DEVELOPMENT OF EXACT SCIENCES IN UZBEKISTAN DURING THE SECOND WORLD WAR

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The Second World War created many difficulties in the Uzbek SSR as well as in the entire USSR. First of all, it should be emphasized that the country's economy and science are under great pressure. The transfer of enterprises, factories and research institutions from the western and central regions, where the risk of war is high, to the eastern and southern regions, which are considered relatively safe, helped to save the life of the above-mentioned industries.

As in all areas, representatives of the scientific sphere were given the task of dealing with the topics and research work necessary for the front. Many achievements in the field of Exact Sciences during the war years made it possible to create the necessary techniques and technologies for the local economy and industry, the country's armed forces and the defense industry, while providing the weapons industry and the Red Army with weapons of combat and high accuracy made it possible to conquer high heights in hitting probable targets with high accuracy. Before scientists, the study of pressing problems for the front and finding solutions to them was defined as a primary task.

The Department of Physical and Mathematical Sciences of the Uzbek branch of the Academy of Sciences of the USSR has done great work in the field of mathematics, physics and geophysics: a number of topical issues of probability theory, mathematical statistics and the theory of differential and integral equations have been developed. The results of these scientific researches are of great scientific importance and have made a great contribution to the treasury of world science. Thus, inductive conclusions in statistics play the main role, as in other sciences dealing with real phenomena, because they are based on the establishment of laws that allow to regulate relations with the environment and predict events arising from specified conditions. The famous mathematician V.I., the founder of the Tashkent School of Mathematics. Romanovsky and his talented students - T.A. Sarimsakov,

M. Kamolov, N.N. Nazarov and others continued the earlier research in the field of probability theory and mathematical statistics and achieved great success.[1]

The work related to increasing the accuracy of artillery firing and bombing, increasing the carrying capacity of combat aircraft was of great practical importance. Uzbek branch of the Academy of Sciences of the USSR physical and technical laboratory (S.V. Starodubsev, G.N. Shuppe, U.A. Arifov) founded research in the field of electronics. It included experts from Moscow. Physicists working to improve materials handling techniques have achieved a number of interesting results: they have performed spectral analysis of ores, minerals and alloys.[2]

Doctor of Physics and Mathematics T.N. Qori-Niyazov made a great contribution to physics and mathematics in Uzbekistan, he studied the scientific activities of the Mirzo Ulugbek School of Astronomy and Mathematics, established in Samarkand in the 15th century, for many years. In this field, important results were achieved based on the deep study of medieval mathematical treatises, Mirzo Ulugbek's famous astronomical tables, and the results of intensive archaeological excavations at the Samarkand observatory. During the war, more than half of the country's astronomical observatories were out of order. As a result of the war, the main Pulkovo astronomical observatory of the USSR Academy of Sciences was completely destroyed with its unique devices and instruments. Its employees were evacuated to Tashkent. In this regard, the importance of the Tashkent Astronomical Observatory has increased immeasurably. Together with the Uzbek astronomers, V.A., one of the astronomers transferred from Leningrad and Moscow, is here. Krath, A.A. Mikhailov, A. Vasiliyev, A. Deych and other famous scientists conducted research.[3]

The Tashkent astronomical observatory, which has existed in Uzbek branch of the Academy of Sciences of the USSR since 1874, has become a world-class well-equipped scientific research institution. He continued his work on climate mapping and research, conducted expeditions to determine astronomical points and meteorological observations. The activation of scientific research works of the observatory dates back to the 20s of the 20th century, when two general directions of activity - Solar service and Time service - appeared. The creation of a technically well-equipped time laboratory and the astronomer V.P. The skillful organization of

[1] Наука в Узбекистане. Естественные науки. Ташкент: Фан, 1974. Т. 1. С. 28
[2] Узбекская ССР в годы Великой Отечественной войны (1941–1945 гг.). Коренной перелом (ноябрь 1942–1943 гг.). Ташкент: Фан, 1983. Т. II. С. 153
[3] Алимова Д.А., Абдурасулов У.А. Академия наук в интеллектуальной истории Узбекистана. Монография. –Ташкент., 2012 г. Ст. 68.

the Time Service headed by Shcheglov deserves special attention. The study of events occurring in the sun and their impact on the Earth was of great scientific and practical importance. A number of meteorological phenomena depend to a certain extent on certain events that occur in the Sun. That is why the Solar Service (headed by Y.M. Slonim), founded in those years, is still of great importance today.

Existing time service observatories in the USSR were located in the western regions. As a result of the war, they were in danger of being destroyed, so the whole country could be left without accurate time indicators. Therefore, these observatories were immediately evacuated to the interior of the country. As a result of the studies, the Tashkent astronomical observatory was chosen, and the observatories of the time service were immediately evacuated to Tashkent. Accurate time signals were broadcast 7 times a day using the radio station installed in the territory of the observatory. Considering that such practice is usually carried out by 3 or 4 observatories, it can be seen that the Tashkent observatory has done a great job.[4]

The main work of the Kitab latitude station named after Mirzo Ulugbek was related to the study of planets and their observation. It served on an international scale: it carried out regular work on determining the variability of latitudes, in full communication with other similar stations. The station has published a number of works of great scientific importance.

