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Teaching of the history of science and technology in Polish insitutions higer education (1918-1980) : tendencies, problems and facts

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TEACHING OF THE HISTORY OF SCIENCE AND TECHNOLOGY IN POLISH INSTITUTIONS OF HIGHER EDUCATION (1918—1980) TENDENCIES, PROBLEMS AND FACTS

I. INTRODUCTORY REFLECTIONS

The teaching of the history of science has in Poland a long-standing tradition which goes back to the beginning of the last century. As early as 1809, at Cracow University (since 1817—the Jagiellonian University), a “chair of general and particular therapy with a history of medicine” was set up, as one of the first in Europe. So it may be said that since then a history of science had been included in a teaching curriculum as a separate subject, although it was still restricted to only one field. In point of fact, even before 1809, courses had been held in Polish institutions of higher education which had to do with the history of science, but they were more in the nature of historical reflections on the past of learning. Similarly, much earlier than teaching of the history of science were in Poland some writings on this branch, since publications in this area used to appear to a noticeable extent back in the 17th century.

The development of learning and of higher education did not take place in Poland in the past century as it did in other European countries. The reason for it was the fact that Poland was deprived of independence during that period, its territories having been partitioned and incorporated into the three neighbouring states: Russia, Prussia and Austria, and each of them—though to another extent—was trying to prevent the development of Polish education and Polish culture.

Only after Poland had regained independence in 1918 the conditions for the development of education in this country did radically change. A score of institutions of higher education were then set up and required new curricula. There was indeed a pressing need to introduce a unified educational system which would bind together schools until then separated in the three parts of the country. In the discussions on the future of education and learning in Poland, which were then taking place, suggestions were put forward for the introduction of subjects that had not been taught before, and among them above all of those relating to the history of particular sciences. There were proposals for the setting up at Polish universities of chairs of the history of culture which would be concerned also with the

teaching and study of the history of science as being one of the basic elements in the history of culture.

These frequently repeated demands for the inclusion of the history of science in the curricula had to do, in our view, with the following circumstances. Firstly: when after 150 years Poland had regained independence there was a general awareness what a great role Polish culture had played in this country during the period of foreign rule. In many cases it did replace the non-existing State institutions, it upheld the spirit of the nation, created moral links in society, strong enough to withstand the plans of destruction carried out by the occupying powers. The regaining of independence by Poland in 1918 inspired the nation to take up its cultural past so as to demonstrate to the countrymen and foreigners how rich this past had been in science, literature and art. Secondly: in the period in which Poland was recovering from bondage the history of science was beginning to get a separate status as an independent branch, both in its methods of research and organizational forms. Many journals devoted to the history of science were being founded throughout the world, societies were being founded too concerned with the history of learning and particular sciences; at universities there were no longer only sporadic courses in this field, but also chairs were set up, research centres and institutes; international organizations of science historians were established and international congresses were held. There was also a new approach to history in which the past intellectual achievements played an essential part including, to a large extent, the history of science.

All these factors created in the 1920s a favourable climate for the inclusion in the curricula of Polish institutions of higher education of the history of science which was taught either in separate courses or as part of the history of culture or education.

II. THE DILEMMA OF THE UNIVERSITY TEACHING: HISTORY OF SCIENCE OR HISTORY OF CULTURE?

1. Period between two wars: teaching of the history of science as part of the history of culture and that of education.

In Poland, in the period between two wars, the notion of the history of culture was very broad. It comprised the history of art and literature, history of science, of intellectual schools, of education, and of customs. Stefan Czarnowski, one of the prominent Polish theoreticians of culture, extended this subject even more by describing culture as "the sum of objective elements of social production, common to a number of groups and, because of their objective nature, stable and capable of extension in space" (*Works*. Vol. 1 p. 2).

This broad notion of the history of culture was the reason for particular scholars to restrict their area of study and concentrate on some definite problems, such as for instance the history of higher education, of cultural institutions, international scientific associations and the intellectual connections resulting from them. Some scholars concentrated on the history of intellectual tendencies and schools.

The above-mentioned problems were the subject of study by professors of culture at the Jagiellonian University in Cracow and by those at the Stefan Batory University in Wilno, as well as by the instructors in education at almost all Polish institutions of higher education, especially at the Jan Kazimierz University in Lwów. Annually several hundreds of hours of courses and seminars were allotted to these subjects, that is to the history of culture and education. A good portion of the problems discussed at them had to do with the history of science and especially with the organization of science in the past.

The history of science was taught at the faculties of the history of culture, opened in 1919 at the Jagiellonian and Stefan Batory Universities.

At the Jagiellonian University it was Stanisław Kot (1885—1975) who took the chair of the History of Culture in 1920. In his courses, as well as in the seminars he conducted, he concentrated almost exclusively on the Polish thoughts and ideas of the period between the 16th and 18th centuries and on the history of education. He dealt with these subjects as a whole or in cyclic monographic courses, such as for instance: "The Commission of National Education" (1920/21—1923/24), "Cultural Relations of Poland with the West" (1927/28—1932/33), "An Historical Outline of the Main Cultural Trends in Europe" (1928/29—1931/32). Prof. Kot's courses were very well-attended with the number of listeners going into hundreds, including historians and pedagogues, as well as students in Polish and other philologies. The great merit of Kot and of his pupils was to initiate very important studies on the links of Poles in the past with the centres of learning in Switzerland, Holland, France, Britain. The development of the Chair of the History of Culture at the Jagiellonian University was interrupted in 1933 by the decision to liquidate it. The protests of the scientific world and of students proved unsuccessful, nor did the subsequent attempts to re-activate the Chair bring positive results. On September 30, 1934, Prof. Kot retired. Since he had been docent of the Jagiellonian University its management secured him a modest possibility of pedagogical work so that he was able to hold seminars in the history of culture and education without having the authority to take examinations however. The gap left at the Jagiellonian University after the liquidation of the Chair of the History of Culture was partly filled, from the academic year 1936/37, by Prof. Kot's assistant, then docent Henryk Barycz (b. 1901) who held courses devoted to the studies of Poles in Rome in the Renaissance period and to the history of Polish university education.

Another Chair of the History of Culture was founded, as was said, at the Stefan Batory University in Wilno and it was assigned to Ludwik Janowski (1878—1921), author of numerous writings on the history of higher education and scientific life in the former Eastern territories of the Polish Republic. Together with his death died away the activities of that Chair. The subject of Janowski's courses were: the history of Polish culture, history of the former Wilno University, he also discussed at his seminars the French influence on the culture, customs and mentality in Poland.

The third Chair of the History of Culture was set up, in the period between two wars, at Warsaw University in 1930 and its holder became Stefan Czarnowski (1879—1937), well known in this country and abroad

for his sociological works and those in the science of religion. Czarnowski's courses did not however contain many elements on the history and organization of science. He would as a rule choose only such facts in the history of science and technology which explained in some way the contemporary forms of social institutions.

Apart from the afore-mentioned chairs of the history of culture at Polish institutions of higher education — first of all at seven universities — also irregular courses in the history of culture were held, including those in the history of science. The history of culture was treated in them either as a whole or, more often, partially with attention paid to genetically connected groups of problems, or particular historical periods, or a cultural history of particular nations. Such themes would be put forward first of all by private docents, and they were recommended to those studying history, art history, pedagogics and various philologies.

A considerable part of the courses in the history of education was concerned with the history and organization of science, and these were the courses great importance was attached to in the prewar Poland; they were obligatory to all would-be teachers. Their purpose was to show education in the past and describe the development of pedagogical theories in their connection with social, political, intellectual and moral culture of each period. This task could be achieved only if the courses presented not only pedagogical theories but also the history of cultural schools and that of higher education.

