It is fortunate that the 6th International Conference on Hydraulic Machinery and Hydrodynamics, 2004, coincides with the 80th anniversary of Professor Ioan Anton, who serves as the chairman of the HMH2004 International Scientific Committee. His teaching and research career, which counts so far 55 years is in many respects synonymous to the evolution of the “Politehnica” University of Timișoara and of the Timișoara School on Hydraulic Machines. As a result, when talking about his life we also present part the history of an institution. It is this history, as well as Professor Anton’s own example, what makes the renown of the Timișoara research groups in Turbo-machinery Hydrodynamics, Cavitation and Magnetic Liquids, as well as of the Hydraulic Machines Department.

1. THE PATH TOWARD AN ACADEMIC CAREER

Born on July 18, 1924, in the small village Vintere from Bihor county, Romania, Ioan Anton learned from his parents that only the hard work is the answer to life difficulties. His mother had to struggle with poverty to raise her four children and to work their small patch of land to support the family. His father, a railway worker, helped her as much as he could when he was at home. The young Ioan had to help as well with the farm chores, guarding the caws and the pigs, as well as working the land.

In the first day in school, his mother respectfully introduced “her Ioan” to the school teacher, and gave him a quince tree stick to “adjust, if necessary, Ioan’s learning desire”. After the first four elementary classes, Ioan’s parents want him to continue his education in high school, but back in that time this was not a simple step, especially in the country side. The school director was rather reluctant to send the young children away from the home village, since there would be no one left to work the land. However, it was the priest Virgil Muntean who supports them to send Ioan to the famous “Samuil Vulcan” high school in Beiuși. It was the first turning point in Ioan Anton’s life, which was at that time, most like it without him knowing it, on a path toward high level education and later a remarkable academic career.

He spent the next eight years in high school. At the Greek-Catholic boarding school he met with his Romanian, Hungarian, German, and Serbian colleagues, quickly realizing that neither nationality, nor religion beliefs, should hinder a friendship or mutual respect. The young student Anton quickly adjusted to the school demands, and his learning performances promoted him as class leader. With a particular calling for mathematics, he was elected for the last two years in high school the president of the school mathematical society, being followed in this position by his younger colleague Mircea Maliță, who later became himself a member of the Romanian Academy. Under the guidance of his math teacher, professor Musta, Ioan led the mathematical society meetings, where difficult problems, far beyond the regular curricula, were put forward and solved. They eagerly approached the most difficult problems published at that time in the Timișoara Math Review and in the Bucharest Math Paper. In high school, the young students learned quite a lot of nature’s secrets, and equally important they learnt how these secrets were revealed by scientists. Having professor Musta as a role model, Ioan Anton already knew when graduating from high school that he would like to pursue an ‘university professor’ career. This would be also a tribute to professor Musta, who gave away an academic career at the Cluj University to teach math in high school.
By the end of high school, Ioan Anton had to face increasingly difficult times after the World War II broke out and Romania plunged in a political turmoil. However, the years spent in high school left many dear memories and broadened horizons.

In spite of war time difficulties, Ioan Anton decided to pursue a university education, and he was admitted among the top candidates at the Politehnica from Timișoara in 1943. Starting from the first year of study at the university, his academic performances recommended him as class leader, position he held until graduation. His main concern was to achieve the highest academic standards, as well as helping his colleagues in the education process. Although he felt attracted by all theoretical and technical topics, he particularly favoured the electrotechnics and related fields since this is were the physics was best described by elaborate mathematical models. Together with two of his colleagues, Ion Muntean and Gh. Trifu, the student Ioan Anton started editing the class notes for the “Electric Measurements” class taught by Professor Platuțiu Andronescu. Many after class meetings with prof. Andronescu polished these class notes that later became an excellent textbook published at the university printing house. The discussions with prof. Remus Răduleț, later member of the Romanian Academy, on developing the scientific and technical literature in Romania, led to the conclusion that besides translating in Romanian the best monographies available at that time a significant effort should be made to add original Romanian contributions as well. The engineering education of the student Ioan Anton was shaped by technical courses given by great professors such as Ștefan Nădășan, Marin Bănărescu, Aurel Bărglăzan, Coloman Bakonyi, Platuțiu Andronescu, Victor Gheorghiu, Ion Zăganescu, Cornel Mikloși, Ioan Vlădea. Excellent theoretical classes were given by professors such as Valeriu Alaci, Ovidiu Țîno, Emanoil Arghiriade, Gh. Th. Gheorghiu, Constantin Sâlceanu, Mihail Ghermănescu, who managed to harmonize the theory with practical applications as required for an engineering background.

