

DISQUISITIONES MATHEMATICAE ET PHYSICAE, AN INTER-WAR PRECURSOR OF ACTUAL ROMANIAN JOURNALS OF PHYSICS*

G. STRATAN^{1,2}, L. MIRCEA³

¹ Joint Institute for Nuclear Research, Dubna, Moscow Region, Russia 141980,
E-mail: stratan@theor.jinr.ru

² National Institute for Nuclear Physics and Engineering, P.O.Box MG-6, RO-077125 Bucharest-
Magurele, Romania, E-mail: stratan@theory.nipne.ro

³ Astronomical Observatory, Babes-Bolyai University, Cireșilor 15, 400487 Cluj-Napoca, Romania,
E-mail: mirliviu@yahoo.com

Received July 20, 2012

Appeared as a publication of *King Charles II* Institute of Scientific Research, *Disquisitiones* grouped the most important mathematicians and physicists from Bucharest. The new publication features and its connections with the scientific, social and historical events in Romania and abroad during its short and tense lifespan (1940–1948) are described.

Key words: *Disquisitiones*, Editorial Board, authors, Mathematical and Physical articles, professor Hulubei, editorial policy, historical events.

1. INTRODUCTION

In 1930, Romania made a step ahead towards a modern structure of its scientific research by the foundation of *King Charles II Research Institute of Romania*, the first research institution formally outside – but in connection with – the research done in universities and in polytechnic schools. From the very beginning, the new created institute encountered financial difficulties; so, it started much later to organize its activity. In 1940, the Laboratory of Physics in Cluj, city elected as the residence of the institute, was on the point to be achieved under the directorate of Professor Horia Hulubei (1896–1972). The making of Cluj laboratory was stopped by the Vienna Dictate of August 30, 1940, following which Romania lost a large territory, including Cluj, the major city of Transylvania. Nevertheless, *Disquisitiones Mathematicae et Physicae*, (*Mathematical and Physical Discussions*, called in this article *Disq. Math. Phys.*), conceived as one of the publications of *King Charles II Institute*, survived the 1940 dictate and WWII, not without undergoing some changes under the pressure of events, fortunately, without compromising its scientific quality. The most important features and the evolution

* Published to commemorate 40th anniversary of prof. Hulubei's death.

of the journal will be analyzed in this paper. Here, we will consider the physical part of this publication; indeed, Romanian Mathematics has another history of publications and needs a different approach.

2. *DISQUISITIONES: AIMS AND EDITORIAL POLICY*

Under the signature of Victor Vâlcovici (1885–1970), member of the Editorial Board, the first number of *Disq. Math. Phys.* (see Fig. 1) presents the profile of the new publication, defined explicitly by its title and, implicitly, by the structure of its Board, Administration and Secretariat. The main aim of the journal was to publish the results obtained in the framework of *King Charles II Institute* in the fields of Mathematics and Physics, but the examination of the contents, as well as of the addressing of V. Vâlcovici, shows a wider approach to the selection of titles and authors, including a number of authors from abroad, who mainly, but not exclusively, collaborated with Romanian scientists. In spite of the restrictions imposed by WWII and the post-war period, *Disquisitiones* was really an international journal, quoted even in the present time (see, for example, [1], [2] and [3]).

PUBLICAȚIILE INSTITUTULUI DE CERCETĂRI ȘTIINȚIFICE
REGELE CAROL II



DISQUISITIONES MATHEMATICAE ET PHYSICAE

TOMUS I
FASC. I

MONITORUL OFICIAL ȘI IMPRIMERIILE STATULUI
IMPRIMERIA NAȚIONALĂ, BUCUREȘTI 1940
ROMANIA

Fig. 1 – The first issue of *Disquisitiones*.

The authors were invited to submit their articles in German, English, French or Italian, but, with its Latin title and French addressings, *Disquisitiones* published mainly papers written in French. This fact had a serious reason: 10 (from 16) members of the Editorial Board, Administration and Secretariat of *Disquisitiones* took their PhD in Paris. Also, the period of publishing of *Disquisitiones* (1940–1948) was situated before the English took over in international journals as the universal scientific language. In this interval of time, the journal appeared in seven tomes: I (1940–1941), II (1942), III (1943), IV (1945), V (1946), VI and VII (1948). In 1944 and 1947, *Disquisitiones* didn't appear, due to the passing of the front line over Romania, respectively, to the drastic after-war changes. If the first two issues from 1940 had on their frontispiece the name of the King Charles II, the following ones wore the inscription *The Publications of the Royal Institute of Scientific Research* (in September 1940, Charles II was deprived of his throne and left Romania). In 1948, another political change, and the inscription became “The Publications of the People's Republic of Romanian Institute of Scientific Research” (in December 1947, the young King Michael I was forced to abdicate and the monarchy was abolished).

