HISTORY OF TECHNOLOGY

ІСТОРІЯ ТЕХНІКИ

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INTERNATIONAL SCIENTIFIC ASSOCIATIONS ON THE HISTORY OF SCIENCE AND TECHNOLOGY: FORMATION AND DEVELOPMENT (PART I)

The history of the formation and development, the task, structure and directions of the activities of some international organizations in the field of history of science and technology, including The International Academy of the History of Science, International Union of History and Philosophy of Science and Technology (IUHPST) and International Committee for the History of Technology (ICOHTEC), are highlighted. The participation of Ukrainian scientists in the activity of these research centers is shown.

Keywords: Ukraine, history of science and technology, The International Academy of the History of Science, International Union of History and Philosophy of Science and Technology (IUHPST), International Committee for the History of Technology (ICOHTEC).

Висвітлено історію формування та розвитку, завдання, структуру та напрями діяльності низки міжнародних організацій в галузі історії науки і техніки, а саме: Міжнародної академії історії науки, Міжнародного союзу історії та філософії науки і техніки (IUHPST) та Міжнародного комітету з історії технологій (ICOHTEC). Показано участь українських вчених у діяльності цих наукових осередків.

Ключові слова: Україна, історія науки і техніки, Міжнародна академія історії науки, Міжнародний союз історії та філософії науки і техніки (IUHPST), Міжнародний комітет з історії технологій (ICOHTEC).

Отражена история формирования и развития, задачи, структура и направления деятельности ряда международных организаций в области истории науки и техники, а именно: Международной академии истории науки, Международного союза истории и философии науки и техники (IUHPST) и Международного комитета по истории технологий (ICOHTEC). Показано участие украинских ученых в деятельности этих научных центров.

Ключевые слова: Украина, история науки и техники, Международная академия истории науки, Международній союз истории и философии науки и техники (IUHPST), Международный комитет по истории технологий (ICOHTEC).

Introduction and context

International organizations on the history of science and technology contribute to the scientific communication of scientists from different countries and the comprehensive development of numerous aspects of the history of science and technology. Their activity

is a remarkable phenomenon in the world scientific and socio-cultural sphere, that is why the analysis of the acquired experience and the obtained results are important.

Today, on the path of the formation of world scientific, technical and geopolitical space, interest in the coverage of the scientific results obtained in different countries, and of the history of local scientific spheres, Ukrainian science for example, is growing. Such international associations, which carry out scientific congresses, influence to this. An activity of international scientific organizations is reflected in the handbook published on three languages by G. V. Dobrov institute for scientific ang technological potentian and science history studies NAS of Ukraine [2]. It contains 60 references about international and national science research organizations which are divided into four chapters: UNESCO and international academic associations; history of science and technology; philosophy and sociology of science; science of science. Basic information about tasks of organizations, its structure and background information is shown.

The puppose of the research is to discuss more deeply than in book mentioned above, the history of formation and development, tasks, structure and activities of some international organizations in the field of the history of science and technology, including The International Academy of the History of Science, the International Union of History and Philosophy of Science and Technology (IUHPST) and International Committee for the History of Technology (ICOHTEC). The participation of Ukrainian scientists in the activities of these research centers is also going to be shown.

The object of the study is history and periods of evolution, results, membership and govermance, national representation, Ukrainian for example, publications of such world scientific unisons of historians of science and technology: The International Academy of the History of Science, International Union of History and Philosophy of Science and Technology (IUHPST), International Committee for the History of Technology (ICOHTEC).

The tasks of the work are the following: to reveal the meaning of professional unions of scientists for effective scientific work, communication and professional support among scolars; to show a social, cultural, political and economic conditions, that leed to the need for scientists to unite and cooperate; to discuss the results represented at the international congresses, organized by The International Academy of the History of Science, International Union of History and Philosophy of Science and Technology (IUHPST) International Committee for the History of Technology (ICOHTEC) and published in their procedeengs; to show the efforts of the Ukrainian scientists for preparing and participation at the International Symposia on the history of science and technology.

