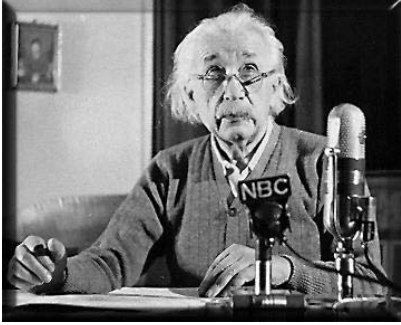


PERSONALITIES FROM THE MERIDIANS OF THE ENGINEERING UNIVERSE

Albert Einstein was born on the 14th of March 1879 in Ulm, Germany. His father, Hermann, was a small enterpriser in the domain of electrical equipment, and his mother, Paulina, was a person in



love with music. Albert had his first violin classes with her. He was six, but he kept on playing the violin all his life: for his own pleasure, when his experiments

didn't have the expected results or for philanthropic events.

History tells us that he didn't utter any word until he was three. Parents got worried, but to their happiness and astonishment, he started to speak fluently one day, using the vocabulary of an adult. He accumulated, analyzed and ... communicated. He did like this all his life. When he was 11 he started to attend a secondary school in Munich. In 1896 he applied for the Polytechnics of Zurich, one of the best universities during that time in order to get a diploma as a physics teacher. He liked more the experimental part of his teaching activity and this is why he was spending a lot of hours in the lab. History tells us that he wanted to continue his activity in the labs of the Polytechnics as an assistant, but, because of the antipathy of a professor, all his hopes vanished. He took a job as a teacher in a secondary school, he gave private lessons at home and published original theories in scientific journals. Although his ideas were inedited, they weren't paid any attention. He was asking at that time: *How would it be if we could control light and travel through it?* One year after his graduation, he defended his dissertation, but the scientific committee not only that they weren't impressed by the subject, but also they didn't give him the diploma which would have allowed him to work. With the help of an acquaintance, he gets, from 1902, a job as a clerk at the Swiss Office for Patents. It is supposed that the analysis and the classification of the usage of several devices stimulated his preoccupations related to space and time. He worked here for two years. Although he had plenty of ideas, he could not find any lab in which he could check his theories. Because of these conditions, he had to develop a method that he called "*theoretical experiment*". History says that when asked "Where is your lab?" he opened a drawer where there were a pen and a sheet of paper and said "*for the theoretical experiment all you need is a pen and a sheet of paper*".

In 1905, after a period of one hundred days, he published three articles, in different fields, but all having a revolutionary importance for science. The third one, *On the electrodynamics of moving bodies* represented the first expression of what it was called later the special theory of relativity. The scientific world remained indifferent. Only after Mark Plank, who had already written the revolutionary theory of the quantum, invited Einstein at the University of Berlin, the scientific community reacted and showed their astonishment: an examiner of inventions, of only 26 years old, unknown, with no scientific titles, can not formulate a revolutionary theory! It was only in 1919, during a total eclipse of sun, when the notes of the astrologist Sir Arthur Eddington, confirmed Einstein's theories regarding the time relativity and the space deformation. After this event Albert Einstein became more and more famous all over the world. He was invited to deliver speeches at conferences all over the world. In Japan he visited many cities, from north to south, including Hiroshima. In Germany, after 1921, Hitler became more and more powerful, and the anti-Semitism extended. In these conditions it was created a committee in Berlin for denigrating Einstein's theories and which published the book *One hundred of writers against Einstein*. Einstein answered to this book with only one sentence: "If my theories are really full of errors, then all it is needed is only a scientist to demonstrate this thing." In 1933 he went to America for ever. Although Einstein is known for his theory of relativity, he received the Nobel Prize in 1921 for his contribution to the quantum theory from the second article written in 1905. The news was brought to him during his return travel from Japan to America. He enjoyed the news with restraint. He expected to be given the prize for the theory of relativity! *His Fame* involved him in the activity of President Franklin Roosevelt, trying to hurry the construction of the atomic bomb which started "The Manhattan Program" for fabricating the atomic bomb before the Germans. As an irony, on the 6th of August 1945, he was in his house from Princeton and he heard on the radio the news about launching the atomic bomb over the Japanese city of Hiroshima. He shouted in vain "What a horror!" He remembered that during his visit in Japan in 1923 he had declared: "*If all people of the world were so smiling as Japanese, we would never have wars again!*" He died on the 18th of April, 1955 in a hospital from Princeton, the USA. He died of heart failure and he was burnt in Trenton, New Jersey, and his ashes was scattered in an unknown place. Albert Einstein opened a new window for the mankind! He loved children! He hated war! "*I don't know what weapons will be used in World War III, but in World War IV they will fight with sticks and stones.*"