Stanisław Łempicki (1886—1947) used to give much place to the history of science within the courses in the history of education; he was head of the Institute for the History of Education at the Jan Kazimierz University in Lwów. Apart from his general courses and seminars he would hold almost each year monographic courses — from 10 to 60 hours — on prominent scholars (e.g. J. A. Komeński, J. L. V. Vives, Erasmus of Rotterdam), on scientific sponsorship, history of the societies of learning, on Polish men of science active abroad and Polish students studying at foreign institutions of higher education.

Both S. Kot in Cracow and S. Łempicki in Lwów founded their own schools which produced many contemporary historians of education and science.

2. The period after World War II: the history of science becoming a separate subject of teaching.

After the Second World War the history of culture has lost its position as a subject of academic teaching; it was replaced — at some faculties — by courses in the universal history of science. It must be stressed here however that the notion of the history of science was even then more extensive than it was the case in Latin and Anglo-Saxon countries at that time where this branch was traditionally restricted to natural and exact sciences with the exclusion of social sciences and the humanities. The Polish conception of the history of science, which came to be accepted in this country after the Second World War and which aroused internationally interest, includes all disciplines — exact, biomedical and social ones, approaching even-handedly the sciences of nature and those dealing with man and society. This conception of the history of science comprising many specialities and

being at the same time integrated found of course its expression in the curricula and teaching of this subject in Polish institutions of higher education. So for instance, as early as the academic year 1955/56, at Warsaw University in the faculty of librarianship, courses in the universal history of science were introduced, amounting to 225 hours, and which were “universal” not only in the territorial sense of their name but covered the history of all disciplines: the exact, natural, social ones and of the humanities. It was an attempt to integrate in one course the knowledge which used to be imparted to students at the courses in the history of culture on the one hand, and on the other at those in the history of exact sciences. It may be noted here that this kind of courses had lasted at the faculty of librarianship of Warsaw University for 20 years, and only at the reform of studies in the academic year 1975//76 was it eventually modified. At the librarianship faculties of other Polish universities — e.g. of Wrocław University — this subject is still being taught in its original form and is called: “Tendencies in the development of science”.

The fact that during the period after the second World War a separate, many-hour course in the universal history of science was established — true, only at the librarianship studies — deserves to be particularly noted. Indeed this subject had not been taught in a separate form and for so many hours neither in the pre-war Poland nor earlier. And it differs — as has already been said — from a course in the history of culture typical of earlier periods in that it pays equal attention to all disciplines.

After the Second World War instructors in the history of science have been trying hard to define the relationship between the history of science and that of culture. The search for various solutions is still going on. Here are some examples.

An attempt was made to resume the prewar tradition by re-activating in 1946 at the Jagiellonian University in Cracow the Chair of the History of Culture which, as it was difficult to fill it, was rather short-lived lasting only till 1949. On the other hand at the same university, in the academic year 1957/58, a Chair of the History of Science and Education was set up whose programme, being concerned with various schools and tendencies of intellectual life in various periods and cultural areas, did extensively include elements of the history of culture as well. This Chair, catering for faculties — historical, pedagogical and psychological ones — had been active for 13 years, i.e. till 1970. A course in the history of culture — numbering first 60 and later 30 hours — was held also for the third year of all faculties of the Warsaw Polytechnic from 1963 till the academic year 1969/70.

The Chair of Polish Culture at the Faculty of Polish Philology at Warsaw University is also concerned with studies of the universal history of culture.

As a result of the curriculum reform of 1975, courses and conversatoria in the history of culture, numbering 180 hours, have been introduced at the first two years of the librarianship studies at Warsaw University. They are of a preparatory character and their purpose is, according to the curriculum, to be an introduction to the history of science taught in the third year.

These few examples show that courses in the history of culture, in spite of having a rich tradition in this country, have been struggling for over

thirty years for acceptance at Polish higher schools. The reason for it is probably the very wide range of knowledge included in the history of culture which may lead to a superficial treatment of this subject, hence the instructors are for the most part advocates of a course in the history of science instead, which does not mean that there are no elements of the history of culture in their teaching.

The science of sciences appears in university courses in various shapes; be it a separate study, or part of the history of science, or the subject called: "Selected problems of the science of sciences", in each case it contains elements of the history of science.

The approach of the instructors in the history of science and technology to the science of sciences does also vary: from an enthusiastic attitude, which has to do with the wide interest this discipline has been arousing lately in the world of learning, to a more cautious approach and finally to a demand that the areas of the history of science and the history of sciences be separate subjects. It must be said that during the past thirty years the problem of a relationship between these two branches has not been solved in university teaching, being still an object of discussion and depending largely on the attitude of particular instructors.

One must also draw attention here to the relation between the courses in the history of science and those in the history of education. The latter — held in the People's Republic of Poland not only at universities but also at teachers' training colleges and academies of physical education — enjoy the status of a separate subject and are not connected so closely, as they were in the prewar period, with the area of the history of science and culture. Of course sporadic attempts are made to link in university teaching the history of science with that of education. So for instance, in the years 1971—1978, a graduate seminar was held at Warsaw University entitled: "Intellectual life, education and science in Poland in the 19th and 20th centuries"; since 1978 this seminar has been called: "The history of education in the 19th and 20th centuries."

And now let us try to divide into periods the university teaching of the history of science during the space of the last thirty years. Assuming that until more or less 1950 attempts were made to restore the model of teaching this discipline in its prewar form, a distinct change did take place in this respect in the fifties. Can some more stages be distinguished since then in the teaching of that branch at universities? Generally speaking it must be said — no. What is rather striking, on the other hand, is the vanishing and then returning of courses in the history of particular disciplines — their origin is however diverse. As has also been diverse the scope and intensiveness of the courses which had to do with individual interests of particular instructors; some of them have been able to arouse a keen interest in their subject with the students.

The Committee for the History of Science and Technology at the Polish Academy of Sciences is the body which during the last decade has been playing an essential part in propagating the history of science and technology as a subject of university teaching; it has been acting through a specially set up Commission (and its specialist working groups) and trying to arrange

into an ordered system these courses while also enhancing their status in this country. This accords with international tendencies: the history of science as a subject of academic teaching, integrating and increasing the student's knowledge, is now experiencing a period of its revival.

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Courses in the universal history of science which — as it was already said — were inaugurated at the faculty of librarianship at Warsaw University in the academic year of 1955/56 and which had lasted for 20 years, first amounting to 225 hours and then to 210 during five semesters, were held under the title: "The main tendencies of science, its organization and literature." In 1963 a textbook by Maria Uklejska, designed mainly for the librarianship students, was published under a similar title: *An outline of the development of science and its organization (Zarys rozwoju nauki i jej organizacji)*. However, as the years went by, courses at the librarianship studies of Warsaw University were increasingly deviating from the chronological-factographical content of the book because the instructors thought it necessary to present the material to students in the form of selected problems. Indeed the didactic experience — and first of all examinations — have shown that the history of science, approached as a sum of an immense number of facts, names and titles fills only the memory of students without stimulating them to any reflections and even worse — giving them no idea of the integral character of the history of science, a fundamental problem in our times given to specialization. The student's imagination may be stimulated, on the other hand, by such an image of the history of science in which the links between the past and the present and future are clearly demonstrated, which reproduces in the history of science not only the struggle of outgoing and emerging conceptions, the struggle of opposite methodological positions, but which enables us also to look at these controversies with our present-day eyes, an approach that has often been the starting point of considerations. With all this in mind the curricula in the universal history of science were drawn for the librarianship students of the universities.

For twenty years a course in the universal history of science — covering all major problems of disciplines from the antiquity to our times — has been conducted by two or three instructors: a historian of social sciences, historian of exact sciences, and the one of technology.