The science of economics developed rapidly after the establishment of the Institute of Economics (1943) within the Academy of Sciences of Uzbekistan. The scientists of the institute, together with their colleagues from other scientific institutions, scientifically and theoretically substantiated the prospects for the development of the national economy of Uzbekistan; based on the natural, historical and economic characteristics of the republic, they developed ways of modern specialization; they studied the state of labor resources, the principles of their deployment and the most rational use possibilities. [5]

At the Tashkent State Institute of Pedagogy and Teachers, the Department of Algebra and Geometry has done a lot of work for the development of exact sciences. Young professors and teachers working in the department were engaged in scientific and research work as well as conducting training sessions.[6] Naturally, enough

[4] Saidolimov S., Rahimov M., Sagdullayev K., Nazarov R., Babadjanov X. O'zbek xalqining fashizm ustidan qozonilgan g'alabaga qo'shgan hissasi, kitob-albom, Toshkent, "O'zbekiston", 2020. 194-bet.
[5] Алимова Д.А., Абдурасулов У.А. Академия наук в интеллектуальной истории Узбекистана. Монография. –Ташкент., 2012 г. С. 76
[6] Salomov I. O'zbekistonda Ikkinchi jahon urushi davrida ta'lim va fan (1941-1945). Tarix fan. bo'yicha falsafa dok. Diss. Q., 2024. -B. 106.

progress has been made in this area. In particular, the senior teacher of the department F.A. Bolbert carried out scientific research on his dissertation on the topic "Tensor method for solving problems of analytical geometry". It was noted that the dissertation is delayed due to the large workload and lack of teachers. Senior teacher Niyazov does not have a dissertation topic, but he notes that he is studying the textbooks and books of Shapiro, Okuneva and Sushkevich on higher algebra.

Associate professor, candidate of science Maqsudov was engaged in scientific work on the subject of "Integral equations". Among the professors, Romanovsky or Nazarov supervised him. Associate professor Slivinsky defended the scientific work on the topic "Theory of differential equations and calculus of variations".

Domoryad, associate professor, candidate of science, completed the review of the literature on the system of "Linear equations" and found a successful way to solve them. In December 1941, Associate Professor Pereldik successfully defended his scientific work on the topic "Contradictions in the theory of sets".

Activities of the Department of Physics:

Associate professor, candidate of science Abdurashitov is working on the topic "Indicator of light diffusion depending on the height of the sun". All experimental parts of the scientific work have been completed.

Senior teacher Kovalsky Nikolay Iosifovich worked on the topic "Anti-fading antenna for regional broadcasting with a power of about 10-20 volts". Defense was carried out in 1942. Worked together with Scientific Advisor Pistolkovsky (Moscow).

Associate professor, candidate of science, Mullakandov conducted scientific research on the topic "Hydraulic resistance of a layer of spherical parts under isothermal and non-isothermal flow". Senior teacher Mirolyubov carried out a scientific work on the topic "Experimental method of physics and its role in the teaching method of physics".

Senior teachers Kerzhensev and Mostepanenko were forced to stop their scientific work due to the war situation in Moscow and Leningrad.

Department of Mathematical Analysis:

Associate professor, doctor of science, head of the department Loginov Pavel Petrovich prepared a training manual on the topic "Development of the method for the course of the theory of functions of the applied variable" (for pedagogical universities).

Yuabov Mikhail Rubinovich is preparing his candidate's thesis on "Triangular affine transformation of linear problems". Defense was carried out in September 1941.[7]

The physics-mathematics department of the Academy of Sciences of Uzbekistan played a major role in the development of exact sciences in the country. During the war, the Institutes of Economics, Oriental Manuscripts, Mathematics and Mechanics, Soil Science and others were created. 843 people, including 338 scientific workers, worked in the institutes of the Academy of Sciences of Uzbekistan (when the Academy was founded, there were 210 scientific workers on its staff).[8] At that time, the effective cooperation of Uzbek scientists with their evacuated colleagues continued to develop even in the last stage of the war, although many scientific institutions and universities were reorganized. In 1945, the Technical Department was established under the Academy of Sciences of Uzbekistan, which separated from the Department of Natural and Mathematical Sciences, including the Institutes of Chemistry, Geology, Energy, Physics and Technology.[9] In 1945, the Academy of Sciences of Uzbekistan had 23 scientific institutions, including 20 research institutes, 2 laboratories and experimental stations.[10]

As can be seen from the above information, despite the difficulties during the Second World War, the field of exact sciences has developed significantly in Uzbekistan. The work related to increasing the accuracy of artillery firing and bombing, increasing the carrying capacity of combat aircraft has become of great practical importance. The work carried out by the Department of Physical and Mathematical Sciences of the Academy of Sciences of Uzbekistan made a great contribution to the development of the field of exact sciences in the republic. The scientific research of mathematicians, physicists and astronomers made a great contribution to solving a number of important scientific problems related to the improvement of the quality of ammunition, military equipment and the development of Soviet aviation.

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[7] Национальный Архив Узбекистана. Фонд-Р-94, опись-5. Ед. хр. 4101. Ст-7
[8] ААП РУз, ф. 58, оп. 21, д. 209, л. 60
[9] НАУз, ф. 1, оп. 1, д. 19, л. 133
[10] Saidolimov S., Rahimov M., Sagdullayev K., Nazarov R., Babadjanov X. O’zbek xalqining fashizm ustidan qozonilgan g’alabaga qo’shgan hissasi, kitob-albom, Toshkent, “O’zbekiston”, 2020. 188-bet

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