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Isabella Grigoryevna Bashmakova on the 70th Anniversary of Her Birth*

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On January 3, 1991, Isabella Grigoryevna Bashmakova, one of the most prominent historians of mathematics in the Soviet Union today, celebrated her 70th birthday.

Bashmakova was born into an Armenian family in Rostov-on-Don. Her father, Grigory Georgiyevich Bashmakov, a highly cultured and educated person, was a lawyer well known for his oratory. In 1932 the Bashmakovs moved to Moscow where Isabella finished secondary school and enrolled in the Mathematics Department of Moscow University. During World War II she was evacuated along with personnel from the University, and worked as a nurse in Samarkand. All her subsequent life has been connected with the Faculty of Mathematics and Mechanics of Moscow University. In 1944 she became an Assistant Professor, in 1949 an Associate Professor, and in 1968 was elevated to Full Professor.

She became interested in history of mathematics already in her student days under the influence of Professor S. A. Yanovskaya. Under Yanovskaya's supervision, I. G. Bashmakova took her first steps in science. In 1948 she defended her Candidate's Thesis on the history of the theory of divisibility, and in 1961, her Doctor's Thesis on the history of ancient Greek mathematics.

The range of her historical inquiries has been extremely broad: from ancient mathematics to Russian mathematics at the end of the 19th century, and from the history of algebra to the history of mathematical analysis. Widely known are her works on the history of mathematics in ancient Greece (on the arithmetical Books of Euclid's *Elements* [1948], on Archimedes' differential methods [1964], and, above all, her *Lectures on mathematics in ancient Greece* [1958]), her studies on the history of algebra and algebraic number theory (on the theory of divisibility in the works of E. I. Zolotarev [1949], on the Fundamental Theorem of Algebra [1960], on the development of commutative algebra [1968a], and on algebra and algebraic number theory in the 19th century [1978a]), and, finally, on Diophantine analysis from Diophantus to the end of the 19th century [1966, 1974, 1981, 1984a, 1984b, 1986a, 1986b, 1987]. In 1966 she was elected as a Corresponding Member of the Académie Internationale d'Histoire des Sciences and she has been a Full Member since 1971.

During the last 10 years[1] Bashmakova has continued her active research on the

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history of Diophantine analysis. In 1981 her work on the development of the theory of algebraic curves from Diophantus to Poincaré was published, and in 1984, in collaboration with her pupil E. I. Slavutin, *The History of Diophantine Analysis from Diophantus to Fermat* [1984a], which sums up the studies she made over more than fifteen years. In this book, Diophantus' methods for finding the rational solutions of equations of the form $F_2(x,y) = 0$, $F_3(x,y) = 0$, where $F_n(x,y)$ is a polynomial of nth degree with rational coefficients, are exposed, as well as the solutions of the "double equations of the second degree," i.e., of the system

$$ax^2 + bx + c = u^2,$$

$$a_1x^2 + b_1x + c_1 = v^2,$$

and the history of these methods up to Fermat.

The investigations on the history of Diophantine equations enabled her to reconsider the history of algebra. She demonstrated [1984b, 1986b, 1987] that the mainsprings of the development of algebra are not only problems, which have been expressed by definite equations, but also the study of and solutions to Diophantine equations.

In her paper [1986a] Bashmakova considers the creative process of investigation in the history of mathematics. In her view, the first stage of any investigation on the history of mathematics must consist in the "translation" of the text under consideration into the language of modern science or, in other words, in the construction of an adequate model for it, in order to reveal the mathematical content of the text. The second, more difficult, stage consists in the consideration of the examined work within the context of the science of that time. This is again an interpretation, though not of a mathematical but rather a historico-mathematical character.

More recently, Bashmakova has prepared a Russian translation of Fermat's works on number theory and Diophantine analysis, which is now in press.

She has always devoted a great deal of time and effort to her pupils. During the last ten years, she supervised the Candidate's Theses of N. V. Aleksandrova, T. A. Lavrinenko, V. G. Morov, G. S. Smirnova, A. A. Antropov, and I. I. Sufiyarova.

