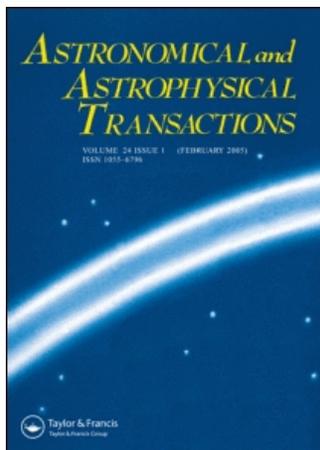


This article was downloaded by:[Bochkarev, N.]  
On: 7 December 2007  
Access Details: [subscription number 746126554]  
Publisher: Taylor & Francis  
Informa Ltd Registered in England and Wales Registered Number: 1072954  
Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Astronomical & Astrophysical Transactions

### The Journal of the Eurasian Astronomical Society

Publication details, including instructions for authors and subscription information:  
<http://www.informaworld.com/smpp/title~content=t713453505>

#### Life and activities of academician V.G. Fesenkov

A. V. Kharitonov<sup>a</sup>; E. Y. Vilkoviskij<sup>a</sup>

<sup>a</sup> Fesenkov Astrophysical Institute, Almaty, Kazakhstan

Online Publication Date: 01 August 2005

To cite this Article: Kharitonov, A. V. and Vilkoviskij, E. Y. (2005) 'Life and activities of academician V.G. Fesenkov', *Astronomical & Astrophysical Transactions*, 24:4, 261 - 264

To link to this article: DOI: 10.1080/10556790500483063

URL: <http://dx.doi.org/10.1080/10556790500483063>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article maybe used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

## Life and activities of academician V.G. Fesenkov

A. V. KHARITONOV\* and E. Y. VILKOVISKIJ

Fesenkov Astrophysical Institute, 050020 Almaty, Kazakhstan

(Received 31 October 2005)

The life and scientific activities of academician V.G. Fesenkov, the founder of the Fesenkov Astrophysical Institute, are briefly described.

*Keywords:* Scientific activities; Personality; V.G. Fesenkov

Academician Vasilij Grigoryevich Fesenkov was a scientist of world renown. He wrote more than 800 scientific papers and books, the themes of which are extraordinarily various and cover almost all topics of the astronomy of his epoch: sky mechanics, stellar physics, the physics of nebulae and planets, the Zodiac light and interplanetary medium, cosmogony and some fields of geophysics, *i.e.* atmospheric optics and the physics of the Earth's atmosphere. The name 'Fesenkov' has been given to craters on the Moon and Mars.

V.G. Fesenkov was an outstanding organizer of science. He founded and headed several scientific institutes for many years, and he organized many scientific expeditions with various scientific purposes, sometimes into almost inaccessible regions of the Soviet Union and abroad. Finally, he was not only a great scientist but also an outstanding teacher. Among his pupils there are eminent scientific workers, doctors, professors, and correspondent members and members of the Academy of Science.

Vasilij Fesenkov was born on 14 November 1889 in the town of Novocherkassk. His father, Grigoriy Akimovich Fesenkov, had had a higher education and worked as a teacher of physics and chemistry. His mother, Olga Vasil'evna, borned Andropova, was the granddaughter of the Swiss architect Carl Ashlimann. There were nine children in the family, and an atmosphere of mutual respect and a love of work predominated in the home. The grandfather of Vasilij, Ioakim Grigoryevich, was a very interesting personality. He was a priest, but very highly educated; he graduated from the Spiritual Academy and wrote a dissertation for a Master of Theology degree. He had taken part in the Crimean war and, in a photograph of him, one can see both the church awards and the fighting awards and medals. Vasilij Fesenkov had begun to be interested in astronomy as a nine year old, when he studied at the Novocherkassk Real school. He graduated from the Real school in 1907 and entered Kharkov

---

\*Corresponding author. Email: khar@laphi.kz

University in the Astronomical Division of the Physical–Mathematical Faculty. He graduated from the University in 1911 and stayed on for a while in order to work towards the job of Professor.

In 1912, he made a long-term visit to Paris. He entered the Sorbonne, worked as a stager in several French observatories and wrote a dissertation for a Doctor of Science degree. At the end of his long time away, in 1914, he visited England and became acquainted with the British observatories at Greenwich, Oxford and Cambridge. In the same year of 1914 he returned to Russia, where his many years of fruitful scientific, organizational and pedagogical work had started. He worked in Kharkov from 1914 to 1920, and then in Novocherkassk to 1922, when he was invited to Moscow.

