THE GREEK MATHEMATICAL SOCIETY

Its predecessors, its founders, and some highlights from its life

(Themistocles M. Rassias, Athens, Greece)

The beginnings

The history of "modern" Greek mathematics begins with Nicholas Nicolaidis (1826-1889). Born during the Greek Revolution in the very center of Arcadia, officer-engineer in the Greek Army, he went with a scholarship to Paris and became a Docteur

Cyparissos Stephanos

d'Etat es Sc. Math., with O. Bonnet in his Committee. He published several original works in the Editions of Gauthier-Villars. When he returned to Greece he became professor at the University of Athens. His research work continues to enjoy some interest even in the present time (he is known, in particular, for the term "Nicolaidis' theorem" in Kinematics). With him begins our story.

The next to appear in Greek mathematics were the professors Cyparissos Stéphanos (1857-1917) from the island of Kea, and John Hadzidakis (1844-1921) from Crete. Stéphanos was a Docteur d'Etat es Sc. Math. from Paris, with Charles Hermite (1822-1901) as a member of his Committee. He was a geometer and algebraist, with references made to his work by a number of mathematicians including the young (at that time) David Hilbert (1862-1943). He also served as a

member of a number of Honorary Committees of International Congresses. J. Hadzidakis is known for his work in Geometry with the notion "Hadzidakis transformation", that is cited in M. Spivak's "Differential Geometry" and in J. McCleary's "Geometry from a

John Hadzidakis

Differential Viewpoint". He was a pupil of the Paris school and of Karl Weierstrass (1815-1897) in Berlin. He is also well known in Greece for writing good books for all levels of mathematical education.

J. Hadzidakis and C. Stéphanos established the mathematical tradition of the University of Athens and were the teachers of the founders of the Greek Mathematical Society (G.M.S.). These founders, all three professors at the University of Athens, were Nicholas Hadzidakis (1872-1942), a son of J. Hadzidakis, George Remoundos (1878-1928) from Athens, and Panayotis Zervos (1878-1952) from Cephalonia. All of them had been pupils of the Paris School, in particular N. Hadzidakis of David Hilbert. Following the geometric approach of Jean Gaston Darboux (1842-1917), N. Hadzidakis introduced Kinetic Geometry, as well as the study of complexes of

lines and surfaces, to Greece. Remoundos contributed a lot in function theory and in particular with his generalization of Picard's theorem to algebraic functions. In the year 1905, Jacques Hadamard (1865-1963) proposed to P. Zervos the study of Monge's conjecture (sometimes called Monge's problem) in the field of Partial Differential Equations, which was posed in 1784 and has not been solved since. In 1905, P. Zervos was the first mathematician to notice the falsity of Monge's conjecture. In the year 1912, after some intensive work by P. Zervos, E. Goursat, and O. Botasso among others, D. Hilbert solved a major part of Monge's problem. Elie Cartan's seminal paper of the year 1914 on Pfaff's problem, begins as follows: "In a recent paper (1913), P. Zervos generalizes a theorem of D. Hilbert…" (Bull. de la Soc. Math. de France, 1914).

Foundation of the G.M.S.

In the year 1918, N. Hadzidakis, G. Remoundos and P. Zervos founded the G.M.S. as well as the Research Seminars in Mathematics at the University of Athens. In addition, the year after, in 1919, they started the international journal: *Bulletin of the G.M.S.* The first issue of the Bulletin of the G.M.S. published P. Zervos' inaugural lesson entitled "Relation of Mathematics to the other Sciences and to Philosophy" as well as some "technical" articles in mathematics by the above three mathematicians and others. Zervos had been in the audience of Poincaré's lectures on Celestial Mechanics in Paris during the period 1903-1905, and he was also the translator into Greek of Poincaré's celebrated book "Science and Hypothesis". In 1935, the Bulletin of the G.M.S. published a paper by Nicholas Criticos (1894-1985) that was devoted to a new proof of the Jordan

Curve Theorem. In the context of two lectures given by him in the G.M.S., a kind of first advanced text in "*Point Set Topology*" was provided, written in Greek.

Papakyriakopoulos and Carathéodory

A rigorous presentation of Mathematical Analysis on the basis of Dedekind Cuts and Cantor's Set Theory had been made by P. Zervos in his masterpiece: "Infinitesimal Calculus". Both of the above mentioned texts, by N. Criticos and P. Zervos, contributed greatly to the orientation in mathematical studies of the well-known topologist Christos D. Papakyriakopoulos (Athens, 1913 - Princeton, 1976). The doctoral thesis of Papakyriakopoulos, entitled "A new proof of the invariance of the homology groups of a complex", was published in the year 1943 in the Bulletin of the G.M.S. The 154-page thesis of Papakyriakopoulos that was published in the Bulletin also constitutes the first text written in Greek on Algebraic Topology. The (unofficial) referee for the Thesis was C. P. Papaioannou (1899-1979), who was Professor of Mechanics at the University of Athens. Papaioannou had the ability to immediately foresee Papakyriakopoulos' brilliant research career. Another prophetic vision of Papaioannou appears in his inaugural speech at the Academy of Athens in the year 1965, in which he sees the universe as Platon's dodecahedron. This is something that was later very beautifully presented in a modern mathematical language by William P. Thurston (Fields Medal in Topology, 1982) in the Scientific American. This seems to be a major subject of research by satellites (cf. Notices of the A.M.S., June-July 2004).