Anyone who has had the good fortune to be associated with Bashmakova has experienced the power of her charm, kindness, and generosity. A person with varied and lofty interests and aspirations, a profound student of Russian poetry and a discriminating connoisseur of the fine arts, especially the ancient ones, Bashmakova combines in a natural way the traditions of the ancient Armenian culture, with which she is tied by birth, and the spirit of the Russian culture, the fate of which determines, in many respects, her activity.

NOTE

1. About I. G. Bashmakova's earlier work see *Historia Mathematica* **8**, 389–392 (1981).

LIST OF THE MAIN WORKS OF I. G. BASHMAKOVA

1948. The Arithmetic Books of Euclid's "Elements". Istoriko-matematicheskie Issledovaniya (IMI). **1,** 296–328. [In Russian]

1949. The foundations of the theory of divisibility in the works of E. I. Zolotarev. *IMI* **2,** 233–351. [In Russian]

1956. Archimedes' treatise "On Floating Bodies." *IMI* **9,** 759–788. [In Russian]

1958. Lectures on the history of mathematics in ancient Greece. *IMI* **11,** 22–438. [In Russian]

1960. Le théorème fondamental de l'algèbre et la construction des corps algebriques. *Archives Internationales d'Histoire des Sciences* **13,** 211–222.

1964. Les méthodes différentielles d'Archimède. *Archive for History of Exact Sciences* **2,** 87–107.

1966. Diophante et Fermat. *Revue d'Histoire des Sciences* **19,** 289–306.

1968a. Sur l'histoire de l'algèbre commutative. In *Actes du XII-e Congrès International d'Histoire des Sciences*. Vol. IA, pp. 185–202. Paris: Blanchard, 1970.

1968b. Les méthodes locales de E. I. Zolotareff. In *Actes du XII-e Congrès International d'Histoire des Sciences*. Vol. IV, pp. 11–15. Paris: Blanchard, 1971.

1970a. Mathematics in ancient Greece. In *History of mathematics from the ancient times to the beginning of the 19th century,* A. P. Yushkevich, Ed., pp. 58–105. Moscow. [In Russian]

1970b. Mathematics in the Hellenistic countries and the Roman Empire. In *History of mathematics from the ancient times to the beginning of the 19th century,* A. P. Yushkevich, Ed., pp. 106–153. Moscow. [In Russian]

1974. *Diophant und diophantische Gleichungen.* Berlin/Basel: Birkhäuser Verlag.

1977. "Genesis triangulorum" de François Viète et ses recherches dans l'analyse indéterminée. *Archive for History of Exact Sciences* **16,** 289–306 (in collaboration with E. I. Slavutin).

1978a. Algebra and algebraic theory of numbers. In *Mathematics in 19th century: Algebra, number theory, probability theory,* A. N. Kolmogorov and A. P. Yushkevich, Eds., pp. 39–122 (in collaboration with A. N. Rudakov). Moscow: Nauka. [In Russian]

1978b. Leonard of Pisa's "Liber Quadratorum." *Istoriya i Metodologiya Estestvennykh Nauk* **20,** 27–37. [In Russian]

1981. Arithmetic of algebraic curves from Diophantus to Poincaré. *Historia Mathematica* **8,** 393–416.

1984a. *History of Diophantine analysis from Diophantus to Fermat.* Moscow: Nauka (in collaboration with E. I. Slavutin). [In Russian]

1984b. Indetermined equations and their role in the development of algebra. *Voprosy Istorii Estestvoznaniya i Tekhniki* **2,** 43–56. [In Russian]

1986a. The role of the interpretations in the history of mathematics, *IMI* **30,** 182–194. [In Russian]

1986b. The main stages in the development of algebra. *Istoriya i metodologiya estestvennykh nauk* **32,** 50–65. [In Russian]

1987. Diophantine equations and the evolution of algebra. *International Congress of Mathematics, Berkeley, California,* pp. 1612–1629.

1988. L. Euler's contribution in algebra. In *The development of Leonard Euler's ideas and the contemporary science,* N. N. Bogolyubov, G. K. Mikhailov, and A. P. Yushkevich, Eds., pp. 139–152. Moscow: Nauka. [In Russian]