The new curriculum of the librarianship studies and of scientific information, introduced in the academic year of 1975/76, differentiates a little courses in the history of science according to the fact whether the librarianship at a given school has assumed a more mathematical or humanistic character. Only the latter kind of curriculum has maintained the former conception of courses in the history of science which under the title: "The tendencies in the evolution of science" are obligatory, amounting to 60 hours of courses and 60 of a conversatorium, for the 3rd year students. These courses are held, as has already been mentioned, at the University in Wrocław, Toruń and the Teacher's Training College in Olsztyn, by contrast with the librarianship studies in Warsaw, Cracow, and Poznań, where a new curriculum, of

two parts, has been introduced. In the first two years of studies — resuming the pre-war tradition in this field — courses in the history of culture are held amounting to 180 hours — 90 hours of lectures and 90 of conversatoria; apart from that — and this is a new element in respect of the prewar period — there is also a conversatorium entitled “Problems of the science of sciences” amounting to 30 hours. According to this curriculum the student is expected, through these courses and conversatoria, to get a synthetic knowledge of the main problems and stages in the evolution of civilization and culture in the broad context of history, before he chooses, in the third year, one of the branches to study. At the same time courses in the history of science, dealing with major problems in the history of social, biological and exact sciences, have been provided for in the new curriculum in the third year but only at special studies (e.g. the study of ancient books or librarianship) with whose subject they correspond. On the other hand, in the third year of scientific information are continued — instead of the courses in the history of science, those in the science of sciences amounting to 2 hours weekly in the 1st semester and to 1 hour weekly in the 2nd. According to the new curriculum, obligatory from 1975, courses and conversatoria in the history of science and the science of sciences are supposed to take place at the librarianship faculties of 9 universities and 6 teachers’ training colleges. In reality however they have not been introduced everywhere to the extent and in the form presented above; the reason for it is among other things the shortage of instructors properly equipped to pass to the students a subject so vast and many-sided, far from being easy to learn. Courses in the history of science are completed by an obligatory examination, regarded by students as being one of the most extensive and difficult at the librarianship studies.

In the light of all these facts a question probably imposes itself: why is it that after the Second World War it was precisely the history of science which won at the university librarianship studies such a strong position based on a long-standing tradition?

Tendencies for spreading the knowledge of science in Polish society — which could be seen in this country after the Second World War — went together with an extension of librarianship studies which apart from their specialist subjects had also to include courses in other branches. And it was precisely the history of science that was supposed to provide the librarian with a knowledge of the current state of science in the world and give him at the same time a synthetic view of the cultural heritage.

Let us recall here that the first instructor in the universal history of science at Warsaw University after the Second World War was Aleksander Birkenmajer (1890—1967), the prominent historian of exact sciences and an equally prominent librarian. His successors were: Paweł Rybicki (ac. year 1956/57); Eugeniusz Olszewski (ac. year 1957/58 until now); Waldemar Voisé (ac. year 1958/59—1976/77); Irena Stasiewicz-Jasiukowa (ac. year 1970/71 until now); Jerzy Dobrzycki (ac. year 1977/78 until now).

At the Jagiellonian University in Cracow the Chair of the History of Science and Education — divided into two departments — had been headed for 13 years (1957—1970) by Henryk Barycz and Jan Hulewicz.



Phot. 1. Stanisław Kot (1885—1975), lecturer of the history of culture. Photo from the private collection of W. Voisé



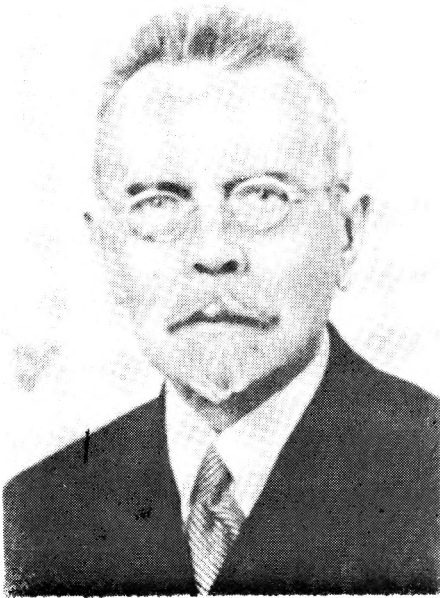
Phot. 2. Ludwik Janowski (1878—1921), historian of culture. Reproduction according to L. Janowski *In the rays of Wilno and Krzemieniec*



Phot. 3. Stanisław Łempicki (1886—1947) Reproduction according to *Re-hash of the history of the Polish Literature Department in the Jagellonian University*. Kraków 1966



Phot. 4. Aleksander Birkenmajer (1890—1967). From the family collection
Phot. 5. Marian Henryk Serejski (1897—1975). From the family collection



Phot. 6. Władysław Szumowski (1875—1954) historian of the medicine. Main Physicians Library in Warsaw. Identity photo
Phot. 7. Adam Wrzosek (1875—1965), historian of medicine. From the collection of the Main Physicians Library in Warsaw. Identity photo



Phot. 8. Stanisław Trzebiński (1861—1930) Photo of 1925 year. From the collection of Main Physicians Library in Warsaw

Phot. 9. Ludwik Zembrzuski (1871—1961). Identity photo from the collection Main Physicians Library of Warsaw



Phot. 10. Witold Karol Ziembiński (1874—1950). Photo from the collection of the Main Physicians Library of Warsaw

Phot. 11. Bronisław Koskowski (1863—1946). Historian of the Pharmacy — repr. acc. *Professor Bronisław Koskowski 50 anniversary of his work in the field of research*



Phot. 12. Robert Rembieliński (1894—1975). From the family collection.

Phot. 13. Konrad Millak (1886—1969), historian of the veterynaries. From the collection of the Centre of History of the Veterinary Medicine by the Main Management of Polish Society of Veterinaries in Warsaw

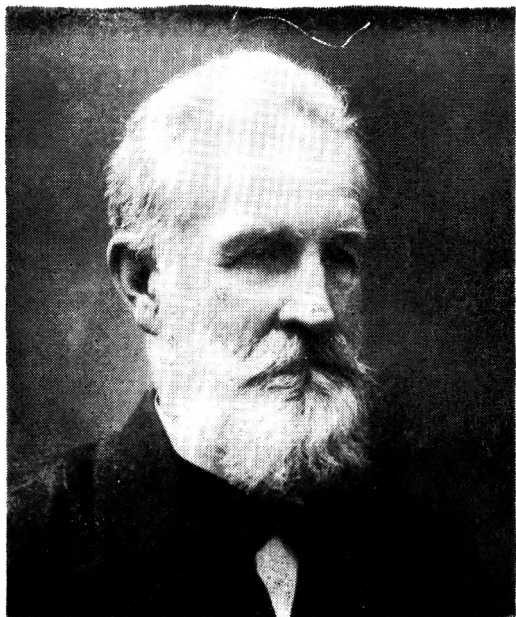


Phot. 14. Józef Rostafiński (1850—1928). Woodcut of Aleksander Regulski accordingly Franciszek Tagazzo. Reproduction from the „Weekly Illustre” vol. 4. Negative in the National Library, sygnature 7446



Phot. 15. Bolesław Hryniewiecki (1875—1963), historian of botany. Oil-painting, canvas. Painted by Antoni Michalak. Negative in the Institute of Art (Polish Academy of Sciences — cat. No. 115239). Phot. W. Rogaliński





Phot. 16. Ludwik Antoni Birkenmajer (1855—1929), historian of the exact sciences.
From the family collection



Phot. 17. Samuel Dickstein (1851—1939), lecturer of history of mathematics. Repr.
acc. 65 anniversary professor Samuel Dickstein activity in the field of science,
education and sociology



Phot. 18. Bolesław Olszewicz (1893—1972)



Phot. 19. Stanisław Majewski (1878—1955), lecturer of the history of the mining
industry. From the archives of the Polish Academy of Sciences

III. TEACHING OF THE HISTORY OF SOCIAL SCIENCES

Separate courses in the history of particular social sciences began to be held at the Polish institutions of higher education from the second half of the last century. Their number grew however considerably only after Poland had regained independence. A systematic teaching of the history of economy, of law philosophy and law doctrines, as well as — to some extent — of the history of historiography was then initiated.