In 1923, V.G. Fesenkov founded the Russian Astrophysical Institute and simultaneously founded and organized the *Astronomicheskij Zhurnal (Soviet Astronomy)*, which was the main journal for astronomical publications in the USSR and remains as such in Russia. He was the Editor in Chief of this journal for 41 years. At different times, he was the director of the Russian Astrophysical Institute (1923–1930) and the director of the Sternberg State Astronomical Institute (1936–1939); he founded the Kuchino Observatory near Moscow, the Institute of Astronomy and Physics (Alma-Ata, 1941) and the Astrophysical Institute (Alma-Ata, 1950). He organized and headed many astronomical expeditions to Caucasus, to Tien-Shan, to East Siberia (Sikhote-Alin), to Egypt and to many other places. His intensive and fruitful scientific and organization activities were marked by his election as a correspondent member (1927) and then a full member (1935) of the USSR Academy of Science.

It is difficult to characterize the scientific work of V.G. Fesenkov in a short paper; so we shall try to show some general methodical features of his scientific creative work, which are not specific to the themes of his separate investigations. First of all, the wide and complex approach to the investigated problems is very typical of his working style. He was involved in discussions in many different divisions of science, not only those closely related to the investigated problem, but also those which seem to be remote at first glance. One typical example is his approach to the Zodiac light problem, which V.G. Fesenkov was interested in for all his life. The apparent brightness of the Zodiac light is distorted by overlapping of the radiation of the night sky (the higher atmospheric layers), by the light of the Milky Way and by contra-radiance and, what is more, all these components are distorted by the atmospheric extinction in different ways. So, V.G. Fesenkov, in order to obtain a detailed picture, considered all these phenomena together, and he provided a contribution to each of them. Moreover, at the end of the 1950s, after the expedition to Egypt, he showed that the apparent brightness of the Zodiac light is distorted by the tropospheric scattering of the brightest part, which is hidden under the horizon. However, his most important achievement in this problem was the proof of the fact that the Zodiac light is the result of scattering of the solar radiation by interplanetary dust grains. He estimated the concentration, distribution and properties of the dust and showed that its main source is the disintegration of comets and, partly, of asteroids.

The cosmogony of the Solar System was of great interest to V.G. Fesenkov for all his life and, as a real classical scholar, he considered in this context the problems of stellar, nebular and galactic evolution as well, and even his fundamental investigations in the atmospheric optics were stimulated by his observations of the faint nebulae and the Zodiac light.

V.G. Fesenkov was able to formulate scientific problems which were very interesting and real, and at the same time he suggested solutions to the problems without using very large and expensive telescopes; this approach provided many successes in those difficult times. For example, we can mention the photographic photometry of the Milky Way using a small objective with a 50 mm focal distance, the determination of the albedo of the Earth as a planet, and the determination of the magnitude of the Sun as a star.

On the other hand, V.G. Fesenkov was very receptive to new ideas and new techniques. When the opportunity appeared, he ordered and obtained for the Astrophysical Institute in Alma-Ata a very good (and large enough at that time (1949)) meniscus telescope, designed by Maksutov. With this instrument he and his pupils performed a series of investigations of the fine-structured nebulae and the stellar rings. He made many efforts to develop photoelectrical investigations with image tubes. V.G. Fesenkov was an expert in both the observational and the theoretical methods of investigations, and he demonstrated great creative ability in the development of new methods. A good example is the problem of the albedo (the reflection ability) of the Earth as a planet. Now this value is measured using artificial satellites, but what was possible in his time, *i.e.* before 4 October 1957? V.G. Fesenkov devised a clever method. He observed the so-called ash light of the Moon (*i.e.* the light from the dark side of the Moon), which depends on the solar light scattered by the Earth. Comparing this very faint light with the light from the bright part of the Moon, and taking into account some geometrical factors, he obtained the albedo of the Earth.

Fesenkov invented many instruments and devices and, in particular, the thermointegrator for observations of the sunspots and the 'aureole photometer' for control of the atmospheric stability.

Here we would like to emphasize that V.G. Fesenkov was the founder of astronomical and astrophysical sciences in Kazakhstan, and the founder and first director of the Astrophysical Institute in Alma-Ata (now the Fesenkov Astrophysical Institute in Alma-Ata, Kazakhstan).

