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(*b.* Stračov, Bohemia, 29 June 1893; *d.* Prague, Czechoslovakia, 15 March 1960),

mathematics.

Eduard Čech was the fourth child of Čeněk Čech, a policeman, and Anna Kleplová. After studying at the Gymnasium in Hradec Kralove, he attended lectures on mathematics at the [Charles University](#) of Prague from 1912 to 1914. In 1920 Čech took his degree in mathematics at the University of Prague. Even his first works showed his mathematical talent. He began to study differential projective properties of geometrical figures and became interested in the work of Guido Fubini. He obtained a scholarship for the school year 1921–1922 that enabled him to study with Fubini in Turin. Later they wrote *Geometria proiettiva differenziale* (1926–1927) and *Introduction à la géométrie projective différentielle des surfaces* (1931). In 1922 Čech was appointed associate professor of mathematics at the University of Prague; on this occasion he presented a study on differential geometry. From 1923 he was professor of mathematics at the Faculty of Natural Sciences of the University of Brno, lecturing on mathematical analysis and algebra.

From 1928 on, Čech was interested in topology, inspired by the works of mathematicians who contributed to the Polish journal *Fundamenta mathematicae*. His work from 1932 on, devoted to the general theory of homology in arbitrary spaces, the general theory of varieties, and theorems of duality, showed him to be one of the foremost experts in combinatorial topology. In September 1935 he was invited to lecture at the [Institute for Advanced Study](#) at Princeton. Čech returned to Brno in 1936 and founded a topology seminar among the young mathematicians there. During the three years the seminar was in existence, the works of P. S. Alexandrov and Pavel Uryson were studied and twenty-six papers were written. The group disbanded at the closing of Czech universities following the German occupation in 1939.

In his paper “On Bicomcompact Spaces” Čech stated precisely possibilities of utilizing a new type of topological space (defined by Tichonow in 1930), which later came to be known as Čech’s bicomcompact envelope (βS of a completely regular space S) or as Stone and Čech’s compact envelope. Čech’s interpretation became a very important tool of general topology and also of some branches of functional analysis.

Čech was also concerned with the improvement of the teaching of mathematics in secondary schools. He organized courses for [secondary school](#) teachers in Brno in 1938–1939; the results are shown in a series of mathematics textbooks for secondary schools that were written under his guidance after [World War II](#).

In 1945 Čech went to the faculty of Natural Sciences of [Charles University](#) in Prague. There he was instrumental in founding two research centers: the Mathematical Institute of the Czechoslovak Academy of Science (1952) and the Mathematical Institute of Charles University.

In topology, in addition to the theory of topological spaces, Čech worked on the theories of dimension and continuous spaces. In combinatorial topology he was concerned primarily with the theory of homology and general varieties. He was most active in differential geometry from 1921 to 1930, when he became one of the founders of systematic projective differential geometry; he dedicated himself chiefly to problems of the connection of varieties, to the study of correspondences, and to systematic utilization of duality in projective spaces. After 1945 he returned to problems of differential geometry and developed a systematic theory of correspondences between projective spaces. His attention was then drawn to the problems of congruences of straight lines that play a significant role in the theory of correspondences. Somewhat different is his work on the relations between the differential classes of points of a curve and the object attached to it. A number of his ideas were elaborated in the works of his students. They can also be found in some of his manuscripts that have been preserved, published in part in 1968.

BIBLIOGRAPHY

I. Original Works. The bibliography of Čech’s scientific works compiled by Katětov, Novák, and Švec lacks only the rev. and enl. ed. of *Topological Spaces* and a number of articles on education. His papers include “Okřivkovém a plošném elementu třetího řádu” (“On the Curve and Surface Element of the Third Order”), his thesis at the University of Prague, in *Časopis pro pěstování matematiky a fysiky*, **50** (1921), 219–249, 305–306; and “On Bicomcompact Spaces,” in *Annals of Mathematics*, **38** (1937), 823–844. With Guido Fubini he wrote *Geometria proiettiva differenziale*, 2 vols. (Bologna, 1926–1927); and *Introduction à la géométrie projective différentielle des surfaces* (Paris, 1931). His *Topological Spaces* (Prague, 1959) was revised by Zdeněk Frolik and Miroslav Katětov (Prague, 1966)

II. Secondary Literature. M. Katětov, J. Novák, and A. Švec, “Akademik Eduard Čech,” in *Časopis pro pěstování matematiky*, **85** (1966), 477–491, includes an almost complete bibliography on 488–491; it also appears in Russian in *Chechoslovatsky matematický žurnal* (“Czechoslovak Mathematical Journal”), **10** (1960), 614–630, with bibliography on 627–630. Two articles by K. Koutský discuss Čech’s work: “Čechův topologický seminář v Brně z let 1936–1939” (“Čech’s Topological Seminar at Brno in 1936–1939”), in *Pokroky matematiky, fyziky a astronomie* (1964), 307–316; and “O Čechových snahách ve středoškolské matematice” (“Čech’s Endeavors for the Reform of Secondary School Mathematics”), in *Sborník pro dějiny přírodních věd a techniky*, **11** (1967), 217–230. See also P. S. Aleksandrov, in *Uspekhi matematicheskikh nauk*, **15**, no. 2 (1960), 25–95; and J. Kelley, *General Topology*

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