During all this troubled period, *Disquisitiones* published 59 articles and reviews of Mathematics and 17 of Physics. This prevalence of Mathematics over Physics was a reflection of the composition of the governing bodies of the journal: indeed, from 22 positions, only 7 were detained by physicists. That proportion measured also the real situation of these two domains of research in Romania, with a stronger position home and abroad and a longer tradition in the field of Mathematics. On the other hand, Physics needed a material basis which was difficult to be build in a country engaged in war.

Coming back to the languages of the articles, we found only one written in Italian and six in German; all of remaining ones (69) being published in French. English was absent from *Disq. Math. Phys.* and this fact is explained also by the internal and external factors described above.

It is important to mention the high achievements of all mathematicians and physicists implied in the editorial activity of *Disquisitiones*. If we could measure the recognition of someone's scientific activity by his (or her) election in a consecration academy organized after the model of the Paris Academy of Sciences, which has a limited number of members (*numerus clausus*), then, the fact that all but one of the editors were elected during the time in the Romanian Academy tells a lot about their professional value. The exception was Gheorghe Manu, a physicist who died in 1961 in prison, where he was detained on political grounds.

2.1. THE PHYSICISTS AND PHYSICS FROM *DISQUISITIONES*

Three physicists were members of the Editorial Board: Eugen Bădărău (1887–1975), the founder of the Romanian school of discharge in gases and of

Physics of plasma (and, later, director of the Institute of Physics), Horia Hulubei (1896–1972), the founder of atomic and nuclear Physics in Romania (and of the Institute of Atomic Physics) and Nicolae Vasilescu-Karpen (1870–1964) a reformer of technical studies in Romania and the inventor of a type of fuel electric cell. Bădărău and Hulubei were also members of the Disq. Math. Phys. Administration. Șerban Țițeica (1908–1985), the founder of the school of Theoretical Physics in Romania and George Manu (see above) were members of the Secretariat of *Disquisitiones*. Without any doubt, the most prominent personality among physicists was Horia Hulubei. A pilot hero of WWI, then, a pioneer of Romanian Civil Aviation, he was promoted Directeur de Recherche at CNR in Paris and elected in 1940 corresponding member of Paris Academy of Sciences. Next year, Hulubei became rector of Bucharest University. Together with Yvette Cauchois, his longstanding collaborator from Paris, Hulubei contributed to the first tome of Disq. Math. Phys. with two articles, consecrated to the study of X-spectra of several elements, one of his main domains of research ([4] and [5]).

Hulubei's professional life is a very eloquent case of the drastic effect of war on scientists and on science in general. His studies were interrupted by WWI in 1916, when he enlisted; he could graduate only in 1926 from University of Jassy. WWII stopped his "contacts with France after the June 1940 occupation of Paris" and made difficult "the reading of Anglo-Saxon scientific literature". He mentioned also the destruction of his manuscripts, including his precious tables of newly measured X-rays spectra, together with his laboratory, during the April 15, 1944 bombing of Bucharest. These set-backs could explain also why Hulubei didn't succeed to be recognized in his time as one of the discoverers of $Z=85$ element [7].

Not only Hulubei had to suffer, but also many other collaborators and authors of the journal. A younger physicist, Gabriel M. Bădărău, from Bucharest University, was forced to interrupt his PhD studies in Sorbonne, under Louis de Broglie and Francis Perrin's supervision. He presented his thesis at Jassy University, and published it in *Disquisitiones* [8]. The journal itself had to diminish the number of published articles and (see above) even to cease temporarily its activity.