At Polish institutions of higher education — and we mean here universities first of all — courses in the Greek and Roman historiography prevailed, and apart from them Polish historiography of the Middle Ages and Renaissance period was discussed as well. On the other hand, there were very few courses in the historiography of the last two centuries. But not at all universities there was systematic teaching of this subject. In fact regular courses in the history of historiography were held, with short breaks, only at the Jan Kazimierz University in Lwów (ancient historiography and the history of the Polish one), and at the Stefan Batory University in Wilno (history of Polish historiography). At Lwów University the ancient Greek historiography was gone into very thoroughly by Stanisław Witkowski (1866—1950), author of a three-volume work on this subject. At the remaining Polish universities the history of historiography was taught during that period — as we have already mentioned — to a reduced extent and, unfortunately, sporadically.

But much attention was paid then to the teaching of the history of universal economy. This subject, called at that time the history of economic doctrines, was taught to a rather large extent at the university law-economic faculties, as well as at commercial schools and higher political schools. The history of economic doctrines was an obligatory subject for all groups studying economic sciences and was also recommended for economic historians and law-students. This teaching went together with a quite intensive publishing activity; among the books prevailed Polish translations of the classics of economy and textbooks. One of those textbooks, whose author was an instructor in the history of economic doctrines at Polish schools, Jan Stanisław Lewiński (1885—1930), won recognition also abroad; it was issued twice in English in London (in 1922 and 1931); and was also translated into Japanese (in 1925).

As for the history of other social sciences they were not taught systematically in the period between two wars in this country, although sporadic courses were held in the history of sociology, philology (jointly the classical and Slavonic one), archeology. Also instructions of educational authorities on the introduction of separate and obligatory courses in the history of sociology and history of archeological research were carried out only to a small extent.

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In the period after the Second World War courses have been held in the history of particular social sciences at their respective faculties, e.g. in the history of historiography, that of social-economic thought, history of

law-political doctrines, history of sociology, psychology, ethnography, linguistics, etc. The status and durability of courses in the history of particular social disciplines were often determined by the personality and interests of the instructors. And so for instance the fact that the history of historiography got the status of an independent course at historical studies was not only the continuation of a prewar tradition but also an undisputed merit of Marian Henryk Serejski (1897—1975) who taught this subject uninterruptedly at Łódź University from the academic year of 1946/47 to that of 1951/52. When subsequently M. H. Serejski concentrated his teaching activities in Warsaw, his courses in the history of historiography, both the general and monographic ones, were taken over and continued at Łódź University by Jerzy Dutkiewicz and Krystyna Śreniowska. The first after the war graduate seminar devoted entirely to the history of historiography was organized at Warsaw University by Wanda Moszczeńska (1896—1974) who had conducted it for 10 years. The Institute for the History of Historiography, existing at Warsaw University from 1957 (at present: Institute for the History of Historiography and Didactics of History) is the only academic institution of this type in Poland; it had been headed for many years by Wanda Moszczeńska, and its present head is Jerzy Maternicki. The participants of doctorate seminars — conducted in the past by W. Moszczeńska as well as by M. H. Serejski — are today qualified scientific workers conducting themselves doctorate seminars in this field.

The history of historiography is now obligatory in the fourth year of study — its teaching being mostly of a conversational and monographic character. And so for instance it is conducted at Warsaw University in three parallel groups (Jerzy Maternicki, Aleksander Gieysztor, and Benedetto Bravo) covering a vast space of time and a variety of problems.

The past of the history of historiography is now playing an increasingly important part in the curriculum of historical studies at Polish universities, as it does also abroad. It is assumed that courses in this subject should demonstrate to the students that the history of historiography reflects various ideological attitudes, that it traces not only the evolution of historical research but takes also part in the process of theoretical reflection. In the 1950s there was issued in Łódź, in three parts, a script of lectures, entitled *An outline of Polish historiography (Zarys historiografii polskiej)*; the author of the two first parts was M. H. Serejski; the authors of the third part (20th century) were J. Dutkiewicz and K. Śreniowska. At two last General Congresses of Polish Historians and in the discussions of specialists there has been much talk lately about the publication of an academic textbook of universal historiography.

Courses in the history of the social thought and of sociology — intended for the students of this faculty — have won an important position in the People's Republic of Poland. But in spite of their uniform programme they take on, at particular schools, an individual character, determined, to some extent at least, by the instructor. In view of the fact that this subject is dealt with in courses and its chronological scope is very wide it is necessary for the instructor to select the material according to some criteria. Here are some solutions of this problem.

Paweł Rybicki conducted, in the years 1957—1969, a two-year course in this subject at the Jagiellonian University for the students of the 1st and 2nd years and, while having at his disposal 120 hours, had to cover a period from Antiquity to the 20th century, so he limited himself to discussing only the most representative schools of thought. Jerzy Szacki teaching the same subject at Warsaw University considered in his programme for the academic year 1974/75 considered that one of the main aims should be to give priority to those presociological and sociological doctrines which have retained their topicality to our day.

After the Second World War also linguistics has been keenly studied in Poland which found its expression in the scientific output and didactic activity of Polish specialists in this field. Let us mention the most prominent of them: of the Jagiellonian University — Tadeusz Lehr-Splawiński (1891—1965), Zenon Klemensiewicz (1891—1969) and Witold Taszycki (1891—1977), and of Warsaw University — Witold Doroszewski (1899—1976) who always allotted much space in his lectures to the history of linguistics. This tradition has been continued in almost all academic centres in this country.

Also such subjects as the history of law-political doctrines, history of economy, of ethnography have won a lasting position in our institutions of higher education. They are taught at all Polish universities and at many other schools of various types — of course they differ in the range of their material and its presentation.

The instructors in the history of various sociological branches do on the whole agree that courses in these subjects at their respective faculties should be held in the final years of studies, when the student is already prepared to receive them properly. So for instance courses in the history of psychology or in the history and methodology of archaeology are held precisely in the final years.

IV. THE HISTORY OF BIOMEDICAL SCIENCES AS A SUBJECT OF ACADEMIC STUDIES

The period between two wars was particularly favourable for the development of the history of medicine in Poland. At all medical faculties of our universities there were at that time chairs and institutes of the history of medicine which played an important role in training future physicians.

We owe the foundations of this so well developing branch first of all to two representatives of the Polish medical historiography: to Władysław Szumowski and Adam Wrzosek. The former had largely worked out in this country the principles on which the teaching of the history of medicine was based; the latter was co-author and promotor of the respective legislation which did materialize these principles.

In 1920, an *Instruction* was issued by the minister of education on the organization of medical studies at State universities. It was stated in it, among other things, that the history of medicine should be taught as a separate subject in the 5th and 6th years in courses amounting to 20 hours. In the last trimester of studies (the 16th) there should be also conducted an obligatory 20-hour seminar in the history of medicine. So altogether

60 hours were allotted to this branch. The *Instruction* laid down also conditions for acquiring the degree of a medical doctor; so it was required of the candidate, before he had taken the main examination, to pass one in the history and philosophy of medicine.

This ministerial decree lost its validity at the beginning of the academic year of 1928/1929 and was replaced by another *Instruction* of the minister of education, dating from March 16, 1928. In accordance with it a course in the history of medicine, amounting together with a seminar to 80⁰ hours, found itself in the group of recommended subjects. It was also established that one of the conditions for acquiring the degree of a medical doctor was the submission of a proof by him that he had attended 40 hours of courses and 20 hours of seminars in the history and philosophy of medicine.