The admiration for his teachers was complemented by a critical evaluation of the course content. After the material strength examination, Professor Nădășan asked student Anton for his opinion on the course. The young student answered that the too many coefficients used to correct a rather simple theory seem to be a measure of the uncertainty, and that he would expect a more elaborate theoretical development. Although this was an unexpected answer, Professor Nădășan assured him that in the following year of study the second part of the course will meet his expectations.

A particular trademark of the Politehnica from Timișoara was the continuous effort to answer the industrial problems by training the students not only on theoretical aspects but also in design and manufacturing, as well as in laboratory works. Developing modern laboratories, where students can see and understand first hand the engineering applications remained along the years a priority for Timișoara Polytechnica University.

Ioan Anton graduated from the Politehnica University in 1948, after presenting the diploma project “Study, design and manufacturing of a turbine model for the Sân-Martin plant on the Bega channel”. After five years of study he received the engineering diploma in “Electro-mechanics” specialty, with “Magna cum Laude” mention.
2. THE UNIVERSITY PROFESSOR

After graduation, the engineer Ioan Anton had several offers to pursue an academic career. It was the great professor and scientist Aurel Bărglăzan who persuaded Eng. Ioan Anton to join the Hydraulic Machines Department. This choice was motivated most likely by the engineering diploma project, and therefore, starting with January 1st, 1949, Ioan Anton became the young assistant of professor Bărglăzan. This marked the beginning of a bright teaching and scientific career marking its 55th anniversary this year.

After only one year he was promoted lecturer in Hydraulic Measurements, and continued to teach laboratory works and design projects in Hydraulic Machines. Meanwhile, he was put in charge with the Hydraulic Machines Laboratory, in order to develop a new laboratory and experimental facilities, as well as to coordinate the student practical works. Starting with 1952 he becomes Associate Professor, and teaches also the Pumps and Fans course, together with the corresponding design projects and laboratory works. This rapid promotion from Assistant Professor to Associate Professor required hard, and often exhausting, continuous efforts. Increasing demands of an education system in transition after the 1948 reform, and the establishment of the new engineering specialization in “Hydraulic and Pneumatic Machines”, also motivated the young Associate Professor. His wife, Eng. Viorica Anton, later professor in fluid mechanics and hydraulic machines, supported and helped him, especially with the translation from German technical literature. Each academic year, Ioan Anton was coordinating at least five student diploma projects. This was a very demanding activity since these projects included not only theoretical considerations but also actual design and model manufacturing and testing for hydraulic turbines, pumps, hydraulic torque converters, and other hydraulic equipments. The main focus of his teaching activity was to transfer the state of the art scientific and technical knowledge to the students. His mentor, Prof. Aurel Bărglăzan, managed to set up a group of young engineers, including I. Anton, who participated in the study and design of the first entirely Romanian hydraulic turbines (such as Pelton turbines from Văluiu, Francis turbines from Crăinice and Kaplan turbines from Tg. Mureș, the Kaplan ones being designed and tested by Viorica Anton), manufactered in 1952-1953 at the Reșița Machine Building Company. The models for these turbines were made and tested at the Hydraulic Machinery Laboratory in Timișoara. Under the supervision of Prof. A. Bărglăzan, I. Anton designed and tested a special fan for cement factories, as well as the whole exhaust system. The first prototype for this fan can be seen in the Hydraulic Machines Laboratory, installed on the test rig for hydrofoil cascades. In associated with his colleague and close friend, Nicolae Peligrad, Anton has also contributed to the design and development of a family of torque converters. The first prototype of TA-500 torque converter, installed on the drilling equipment LLD-350 was manufactured at the “1 Mai” factory in Ploiești, and was installed in our laboratory as well. The Timișoara School on Hydraulic Machines has also contributed decisively on the pump industry development in Romania. All these achievements were motivated by the ambitious goal of developing a competitive Romanian industry able to produce a whole variety of hydraulic machines and equipments. Although it was obvious, not all decision people agreed that only by joining the high level technical education with industrial design manufacturing is the basic requirement for development. Building confidence in the domestic industry and Romanian specialists was a rather difficult process, and Ioan Anton focused all his efforts in this direction. Starting with 1960, the Machine Building Company from Reșița has established a design office in hydraulic machines, and since then practically all hydraulic turbines installed in our country were made in Romania. The Hydraulic Machinery Department from Timișoara has continuously contributed in both design and testing stages, as well as in educating many generations of mechanical engineers specialized in hydraulic machines.

