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SIXTIETH ANNIVERSARY OF THE BIRTHDAY
OF ACADEMICIAN ŠTEFAN SCHWARZ

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An outstanding czechoslovak mathematician, Academician ŠTEFAN SCHWARZ, reaches sixty years of age on May 18, 1974.

He was born at Nové Mesto nad Váhom where he attended the secondary school. Already then he showed his deep interest in mathematics. In the years 1932–1936 he studied at the Faculty of Sciences of the Charles University at Prague. Immediately after completing his studies he became assistant at the Faculty, remaining member of its staff until 1939. Then he came to the just established Slovak Technical University at Bratislava where he has worked until now. In the year 1946 he became reader and in 1947 he was appointed professor.

In the year 1952, Š. Schwarz was elected corresponding member of the Czechoslovak Academy of Sciences. When the Slovak Academy of Sciences was founded in 1953, he was appointed its regular member, and in 1960 he was elected regular member of the Czechoslovak Academy of Sciences. In both Czechoslovak and Slovak Academies he acted in a number of important offices. In the years 1965–70 he was President of the Slovak Academy of Sciences and Vice-President of the Czechoslovak Academy of Sciences. Since 1964 he has been director of the Institute of Mathematics of the Slovak Academy of Sciences.

The scientific activity of Academician Štefan Schwarz concentrates on algebra and theory of numbers. It was Schwarz's teacher, an outstanding mathematician KAREL PETR, professor of the Charles University, who encouraged Š. Schwarz to direct his work to algebraic problems connected with the theory of numbers.

In his first studies Š. Schwarz dealt with the problems concerning irreducibility of polynomials over an integral domain. His further papers are devoted to the decomposability of polynomials over a finite field into a product of irreducible polynomials. One of the main tasks advanced by Š. Schwarz was to find explicit formulae for the number σ_k of mutually different irreducible factors of degree k for a given polynomial over a finite field. He first improved some older results and finally found an essentially new solution of a, so to say, "algorithmic" character, which turned out to be suitable for machine computation. In other papers which obtained also considerable

publicity in literature, Š. Schwarz studied the solvability of the equation $a_1x^k + \dots + a_sx^k + b = 0$ over finite or local fields. In particular, he dealt also with the case $a_1 = \dots = a_s = 1$ (the so-called Waring's problem).

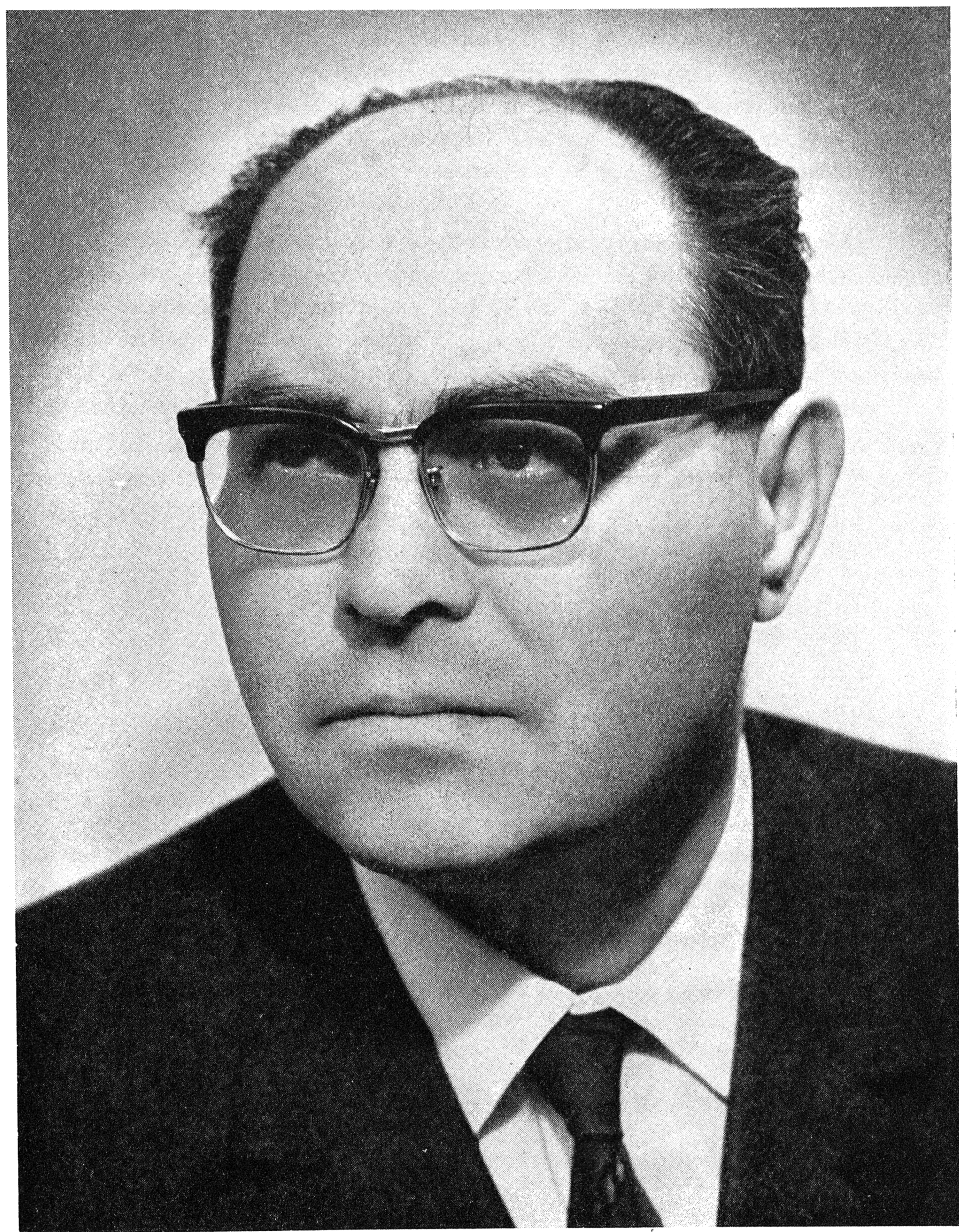
Most of the scientific papers of Academician Schwarz are devoted to the theory of semigroups, Š. Schwarz being one of those mathematicians who built the foundations of the theory. His first paper on semigroups dates back to 1943. It is in this paper where the notions of maximal groups of a given semigroup, of the radical of a semigroup and, in fact, even that of the ideal, used purposefully to study the structure of semigroups, appear for the first time in literature. There is a number of papers in which Š. Schwarz demonstrated the significance of idempotents and ideals for the study of structure of semigroups. From the study of finite semigroups he passed to periodic semigroups which have some properties analogous to those of finite semigroups. In several papers he dealt with topological semigroups which are compact and Hausdorff. He obtained some interesting results even in the theory of dual semigroups.