The decrees in question enhanced the status of the history of medicine and became the basis for the creation at medical faculties of respective centres of learning. Owing to them chairs and institutes for the history and philosophy of medicine were set up at the Jagiellonian University (1920/21), Poznań University (1920), Warsaw University (1920/21), Stefan Batory University in Wilno (1922), and Jan Kazimierz University in Lwów (1922 — regular courses; 1935 — establishment of an institute).

Instructors in the history and philosophy of medicine at Polish universities did not stick closely to the above-mentioned decrees, treating them as a minimal programme, especially as regards the amount of time allotted to courses and seminars. The number of hours was increased first of all at the Jagiellonian University and Warsaw University. So for instance at the Jagiellonian University, where the head of the chair and Institute for the History and Philosophy of medicine was Władysław Szumowski (1875—1954), courses in this branch allotted in the early thirties numbered 240 hours annually. After the departure from Cracow of the instructor in the history of Polish medicine, Tadeusz Bilikiewicz, this figure was reduced to 180—200 hours for one year. Similarly at Warsaw University, the instructor, Franciszek Giedroyć (1840—1944) assigned to the history of medicine over 200 hours, most of which was used for seminars, being in the professor's view of greater importance than courses. It must be added that F. Giedroyć, unlike other Polish instructors, did not include in his teaching the philosophy of medicine, as this subject was taught at Warsaw University separately by Henryk Nusbaum (1849—1937).

The main theoretician of the history of medicine was in Poland the already mentioned W. Szumowski. He introduced a close linkage between the history of medicine and the philosophy of medicine (it found its expression also in the names of chairs and institutes set up then in Poland). In Szumowski's opinion only the philosophy of medicine, being most closely connected with the history of medicine, could give the physician a view on the whole of medicine as does philosophy in relation to all sciences. Because what is the object of the philosophy of medicine? Szumowski answers this question by saying:

“The philosophy of medicine draws general conclusions and combines the results of particular medical branches with biology, it gives a view

on the whole of medicine, its evolution, foundations, value, boundaries, method, mistakes; it investigates from the position of logic, theory of knowledge, psychology, methods of thinking and ethical attitudes — the ways of medical conduct” (“Przegląd Filozoficzny” 1920 p. 290).

In Szumowski's view the history of medicine must be closely connected with philosophy because this is implied in the very tasks of this discipline which he describes as follows:

“The first task is to collect historical facts and arrange them in a chronological, bibliographical and biographical order.

The second task is an analysis of facts, seeking their significance because not every fact has a historical significance.

And finally the third task is a synthesis, i.e. linking facts into a genetical string, presentation of the whole picture against the background of the history of human thought and of culture, a reference of the historical development to present-day science.

Of the three mentioned tasks the two latter cannot do without philosophy (“Przegląd Filozoficzny” 1920 p. 201—292).

Szumowski's courses and the seminar he conducted stuck closely to the above listed tasks. He usually divided his teaching into three separate parts: a) history of universal medicine; b) history of medicine in Poland; c) monographic — problematic courses in the area between medicine and philosophy, such as for instance “The philosophy of nature in its historical development”; “Revolutionary tendencies in medicine”; “Men of genius in the evolution of medicine”; “Medicine and materialism”; “Critical-philosophical questions in medicine and its history”, etc.

Szumowski divided his teaching of the history of medicine into two stages: for the 1st year students (history of medical disciplines), and for the final (4th) year students. In spite of some objections by some instructors, not sure if the 1st year students would be able to absorb the content of such courses, the programme of teaching applied by Szumowski was taken up, with some modifications, by Adam Wrzosek (1875—1965) in Poznań, and Stanisław Trzebiński (1861—1930) in Wilno. Both these instructors, following also in this respect in Szumowski's footsteps, introduced as a basic form of instruction a student's own contribution which was a paper written by him, usually on a classical medical work, or discussing a fragment from the history of medicine in Poland. Quite often the papers were published and some were even subsequently extended into doctor's of medicine theses.

Szumowski's influence on Polish instructors in the history of education was also due to the fact that he was author of a didactically good textbook *The history of medicine approached philosophically* (*Historia medycyny filozoficznie ujęta*) (vol. 1—3, Cracow 1930—1935) which aroused interest in Poland as well as abroad (in 1939 it was translated into Hungarian).

Regarded as an authority in the matter, at the International Congress of the History of Medicine in Rome in 1930, it was Szumowski who read the main paper *On the need for an obligatory teaching of the history of medicine at universities* which was then sent to the ministries of education in all countries and the suggestions it contained are said to have been applied in Constantinople and Leiden.

Similarly to the history of medicine, also the history of pharmacology was systematically taught at all pharmacological departments of Polish universities during the period between two wars. The legal foundation on which pharmacological studies were based then in Poland were two decrees issued by the Ministry of Education in 1920 and 1930. Both these legal documents provided for the introduction of separate courses in the history of pharmacology, amounting to 20 hours, for students of senior years. Following the instructions contained in the decrees, courses in pharmacology were initiated at Warsaw University (they were in point of fact held there back from the year 1918/19), Poznań University (from 1922/23), Stefan Batory University in Wilno (from 1931/32) Jagiellonian University (from 1933/34), and Jan Kazimierz University in Lwów (1933/34).

A major role in the teaching of the history of pharmacology in Poland had played a prominent Polish pharmacologist at the end of the 19th century and the first half of the 20th, professor of Warsaw University, Bronisław Koskowski (1863—1946). He was the first instructor in the history of pharmacology in Poland, being also author of valuable works on this subject. In one of them, *Propedeutics of pharmacology (Propedeutyka farmaceutyczna)*, devoted in fact to the history of pharmacology in Poland and to the universal history of that science, he wrote:

“Seeing the links between the past and the present is indispensable for any reformer who wants to draw plans for future action. This applies also to science in which without a good knowledge of tradition one can hardly achieve anything...” (Warsaw 1935 p. 7).

The history of veterinary sciences was introduced, after some unsuccessful attempts, almost simultaneously into the curricula of the two schools training veterinary surgeons, that is the Academy of Veterinary Medicine in Lwów (1927/28) and at the Veterinary Faculty of Warsaw University (1926/27). The courses, amounting to a small number of hours (from 10 to 30) were continued uninterruptedly till the outbreak of the Second World War. However the instructors at both these schools treated the history of veterinary sciences as an insignificant margin of their basic courses. Outside these schools acted the two most prolific writers of veterinary works: Konrad Mil-lak (1886—1969) and Aleksander Perenc (1888—1958). The latter had for some time taught the history of veterinary medicine at courses for military veterinary surgeons, which stimulated him to the publishing, in 1936, of an extensive and pioneering book *The history of veterinary medicine in Poland (Historia lecznictwa zwierząt w Polsce)*, the work which dealt not only with veterinary medicine but also with the past of this science and the history of its teaching.

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After the Second World War special attention was paid to the academic teaching of the history of medicine which was linked — as it had been before the war — with the philosophy of medicine. This connection appeared so obvious that the heads of the institutes for the history of medicine,

set up after the war, were prominent representatives of this branch in the prewar period: Władysław Szumowski (Jagiellonian University), Adam Wrzosek (Poznań University), Stanisław Konopka (Warsaw University), Ludwik Zembrzusi (1871—1962; Lublin University), Jan Szmurło (1867—1952; Łódź University), Witold Ziembicki (1874—1950; Wrocław University). But quite unexpectedly very soon a crisis set in the academic teaching of the history of medicine. The reason for it was the fact that most of the above-mentioned professors retired and there were hardly any younger specialists to replace them. Also the reform of medical studies, carried out in the years 1949—1952 and transforming medical faculties at universities into separate medical academies, did not provide for the setting up of chairs or institutes of the history of medicine. It was only in 1957—owing to the efforts of the Commission for the History of Medical Sciences in which particularly active were professors: Stanisław Konopka, Ksawery Rośniński, and Bolesław Skarżyński (1901—1963)—that a motion for the introduction of courses in the history of medicine at Polish medical academies received official sanction. Courses in this discipline are now held (ac. year 1979/80) at all, that is—eleven, Polish medical academies. However, in spite of the systematic efforts of the by now trained new group of historians of medicine the position of these courses is still not entirely stabilized. Thus for instance there is in Cracow a separate common Chair for the History of Medicine and Pharmacology, headed by Mieczysław Skulimowski; also the Chair of the History of Medicine at the Military Medical Academy in Łódź has the status of a separate department (its head: Tadeusz Brzeziński). At other Medical Academies the departments of the history of medicine are either part of the Institutes of Social Medicine, or of the common Chair of Collective Social Sciences, or courses in the history of medicine are of an irregular character. These examples indicate that the position of courses in the history of medicine remains in various centres still far from being the same, in fact it is quite diverse.