All these achievements could not be imagined without the effort and dedication of Prof. A. Bărglăzan and his team who built and equipped the Laboratory of Hydraulic Machines from Timișoara (LMHT). It all started in a small hut, with three small test rigs. Between 1948-1952 the number of experimental facilities grew to 15, and the original hut was replaced by a large and modern building which hosts today the LMHT. It was at that time, for several decades, a very competitive research and testing facility, as well as a unique education opportunity in Romania. This was officially acknowledged in 1953, when the LMHT team (Prof. A. Bărglăzan, member of the Romanian Academy, Prof. V. Gheorghiu, Assoc. Prof. I. Anton, Lect. I. Preda, Lect. Viorica Anton, and I. Dragalina) was awarded the Romanian State Prize.
After the premature death of Prof. Aurel Bărglăzan in 1960, Ioan Anton took over the course in Turbines and Torque Converters previously taught by his magister, and became full professor at the Hydraulic Machinery Department in 1967. He developed and edited class notes for the courses “Pumps and Fans” (600 pages), “Hydraulic Measurements” (250 pages), “Hydraulic Machines” (250 pages), “Turbines and Torque Converters” (850 pages). His main goal for teaching activities was to constantly introduce the latest scientific and technical achievements, with clear and relevant examples. Many teaching subjects originated from his own research, as is should be for a true university professor. His students were the fortunate recipients of top level knowledge in hydraulic and pneumatic machines, turbines, pumps, pump-turbines, cavitation and its effects. This was the main advantage of his former students when they found themselves in positions of designer, or director of hydraulic machinery and equipment factories. Moreover, the personal example of Prof. Anton shaped many young students into industry leaders who always knew to appreciate and support their colleagues and co-workers.

The 40 PhD students who completed their theses under the supervision of Ioan Anton can now be found both in academia, research and industry all over the country as well as abroad (U.S.A., Canada, Germany). Together with many generations of graduates from the Politehnica University of Timişoara, they all owe a great debt of gratitude to their Professor Ioan Anton.

Professor Ioan Anton served as chairman of the Hydraulic Machinery Department (1962-1973, 1982-1990), Vice-dean (1951-1953) and Dean (1961-1963) of the Mechanical Engineering Faculty, Vice-Rector (1963-1966) and Rector (1971-1981) of the Politehnica University of Timişoara. It is easy to see that for many years his working hours were divided between academic activities and managerial/administrative tasks. It was not easy to keep this balance right, but he managed to have remarkable achievements on both fronts. His perseverance made possible the building of the Electrotechnical Faculty, the Hydrotechnical Civil Engineering Laboratory and the new main building of the Civil Engineering Faculty, the new wing of the Mechanical Engineering Faculty, the “Politehnica” University Computer Center, the Workshop for student practical training, the Chemical Engineering Faculty, two new chemical engineering labs at the “Azur” and UTT factories, and others. Rector Ioan Anton managed to endow these new laboratories and research facilities with state-of-the-art equipments.

Professor Anton was always trying to stimulate the student’s innovative and creative way of thinking. He knew from his own experience that, as the scientific and technical knowledge is evolving, the only way to keep up with the technical progress is to have a robust way to tackle any technical challenges. This is probably the most important legacy he left to many generations of students. Professor Anton always considered a privilege the opportunity for him to award the best student diplomas. This is why, even after many decades, many of his former students still enjoy remember their encounters with Professor Anton.

The students accommodation capabilities were substantially improved by the four hostels added to the campus, as well as the modern Cafeteria No.4. The “Politehnica” University got a new and modern publishing house, and the class notes become available to the ever increasing student body. It is hard to do justice to Rector Ioan Anton achievements in just a few words, but one can say that is hard to find a single place in the “Politehnica” University where his direct contribution was not felt. His legacy is unanimously recognized and appreciated by the academic body, although the latest generations of students may not know to whom they owe the campus facilities.