It seems that the physicists from Disq. Math. Phys. were more open to the international cooperation than their colleagues mathematicians. Indeed, *Disquisitiones* published a number of 8 articles having international authors or coauthors (from a total of 17 articles of Physics), while only one of this kind in the field of Mathematics. Yvette Cauchois (1908-1999) detains the record of articles published in this journal: two in collaboration with Hulubei (see above), one with Ioana Mănescu [9] and one alone [10]. Together with [11], these five papers determine the main direction of the experimental Physics in Disq. Math. Phys., namely, the X-ray Spectroscopy, represented in the Editorial Board by Horia Hulubei. Theoretical Physics is present with 6 articles, four of them due to foreign

authors (three from France, one from Switzerland). Nuclear Physics makes its entry with two articles [8] and [12], which could be assimilated also to Theoretical Physics. Eugen Bădărău's school is present with, especially then, a very actual problem, the explosive potential of hydrocarbons [13]. Two other articles [14] and [15], on the structure of negative ions and the propagation of electromagnetic waves, involved a research with many applications in laboratory conditions, as well as in the atmosphere. All the directions of development of Romanian Physics present with articles published in *Disquisitiones* will be continued by their founders and followers after the closing of the journal (1948).

3. FINAL REMARKS

After the closing of *Disquisitiones*, a journal called *Studii și cercetări de fizică* (Studies and Research of Physics, tome I in 1950), started with articles written in Romanian, with summaries in Russian or French, published jointly by the Institute of Physics, Institute of Atomic Physics and Romanian Academy, under the current official name of these institutions, which were changed during the time. The physicists from *Disquisitiones* board took positions in the board of the new journal, but for them, as well as for all Romanian scientific community, it was a drawback from the international status of *Disq. Math. Phys.* Only in 1992, under the new political conditions, the journal regained its international status, bearing its new – and actual – name, *Romanian Reports in Physics*. Using the same criterion of the people from the Editing Board, the other successor of *Disquisitiones* is the *Romanian Journal of Physics*, which started in 1955 as the *Revue de Physique* and changed twice its name, in 1964 as *Revue Roumaine de Physique*, and in 1992, into its actual name. Many other scientific journals edited by the Romanian Academy had similar evolution, but this subject goes beyond our actual purpose.

Acknowledgements. The authors are indebted to Mr. M. Trikhanov for help in documentation.

REFERENCES

1. K. Yano, *Selected Papers of Kentaro Yano*, M. Obata (editor), North Holland, Amsterdam, 1982.
2. S. Stoilow, *Analysis and Topology: A Volume dedicated to the Memory of S. Stoilov*, C. Andreian Cazacu, O. Letho, M. Rassias (editors), World Scientific, Singapore, 1998.
3. Lloyd Humberstone, *The Connectives*, MIT Press, 2011.
4. H. Hulubei, Y. Cauchois, *Spectres caractéristiques du Polonium I*, *Disq. Math. Phys.* **1**, 141–156 (1940).
5. H. Hulubei, Y. Cauchois, *Les spectres K d'absorption du gallium, du germanium, de l'arsenic et du sélénium* *Disq. Math. Phys.* **1**, 467–490 (1941).
6. H. Hulubei, *Sur l'Élément 85*, *Bull. Sci. Sec. Roum. Ac.* XXVII, 124–134 (1945).
7. B. F. Thornton, S. C. Bourdette, *Finding eka-iodine: discovery priority in modern times*. *Bull. Hist. Chem.* **35**, 86–96 (2010).

8. G. M. Badarau, *Contributions à l'étude des barrières de potentiel. Niveaux de résonance des particules- α* , Disq. Math. Phys. **I**, 391–465 (1941).
9. Y. Cauchois, I. Manescu, *Les specters d'absorption L et les niveaux caractéristiques de l'uranium, du platine et du tungstène*, Disq. Math. Phys. **I**, 117–140 (1940).
10. Y. Cauchois, *Remarques sur <<l'anomalie>> des absorption M*, Disq. Math. Phys. **II**, 319–330 (1942).
11. I. Manescu, *Étude des spectres L de numeros atomiques 72 (celtium) et 73 (tantale)*, Disq. Math. Phys. **III**, 141–154 (1943).
12. G. M. Bădărău, *Sur le coefficient de transmission d'une barrière de potentiel. Niveaux de resonance des particules- α* , Disq. Math. Phys. **I**, 391–465 (1941).
13. E. Bădărău, I. Constantinescu, *Étude de potentiel explosif dans les vapeurs d'hydrocarbures*, Disq. Math. Phys. **I**, 157–163 (1940).
14. T. V. Ionescu, *La structure des ions négatifs*, Disq. Math. Phys., **I**, 491–510 (1941).
15. C. Mihul, *Réflexion des des ondes électromagnétiques par les milieu aux constants optiques variables*, Disq. Math. Phys. **I**, 253–270 (1940).