The organization of the institute was connected with two events: the solar eclipses and the Great Patriotic War. The total solar eclipses took place on 21 September 1941, and its band crossed the city of Alma-Ata, the capital of the Kazakh SSR at that time. Also, 3 years before this, Fesenkov had been chosen by the Presidium of the Academy of Science of the USSR as the chairperson of the commission for organization of observations of the event. The commission worked out very extensive plans to produce special equipment for observations and to organize more than 20 expeditions to different places. It should be noted that, 5 years before this, V.G. Fesenkov took part in the organization of observations of the solar eclipse of 1936, and the observations were very successful. In the newspaper *Izvestiya* the article by V.G. Fesenkov about the forthcoming eclipse of 1941 was published in the middle of June—just 1 week before the Germans attacked the Soviet Union. That terrible war had begun, but nevertheless some expeditions, although very diminished, left to travel to the eclipse band from Moscow and Leningrad to Alma-Ata. On the day of the solar eclipse the weather was excellent, and the observations were quite successful. However, what could these astronomers do next? They could not return back home, because Leningrad was encircled on 8 September 1941; there was a battle for Moscow, and Kiev was occupied by the Germans.

The astronomers participating in the observation were left in hospitable Kazakhstan and, after several days, Fesenkov wrote a detailed letter (six pages) to the Government of Kazakhstan (the Sovnarkom of Kazakh SSR). Firstly, in the letter he explained the necessity and expediency of the organization of an institute for astronomy, physics and geophysics in Alma-Ata. He stressed that there had been no institutes for these subjects in Kazakhstan before, and that an institute of this type would provide the basis for investigations into the natural resources of the country and its further cultural development. Secondly, he pointed out that the geographical position and climate in Alma-Ata and the nearby mountains are extremely favourable for the organization of a large astronomical centre, which would have all-union significance. Thirdly, he stressed that many highly qualified specialists and much special scientific equipment were concentrated in Alma-Ata owing to the solar eclipse observations. He proposed a preliminary plan for scientific work in a future institute and stressed that the institute would be able to begin some investigations of a defence-significant nature. This memorandum

was sent to the Sovnarkom of Kazakh SSR at the end of September, and on 10 October 1941 the decision of the Sovnarkom was obtained, which prescribed the following:

- (i) the organization of the Institute of Astronomy and Physics attached to the Kazakhstan branch of the Academy of Science of the USSR;
- (ii) the nomination of academician V.G. Fesenkov as the director of the Institute of Astronomy and Physics.

This decision was approved by the Academy of Science of the USSR on 16 October 1941. Now it sounds an amazing coincidence, but that was the day of the most dramatic events of the battle for Moscow!

The new institute obtained a small place and began its work. The first studies of the Institute of Astronomy and Physics were connected with processing the observed materials and directed towards solar physics investigations, atmospheric optics and stellar astronomy. The defence work included investigations of the observations obtained and working out possible ways to carry out observations in conditions of limited visibility (fog and darkness), secret signalling using polarized light and so on.

Although the war continued, V.G. Fesenkov started plans to build a future large observatory, investigating appropriate places in the vicinity of Alma-Ata, allocating various sites for this and so on. The preliminary architectural project for the new observatory was ready in 1945, and it was discussed and approved at the Presidium of the Kazakhstan branch of the Academy of Science of the USSR on 18 October 1945. In March 1946, the decision of the Soviet Government was adopted about the building of the observatory and allocating the site. The building itself was started in 1947.

In the creation and development of the Astrophysical Institute, V.G. Fesenkov was supported by Kanysh Imantaevich Satpaev, the chair of the Presidium of the Kazakhstan branch of the Academy of Science of the USSR, and later the President of the Academy of Science of Kazakh SSR. V.G. Fesenkov took part in the organization of the Kazakh Academy of Science as well.

In 1950, the Institute of Astronomy and Physics was divided into the Astrophysical Institute and the Physical–Technical Institute, thus beginning the development of physical–mathematical science in Kazakhstan. Fesenkov was the founder and the head of the Institute of Astronomy and Physics and later the director of the Astrophysical Institute for 23 years, from 1941 to 1964. Then, at the age of 75 years, he left to go to Moscow, where he worked as a chairman of the Meteorite Committee of the Academy of Science of the USSR. V.G. Fesenkov died in 1972. In 1989, on the centenary of V.G. Fesenkov’s birth, the Astrophysical Institute obtained a new name, the V.G. Fesenkov Astrophysical Institute, in honour of its creator.

In May 2005 a scientific conference, *Modern Astrophysics: Traditions and Perspectives*, took place at the Fesenkov Astrophysical Institute. The conference was called ‘The first Fesenkov lectures’. Below we present papers which were given at the conference by collaborators of the Fesenkov Astrophysical Institute. We intend to continue the Fesenkov lectures at periodically repeated conferences.