

ACAD. ȘTEFAN PROCOPIU – A CREATIVE PERSONALITY

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The first observation to be made today, 50 years since the passing away of the distinguished professor Ștefan Procopiu, is that large part of his ideas, and not only those on Physics, are still actual. The most convincing proofs on this line are first the studies he published in the “V. Adamachi” Scientific Journal, in which he discussed for his readers the news and advances registered in Physics, while also putting forward his innovative ideas on the Romanian education and socio-cultural life. Worth mentioning in this respect is the initiative and the devoted, scrupulous and disinterested effort assumed by Teodora-Camelia Cristofor, curator at the “Ștefan Procopiu” Museum of Iași, materialized in the elaboration and issuing of the volume entitled *Ștefan Procopiu: Documentary testimonies*, Publishing House of the Culture Palace of Iași, 2012, 315 pages (Fig. 1).

The image of Professor Ștefan Procopiu offered by this volume is that of a brilliant model we must offer to the young people of today, encouraging them to follow his steps, to develop a noble and fruitful work, thus contributing to the progress of the country in which they live.

I first met Professor Ștefan Procopiu in the year 1954 when, as a young graduate of the 3-year section of the Faculty of Physics in București, I came to Iași for attending the IVth year of study within the same section of Physics. Even if, in București, I had passed the exam of Electricity with Professor Th.V. Ionescu, Professor Procopiu asked me to attend, as well, his course of Electricity, as a condition for taking the exam. It was only much later that I realized how important had been this experience for my scientific formation. The successful demonstrative experiments he performed, the explicitness and precision of the delievery, interrupted by brief humoristic parantheses (aimed at relaxing the audience) assured a rarely attained qualitative level of the lecture. As a young graduate invited to work as a university preparator in the Department of Electricity, led by the Professor, I have had the chance of better knowing him, both directly, during our daily appointments, and by my meetings with lecturer Vasile Tutovan, his close collaborator.

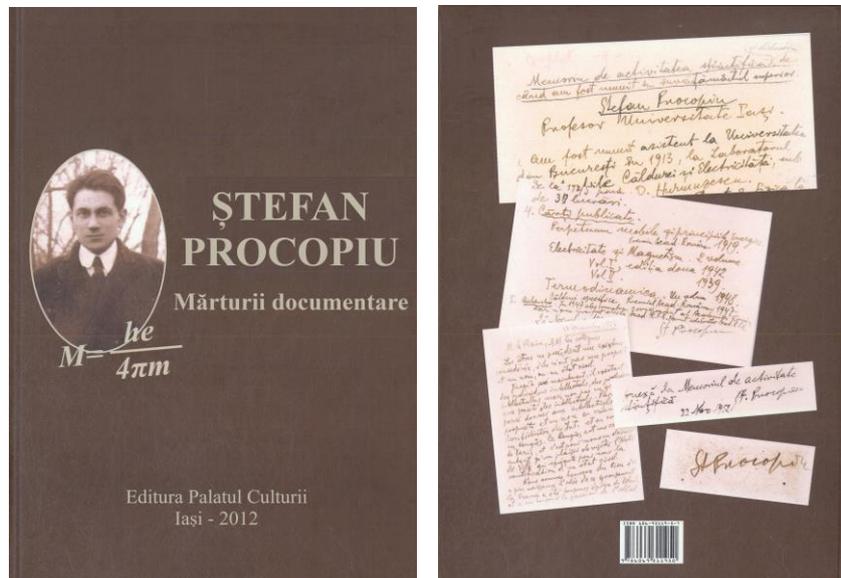


Figure 1. Ștefan Procopiu. Documentary testimonies.

Professor Ștefan Procopiu used to pay special attention to the preparation of his lectures, he never improvised. On the day of his course, usually on Tuesdays 18 p.m., he could not be approached for other issues, he received no one, as he was concentrating on what he was going to deliver to his students. The experiments carefully prepared by his assistants were minutely checked by him. During the examination sessions, he made efforts to correctly appreciate his students. He never gave a note immediately after the oral examination, but only after having examined the whole group (year) of study, comparing, hierarchizing and differentiating the grades. Together with the assistants having participated to the examination, he comparatively analyzed the notes of the thesis with that of the oral test, and only then he established the final qualification. He enjoyed the moments in which he could give a maximum mark and he encouraged the students with good interventions during the seminars. He was equally supervising their professional training, as well as the cultural development, challenging them by daily dialogues. He used to bring in the laboratory the books and journals he received from abroad, inviting all to consult them – thus developing an authentic and original school of university level. He was strict, exigent with the whole staff of the laboratory, yet he used to take their part against outside interventions. He absolutely fulfilled his vocation of trainer of successive generations, elaborating courses for his students, books dedicated to the – greater or lesser – contributions brought by Romanian physicists, which is quite unusual for the content of an university lecture.