Courses in the history of medicine are held at the second year of medical studies amounting there to 15 hours of lectures and 15 hours of seminars; they are concluded as a rule by an examination colloquium. Apart from that some elements of this history appear also in the deontology course taking place in the sixth year. In spite of the fact that both the students and the instructors make use of W. Szumowski's *History of medicine in a philosophical approach (Historia medycyny filozoficznie ujętej)* (its extended issue, edited by T. Bilikiewicz, came out in 1961), in most of the courses in this discipline there are no attempts at linking the history of medicine with the philosophy of this science as it was the case in the pre-war period.

At present, because of the modification of medical curricula at Polish medical academies, The Commission for the Teaching of the History of Science and Technology being part of the Committee for the History of Science and Technology at the Polish Academy of Sciences, is preparing a new project for the teaching of the history of medicine. What is notable in it is the fact that there is in it a clear reference to the experiences of the interwar period, to the approach to the history of medicine as had

been shown by such a prominent representative of this discipline as Władysław Szumowski. And although there is no possibility at present of increasing the amount of hours devoted to teaching it, it is suggested that this should be conducted, as it used to be before the war, in two stages. The first 20 hour stage—the main period of teaching—is intended for the third year of studies; the 10 hour second stage is for the sixth year, by which time the student should be able to benefit from the historical analysis in studying contemporary problems.

One is struck in this new curriculum by a problematic approach to the material, by the treatment of problems against their philosophical and sociological background, in their relationship with other sciences, and in their past and future. Here are some programme proposals for the first stage of teaching: theme I—Folk medicine. Its origin and contemporary forms. The origin of superstition in medical practice. Theme II—Basic philosophical conceptions in the ancient medicine and their influence on the subsequent evolution of medicine. Theme III—The notion of health and illness from the Middle Ages till modern times. The main schools in pathology. Theme IV—The development of natural sciences and technology, and the development of medical theory and practice. As it appears from these examples the proposals of the new curriculum suggest a monographic character of the courses while leaving much scope for the student's home work.

Attention should also be drawn here to a problem, discussed from time to time in this country, whether the defence of doctor's and docent's theses in the history of medicine and pharmacology should take place only at the respective medical academy or should it be also possible to defend them at the historical faculties of universities.

Courses in the history of pharmacology are currently held in Poland at eight medical academies—usually amounting to 30 hours. The research centre concerned with the past of the pharmacological material culture is now in this country the Museum of Pharmacology, connected with the common Chair of the History of Medicine and Pharmacology at the Medical Academy in Cracow. Also the Medical Academy in Łódź can boast a long-standing tradition in the field of teaching the history of pharmacology since it was there that the first Chair of the History of Pharmacology in Poland had been active, in the years 1959—1970, under the direction of Robert Rembéliński (1894—1975). It was precisely R. Rembéliński who had written *History of pharmacology (Historia farmacji)*, used as an academic textbook, it was reissued in a modified extended version (with Barbara Rembélińska-Kuźnicka as its co-author) in 1972. And although the position of the history of pharmacology as a subject of university teaching is not yet determined on the national scale, although its curriculum is not yet uniform for all schools, there is a growing interest in this discipline, an evidence of which is the increasing number of master's and doctor's theses in this field.

As for the teaching of the history of veterinary medicine it is linked in People's Poland with only one name—well known already in the pre-war period—that of Konrad Millak, founder and head of the Centre of the History of Veterinary Medicine, established in 1949. K. Millak taught ve-

terinary propaedeutics including history and deontology, during the years 1946—1951, at the Veterinary Faculty of Warsaw University, and during the years 1956—1960 at the Main School of Farming in Warsaw.

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During the years 1919—1920, suggestions were advanced to introduce into Polish institutions of higher education separate courses in the history of biological sciences and even to set up chairs of this subject connected with museums, but these proposals were not realized. True, courses of this kind were initiated, in the ac. year 1920/21, at the Jagiellonian University by Józef Rostafiński (1850—1928), a distinguished botanist and historian of natural sciences, but a small number of hours was allotted to them (20) and they were held only two years. Also 20 hour courses, held every three years, were given at Warsaw University from 1922/23 by Bolesław Hryniewiecki (1875—1963), author of dozens of works in the history of botany. If we add to it some ephemeral courses in the history of zoology, usually disappearing after having preceded their courses in general biology, zoology, botany, or in biological theory (e.g. theory of evolution) with a more or less detailed historical outline, then we can get the whole of what was a rather modest picture of how the history of biological sciences was taught in the institutions of higher education in prewar Poland. Neither did the situation improve in this respect after the Second World War. Even just the opposite: in the course of time there grew a tendency to shorten historical introductions in the textbooks of biology. If there were sometimes courses in the history of natural sciences they resulted from the instructors' individual interests in this field.

The representatives of the history of biological sciences consider one of the main reasons for this not very optimistic situation in the academic teaching of this branch to be the shortage of specialist instructors. Some of the biologists are therefore of the opinion that the training of would-be historians of biology would be facilitated if the candidates for doctor's degree could choose in their final examinations instead of one subject in the history of philosophy or of economy that in the history of biological sciences.

V. TEACHING THE HISTORY OF EXACT SCIENCES

The teaching of the history of exact sciences is closely linked in Poland with the names of Ludwik Antoni Birkenmajer and of his son Aleksander.

L. A. Birkenmajer (1855—1929), author of profound studies of Copernicus' life and work, was given the title of irregular professor in the history of mathematical sciences at the Jagiellonian University as early as 1897, but it was only after Poland had regained independence that proper conditions were fulfilled owing to which it came, in 1919, to the establishment of, one of the first in Europe, Chair for the History of Exact Sciences and thereby to the independent organizational status of this branch.

L. A. Birkenmajer used to allot to the teaching of the history of exact sciences annually 200—210 hours. These were made up of: a general course, entitled mostly as “The history of exact learning”, amounting originally to 3 hours weekly the whole year, and then to 4 hours weekly; 10—20 hours monographic courses devoted to people, fields or problems and a seminar, amounting usually to 2 hours weekly, conducted throughout the whole academic year. The monographic courses covered a wide range of themes, which was characteristic of the instructor’s wide interests. Here are some of the titles of these courses (in English transl.): “Leonardo da Vinci and Copernicus, a comparative study”; “The first telescope in Poland”; “Tools of the ancient and medieval astronomy”; “Exegesis of Copernicus’ work *De revolutionibus orbium coelestium*”; “History and the historians of exact sciences”; “Jan Brożek and Stanisław Pułowski”; “Sources for the history of mathematical sciences”; “Diophantos of Alexandria and algebra with the Greeks”; “Dante Alighieri as a mathematician, astronomer and physicist”; “Isaac Newton”; “Astrology, its nature and role in the history of science and culture”; “Mathematical sciences during the Arab epoch”; “The research method in the history of mathematical research”.

As it appears from the cited titles, L. A. Birkenmajer did not include chemistry either in the courses or in the seminars at which early texts were read and explained, as well as papers by the students — 12 yearly on an average.