The outstanding achievements of Ioan Anton in his academic career were once more recognized by the “Politehnica” University from Timişoara, as well as by the Civil Engineering University from Bucharest.
which awarded him the prestigious title of Doctor Honoris Causa.

3. THE SCIENTIST AND MEMBER OF THE ROMANIAN ACADEMY

Under the supervision of Prof. A. Bărglăzan, I. Anton completes his Doctoral Thesis “Cavitation Characteristic Curves for Low Specific Speed Pumps” and defends it on May 28, 1961. He started with an original idea of splitting the inner (pump flow kinematics and dynamics, minimum pressure location) and outer (suction height, water properties, inlet pipe geometry) contributions to the minimum pressure on the runner blade. He derives original formulae for the suction head, and defines for the first time the inner and outer cavitation characteristic curves. These formulae explicitly account for both geometric and hydrodynamic parameters. The curves $\sigma_i = f(n_s)$ computed in the thesis show a good agreement with data from literature, as well as with his own measurements. Extensive experimental investigations, performed in association with his colleagues, revealed the influence of several parameters, such as: blade angle at the leading edge, location of the leading edge, blade shape and number. It shown that a small number of blades improves the cavitation behavior, while a large number of blades, 7-24, enhances the pump cavitation. Using these results, he designed and tested a pump impeller with splitter blades, thus managing a good compromise between energetic and cavitational requirements. These conclusions were presented and debated at “VIes Journées Hydrauliques – Turbines et Pompes Hydrauliques”, Aix en Provence, France, 1958. The cavitation in hydraulic machines later become his main research area, with further developments to cavitation in hydraulic turbines.

Acad. Ioan Anton focused his research activity on four main areas: (I) the cavitation phenomena, (II) turbomachinery hydrodynamics, (III) hydrofoil cascade hydrodynamics, (IV) magnetic liquids.

(I) The research on cavitation successfully addressed fundamental aspects such as cavitation inception, cavitation bubble dynamics, cavitation erosion, as well as the complex cavitation in hydraulic turbines and pumps. Using an original method, Anton developed new equations and formulae for computing the cavitation coefficient, as well as the inner and outer cavitation characteristic curves for pumps and turbines.

The cavitation curves for both turbine and power plant form an elegant and efficient tool for an accurate evaluation of turbine behavior in normal or cavitational operating regimes. Original contributions include, for the first time in literature, formulae for cavitational scale-up effects in both hydraulic turbines and pumps. The importance of these results have been recognized by the international scientific community, being included in monographies such as J. Noskievich, “Kavitace”, Ed. Acad. CSR, Prague, 1969. The comprehensive treatise “Cavităția”, (1056 pages, more than 1800 references), published by Anton in 1984 (Vol. 1) and 1985 (Vol. 2) at the Romanian Academy Publishing House, presents both fundamental aspects of cavitation as well as technical applications for cavitating flows in hydraulic turbomachinery and various equipments. Professor J. J. Varga, from the Budapest Technical University, referring to the “Cavităția” (Vol. 1) in Acta Technica Acad. Sci. Hung. 98(1-2), 1985, writes: “The expectations are supported by the circumstance that voluminous review of this kind can be performed only by a scientist who himself is a successful researcher in the field of cavitation. All these are generally known by professor and academician Anton”. Referring to the second volume of “Cavităția”, J. J. Varga writes in Acta Technica Acad. Sci. Hung. 99(1-2), 1986: “The good theroretical basis, the clear treatment of the various problems, the numerous figures, diagrams and illustrations, the carefully selected plentiful bibliography are good points of the book …”, “… this large work of Professor Anton is the first comprehensive treatise … it is desirable to publish this work in English …”. Dr.eng. Oreste Ceravola, from HYDROART Milano, one of the

