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NEWS AND NOTICES

ACADEMICIAN OTAKAR BORŮVKA NONAGERIAN

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On May 10, 1989, Otakar Borůvka, Nestor of Czechoslovak mathematicians, member of the Czechoslovak Academy of Sciences, reaches ninety years of age in full mental freshness and unceasing mathematical activities.

After studies at the University of Brno, he became a lecturer (1921), a reader (1928), and Professor (1934) at this University. He studied in Paris (1926 and 1929)

with Prof. É. Cartan and in Hamburg (1930) with Prof. W. Blaschke, where he also met Professors E. Artin, E. Borel, J. Douglas, M. Fréchet, E. Goursat, J. Hadamard, H. Lebesgue, E. Picard, B. Segre, E. Vessiot and many others. In 1953 he became a corresponding member and in 1965 an ordinary member (Academician) of the

Czechoslovak Academy of Sciences. From 1969 till now he has worked in the Mathematical Institute of the Academy, branch Brno. His scientific work has covered extensive fields of Mathematics and reflects the main trends of the development of the 20th century Mathematics not only in Czechoslovakia but throughout the world.

Borůvka's results in classical analysis belong to the period 1923 – 1925, having been achieved mainly under the influence of his teacher, Prof. M. Lerch. In his pioneering paper "On a certain minimal problem" from 1926 he algorithmically solved the problem of a minimal cost of an electric network, a kind of the transport problem belonging to an essential part of the graph theory, at least ten years before the graph theory was established as a mathematical discipline.

In his monumetal work on projective differential geometry O. Borůvka was the first who studied analytic correspondences between two projective planes. The results of his extensive paper from 1933 on (two dimensional) spherical surfaces in $2n$-dimensional spaces with constant curvatures have found important applications in modern differential geometry. The research school in Bologna has been continuing Borůvka's original study in many respects. For example, S. S. Chern in his paper on minimal submanifolds immersed into spheres calls certain differential equations "Frenet-Borůvka formulae".

O. Borůvka is also one of the founders of some important conceptions of the general algebra. He established the theory of grupoids and collected his original methods and results in the monograph *Foundations of the Theory of Groupoids and Groups*, published in German (1960), English (1974), and several times in Czech.

In 1950 O. Borůvka started his systematic study of differential equations. On the basis of his perfect knowledge of classical analysis, differential geometry and algebra, he developed an original and fruitful theory of global transformations of linear differential equations of the second order. He introduced several new notions and methods, solved many open problems in this field, for example, the problem of global equivalence of such equations. This qualitative theory of a global character, which exhibits a high degree of geometrization and algebraization is collected in his monograph *Lineare Differentialtransformationen 2. Ordnung*, published in German (Berlin 1967) and in English (London 1971). As was the case with differential geometry and algebra, numerous Czechoslovak as well as foreign mathematicians have exploited Borůvka's methods and results in the theory of differential equations to solve various problems concerning not only equations of the second but also of higher orders.

It is admirable that at the age of ninety Academician O. Borůvka is intensively working in Mathematics and achieves new and important results. His present area of research concerns algebraic spaces with operators where he studies transformations of differential equations from an abstract algebraic point of view.

Academician O. Borůvka has also deserved considerable credit for his essential share in establishing the Brno branch of the Mathematical Institute of the Czechoslovak Academy of Sciences, and in founding the journal Archivum Mathematicum

in 1965. The great importance of his achievements has had wide response in a number of honours awarded to him in Czechoslovakia and abroad and in numerious invitations to lecture at foreign universities and conferences.

Academician Otakar Borůvka is an oustanding personality in the history of Czechoslovak Mathematics, having remarkably contributed to its reputable position in the framework of the world science. Love of work, vitality and unceasing enthusiasm, new ideas and an inexhaustible scientific program, that is a short characterization of him as a nonagerian.

We wish Academician Otakar Borůvka favourable conditions, health and happiness for many coming years in which we may have the pleasure of drawing new knowledge from his wisdom and experience.

SUPPLEMENT TO SCIENTIFIC PUBLICATIONS OF O. BORŮVKA

(For the scientific publications [1—63] see Časopis Pěst. Mat. *84* (1959), 248—250 and ibid *94* (1969), 244—247; for [64—81] see Czechoslovak Math. J. *29* (*104*) (1979), 330—335 and ibid *34* (*109*) (1984), 488—489.)

[82] Sur les transformations simultanées de deux équations différentielles linéaires du deuxième ordre dans elles-mêmes. Applicable Analysis *15* (1983), 187—200.

[83] Sur les sous-groupes planaires des groupes des dispersions des équations différentielles linéaires du deuxième ordre. Proc. Roy. Soc. Edinburgh *97A* (1984), 35—41.

[84] Sur les blocs des équations différentielles linéaires du deuxième ordre et leurs transformations. Časopis Pěst. Mat. *111* (1986), 78—88.