

EDITORIAL

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PREFACE

This issue of the journal begins with an article by Gennadiy V. Bulavko that provides an in-depth exploration of organic photovoltaics, a key green energy technology. The article traces its development from early theoretical concepts to its current status as a promising option for sustainable energy production. The research thoroughly examines the series of milestones in converting solar energy into electrical power, focusing on the evolution, technological advancements, and inherent challenges of organic solar cells. It reviews the foundational aspects of organic photovoltaics, including the initial discoveries and subsequent material science enhancements that have significantly improved the efficiency and practicality of organic solar cells.

Skepticism and critical inquiry are essential in the scientific process, serving as protections against the "ad verecundiam" fallacy, where claims are accepted merely based on authority. The next article thoroughly investigates Augustin-Jean Fresnel's challenge to Newton's corpuscular theory with his innovative wave theory of light. By examining how Fresnel overcame challenges, it offers lessons on constructing scientific knowledge, highlighting the need to avoid accepting theories based solely on authority and instead focus on empirical evidence and theoretical coherence. Fresnel's case serves as a valuable example for teaching the history of science and understanding the evolution of complex scientific concepts.

The article by Iryna Humenna focuses on the national, cultural, educational, and scientific activities of Ukrainian student societies in Eastern Galicia from the late nineteenth century to 1939, examining their cooperation with Metropolitan A. Sheptytskyi. Using chronological, historical-comparative, retrospective, and interdisciplinary methods, including the structural method, the author analyzes historical evidence. The study investigates the functioning of Ukrainian student societies in difficult and unfavorable conditions and demonstrates that their primary aim was the consolidation of society and the realization of national and cultural aspirations of the Ukrainian people. This was achieved by catalyzing processes in the educational and scientific spheres through active interaction with A. Sheptytskyi.



During the period covered, students collaborated with various political parties, participated in the First World War, and fought for the establishment of the Ukrainian University as a center of higher education and a Ukrainian scientific school.

The article by authors from Yaroslav Mudryi National Law University of Ukraine examines the development of the problem-solving method in the history of pedagogy, both in theory and practice. The research findings show that problem-solving teaching and learning is viewed as a process in which students solve cognitive and practical problems, stimulating their creative and mental activity and promoting active participation in learning. The significant potential of the problem-solving teaching method has been extensively utilized in higher education. The ideas and accumulated pedagogically valuable experiences of implementing problem-solving teaching in higher education offer a valuable theoretical framework and teaching tools for ensuring and enhancing the intellectual and professional competence of future specialists, thereby improving the quality of higher education.

The next article discusses a study on the role of natural knowledge in organizing agricultural research in Ukraine's forest-steppe zone. It provides insights based on available sources about efforts to establish an agricultural experimentation framework in the Forest-Steppe region during the first quarter of the 20th century, following a regional approach. This initiative included the operation of two regional agricultural research centers in slightly different areas of the Forest-Steppe. In the right-bank area, agricultural experimentation was conducted by the Kyiv Agricultural Research Station, along with various district institutions. In contrast, the left-bank area was served by the Kharkiv Agricultural Research Station, along with district and specialized research institutions. The natural science experience accumulated in the early 20th century significantly contributed to developing the theoretical and methodological foundations for advancing agricultural science and research in Ukraine.

Pantelis Zoiopoulos's detailed study offers a comprehensive evaluation of the national and international career of the eminent Greek agriculturist Ioannis Papadakis. The study highlights how Papadakis, primarily working as a plant breeder since 1923, addressed the major challenge of achieving wheat self-sufficiency in Greece by developing new, high-yielding varieties that adapted well to the country's adverse soil and climatic conditions. In 1947, after being invited by Argentina to create its ecological map, Papadakis permanently moved there. He had published the pioneering book "Agricultural Ecology" in French in 1938 and was invited to write the "Soils" entry for the Encyclopaedia Britannica. Papadakis worked for the Food and Agriculture Organization of the United Nations and researched agricultural issues in South America, West Africa, Southeast Asia, and other regions. He authored numerous research and review papers on various agricultural topics, including field crops, plant breeding, biometry, soil science, agricultural ecology, and rural economy and policy.

The article by authors from the Research Center for Prehistoric and Historical Archaeology of the National Research and Innovation Agency of Indonesia investigates how municipalities managed wastewater in the Dutch East Indies in the early 20th century. The focus is on Bandung, one of the most significant cities in the Dutch East Indies, which evolved into a modern residential area, economic hub, and

government seat. This research uses historical-archaeological methods, combining primary data from written sources and field observations. The study reveals that Bandung faced environmental issues, such as the local population's habit of defecating in rivers and open spaces, which spread diseases and polluted river water.

The next article is devoted to the study of the history of the emergence and development of additive technologies in world artistic ceramics. The article analyzes information on the history of the emergence of additive technologies. The principle of operation of 3D printing equipment, features of its use, the most common areas of use and materials used in 3D printing have been considered.

The article by authors from Kharkiv State Academy of Culture of Ukraine examines the carved support beams from the homes of Cossack elder families and Orthodox clergy in the Hetmanate during the last quarter of the 17th century to the end of the 18th century. The creation of these elaborately ornamented support beams served as a confirmation of the homeowners' social status and artistic tastes, as well as a demonstration of the master carvers' skill level of that era.

The next article presents a comprehensive review of Prussian Blue, a pigment with a rich history and diverse applications. It explores the pigment's origins, artistic uses, and chemical properties. The review emphasizes the wide-ranging applications of Prussian Blue, demonstrating its enduring relevance and evolution beyond its historical beginnings.

The next article examines how the socio-economic conditions in Bukovyna influenced the formation and development of the railway network in the region. It explores whether these processes aligned with the global trends of the time. The article also analyzes the impact of railway construction on the social aspects of life in Bukovyna.

The authors from Ternopil Volodymyr Hnatiuk National Pedagogical University made an attempt to explain the evolution of architectural styles of theater buildings from ancient times to modern times. It helps to understand the influence of cultural, technological and social factors on architectural decisions. The article analyzes the relationship between the development of theater architecture and social aspects, such as changes in audience tastes, the role of theater in society, and the reflection of political and cultural trends in buildings.