The 1943 issue of the Bulletin of the G.M.S. was, naturally, dedicated to Constantin Carathéodory at the occasion of his 70-th birthday. Carathéodory was born in Berlin, of Greek parents, on 13 September 1873, and he died in Munich on 2 February 1950. His work covered several subjects of Mathematics, including the calculus of variations, function theory, measure and integration, as well as applied mathematics. Carathéodory has also done very fundamental work in mechanics, thermodynamics, geometrical optics and relativity theory. An example of Carathéodory's wide ranging influence in the international mathematical community was seen during the first Fields Medals awards at the International Congress of Mathematicians, Oslo, 1936. The selection committee consisted of George D. Birkhoff, Elie Cartan, C. Carathéodory,

F. Severi, and T. Takagi. Two medals were awarded, one to Lars V. Ahlfors (Harvard University) and one to Jesse Douglas (M.I.T). It was C. Carathéodory who presented the work of both medalists during the opening of the International Congress (see *Constantin Carathéodory: An International Tribute, Vols I & II, World Scientific Publ. Co., 1991, edited by Th. M. Rassias*).

Now let us come back to our story. Remoundos' pupil Theodore Varopoulos (1894-1957), professor of the University of Thessaloniki (father of the well-known Paris Analyst Nicholas Th. Varopoulos), the closest pupil of Paul Montel, had a special interest in the Geometry of Polynomials. From time to time one could find articles in the Bulletin of the G.M.S. devoted to polynomials (from both an algebraic and a geometric approach) influenced directly or indirectly by Th. Varopoulos. For instance, in the thirties one can find articles by Constantine Yannopoulos and by John Papademetriou. Around 1950, one has to mention the thesis on polynomials written in Athens by Th. Varopoulos' research student Dionysios Vythoulcas. Moving further and with more essential results in the context of polynomials and especially their localization of roots (zeros), Spyros P. Zervos (a son of P. Zervos) wrote his Thèse d'Etat in Paris (Ann. Sc. de l'Ecole Normale Sup., 1960) in the spirit of Modern Mathematics. Furthermore, some interesting work in the classical version of polynomials and related subjects was obtained by the late I. Ferentinou-Nicolacopoulou and was published in the Bulletin of the G.M.S.

Other activities

Until now, we have been devoted to the
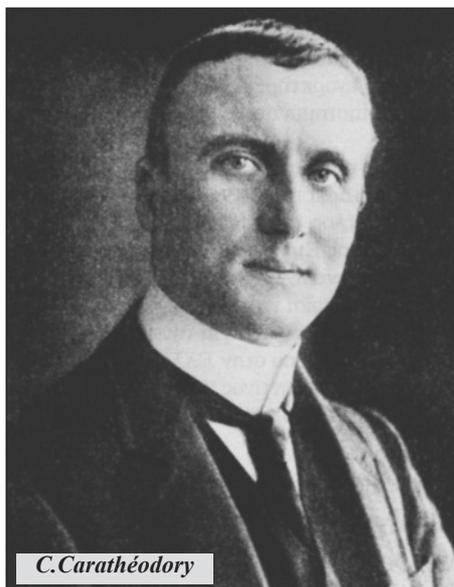
C.Carathéodory

scientific side of the subject and have not covered the general activity of the G.M.S. In this connection, we recall the Panhellenic Competition in Mathematics for High School Students, inaugurated by the G.M.S. in the year 1931. The first winner was George Tsamis from Patras, at that time a schoolboy, who was to become a very influential High School Teacher in mathematics. In the sixties, the Mathematical Competition got a new lease of life by Aristide Pallas, a man who was entirely devoted to the G.M.S and at that time its president.

In 1975, the new Council of the G.M.S., under the presidency of Professor S.P.Zervos, enlarged the domain of the activities and publications of the G.M.S. In that year, S.P. Zervos conceived the idea for the foundation of a "University of Aegean", with a Pythagorean Department of Mathematics, on the island of Samos, and other Departments (Schools) in various subjects on other islands. This idea was materialized later on. Some distinguished mathematicians delivered lectures during the "Pythagorean Days", in Athens and in Samos. Among the mathematicians who delivered such lectures are the following: K. Borsuk (Warszawa), L. Iliev (Sofia), A. Kawaguchi (Japan), M. Krasner (Paris), K. Kuratowski (Warszawa), Dj. Kurepa (Beograd), M. Loi (Paris), O. Onicescu (Bucharest).

A subsequent article will deal with the 'discovery' of the 'Olympiads' for High Schools in Greece, as well as to activities of the G.M.S. with emphasis to the last three decades.

Themistocles M. Rassias [trassias@math. ntua.gr] studied mathematics at the University of California at Berkeley, where he received his Ph.D with Steven Smale. He has published more than 170 papers and six research books and he has edited 24 volumes on different subjects in Mathematical Analysis, Geometry/ Topology and their applications. His research work has found more than 2000 citations. His work is known in the field of Mathematical Analysis with the term "Hyers-Ulam-Rassias Stability" and in Geometry with the term "Alexandrov - Rassias Problem". He has lectured extensively and conducted research in various academic institutions in Europe and North America. More than ten mathematical journals count him as a member of their Editorial Board. He is Professor at the National Technical University of Athens, Greece. He is married and has two children.