This issue of Archivum Mathematicum
is dedicated to professor Ivan Kolář
on the occasion of his sixtieth birthday

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IVAN KOLÁŘ

Doctor of Natural Science, Doctor of Science, ordinary professor of mathematics at the Faculty of Science of the Masaryk University in Brno, will be sixty on May 22, 1996.

This volume is dedicated to this occasion and we believe that the contributions themselves reflect the wide scope of Professor Kolář's impact on modern differential geometry. We are happy to see him passing this milestone in life with a lot of energy, enthusiasm, creativity and high spirits.

In view of his ongoing active research we will not give an exhaustive analysis of his mathematical contributions, we will just briefly review his activities. See also the complete bibliography of all scientific publications up to now of Professor Kolář included in this volume.

Professor Kolář's deep sense of pure geometrical structures and concepts, and his extreme accuracy and exactness in working out details had formed already in the first period of his research, which was closely related to the traditional subjects introduced to Czech geometry by Eduard Čech and Alois Švec. Working on the theory of submanifolds in curved projective spaces, he realized Ehresmann's higher order connections and the related (non-holonomic) jet theory should pave the way to a rigorous understanding of the classical infinitesimal algorithmic approach. This led to an impressive series of papers, working out many aspects of Cartan's moving frame method in a framework of original and rigorous geometrical concepts. We are afraid this fundamental achievement has not yet been sufficiently recognised and some of his concepts have been rediscovered by other authors much later. Since that time, jets in all their forms have appeared in Professor Kolář's work as the basic tool for dealing with higher order problems in differential geometry and global analysis. At the beginning of the seventies, Professor Kolář created his own scientific seminar at the Mathematical Institute of the Academy of Science in Brno which attracted most of the Czech and Slovak geometers at that time. Initially the research dealt with higher order (generalized) connections and absolute differentiation and later, inspired by the ongoing interaction with mathematical physicists, it included higher order variational calculus. Also here, Professor Kolář created several original concepts and achieved unexpected results.

During all this research, iterative higher order considerations had to be faced, requiring sophisticated auxiliary constructions which always had to be chosen in a 'natural way'. This fact, together with the general interest in pure geometrical structures and the categorical language, led to the study of natural operations in differential geometry, in the framework of natural bundles introduced by Nijenhuis. This activity extended in the mid-eighties to the Middle European Seminar created jointly with Peter Michor, and culminated in a research monograph by Professor Kolář and the editors of this volume, published by Springer–Verlag in 1993. Also in this case Professor Kolář refined the original concepts and tools, and he obtained complete classification lists for certain types of operations, and vast generalizations of the classical theory of geometrical objects and operators, a field going back to men like Veblen and Schouten.

Parallel to these activities, the long time cooperation with Marco Modugno resulted in a series of seven joint papers, still continuing. The geometrical structures related to Modugno's research in mathematical physics are the main subject of this effort, recently concentrating on the geometry of spaces of smooth mappings, the Schrödinger connection and further infinite-dimensional topics.

This enormous research activity, however, cannot let us forget Professor Kolář's pedagogical achievements and organizational efforts. In particular, he is a member of the editorial boards of numerous international mathematical journals. Most of his teaching is connected to the Masaryk University in Brno and he enjoys great authority as an excellent teacher delivering extremely accurate and precise lecture courses at all levels, always offering deep insight in the subjects. Twelve PhD students have already achieved their degrees under Professor Kolář's supervision.

We believe that the great influence of Professor Ivan Kolář in the development of mathematics extends outside any geographical boundaries, and it reaches far beyond local differential geometry, the initial subject of his research. On behalf of all mathematicians who have ever met Professor Ivan Kolář and his mathematics, we wish him many more years in good health, creative spirits and further distinguished achievements in the mathematics which he loves so much.

The Editors

LIST OF SCIENTIFIC PAPERS
by Prof. RNDr. Ivan Kolář, DrSc.

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5. M. Katětov, I. Kolář, P. Simon, E. G. Sklyarenko, *The mathematical legacy of Eduard Čech*, Academia Praha–Birkhauser Basel, 1993.

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D. OTHER PAPERS ABOUT GEOMETRY

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