Hotel de Nevers (former headquarters of The International Academy of the History of Science [3]

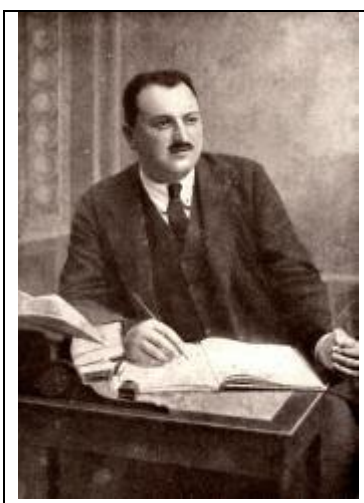
Results and discussion

Among unions of scientists from all over the world is **The International Academy of the History of Science** (French: Académie Internationale d'Histoire des Sciences) - worldwide non profit membership organization of historians of science [3].

History of the Academy originates from italian historian Aldo Mieli's first appeal in the issue of the journal «Archeion» for November-December 1927 to his colleagues working in the history of science for an active and organic participation in the business of

the international organization for history in general. Aldo Mieli, 1879-1950, was at that time a Professor in the University of Rome. Political circumstances forced him to move to Paris, then to Argentina, where he died. The VIth Congress of the Historical Sciences was then in preparation by a committee formed in the United States (The International Committee of Historical Sciences) for assembly at Oslo in August 1928. The steps taken by Aldo Mieli resulted in the establishment, within the framework of the Congress, of an International Committee of the History of Science, to which its progenitor was already attaching the name of Academy. So, the academy was founded on 17 August 1928 in Oslo at the Congress of Historical Science on initiative of Aldo Mieli, Abel Rey, George Sarton, Henry E. Sigerist, Charles Singer, Karl Sudhoff, and Lynn Thorndike. But till 1932 Academy was called the International Committee of the History of Science.

The activities of the International Academy of the History of Science were suspended during the World War II. Prof Aldo Mieli, the permanent secretary, was not able to leave Buenos Aires, and resume publication of Journal of the Academy «Archeion». It has been decided, however, to hold a congress at Lausanne (Switzerland) in the summer of 1947. All interested in the subject were invited, and the following provisional measures have been taken: J. A. Vollgraff (Leyden, Holland) is acting as secretary-treasurer, and Prof. P. Brunet (Paris, France) as archivist and librarian. Prof. Arnold Reymond (Lausanne, Switzerland) was elected president at the last meeting and will preside at the next. A corrected list of the surviving members of the Academy is being compiled. Each individual member and each national group was urgently requested to send the necessary information either to Prof. Brunet or to M. Vollgraff. Suggestions for the replacement of both executive and corresponding members who have died since 1938 were welcomed. Prof. Brunet further wishes to receive from members copies of books and brochures published by them since 1939, together with a note both of their own activities and that of their national group during the intervening period. Obituary notices of those who have died, together with photographs, were also desired.



Aldo Mieli – founder of The International Academy of the History of Science [3]

Office of the Academy is situated in Paris, and a part of it – in Liege (Belgium). The International Academy of the History of Science is directed by a Council made up of a President and three Vice-Presidents, all former Presidents, a Permanent Secretary, a Treasurer, and an Archivist. Every four years Academy holds the Congress of historians of science under the auspices of International Union for History and Philosophy of Science and Technology. The Council of The Academy is elected at General Assembly which is held during the Congress. The first Congress on history of science took place on 20–25 May in 1928 in Paris and was dedicated to the memory of french historian P. Tannery.

Members of the International Academy of the History of Science are elected for life to one of the categories: effective members, corresponding members and honorary members, who do not reside at the Academy, but who made a significant contribution to the history of science. New members are elected during the meeting of its effective members. For the nomination of the candidate it is required recommendations of two effective members of the Academy from different countries, decision on election are taken by ob-