Professor Procopiu brought an essential contribution to the creation of the technical higher education in Iași, whose importance he supported from all his

heart and explained its necessity in articles issued in various publications. As a PhD supervisor, he formed an elite group of professors at the “Gh. Asachi” Polytechnic Institute of Iași: Toma Farcaș, Vasile Petrescu, Gheorghe Vasiliu, Gérard d’Albon, Virgiliu Gheorghiu, Nicolae Calinicenco, and others. In the period following the war, starting with 1944, he continued to supervise the theses of candidates to a doctor’s degree in both Iași and Cluj. As far as my attitude, trying not to be overwhelmed by his personality, I did my best, by my behaviour and my activity, to meet his expectations.

The scientific work of professor Ștefan Procopiu “places him among the greatest physicists of the world and pathfinders in modern physics”, as stated by acad. Șerban Țițeica. As a student (in 1912, at the age of only 22 years), he published, in the “Scientific Annals of the University of Iași”, the study entitled *Sur les éléments d’énergie*, in which he was the first to predict the existence of the stationary energy states of the atom, while establishing the theoretical expression of the magnetic moment of the electron as a function of universal physical constants: $M = \frac{he}{4\pi m}$ (where h is Planck constant, e – electron charge, and m – its mass $m = 9.1 \cdot 10^{-31}$ kg). The literature of the field has recognized his priority in the domain. For example, in his book entitled *Le Magnétisme*, physicist **Pierre Weiss** mentions the name of **Procopiu** beside that of **Einstein**, who had also studied the magnetic moment of the electron. The theory of **Bohr** was made known only in the year 1913. In Romania, the magnetic moment of the electron is known as the “**Bohr-Procopiu magneton**”.

Extending his investigations on the electrical and magnetic birefringence of colloidal solutions and crystalline suspensions, Șt. Procopiu discovers in 1921 an effect of longitudinal depolarization of emergent light. The phenomenon, having an especially practical importance in the study of formation of crystalline precipitates, of colloids, and even of the protoplasmatic structure of the living cells, was named the *Procopiu phenomenon*. The French physicist A. Butaric called it the *depolarization Procopiu effect*.

Starting with the year 1929, his researches have been considerably extended on quite different topics. He published several studies on the Barkhausen effect, in which he demonstrated the discontinuity of magnetization produced on the alternative electrical current flow through a ferromagnetic wire, which he called “circular Barkhausen effect”. Later on, the foreign literature of the field named it the *Procopiu effect*.

For almost 30 years, continuously, in the same place and same time of the year, professor Procopiu and his assistants, made, both in Iași and in some other locations, measurements of the compounds forming the terrestrial magnetic field, on the basis of which he drew the map of this field, and evidenced certain anomalies. Corroborating the thus obtained data with the information provided by the literature of the field, Șt. Procopiu concludes that, since 1932, the magnetic moment of the terrestrial globe started to increase, a value known as decreasing

since 1843. Publication and interpretation of his magnetic measurements in reputed specialized journals placed the city of Iași in the list of localities mentioned in international catalogues on geomagnetism. In this respect, the words of acad. Șerban Țițeica should be again mentioned: “Most of the studies of Professor Șt. Procopiu are cited, analyzed, checked and continued in most authorized classical treatises, his investigations representing the starting point in the elaboration of new theories. He is therefore entitledly viewed as pathfinder in a series of new fields in physics” [1].

In parallels with his didactic and research activity performed for more than 50 years of continuous efforts, professor Procopiu also developed an unflinching, competent and energetic socio-cultural work. He was a gifted intellectual, always present in the complex life of our university city. For many years, he was a member of the Steering Committee of the “Vasile Alecsandri” National Theater of Iași, imposing in its repertoire the representation of authentic artistic creations, for example, the play of Karel Capek, *R.U.R. (Rational – Universal – Robot)*, proposing a visionary image for the future of humanity, paying no attention to the attacks launched in several newspapers [2]. He published regularly in the cultural journals of the time, mainly in “Însemnări ieșene”, and also in “Argus”, the daily newspaper of Commerce, Industry and Finance. However, most of his contributions were issued in the “V. Adamachi” Scientific Journal [3], especially the papers discussing scientific information and biographies of several physicists, among whom Julius-Robert Mayer, Albert Einstein, C.V. Raman, a.s.o. He was also interested in various topics of history, literature, imitative arts and, last but not least, of philosophy [4]. For example, the magazine entitled “Ethos”, published, in 1944, two articles in which professor Procopiu, refugee, with the whole University of Iași, at Alba Iulia, in Transylvania, makes a comparative analysis between the classical, deterministic conception, and the new, by that time, non-deterministic one, expressed by the uncertainty relation elaborated by Heisenberg. In the end of his analysis, the authors launches the question whether the existence of a supreme being is possible, by following either one or another of these conceptions. His answer is negative, once the acceptance of the existence of such a supreme being depends on a certain, momentary spiritual condition of a human person. Possibly, this type of articles, along with the discussions provoked by the publication, in 1948, of his book, **Thermodynamics**, as well other assertions made by malevolent people, explained the serious imputations addressed to professor Procopiu, of “idealism” and “cosmopolitanism”, and the severe criticism expressed by the “extraordinary assembly of the Society of Mathematics and Physics” held in July 23, 1949. Unlike some other professors who, equally criticized, “made concrete commitments, in accordance with the indications provided by the Academy of the Popular Republic of Romania”, Șt. Procopiu “did not recognize the criticism of his past activities”, responding to all accusations and ending with a verse, taken over from La Fontaine, which he delivered in French: “Cet animal est très méchant/

Quand on l'attaque, il se défend", "thus paying his tribute to <cosmopolitanism>, exactly the blame which he had been accused of. The accusations were extremely serious, even if some of them purely demagogic" [5].