(II) In turbomachinery hydrodynamics Anton focuses his efforts on the influence of geometrical and kinematical parameters on the energetic and cavitational characteristics. He develops original analytical relations for optimal design of Kaplan and bulb turbines, published in St. Cerc. Mec. Apl., 30 (1971) No 3,4, and in the Proceedings of the IAHR Symposium on Hydraulic Machinery and Cavitation, Sao Paolo (1992). These results have been included in the “Hydraulic Design of Hydraulic Machinery” monography, where Wu Yulin recommends them in Section 12.9, in comparison with other approaches: “The Kaplan turbine design method … presented by Anton, is an analytical design relationship which eliminates the above shortcomings”. With his monography “Turbine Hidraulice”, Ed. Facla, 1979, Anton brought a major contribution to the literature on hydraulic turbines. This 650 pages treatise was and still is largely used by the hydraulic turbines designers in Romania. A decade later he continued this work by publishing, in association with two of his younger co-workers, V. Câmpian and I. N. Carte, the monography “Hidrodinamica turbinelor - pompe bulb”, Ed. Tehnică, Bucureşti, 1988. In his most recent book, published in English, “Energetic and Cavitational Scale-Up Effects in Hydraulic Turbines”, Ed. Orizonturi Universitate Timișoara, 2002, Professor Anton presents his latest contributions, as well as a comprehensive review of the literature, on the still open problem of transposing experimental data from the turbine model to the prototype. His formulae for the scale-up effects, both energetic and cavitational, are unique in the current literature and cover the whole operating range of the turbomachine.

(III) The hydrodynamics of hydrofoils and hydrofoil cascades received a particular attention in Anton’s research activities. He combined here the experimental investigations with numerical approaches, and supervised a significant number of PhD theses on this subject. The Hydraulic Machines Laboratory from Timișoara hosts several test rigs for linear and radial cascades, where his former PhD students were performed extensive tests. Among these PhD students was Viorica Anton, who comprehensively investigated the energetic and cavitational performances of a MTH1-12 linear cascade designed at Timișoara, and Monica Gheorghiu who studied circular cascades. Together with O. Popa, Anton developed new analytical techniques for cascade hydrodynamics, using the complex analysis mathematical tools. Once the modern computers became available, Anton focused the PhD theses he conducted on developing and using numerical techniques for cascade flow computation. I. N. Carte managed, in his PhD thesis (1986) to develop original Finite Element algorithms for flows in radial-axial cascades. Later, the same problems were approached using the Boundary Element as well. In addition to these inviscid flow computations, I. Anton and D. Ionescu developed and used complex methods for boundary layer computation in order to accurately evaluate the hydraulic losses in hydrofoil cascades. These developments allowed V. Ancușa and I. Anton to accurately compute the energetic characteristics of the MHT1-12 cascade, previously investigated experimentally by Viorica Anton. The PhD theses currently conducted by Professor Anton are using state-of-the-art numerical methods and software to evaluate energetic and cavitational issues in hydrofoil cascades, aimed at improving and optimizing the design techniques.

(IV) The research on the interdisciplinary field of magnetic liquids began with the patent on “Magnetic-hydrodynamic torque converter”, No. 57574, granted to I. Anton in 1971. Magnetic liquids started to be produced and studied in early 70’s at NASA, as well as at the American company Ferrofluidics. The first paper published on the MHD effect and its application on torque converters, “Ferrofluid flow under the influence of rotating magnetic fields” authored by I. Anton, L. Vekas, I. Potencz, E. Suciu, appeared in IEEE Trans. Magn. Vol. MAG-16(2), 1980. Funda-
mental, as well as applicative results, have been collected in the invited lecture “Application oriented researches on magnetic fluids”, I. Anton, I. De Sabata, L. Vekas, published in J. Magn. Mater. 30, 1990, which was frequently cited by the scientific community. The Magnetic Liquid School from Timișoara, established and coordinated by Acad. Ioan Anton, is now internationally recognized and appreciated. This was once again confirmed at the 8th International Conference on Magnetic Liquid, held in Timișoara, 1998, having Acad. Anton as chairman. The excellent quality of the conference papers was supported by publication in a special issue of J. Magn. Mater. Vol. 201, 1999.