taining an absolute majority of the votes; it is conceded to vote by email. The Presidents of Academy are: G. Loria (20.05.1929–25.05.1929), Ch. Singer (26.05.1929–04.07.1931), K. Sudhoff (05.07.1929–02.10.1934), Q. Vetter 03.10.1934–23.09.1937, A. Reymond (24.09.1937–03.10.1947), P. Sergescu 04.10.1947–19.08.1950), J. A. Vollgraff (20.08.1950–11.08.1953), F. S. Bodenheimer (12.08.1953–09.09.1956), J. M. Millás–Vallicrosa (10.09.1956–07.09.1959), H. Guerlac (08.09.1959–28.08.1965), A. Yushkevitch (29.08.1965–31.08.1968), A. C. Crombie (01.09.1968–20.08.1971), W. Hartner (21.08.1971–12.08.1977), A. R. Hall (13.08.1977–27.08.1981), M. D. Grmek (28.08.198–06.08.1985), O. Pedersen (06.08.1985–02.08.1989), V. Cappelletti (02.08.1989–23.07.1997), W. Shea (23.07.1997–12.07.2001), J. Heilbron (12.07.2001–27.07.2005), E. Knobloch (27.07.2005–25.07.2013), A. Shapiro (25.07.2013–27.07.2017), S. Demidov (from 27.07.2017).

Academy publishes of two periodicals – «Archeion» and «Archives internationales d'histoire des sciences (Archives of the International Studies of the History of Science)». Two Koyré medals are awarded for a contribution to a history of science (named after A. Koyré) every two years – one of which is for young historians. During 1968–2017 experienced researchers were awarded with 20 medals and in 1968–2015 young researchers were awarded with 14 medals. Among Ukrainian researchers who were awarded a title of Academy corresponding member in 1965 were G. M. Dobrov and Y. Shtokalo. Y. Shtokalo was also awarded a title of honorary member in 1978. He and O.M. Boholyubov were awarded with a Koyre medal for edition of four–volume collective monograph «History of native mathematics».

One more professional union is **International Union of History and Philosophy of Science and Technology (IUHPST).** This scientific organization was established in 1955 on initiative of the International Council for Science (ICSU) and UNESCO. It and includes researchers in the fields of history of science and technology, philosophy, methodology and logic of science and technology [5]. IUHPST was founded by merging the International Union of History of Science (IUHS, established in 1947) and the International Union of Philosophy of Science (IUPS, established in 1949). Since the summer of 2015, the Union uses the name International Union for History and Philosophy of Science and Technology (IUHPST). It consists of two divisions, each having own statute, membership and governance structure – the Division of History of Science and Technology (DHST) and the Division of Logic, Methodology and Philosophy of Science and Technology (DLMPST). Cooperation of subsections within the Union is regulated by Memorandum of cooperation between them. The Union is a member of International Council for Science (ICSU), each Department is a member of International Council for Philosophy and Human Sciences within UNESCO (ICPHS), and it has close cooperation with The International Social Science Council (ISSC). The objectives of IUHPST are: to establish and reinforce links between historians and philosophers of science and between the institutions, societies, journals; to collect documents useful for the development of the history of science and technology and for logic, methodology and philosophy of science; to take all measures deemed necessary or useful for the development, to spread and support of studies and research; to organize international congresses on the History of Science and Technology

The logo of International Union of History and Philosophy of Science and Technology (IUHPST) [5]

and on Logic, Methodology and Philosophy of Science and Technology, as well as other international events. This scientific community is contributing to maintaining the unity of science in general and to the establishment of links between different branches of human knowledge, fostering contacts and exchanges among historians, philosophers, and scholars concerned with related issues.

The Union's scientific directions related to natural sciences as well as to social sciences and humanities. So in the Union national and international institutes related to this themes are well-represented. For example, there are 98 national members (represented by national committees for the history of science) and 26 international members–scientific unions of DHST.

The governance of the Union alternates every two years between the divisions as described in the Memorandum of Cooperation between them. Currently, the officers are: President: Menachem Magidor (Israel; President, DLMPST); Vice President: Michael Osborne (U.S.A.; President, DHST); Secretary General: Benedikt Löwe (The Netherlands & Germany; Secretary General, DLMPST); Treasurer: Peter Schroeder–Heister (Germany; Treasurer, DLMPST); DHST contact for ICSU business: Takehiko Hashimoto (Japan); DLMPST contact for ICSU business: Benedikt Löwe (The Netherlands & Germany). Among the past presidents of the Union were Wilfrid Hodges (DLMPS, United Kingdom, 2010–2011), Liu Dun (DHST, China, 2012–2013), Elliott Sober (DLMPS/DLMPST, USA, 2014–2015), and Efthymios Nicolaidis (DHST, Greece, 2016–2017).

