realized, as had Ehrlich, the essentially chemical basis of immunity and the chemical nature of the serological reactions by which immune processes are made evident. Years ahead of his time, before the advent of micro-methods and micro-balances, he weighed specific precipitates in the presence and absence of complement, but the equipment available was not sensitive enough to show the significant differences that actually occur.

Aware of the complex structure of the natural protein antigens and the difficulty of tracing the chemical groupings responsible for the serological reactivity and specificity of these substances, although he had made contributions in this direction as well, Landsteiner turned to the effect on specificity of the introduction of known chemical elements and organic groupings, building upon an earlier study by Obermayer and Pick. Using principally the diazo reaction for coupling aromatic amines with proteins to form azo compounds, Landsteiner and his collaborators demonstrated the creation of a new specificity characteristic of the entering group, or hapten, showed the importance of position-isomerism in the entering aromatic groups, and charted the interrelationships of