As a matter of fact, even after his passing away, the personal legend created around him included sharp, antological replies of his, a proof of his unflinching presence of mind, with which he defended his accomplishments and his convictions. As his devoted wife, professor Rodica Procopiu remembered, the above-mentioned incident made him believe that he could be "purged" from the University, the more so that his commanding personality had already entered the viewfinder of the pervasive *Securitate* secret services as early as 1951, possibly even earlier as, between 1945–1948 he had participated to a series of public conferences organized by the French-Romanian "Luteția" Association. His dossier preserved in the archives of CNSAS (National Council for the Study of *Securitate* Archives) [6] includes a multitude of reports, addresses, declarations about the activity of Professor Șt. Procopiu, some of them intentionally malicious, the usual delations signed by the telltales around him, as well as some commendatory lines. Finally, considering his scientific, national and international prestige, and the fact that he had been never involved in politics ("science and politics are never on good terms with one another, once individual energy is limited", he used to say), nor had he ever permitted his subordinates any political attitude in the laboratory [7], he could continue alone his didactic and scientific activity, as he always used to do.

"The laboratory is my life", he sometimes used to say.

Starting with the year 1955, when he was elected full member of the Romanian Academy, all his excellence was finally recognized, several fully deserved titles and honours were awarded to him by various prestigious institutions.

Professor Procopiu loved and served his country, not by clamorous manifestations but by his honest work, competence and perseverance. The cult of labour, his profession of faith, guided his whole life. He expressed this faith explicitly in the opening lecture of the 1933–1934 university year, delivered in the presence of king Carol II of Romania. His lesson opens with a protocol introduction, followed by a plead supporting the establishment of the technical high education in Iași, continuing with the main part, entitled *Chimea in science* [8], in which he analyzes the three chimeric entities, namely: Astrology, Perpetuum mobile and Alchemy, each of them leading to the development of a scientific branch. Highly interesting are also the connections made with certain historical events and the extrapolations involving social life. The lesson ends with the presentation of universities' mission: *The real mission of any University is not only of spreading science, but also of coming to create itself values, inspiring vocations and maintaining the sacred fire in the generations it educates. Apart from the issues specific to our territory, our University will bring its own contribution to the great challenges which turmoil and transform the Western world. It is only in this way that we shall impose ourselves, gaining the reverence and collaboration of all*

ethnic groups living in our country. It is only in this way that the possession of this territory will be never challenged, once its cultural richness represents today a more efficient manner of security and national unity.

We will bring our contribution to progress by our scientific works, and thus our professors and students will better understand the idea of sacrifice for the sake of the whole collectivity. To reach this end, our work must be viewed as a sacred duty". Antological words, indeed, and a model for the present time. The personality of professor Ștefan Procopiu, the whole significance of his contributions to science and education remain a model to be followed, as well. I shall cite in the end of this evocation the words of our old chronicler Miron Costin (1633–1699): "Valuable people are born in Moldova, as well". And these notable people are not few...

REFERENCES

1. * * * *Personalități românești ale științelor naturii și tehnicii*, Scientific and Enciclopaedic Publishing House, București, 1982.
2. *Ștefan Procopiu: mărturii documentare*, Teodora-Camelia Cristofor (Ed.), Iași, Publishing House of the Palace of Culture of Iași, 2012, p. 154.
3. Vasile Adamachi (1817–1892) was prefect, senator, man of science, and mainly a philanthropist. He donated to the Romanian Academy 2.5 million lei (in gold), thus creating the "Adamachi Fund" meant at financially supporting, by a grant system, young students and candidates to a doctor degree. Rich people still exist, yet, unfortunately, we do not have patriotic philanthropists, any more.
4. As his devoted wife, professor Rodica Procopiu remembers, during the evening political courses organized in the University by the communist regime, to which the presence of the whole didactic staff was binding, professor Procopiu frequently created problems to the young lecturers, as he was by far much better informed on the topics they were to teach.
5. *Ștefan Procopiu: mărturii documentare*, Teodora-Camelia Cristofor (Ed.), Iași, Publishing House of the Palace of Culture of Iași, 2012, p. 152.
6. *Idem*, p. 241.
7. *Idem*, p. 154.
8. *Idem*, p. 117.