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Modern geometry (Sovremennaya geometriya), by B. A. Dubrovin, S. P. Novikov, and A. T. Fomenko, Moskva: Izdatel'stvo "Nauka", 760 pp., R.2.00 (Russian), 1979.

This is a very important and interesting book. This volume is written by Russian authors who are experts in large areas of contemporary geometry and their applications. In particular, Novikov is a Field's Medalist and is publishing most exciting research in the intersection of geometry, analysis, and physics. The original Russian edition appeared in 1979 in a one-volume edition, double the size of the present translated volume. I first came across this book shortly thereafter when a new faculty member in our department, Alexander Eydeland, showed it to me. In 1982 at the colloquium in Paris to honor Laurent Schwartz, I found a translation of this book in French, in two volumes. The present English translation comprises the first volume of the French edition.

The best way to describe this volume is to say that it is a contemporary treatise on modern methods in geometry with deep applications to the physical sciences. It used to be that the great treatises of mathematics were written by scholars of analysis, and these volumes contained a synthesis of the geometry and analysis of their times. The latest example of this type of work is the comprehensive and marvelous treatise on analysis by Jean Dieudonné in twenty-five chapters, twenty-four of which have appeared in nine volumes.

As a student, I studied geometry for each of my undergraduate years, but unfortunately it was not the kind of geometry presented in this new Russian book. Indeed, it was filled with linear projective geometry in all its classical points of view (triangles, lines, hyperplanes, crossratios, and eventually conic sections). (Even Euclid would have felt maligned.) Eventually I escaped to England to discover that projective geometry could include cubic surfaces and,