Alexandru Proca was born on the 16th of October, 1897 in Bucharest, in a family of intellectuals. He graduated Gheorghe Lazar Highschool in 1915. Although he chose the scientific qualification, he could speak fluently French, English and German at graduation. In the same year he started to attend the Faculty of Sciences,

department of mathematics, but because of the beginning of the war he attended only the first year. In 1917 he is enrolled, he attended the School for reserve officers from Iași afterwards being sent to war as engineer lieutenant, where he fought until June 1918 when he was discharged. He restarted to attend The National School for Bridges and Roads, as a student, and when this school was transformed into The School of Polytechnics he chose the department of electromechanics. As a student he became known due to his bright intelligence, due its intuition and general view of technical phenomena. He preferred the theoretical research, namely mathematics. When still a student, he collaborated with professors Tudor Tănăsescu and E. Abason in order to write the *Bulletin of theoretical and applied mathematics and physics*, published by the School of Polytechnics from Bucharest. He delivered some lectures about the theory of relativity which had been made known by Einstein recently. He started his activity as engineer in 1922 at the Electrical Society in Câmpina, where he worked only for a year, but where he managed to begin the implementation of the electrical equipment for oil and mining gears. The results were presented in the paper *"The Use of Electricity in oil Industry"* published in 1924. At the same time he started his teaching career as an assistant at the Department of Electricity and Electrotechnics.

He was keen on the theoretical study of physical phenomena and, in 1925, he was sent to University of Sorbona, Faculty of Sciences. Although he had to attend all the courses he graduated until 1928, namely in less than three years, with an average mark of 17.50, the maximum average being 20. After defending his B.A. paper he was employed at the Institute of Radium which was managed by the famous Marie Curie. Here is what Marie Curie was saying about Alexandru Proca: *"Every time when I have a difficult scientific problem, that needs a lot of patience, competence, experimental ability and meticulousness I go to Mr. Proca. Every time he provides solutions that I like, that satisfy me and the results are always very precise. You, Romanians, can be proud that you have a scientific researcher as valuable as Mr. Proca."* During that time the Institute of Mathematics *"Henri Poincaré"* for promoting the theoretical physics in France was set up. Marie Curie

encouraged him to get a job at this institute. Here he wrote his Ph.D. thesis that combined researches from two top fields of physics: the theory of relativity elaborated by Einstein and the theory of electrons elaborated by Dirac. In 1929 Albert Einstein delivered a conference at Henri Poincaré Institute, and Alexandru Proca was among very few invited at the talks with Albert Einstein. The destiny wanted that the two men to meet in Paris: Einstein, the author of the theory of relativity and Proca who, as a student at the School of Polytechnics in Bucharest, had delivered some lectures about Einstein back in Romania. In 1933 he got his Ph.D. diploma in physics, demonstrating in this thesis the existence of some sub-atomic particles, with positive or negative load, with a very short life and with a mass approximately two hundred times bigger than the mass of an electron. He called these particle *"mesons"*. After obtaining these particles artificially in particle accelerators, Alexandru Proca became an indisputable authority in the study of mesons. The Ministry of Foreign Affairs from France financed him one year grant in Berlin where he worked together with the famous physicist Schrödinger. Later, he worked in Copenhagen with Niels Bohr. With the help of his theoretical research he established a link between the electromagnetic theory and the quantum theory of the photon. During 1936 – 1940, he extended Maxwell's equations in vacuum, writing the relativist equations of the boson vectorial field that established his reputation completely and that are known in scientific world as *"Proca's Equations"*. He wanted to become a professor, but his attempts to get a teaching load were defeated by the envy of the most important people during that period who could not accept their theories to be contradicted by Alexandru Proca's scientific proofs. It was only in the summer of 1943 when he managed to teach the course on theoretical physics at the University of Porto, Portugal. Although he was the first person who proved the existence of mesons before the Japanese Hideki Yukawa, the latter received the Nobel Prize for physics in 1949. Although he received a lot of praises for his valuable work, he was affected by the injustices. He was unable to understand the envy and the bad things coming from his fellows. He kept quiet. He suffered. His enthusiasm faded as well as his physical strength and he got ill. At the beginning of 1953 he was diagnosed with throat cancer. He kept on fighting. He fought writing. His last article was written on the 18th of October, 1955. After two months, on the 13th December 1955, the disease killed him. He was 58. In 1990 he was chosen the honored member of The Romanian Academy post-mortem.

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