L. A. Birkenmajer’s death brought about a crisis in the chair’s activities and consequently — for all the efforts made by his successor. Aleksander Birkenmajer (1890—1967) who in January of 1930 received *veniam legendi* — in the autumn of 1931 the chair was closed down by the Ministry of Education. The attempts to reopen it, made in 1937, proved vain. Aleksander Birkenmajer returned to his work at the Jagiellonian Library while retaining, as a docent in the history of exact sciences, courses in this field. He tried to keep the arrangement, content and method of the teaching worked out for many years by his father. He succeeded in doing it during the years 1933/31—1933/34; later (in the years 1934/35—1937/38) as the number of hours allotted to the history of exact sciences had been reduced by half, he entirely gave up monographic courses and restricted himself to holding (1 hour weekly during the whole year) a course in the history of mathematical sciences and a seminar (2 hours weekly during the whole year).

Attempts made, during the period between two wars, to organize other chairs in the history of exact sciences at Polish universities did not succeed, mainly it seems, because of the shortage of qualified instructors. True, from time to time there did appear short-lived — because lasting no longer than one trimester — separate courses in the history of particular exact sciences, but they were conducted by scholars who were concerned with the history of their respective branches merely as a side-study. It was only at Warsaw University that courses and seminars in the history of mathematics had been held for a longer time (in 1920/21—1927/28), amounting to 30—60 hours, the instructor being an honorary professor in this subject, later vice-chairman of the International Academy of the History of Science,

Samuel Dickstein (1851—1939). After Dickstein had given up his courses, the only subject having to do with the history of exact sciences remained the history of mathematical logic, taught by Jan Łukasiewicz (1878—1956), the co-founder of the Warsaw school of mathematical logic. Łukasiewicz used to combine his courses into three-year cycles (Antiquity, Middle Ages, Modern Times), allotting to them at first 4 hours weekly in a year, and then only 2 hours in one trimester.

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The academic teaching of the history of exact sciences cannot, alas, boast in the People's Republic of Poland achievements similar to those it has in the period between two wars. Sometimes even a question is asked in the Polish mathematical milieu: should the mathematical faculty students learn the history of mathematics at all and acquire thereby a broader view of their discipline? Is it right to absorb the minds of young mathematicians with problems which remain outside the main area of their work and interest? Nevertheless a course entitled: "Selected problems in the history of methodology and the foundations of mathematics", formulated, as it can be seen, in such a way as to enable the instructor an individual approach, did figure, until the reform of mathematical studies in 1974, on the list of obligatory courses for the students of the last year of the so called theoretical section of mathematics. Its character was so different at various universities and in various periods, that it would be a systematic course of the history of mathematics on the one hand, and on the other — it would present the latest sections of the abstract formal logic. But it was usually assumed that courses in the history of mathematics should not give a dry list of facts and life-sketches of famous men and should try to explain instead why the evolution of mathematics' particular sections had developed in that and not other way.

Andrzej Mostowski, teaching the history of mathematics at Warsaw University in 1970/71 and casting doubt — by way of paradox probably? — on the advisability of teaching this branch to students, would stress that his course was meant to serve double purpose: firstly, it should illustrate how one proceeds from simple mathematical notions to the increasingly abstract ones, the object of contemporary research; secondly — it should demonstrate to the students at least some, historically important mathematical statements with which not all students may get acquainted in the main courses. A similar approach was adopted to these particular courses at Wrocław University.

As regards the history of physico-chemical sciences they won a more important place, after the Second World War, in the Polish educational system than did the history of mathematics, being in fact also more popular among the teaching cadres. It is an interesting and noteworthy fact that the animators of these courses were in the People's Republic of Poland professors of the M. Curie-Skłodowska University in Lublin who were not themselves concerned with teaching in this field: Armin Teske (1910—1967) and Włodzimierz Hubicki (1914—1977). It is to them that goes the merit — in view

of their keen historical interest and publications — of having aroused among their colleagues and students an interest in the history of physics and chemistry.

Both these branches have been consolidating their position, especially during the last decade, at Polish institutions of higher education. So for instance into the new curriculum of physical studies has been introduced, from the academic year 1975/76, a course in the history of science amounting to 28 hours for the 4th year of study; it is obligatory for the students of the teachers' section and is concluded by an examination. Courses in the history of physics take place also at the university Postgraduate Studies for the teachers of physics. At Warsaw University it is Andrzej Wróblewski who is the instructor. Since 1973, courses in the history of physics have been conducted (Zbigniew Strugalski being the instructor) at the Institute of Physics of the Warsaw Technical University. A course entitled: "Foundations of experimental physics", intended mainly for candidates for doctor's degree and professor assistants of the Institute (8 semesters, 2 hours weekly) was 50% on the problems of the history of physics, describing the evolution of views on particular phenomena in the fields of mechanics, heat, acoustics, electro-acoustical radiation, atomic and molecular structure of matter, relativistic physics, quantum physics, etc. Apart from that, since the academic year 1976/77 a seminar in the history of physics has been held at the Faculties of Technical Physics and Applied Mathematics at the Warsaw Technical University amounting to 2 hours weekly in the 4th year of study (8th semester).

At Lublin University — like in Warsaw — there is held for the 4th year physics students of the teachers' section a 30 hour course in the history of physics combined with some elements of the history of mathematics and of technology. Simultaneously there are conducted courses and conversatoria, for all students of the 4th year of physics, in the methodology of contemporary physics and historical research in this branch (instructors: Stanisław Szpikowski, Waclaw Andrzej Kamiński). An evidence of the growing interest at Polish academic centres in the methodology and history of physics is the inclusion of this subject in the curricula of Teachers' Training Colleges — e.g. in Częstochowa.

By comparison with the prewar period there has also increased in People's Poland the number of courses in the history of chemistry. So for instance at the Faculty of Chemistry at Warsaw University a cycle course in this branch, entitled: The historical evolution of chemical concepts (instructor: Roman Mierzecki) — amounting to 15 hours — is designed for the students of the final year, that is to say — after the completion of main courses. The subjects are governed by selected problems, arranged chronologically. The courses focus on four basic questions: 1) problem of elements in matter; 2) problem of the smallest particle of matter; 3) problem of chemical reactivity; 4) problem of molecular structure. Other instructors in the history (let us mention as an example Roman Bugaj who conducted courses in the academic year 1967/68—1972/73) at the so called Evening Study of Chemistry at Warsaw University) are advocates of arranging the material basically in a chronological manner.

As we can see, the programme of teaching the history of physics and of chemistry is quite varied in Polish institutions of higher education which suits the instructors by leaving much initiative to them.

VI. THE HISTORY OF EARTH SCIENCES IN POLISH HIGHER EDUCATION

In the period between two wars there were separate courses devoted entirely to the history of earth sciences. But there were held sporadic courses which were mostly concerned with the history of geography and cartography, as well as with that of geographical discoveries. Yet their number was exceptionally small considering that there were in Poland of those days many scholars doing research in the mentioned fields. It was also in Poland that a project was advanced — carried out in 1934 — to set up an international organization associating geography historians from all over the world; it adopted the name of the Polish nineteenth-century historian and geographer, Joachim Lelewel.

During the whole period between two wars it was only at Warsaw University and the Warsaw Technical University, and only a few years before World War II, that courses in the history of geography and that of geodesy were introduced.

The history of geography was initiated at the Mathematical-Natural Faculty of Warsaw University by Stanisław Lencewicz in 1935/36. In the next year this subject, restricted to the history of geography in Poland, began to be taught in the Arts Department by Bolesław Olszewicz (1893—1972), concerned for many years with the history of cartography and geography. Apart from the courses (1 hour weekly during the trimester) Olszewicz also conducted seminars in the history of geography which amounted together to 40 hours yearly.

