

EDITORIAL

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Oleh Pylypchuk

State University of Infrastructure and Technologies
9, Kyrylivska Street, Kyiv, Ukraine, 04071
E-mail: olegpilipchuk47@gmail.com
<https://orcid.org/0000-0002-8178-3347>

Oleh Strelko

State University of Infrastructure and Technologies
9, Kyrylivska Street, Kyiv, Ukraine, 04071
E-mail: ohestrelko@duit.edu.ua
<http://orcid.org/0000-0003-3173-3373>

Yuliia Berdnynchenko

State University of Infrastructure and Technologies
9, Kyrylivska Street, Kyiv, Ukraine, 04071
E-mail: yb08@ukr.net
<https://orcid.org/0000-0001-7536-7155>

PREFACE

We are delighted to welcome you to the new issue of the journal on the history of science and technology! This issue is unique as it explores diverse aspects of the development of science and technology in various countries and historical periods.

We invite you on an exciting journey through the pages of this issue, where you will find works by distinguished scientists such as Maryna Gutnyk, Florian Nürnberger, Tetiana Karmadonova, Natalya Pasichnyk, Renat Rizhniak, Hanna Deforz, Liudmyla Zhuravlova, and many others. Their research covers various facets of history and technology.

The collaborative work by Maryna Gutnyk and Florian Nürnberger presents a comprehensive exploration of the evolution of the Fe-C diagram, tracing its historical development through the lenses of various scientific contributions over time. Their analysis underscores the rich history behind this diagram, highlighting the foundational studies dating back to the early 19th century, marking crucial milestones in understanding the carbon content in steel and its implications for industrial applications. The authors' meticulous use of comparative analysis, synthesis, and chronological examination sheds light on the gradual refinement and evolution of the



Fe-C diagram. From the initial recognition of graphite as pure carbon to the establishment of phase diagrams through collaborative efforts at international congresses, the Fe-C diagram's progression intertwines with the advancements of the industrial revolution.

Tetiana Karmadonova's work on the migration trends of Ukrainian researchers from 1991 to 2023 provides a comprehensive analysis of the multifaceted factors driving the migration of scientists from Ukraine to various destination countries, particularly against the backdrop of recent events in the country. The study delves into the intricate landscape of migration among Ukrainian researchers across different historical periods.

Natalya Pasichnyk, Renat Rizhniak, and Hanna Deforz's meticulous study on the publications in the "Bulletin of Experimental Physics and Elementary Mathematics" from 1886 to 1917 offers invaluable insights into the organization, proceedings, and outcomes of domestic and international congresses of mathematicians and natural scientists during that period. Their research, focused on a comprehensive and quantitative analysis of these journal publications, sheds light on the pivotal role of these gatherings in the scientific and pedagogical realms.

Liudmyla Zhuravlova's research on the evolution of techno-nationalism and the pivotal role of space in this phenomenon from the 1980s to the 2020s offers a compelling exploration into the intricate dynamics of technological advancements and their influence on international relations and national strategies. The article delves deeply into the theoretical comprehension of techno-nationalism, particularly examining its relationship with space policy and its relevance within the context of US-China relations. Employing an interdisciplinary approach, drawing from historical, economic, political sciences, and international relations theory, the research unravels the dichotomous evolution of techno-nationalism juxtaposed against techno-globalism. Zhuravlova's work accentuates the ongoing power struggle between the US and China within the space industry, amplifying the techno-nationalist dimensions within innovation systems.

Artemii Bernatskyi and Mykola Sokolovskyi's research presents a comprehensive review of the evolution of additive manufacturing (AM) processes within the realm of metallurgy, spanning from the foundational theories of layer-by-layer manufacturing to the contemporary landscape of AM technologies. This work illuminates the rapid advancements within the AM sector, capturing the profound interest of the scientific community. It underscores the dual significance of AM technologies - not only as an alternative manufacturing method for existing structures but also as a gateway to crafting new, intricately complex structures unattainable through traditional methodologies. Through meticulous analysis and classification of prior studies focusing on technological advancements and implementations, the research establishes a structured approach towards comprehensively mapping the development of additive manufacturing technologies in various trajectories. As a result, the research proposes a systematic approach to formulate a comprehensive scheme for AM technology development, thereby offering a framework that navigates the intricate landscape of technological advancements in various directions.

Mykhailo Klymenko's meticulous study offers a comprehensive evaluation of Professor Tomasz Nikodem Ścibor-Rylski's pioneering contributions to the development of agricultural machinery testing during the latter half of the 19th century. This research sheds new light on Rylski's scientific endeavors and their significant impact on the evolution of agricultural equipment testing. Employing principles of historicism, scientific rigor, and objectivity, Klymenko utilizes historical-scientific methodologies, archival analysis, and generalization to present a nuanced understanding of Rylski's work. For the first time, archival documents are introduced, unveiling insights into the scientist's activities in advancing the field of agricultural machinery testing.

Mohamad Khairul Anuar Mohd Rosli, Ahmad Kamal Ariffin Mohd Rus, and Suffian Mansor's insightful study delves into the overlooked yet pivotal role of electricity, specifically facilitated by the Perak River Hydro-Electric Power Company (PRHEPC), in the tin-mining industry within Kinta Valley during the period of 1927 to 1940. The research illuminates the historical emergence of electricity as a dominant power source in the tin-mining industry of Colonial Malaya, a topic that has received minimal attention in Malaysian historiography.

Sana Simou, Khadija Baba, and Abderrahman Nounah's research represents a profound call to action amidst the urgent need to safeguard Morocco's cultural heritage, notably exemplified by the Marinid Madrasa within the Chellah archaeological site in Rabat. This research intricately weaves advanced technologies with a profound appreciation for the historical, social, and cultural significance of these sites. It charts a course that not only conserves architectural brilliance but also honors the profound stories encapsulated across epochs. Ultimately, it emerges as a blueprint for harmonizing the past with the present, ensuring the preservation of cultural heritage while embracing the imperatives of progress.

In his article, Oleh Strelko shows that the history of bridge construction is an important part of historical knowledge. Developments in bridge construction technology reflect not only engineering advances, but also social, economic and cultural aspects of society. Engineers and scientists faced unique challenges when designing and building bridges depending on the technological level of the era, available materials and the needs of society. This process may reflect technological progress, changes in transportation needs, and cultural and social changes. The purpose of this article is to briefly review key moments and stages in the history of metal bridge construction using welding technology in the 20th century.

We invite you on this exciting journey with our authors exploring the history of science, technology, and cultural heritage. May this issue broaden your knowledge and inspire new research endeavors!