The current DHST council consists of Efthymios Nicolaidis (Greece, president), Michael Osborne (USA, president elect), Lesley Cormack (Canada, first vice-president), Jean Gayon (France, second vice-president), Catherine Jami (France, secretary general), Jeff Hughes (United Kingdom, treasurer), Annette Vogt (Germany, assistant secretary general) and the council members Takehiko Hashimoto (Japan), Frank James (United Kingdom), Maija Kallinen (Finland), Krishnamurthi Ramasubramanian (India), Luiz Carlos Soares (Brazil), Sun Xiaochun (China).

Until 2015, the DLMPST was called Division of Logic, Methodology and Philosophy of Science. Past and future presidents of DLMPST are: Stephen Cole Kleene (1960–1962); Georg Henrik von Wright (1963–1965); Yehoshua Bar-Hillel (1966–1969); Stephan Körner (1969–1971); Andrzej Mostowski (1971–1975); Jaakko Hintikka (1975); Patrick Suppes (1975–1979); Jerzy Łoś (1979–1983); Dana Scott (1983–1987); Lawrence Jonathan Cohen (1987–1991); Jens Erik Fenstad (1991–1995); Wesley Salmon (1995–1999); Michael Rabin (1999–2003); Adolf Grünbaum (2003–2007); Wilfrid Hodges (2007–2011); Elliott Sober (2011–2015); Menachem Magidor (2016–2019).

The council of the DLMPST consists of the executive committee and eight assessors. The current members of the executive committee of the DLMPST are Menachem Magidor, Israel (president), Helen Longino, USA (first vice-president), Amita Chatterjee, India (second vice-president), Elliott Sober, USA (past president), Benedikt Löwe, Germany (secretary general), Peter Schroeder-Heister, Germany (treasurer). The assessors are Samson Abramsky (England), Rachel Ankeny (Australia), Veronica Becher (Argentina), Heather Douglas (Canada), Hannes Leitgeb (Australia), Mitsuhiro Okada (Japan), Katarzyna Papryzycka (Poland), Charlotte Werndl (England).

The Statutes of the IUHPS was ratified by the IUHS General Assembly in September 1956 (Florence–Milan), and by the IUPS General Assembly in September 1958 (Brussels). Then, after preparatory work undertaken by the Executive Committees and General Assemblies of the two Divisions, the Board of the IUHPS, during its meeting of 29 September 1961 (London), decided to entrust the drafting of new Statutes to a Com-

mittee composed of Prof. S. C. Kleene (representing DLMPS) and Prof. M. Clagett (representing DHS). This project revised by the Executive Committees of the two Divisions, was approved by the General Assembly of the DLMPS (24–26 August 1962, Helsinki) and the General Assembly of the DHS (August 26–September 2, 1962, Ithaca N.Y.). It was implemented on 1st January 1963.

By the end of the 1990s, the IUHPS Statutes were not to be found in the archives of either of the two divisions. As a consequence, the two Divisions decided on the practical matters involved in the cooperation between the Divisions and the governance of the Union in a Memorandum of Cooperation approved by the Councils of DHST and DLMPS in December 2012 and January 2013, respectively. In May 2015, the 1963 Statutes were re–discovered by Benedikt Lowe in the archives of the German National Committee for Logic, Methodology and Philosophy of Science. A joint committee consisting of Prof. E. Sober, Prof. P. Schroeder-Heister, Prof. B. Lowe (representing DLMPS) and Prof. E. Nicolaidis, Prof. C. Jami, and Prof. M. Osborne (representing DHST) drafted a new version of the Statutes to match the current governance practice as described in the Memorandum. These drafted Statutes was proposed and approved by the General Assembly of DLMPS in Helsinki on 6 August 2015 and by the General Assembly of DHST in Rio de Janeiro on 26 July 2017.