At the same time a course entitled “The history of land and earth surveying” (amounting to 1 hour weekly in the summer semester) was held, from 1934/35, at the Engineering Faculty of the Warsaw Technical University. The instructor was head of the Geodesy Section, Jan Piotrowski (1885—1962).

Courses in the history of earth sciences, as it was in the prewar period, in People’s Poland are not of an uniform character either, being conducted only at some Polish institutions of higher education — first of all in Wrocław, Warsaw, Cracow and Lublin. Bolesław Olszewicz, also after the Second World War, contributed greatly to the development of the history of geography, mainly to that of cartography.

Here are some data on the teaching of this branch. At Wrocław University there is a tradition of courses in the history of geographical discoveries, amounting to 2 hours weekly; in the 4th year of study the history of cartography is taught; in the 5th year — as part of specialization — the history of geographical methodology (2 hours weekly during one semester).

The situation is much worse in our schools as far as the teaching of students in the history of geology is concerned. Quite an event are therefore separate cycles of courses in this subject conducted at the Geological Faculty of the Mining and Metallurgical Academy in Cracow. Elements of the history

of geological sciences appeared also as a rule in the university course entitled: "Introduction to geology". But it was of course very little since only 1—2 hours were devoted in it to historical retrospection. Therefore, if the instructor did not systematically refer in the remainder of the course to the history of the subject, the instructive value of that reflection was insignificant.

Lately there have been increasingly voiced suggestions for the students of geological-prospecting faculties, of engineering geology and hydrology to get a course in the history of their branches, because just in these studies the knowledge of the development of thought and of research methods is particularly needed.

VII. TEACHING THE HISTORY OF TECHNOLOGICAL SCIENCES AND THE TECHNOLOGY

The first separate course in the history of technological sciences was introduced in Poland in the ac. year 1919/20 at the Warsaw Technical University. It was the history of mechanics. With the conducting of this course was entrusted Feliks Kucharzewski (1849—1935), a scholar who had made a great contribution to the historiography of science and technology in this country and who was just then named honorary professor in technical mechanics and its history. But he held his course only during the ac. year 1919/20—1920/21. It was partly brought out in print and he would begin it with the history of first tools and machines and end in the 19th century, while only mentioning briefly the latest 20th century physical theories (among others that of A. Einstein) and their possible influence on the development of mechanics.

At the Mining Academy in Cracow the first separate and obligatory courses in the history of technology, namely that of mining, were introduced in 1937/38. It was Stanisław Majewski (1878—1955), the author of a number of publications on the subject, who was entrusted with them. He maintained that these were the first courses of that kind in the history of the academic teaching of mining. One cannot now confirm the accuracy of this statement. Majewski taught the history of mining during the winter semester for the 3rd year students of the Mining Faculty 1 hour a week (thus c. 20 hours globally). As it appears from the archival and issued material, Majewski restricted himself in this course to an extensive description of the history of ancient mining, beginning at the first appearance of man on earth and ending in the Hallstatt period.

Courses in the history of mechanics and the history of mining were virtually the only separate lectures in the evolution of technological and technical sciences that were included in the curricula of Polish technical schools during the period between two wars. But let us add, to complete the picture, that at the Lwów Technical University, as well as some universities there would sporadically appear separate courses devoted to particular branches of industry, still they should be regarded as belonging more to the history of economy. Neither do we consider, which may be debatable,

as being part of the history of technological and technical sciences courses in the history of architecture. Without trying to justify here this position we should like only to remark that the history of architecture has been playing an essential role in the training of Polish architects as a basic link binding artistic culture with the indispensable technical knowledge. So the history of architecture was taught extensively at the faculties of architecture of the two Polish Technical universities (in Warsaw and Lwów) but to a lesser extent at the art academies and universities.

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In People's Poland courses in the history of technology have a long-standing tradition at two Polish schools: the Mining Metallurgical Academy in Cracow and the Warsaw Technical University. In Cracow the Chair of the History of Technology and Technical Sciences was set up in 1956 owing to the efforts of Mieczysław Radwan; there is now in the Institute of Management Organization a department of the History of Technology directed by Maria Wirska-Parachoniak. The evidence of the high status the history of technology has achieved there is the number of courses in this branch: they were held in the academic year 1975/1976 at the Pottery Department ("selected problems in the history of pottery"), at the Non-ferrous Metals Department ("an outline of the universal history of non-ferrous metals and a history of these metals on Polish territories"), at the Geological Department (subjects: "geology and the development of man's material culture", "an outline of the evolution of geological knowledge in the world and in Poland"), at the Department of Mining and Metallurgical Electrotechnics (subject: 1. "origin and evolution of technical thought throughout the ages", 2. "historical problems of energetics and of energetical industry in the world and in Poland"), and at the Mining Department ("outline of the history of coal mining"). The above-mentioned courses were usually held in the 3rd year of study and amounted to 2 hours weekly during one semester. The quoted examples show that the subjects of these courses corresponded on the whole to the requirements of particular faculties. The courses were obligatory, and the fact that they were held in the 3rd year was essential as the students were by then sufficiently prepared to absorb them. As a result of the new curriculum in the academic year 1975/76 the situation of the courses in the history of technology worsened unfortunately at the Mining-Metallurgical Academy. So in the ac. year 1978/79 courses in this branch were conducted only at three departments of this school (the Geological-Prospecting, Material Engineering and Pottery, and The Non-Ferrous Metals Departments), amounting to 30 hours yearly. It is now hard to say beforehand whether the restriction of the amount of teaching in the history of technology and technological sciences is at the Mining and Metallurgical Academy in Cracow only a temporary phenomenon or a symptom of the diminishing interest in this branch.

At the Warsaw Technical University a Chair of the History of Technology was set up — as it was in Cracow — in 1956 and its head became

Eugeniusz Olszewski. Courses in the history of technology have been held there since then, only their content and amount of hours have been changing. So for instance the history of technology figured prominently in the course of the history of culture which — as it was already mentioned — was obligatory, from 1961 to 1968, at the Department of Architecture at the Warsaw Technical University. But at the Department of Land Engineering at that of Sanitary and Aquatic Engineering courses in the history of technology did not receive the status of an obligatory subject or colloquium (30 hour course for the 4th year students). Of the planned courses in various fields of the history of technology in the 3rd year of all departments of the Warsaw Technical University — 30 hours in one semester only that conducted by Alfred Wiślicki was fully carried out — in the academic years of 1975/76, 1976/77, 1977/78 and at the Car and Working Machines Department (obligatory course). Since 1970 there has been held a 30 hour cycle of courses for all the 3rd year students of the Warsaw Technical University on the subject of the social role of technology in the 200 year long historical retrospect.

At the Wrocław Technical University there is at the same time a Section of the History of Science and Technology within the Institute for the History of Architecture, Art and Technology and directed by Ryszard Sroczyński. The section is very concerned with teaching having introduced, in the academic year 1972/73, courses in the history of technology at the Mechanical Department of the Institute of Basic Technological Problems. Courses in the history of technology, amounting to 60 hours, were also among the obligatory ones at the Department of the Computer Science and Management. In 1974 a doctorate study was set up at the Wrocław Technical University in the history of science and that of technology.

The curricula which have been in force at the Wrocław Technical University from the academic year 1978/79 include the so called subjects of general development — they were introduced in the 5th year of most departments and in the respective courses the history of science and technology is also dealt with. The subject — selected by the student from a number of themes — becomes obligatory and ends with an examination. The courses are held in the 9th semester and amount to 45 hours. According to the head of the Section of the History of Science and Technology at the Wrocław Technical University courses in the history of science and technology, which a few years ago were conducted only at three departments and the doctorate study, have now spread throughout all departments.

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The material used in this article suggests that the attempts made in the period between two wars and also now to secure for the history of science and technology a regular place express and attitude in the teaching which tries to divorce it from a one-sided specialization. This is of particular significance now in our growingly technically world.