Another series of papers of Š. Schwarz concerns characters of semigroups and measure theory on semigroups. He succeeded in describing the structure of the semigroup of characters S^* of a given semigroup S if S is a finite or a compact semigroup, as well as in the case when S is a multiplicative group of residue classes mod m . As for the measure theory, he studied mainly measures on finite or Hausdorff compact semigroups.

Results obtained for classes of abstract semigroups are used by Š. Schwarz to study important "concrete" classes of semigroups. In a number of papers he deals with semigroups of matrices with non-negative elements and with semigroups of stochastic matrices. He investigates in particular the distribution of zeros and non-zeros in the sequence of powers of a given non-negative matrix. These results have many applications. Recently, Š. Schwarz has written several papers in which he studies semigroups of binary relations and which have partially a combinatorial character. Schwarz's results offer a generalizing approach to these problems, placing them into the frame of the theory of semigroups. Applications in the theory of automata show the usefulness of the subject.

A characteristic feature of Schwarz's scientific work is his effort to bring the results to the most explicit form possible. This affects also Schwarz's method: he prefers consequently constructive processes, bringing his reasoning to the most final form and to the complete description of the structure of the subject considered.

A large part of Schwarz's results in the theory of semigroups is at the present time accessible in monographs which have appeared in the last ten years and are devoted to abstract and topological semigroups. Let us mention, among others, the books A. H. Clifford - G. B. Preston: *The algebraic theory of semigroups*, AMS Providence, vol. 1 (1963) and 2 (1967); E. S. Ljapin: *Polugruppy (Semigroups)*, Moskva 1960; A. B. Paalman - de Miranda: *Topological semigroups*, Amsterdam 1964.



Academician ŠTEFAN SCHWARZ

Academician Š. Schwarz has devoted much of his time and energy to the organization of education and science in Czechoslovakia. He has influenced considerably two generations of our mathematicians. His activity has included various duties in the Academy as well as in educational and other cultural and political institutions. As a man deeply involved in social and public life he has shared all problems of our society. In the years 1966–71 he was member of the Central Committee of the Communist Party of Czechoslovakia.

The Czechoslovak Socialist Republic has many times paid a tribute to Academician Schwarz for his many-sided and important activities. He was awarded 1st degree Klement Gottwald State Prize in 1955 and the Order of Labour in 1964. He has been honourable member of the Union of Czechoslovak Mathematicians and Physicists. Several institutions awarded him their medals on various occasions (Komenský University, Slovak Technical University, Czechoslovak Academy of Sciences).

The Czechoslovak mathematical community wishes Academician Štefan Schwarz good health and much success in his further work for the development of Czechoslovak mathematics.

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Remark. This list (in Section C) is rather incomplete. Prof. Schwarz published and has given a series of interviews to newspapers and weekly papers, to the broadcast and television mostly concerning the role of mathematics in the modern society. As President of the Slovak Academy of Sciences he has had by several occasions a number of talks (mostly published in the Věstník Československé akademie věd) concerning the development of the science as a whole in Czechoslovakia, and in particular in Slovakia.

IN MEMORIAM PROFESSOR RNDR. LADISLAV KOUBEK

Associate Professor RNDr. LADISLAV KOUBEK, CSc., director of the Centre of Numerical Mathematics at the Faculty of Mathematics and Physics of Charles University and vicechancellor of Charles University, died 1. December, 1973.

Professor L. Koubek was born on 4 January, 1923 at Prague. After completing his studies at Charles University, he was engaged first in the differential geometry. However, the centre of his activities is in the theory of programming and theory of algorithmic languages.

A more detailed biography together with the list of Professor Koubek's scientific papers is published in Časopis pro pěstování matematiky, 99 (1974), 213—215.

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