The main activities of the Union are the two quadriennial congresses organised by the two divisions: the International Congress for History of Science and Technology (ICHST) organised by DHST and the Congress for Logic. Methodology and Philosophy of Science (CLMPS) organised by DLMPST. The first International Congress for History of Science and Technology took place in 1929 in Paris, next forums were held in London (1931); Porto–Combra–Lisbon (1934); Prague (1937); Lausanne (1947); Amsterdam (1950); Jerusalem (1953); Florence–Milan (1956); Barcelona–Madrid (1959); Ithaca (1962); Cracow (1965); Paris, (1968); Moscow (1971); Tokyo (1974); Edinburgh (1977); Bucarest (1981); Berkeley (1985); Zaragoza (1993); Liège (1997); Mexico City (2001); Beijing (2005); Budapest (2009); Manchester (England, 2013). The 25th International Congress for History of Science and Technology was held on 23–29 July 2017 in Rio de Janeiro. At International Congress for History of Science in Liège (Belgium, 1997) scientists from G. M. Dobrov Institute for Scientific and Technological Potential and Science History Studies NAS of Ukraine, Institute of Botany NAS of Ukraine, Institute of Ukrainian studies of Kiev National T. Shevchenko University, Dnipro National University and Nikolaev State Pedagogical University were among members of Ukrainian delegation. Scientists from G.M. Dobrov Institute for Scientific and Technological Potential and Science History Studies NAS of Ukraine and also from Kyiv and Kharkiv Polytechnic Institutes participated in congress which was held in 2009 in Budapest.

The Congress for Logic, Philosophy and Methodology of Science (CLMPS) took place in Stanford (United States, 1960), Jerusalem (1964), Amsterdam (1967); Bucharest (1971), London (ON, Canada, 1975), Hannover (1979), Salzburg (Austria, 1983), Moscow (1987), Uppsala (Sweden, 1991), Florence (1995), Cracow (1999), Oviedo (Spain, 2003), Beijing (2007), Nancy (2011), Helsinki (2015). The next XVI congress will be held 5–10 August 2019 in Prague, Czech Republic.

The two divisions maintain a Joint Commission in order to enhance cooperation between them. The main responsibility of the Joint Commission is to explore research fields of mutual interest to historians and philosophers of science and technology and logicians by means of Joint Conferences and symposia on topics of mutual interest. The key activity of the Joint Commission is the organisation of a session at the congresses of both divisions. According to a decision of the Councils of both divisions (DLMPST in

Helsinki, August 2015 & DHST in Beijing, December 2015), a joint committee of the two divisions is reevaluating the Joint Commission. There are other commissions shared between the two divisions, DHST and DLMPST: The commission for History and Philosophy of Computing, the International Association for Science and Cultural Diversity and the Inter-Divisional Teaching Commission.

Union uses different forms to promote sectoral studies. One of them is the Prize for an essay on history and philosophy of science which is awarded for works that included new methodology thinking in the field of history and philosophy of science as integrated scientific discipline. It is also proposed research projects which are financed by the International Council for Science (ICSU). For example, in 2014–2015 the project «Cultures of Mathematical Research Training» was executed; its aim was to explore different approaches to mathematical research and its joint discussion by public and researchers who study mathematical practice in order to identify research topics that would be of interest to the community.

Among the organizations on the history of technology and industry is **International Committee for the History of Technology (ICOHTEC)**. It was founded in Paris 1968 during The Congress for History of Science against the backdrop of cold war between countries of Eastern and Western worlds when bitterness divided the nations [4]. The intent was to provide a forum of scholars for the history of technology from both sides of the «iron curtain». It was constituted as a scientific section within the Division of the History of Science and Technology of the International Union of the History and Philosophy of Science. The first President was Eugeniusz

The logo of International Committee for the History of Technology (ICOHTEC) [4]

Olszewski (Poland), with Vice-Presidents – S. Schuchardin (USSR) and Melvin Kranzberg (USA). The first Secretary-General was Maurice Daumas (France), through whose initiative the French government hosted the first independent symposium at Pont–a–Mousson (1970). Symposia have been held almost every year, and the proceedings of many meetings have been published, although in a variety of forms.

Whereas national organisations have their membership bases in their respective countries, ICOHTEC has its membership base mainly in Europe, but also in the USA, Japan, India and Australia. Research activities, in which ICOHTEC members cooperate, reflect this special interest. The issues are investigated on a comparative national basis, stressing aspects of cooperation between various nations, regions or institutions. The first statutes of ICOHTEC was approved in Paris in 1968 and then amended in 1974, 1985 and 1993.