Anton knew from the very beginning of his career that high quality research and major achievements are possible only by developing a strong research community, with interdisciplinary teams. In the early 50’s, the Romanian Academy started to establish research units in natural sciences and engineering. This initiative was joined by some of the main personalities of the “Politehnica” University from Timișoara, e.g. professors Cornel Miklosi, Aurel Bărglăzan, Ștefan Nădășan, Constantin Avram. Thanks to their efforts, a 1951 decision of the President of the Romanian Academy officially established an academic group of researchers in technical sciences. Starting with January 1st, 1953, this group was formally organized into the Timișoara Research Division of the Romanian Academy. The young Associate Professor Ioan Anton joined from the beginning this elite group, first as a scientific researcher (1951), then as a senior researcher (from 1954). After Prof. Cornel Miklosi (1956-1963) and Prof. Ștefan Nădășan (1963-1967), both members of the Romanian Academy, Prof. Ioan Anton, a corresponding member of the Romanian Academy since 1963, became the director of the Technical Research Center, with four divisions: Welding, Material testing, Cavitation, Materials for Civil Engineering. This was an outstanding research center in Romania, unanimously recognized within the Romanian scientific community, as well as abroad. Highly confident in the scientific potential of his colleagues, Ioan Anton was determined to continue the work of his predecessors, following in the footsteps of his magister Aurel Bărglăzan. He proved to be an outstanding researcher as well as a successful manager, with a unique capacity to attract and motivate young researchers into a rather difficult scientific endeavour. He constantly promoted high level scientific cooperation with both Romanian and foreign partners, in spite of numerous impediments of the political regime in that time. He also realized that only strong ties between the Romanian Academy – Timișoara Branch, and the Politehnica University can build a powerful and productive scientific community.

Unfortunately, after a very promising two decades, the Romanian Academy research centers were decommissioned in 1971 by a rather aberrant decision of the political leaders. However, in the same year Ioan Anton managed to establish a Hydraulic Machines Research Center within the Politehnica University, where all researchers from the Cavitation laboratory at the Romanian Academy were able to continue their work, as well as to expand their research to include the magnetic liquids as well. Only after three years, in 1974, even this center was forced to merge with the Hydraulic Machinery Department within the Politehnica University, and most of the researchers had to do teaching as well. After becoming full member of the Romanian Academy, in 1974, Anton used all his influence to rebuild the research teams. In 1976 he managed to set up the Magnetic Liquids research group, formally within the Hydraulic Machinery Dpt., thus starting the preparation and technical applications of these special liquids. Three decades later, the impressive achievements in this field are the most solid proof that Anton’s continuous efforts paid off. These results were the strongest arguments for formally establishing in 1991 the Research Center for Hydrodynamics, Cavitation and Magnetic Liquids within the Politehnica University. This research center was then moved back at the Romanian Academy in 1997, within the “Center for Advanced Fundamental Research in Engineering Sciences”, directed by Acad. Ioan Anton. This rather sinuous path might seem quite peculiar for the reader. However, it represents the struggle of Acad. Anton, over several decades, who did not give up in times when many were convinced that nothing more could be done.

From left to right: Acad. Ioan Anton, Acad. Remus Răduleț, and Acad. Dan Mateescu.

One more example will support even further this conclusion. The Hydraulic Machines Laboratory, established in the early 50’s, was for almost three decades a “full of life” research facility, supported by the ambitious national programs in hydropower, as well as domestic hydraulic turbines and pumps development. However, for the last couple of decades the support for the experimental facilities grew thinner and thinner, until state-of-the-art scientific investigations became increasingly difficult, if not impossible, to perform. The test rigs are mainly used now for educational purposes. On the other hand, with the advent of increasing computer power, the numerical investigations become more and more capable to replace the experimental ones. As a result, Acad. Ioan Anton oriented the turbomachinery research toward numerical simulation.

It was a natural continuation of his efforts to introduce modern numerical techniques into hydraulic machines design and analysis. Today, a whole new generation of scientists (Prof. Romeo Resiga, Dr. Sebastian Muntean, Dr. Sandor Bernad, and others, all of them former PhD students of Acad. Ioan Anton) is developing and using state-of-the-art software and hardware capabilities to analyze the complex three dimensional turbulent flows in hydraulic machines. The recently established National Center for Engineering of Systems with Complex Fluids can be largely attributed to Anton’s efforts to build a modern research infrastructure (including numerical simulation, magnetometry, and rheology laboratories), as well as to his determination over the years to educate generations of top level scientists. Acad. Ioan Anton set up an asymptotic example for all his disciples to continue and enrich the more than half a century old tradition of the Timișoara School on Hydraulic Machines, Cavitation and Magnetic Liquids. Moreover, although his academic and managerial activities demanded many working hours every day, he was able to be constantly present in the middle of his family, near his beloved wife Viorica Anton.

4. AT THE 80TH ANNIVERSARY
At his 80th birthday we wish Professor Anton to continue for many years from now to enjoy the fruits of his outstanding teaching and scientific career. All his colleagues, disciples, as well as his former students, jointly wish him “Happy Anniversary”, in health and happiness!