The aims are as stated in article four: to establish close working relationships among specialists of different disciplines in order to foster international cooperation for the study and development of the history of technology; to promote the study of appropriate historical subjects by establishing and extending the scholarly bases of the history of technology as well as by contributing to the resolution of certain contemporary national and international problems; to facilitate research and documentation for scholars in all countries in the history of technology by exchange of information and the creation of the material means necessary for this objective.

The current officers of ICOHTEC are: President: Slawomir Lotysz (Poland); Vice–president: Yoel Bergman (Israel), Secretary-General: Stefan Poser (Germany); Treasurer:

Timo Myllyntaus (Finland); Journal Editor-in-Chief: Hermione Giffard (The Netherlands); Newsletter Editor: Francesco Gerali (Italy).

Members of the executive committee: Mihai Catalin (Romania), Irina Gouzevitch (France), Elitsa Stoilova (Bulgaria), , Maria E. Callapez (Portugal), Shaul Katzir (Israel), Ciro Paoletti (Italy), Artemis Yagou (Greece), Liliia Zemnukhova (Russia), Mirosław Sikora (Poland), Jan Hadlaw (Canada), Layne Karafantis (USA), Peter Koval (Germany).

ICOHTEC past Presidents: Timo Myllyntaus 2013–2017, James C. Williams 2009–2013, Hans–Joachim Braun 2005–2009, Alexandre Herlea 2001–2005, Carroll Pursell 1997–2001, Robert Angus Buchanan 1993–1997, José Antonio Garcia-Diego 1989–1993, Stefan Balan 1981–1989; Carlo Maccagni 1977–1981, Luigi Bulfaretti 1974–1977, Eugeniusz Olszewski 1968–1974.

Dr. Melvin Kranzberg, the firstVice–President of ICOHTEC [1]

The means which ICOHTEC utilize in order to attain its goals are the following: establish itself in the greatest possible number of countries and recruit the greatest possible number of qualified members therein; create working groups, permanent or temporary, charged with conducting joint studies; assist the work of these groups with the financial means which may be available; organize meetings, colloquia, and seminars in order to make possible the direct cooperation of its members; establish and maintain at the disposition ofits members indispensable informational documents and scientific exchanges; publish the results of its works and give them the widest possible dissemination; cooperate with national or international scientific organizations which pursue similar goals, or adhere to one of these international organizations. From 1994 onward the outstanding papers are published in ICON.

The history of technology is considered as a complex phenomenon at all times and on any territory; it is closely related to many spheres of human activity. The areas of research: history, philosophy and methodology of engineering sciences, evolution of technological potential (fuel and energy sector, oil and gas production, food, chemical and construction industries, nuclear energy), transport, telephony, cinematograph, typography, technology in architecture, computers, robotics and computer graphics, electrical, acoustic and medical equipment, obtaining new materials and renewable energy, space equipment and weapons; relation of technology to science, culture, art, theater, music, literature, sports and recreation, health care; impact of technology on commercial sector and economic growth of the country; approaches to improve infrastructure of urbanize environment; evolution of design and aesthetics of technical products; public perception of new technologies and technological literacy of people; portrait and social status of an engineer; development of technical education; technical museums; technology transfer in globalized world as a factor of bringing countries and nations closer together; risks and consequences of high technologies implementation. Among the committee members there are representatives from Ukraine – from G. M. Dobrov Institute for Scientific and Technological Potential and Science History Studies NAS of Ukraine and Kiev Polytechnic Institute.

The past ICOHTEC Congresses and its topics were: Tel Aviv, Israel, 16–21 August 2015, «History of High-Technologies and Their Socio-Cultural Contexts»); Brasov, Romania, 29 July–2 August 2014, «Technology in Times of Transition»; Manchester, UK, 22–28 July 2013, «Knowledge at Work», jointly with: 24rd International Congress of IUHPS/DHS; Barcelona, Spain, 10–14 July 2012, «Technology, the Arts and Industrial Culture»; Glasgow, UK, 2–7 August 2011, «Consumer Choice and Technology»; Tampere, Finland, 10–15 of August 2010, «Reusing the Industrial Past»; Budapest, Hungary, 28 July–2 August 2009, «Ideas and Instruments in Social Context»; jointly with: 23rd International Congress of IUHPS/DHS, 350 participants; Victoria, Canada, 5–10 August 2008, «Crossing Borders in the History of Technology»; Copenhagen, Denmark, 14–18 August 2007, «Fashioning Technology: Design from Imagination to Practic», 100 participants from 19 countries; Leicester, UK, 15–20 August 2006, «Transforming Economies and Civilizations: The Role of Technology»; Beijing, China, 24–30 July, 2005, «Globalisation and Diversity: Diffusion of Science and Technology throughout History», Jointly with: 22nd International Congress of IUHPS/DHS; Bochum, Germany, 17–21 August 2004, «Re-designing Technological Landscapes», 120 participants; St. Petersburg/Moscow, Russia, 21–26 August 2003, «Society and Nature in the History of Civilization», 100 participants; Granada, Spain, 24–29 June 2002, «Technology, Cultural Interchange and Globalization», 200 participants; Mexico, Mexico, City, 7–14 July 2001, «Science and Cultural Diversity», Jointly with: 21st International Congress of IUHPS/DHS; Prague, Czech Republic, 22–26 August 2000, «Technological Landscapes: Energy, Transport, and Environment», 184 participants, c. 120 papers; Belfort, France, 16–21 August 1999, «Technological choice», 143 participants, 122 papers; Lisbon, Portugal, 18–22 August 1998; Liege/Luik, Belgium, 20–26 July 1997, «Science, Technology and Industry», Jointly with: 20th International Congress of IUHPS/DHS; Budapest, Hungary, 7–11 August 1996, «Past and Present Forms of Communication»; Bath, UK, 30 July–4 August 1994, «International aspects of the institutional organisation of engineers, 100 participants from 21 countries, 59 papers; The manufacture and marketing of gunpowder; The value of physical artefacts in international comparisons in the history of technology; Invisible technology», 300 participants from 28 countries, 190 papers; Zaragoza, Spain 22–29 August 1993, «The Place of Theory in the History of Technology», Jointly with: 19th International Congress of IUHPS/DHS; Uppsala, Sweden, 16–20 August 1992, «The steam engine as a Greek temple: art and technology throughout history»; Vienna, Austria, 1–6 September 1991, «The Development of Technology in Traffic and Transport Systems»; Paris, France, 8–14 July 1990, «The relations of science with technology», 70 participants, 60 papers; Hamburg/Munich, Germany, 1–9 August 1989, «Failed Innovations», Jointly with: 18th International Congress of IUHPS/DHS, 1000 participants from 48 countries in the IUHPS Congress, 177 papers; Madrid, Spain, 5–9 September 1988 «Civil Engineering between 1750 and 1850»; Dresden, Germany, 25–29 August 1986, «Technology and Technical Sciences in History», 80 participants from 16 countries, 50 papers; Berkeley/San Francisco, USA, 31 July–8 August 1985, «Technological Education – Technological Style», Lerbach/Cologne, Germany, 2–9 September 1984, «Energy in History», 90 participants from 16 countries, Smolenice, Czechoslovakia, 8–12 June 1982, «Sources for the History of Technology-National Comparisons», 60 participants from 16 countries, 45 papers; Bucharest, Romania, 26 August–3 September 1981, «Technology, Humanism and Peace-Historical Aspects»; Sofia, Bulgaria, 3–6 September 1979, «Technological Systems: Their Development, Utilisation, Control», 70 participants from 11 countries; Freiberg, Germany, 4–8 September 1978, «History of Mining and Metallurgy», 76 participants from 14 countries; Stirling, UK, 21 August 1977, «Scottish

Engineers and Engineering», 5 papers; Jointly with: Newcomen Society; Edinburgh, UK, 10–19 August 1977, «Human Implications of 20th Century Communications Technology», Jointly with: 15th International Congress of IUHPS/DHS; Kaluga, Soviet Union, 8–11 June 1976, «Technology and Society», 60 participants from 8 countries, 34 papers; Tokyo, Japan, 19–27 August 1974, «Transition of Non-initiating Countries into Initiating Countries», Jointly with: 14th International Congress of IUHPS/DHS; Jablonna, Poland, 27 August–1 September 1973, «Industrialization and modern technology in agricultural countries of Central and Southern Europe (1850–1918)», 68 participants from 13 countries; Moscow, Soviet Union, 18–24 August 1971, Jointly with: 13th International Congress of IUHPS/DHS, 5 papers from 5 countries in special ICOHTEC colloquia on 20 August. Additionally, 62 papers from 13 countries in section XI on history of technology of the IUHPS Congress; Pont-a-Mousson, France, 29 june–4 july 1970, «The Acquisition of Technology by Non-Initiating Countries», 45 participants from 13 countries, 31 papers; Paris, France, 27 August 1968 Jointly with: 12th International Congress of IUHPS/DHS.

Historians of technology from the USSR participated in the Symposium in Paris 1968 (presented 11 papers) and 1971 at the XIII International Congress on the History of Science, held in Kaluga. In the framework of the XIV Congress on the History of Science, held in Tokyo–Kyoto in 1974, 12 historians of technology from the USSR spoke at the ICOHTEC sections.

Scientists from Ukraine participated at the 30th, 31st, 33rd, 34th, 37th, 39th and 41st congresses. They discussed the priority of the introduction by M. Bogolyubov of the concept «color» to the physics of elementary particles, the first technical applications of the asymptotic methods of nonlinear mechanics, the creation of statistical mechanics as the beginning of the probabilistic thinking style in the natural and technical sciences, the formation of radio engineering in Ukraine as a component of the technical revolution of the early 20th century, design of styles of thinking in science in the process of formation of scientific pictures of the world, social phenomenon of scientific schools on statistical physics in Ukraine, the value of laboratory's works for Experimental physics of the University of Kyiv on the study of the critical state of matter for the improvement of the steam engine, prospects and risks of new technologies, for example, the synthesis of superhard materials in Ukraine, the activity of V. Utkin as the designer of rocket and space complexes (A. Lytvynko), genesis, evolution and periodization magneto–optics, the initial stage of the creation of cryogenic technology in Ukraine, the application of the phenomenon of superconductivity, the design of forms of scientific creativity on the example of scientific schools, the activity of Physics Department at the Kiev Polytechnic Institute in 1931–1955, the first scientific works in metallurgy, bridge construction and aviation (1898–1918) in the KPI (L. Ponomarenko).

Conclusions and prospects

Ecept for the organizations considered, there are many other scientific unions and societies in the field of history of science and engineering, whose activities require further study and synthesis.

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ІНЖЕНЕРНИЙ КОРПУС РОСІЙСЬКОЇ ІМПЕРІЇ У ПОРЕФОРМЕНИЙ ПЕРІОД: ОСОБЛИВОСТІ ФОРМУВАННЯ, ЗАГАЛЬНА ХАРАКТЕРИСТИКА

Охарактеризовано стан інженерного співтовариства в державі та у промислових регіонах України другої половини XIX ст., проаналізовано соціально-історичні чинники, що впливали на підготовку вітчизняного інженерного корпусу, досліджено динаміку формування системи вищої професійної освіти, а також досліджено контингент студентів вищих технічних закладів освіти у досліджуваний період.

Ключові слова: інженер, професійна освіта, інженерна діяльність, політехнічний інститут, технологічний інститут, гірниче училище.

The state of the engineering community in the state and in the industrial regions of Ukraine in the second half of the nineteenth century was characterized, the socio-historical factors that influenced the preparation of the domestic engineering corps were analyzed, the dynamics of the formation of the system of higher professional education was researched, as well as the contingent of higher technical students Educational establishments in the studied period.

Keywords: engineer, vocational education, engineering activity, polytechnic institute, technological institute, mining school.

Охарактеризовано состояние инженерного сообщества в государстве и в промышленных регионах Украины второй половины XIX ст., проанализированы социально-исторические факторы, влиявшие на подготовку отечественного инженерного корпуса, исследована динамика формирования системы высшего профессионального образования и контингент студентов высших технических заведений образования в исследуемый период.

Ключевые слова: инженер, профессиональное образование, инженерная деятельность, политехнический институт, технологический институт, горное училище.

Історія інженерної діяльності нероздільно пов’язана з історією розвитку людського суспільства й закономірностями розвитку науки й техніки. Якщо на ранніх етапах людської цивілізації інженерно-технічна діяльність була зосереджена, в основному, на будівництві та архітектурі, то в XIX ст. з формуванням машин-