

HISTORY OF BOTANY IN THE ATTILA JÓZSEF UNIVERSITY (1921—1970)

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A. History of The Institutes for Botany

May 29 1921 is a significant date in the cultural life of Szeged. That was the day when Hungarian Parliament voted the bill assigning the town of Szeged as headquarters of the Ferenc József University displaced from Kolozsvár. This event caused headline reports in the local press, including interviews with leaders of the municipal administration and with representatives of the new establishment. The opinions on the present and future of the university were sometimes extremist, in fact contradictory, but local press played certainly an important role in calling the attention to the new university and its problems both in the country and abroad.

Phase 1

After working for a while in Budapest, Professor ISTVÁN GYÖRFFY came from Kolozsvár to Szeged to be Head of the Institute for Botany: his aim was to develop the respectable traditions of his predecessors (VINCE BORBÁS, ALADÁR RICHTER) in the Institute for Botany of Kolozsvár University and to introduce the love of science in Szeged, too.

In the very first years of his activity he wrote number of informative articles, almost regularly published reports, for keeping Szeged public opinion well informed, in return for the „great sacrifices” made by the citizens for the university. Professor ISTVÁN GYÖRFFY was the founder of the Institute for General Botany and headed it from 1921 to 1940.

The Institute for Botany was working in 1921 on the first storey of the State Grammar School the present Radnóti Grammar School, where some 14 premises were equipped to the purposes of instruction and research work (350 sq. m.). After ten years (1931), when the clinical buildings of the Medical Faculty were already standing, the institutes of the Faculty for Natural Sciences could also obtain their final quarters. In the large building of the former Railway Accounting Office (to-day: Táncsics Mihály Street 2) the Institute for General Botany, together with other institutes of natural sciences (zoology, geology, mineralogy), obtained its definitive home.

The Institute occupied in the new building on the 1st storey a surface of 1190. sq. m. including 22 rooms, a well equipped botanical museum and herbarium, assuring fair possibilities for progress.

The teaching and research staff included the Professor, a junior lecturer, two assistants and a research student.

Professor GYÖRFFY refers to the first years as to the „heroic period” of the Institute. „All furniture of my study consists of a kitchen table and a case,” he writes in his recollections. Generous gifts were characteristic of that period, when the Institute had to be established practically from nil. As the very basis for any further scientific work, major gifts of books were sent by the Hungarian Geographical Society and the Institute for General Botany of Péter Pázmány University in Budapest. Other valuable school equipment included the gifts of the Herbarium of the Hungarian National Museum and of Tartu University (Finland), as well as the significant collections of GAYER, WAGNER and HULJÁK and other precious contributions from renowned scientists and private collectors for the botanical museum.

As a result of clever organizational work, the Institute was substantially supported by the Rockefeller Foundation and the Széchenyi Research Foundation. These funds permitted the Institute to start its own periodical „Folia Cryptogamica” in 1924 which regularly published papers received from foreign scientists, too (edited by „Mars” Press, Szeged). Prior to that date, the members of the Institute staff published their papers either abroad or in „Acta” (edited by the Association of the Friends of the University), which can be regarded, as a matter of fact, as the first publication of Szeged University.

In compliance with time-spirit, the educational work of the Institute was characterized by the autonomy of the university: so, for instance, there were never any lectures on taxonomy and phytogeography, although the formation of teachers would have required lectures on the whole domain of botany. Instruction was concentrated on the lectures and practical studies on morphology and physiology. A complete and up-to-date equipment made for successful instruction. According to the division of botany, there were special histological laboratories for floriferous and cryptogamous plants, as well as physiological premises and working rooms for the candidates for doctorate. Micro- and macro-photo-laboratories were answering to superior professional expectations. The formation of teachers played only a secondary role in instruction.

The research work of the Institute was mainly concentrated on the overall examination of the cryptogamous plants to be found in the Great Hungarian Lowland and the High Tatra. This was actually the pursuance of the research trend within the Institute for Botany of Kolozsvár and was highly successful indeed as shown, among others, by the list of distinguished scientists who have started their scientific career in Szeged (Professor TIBOR HORTOBÁGYI, Professor ISTVÁN KISS, the research-workers ERZSÉBET KOL, GÁBOR SZEMES, LÁSZLÓ GALLÉ, GÁBOR UHERKOVICH). However, this „school” ceased to exist in 1940 when the University returned to Kolozsvár.

The adherence to Kolozsvár traditions was expressed also by Professor GYÖRFFY's consistent ambition of creating the Botanical Garden. Received from the city of Szeged, an area of 10 hectares (in Királica) was symbolically occupied already in November 1922, but some years were still needed to achieve any progress. The still existing lake was established at that time, and *Nelumbo* was successfully introduced. The hill made of the excavated earth

was planted with alpine flora, the required material being usually gathered by members of the Institute in the High Tatra.

The Botanical Garden was representative of the flora of Hungarian regions, including the vegetation of the sandy lowlands as well as the forests and typical plants of the river-banks. With its rich stock of conifers (spruce, black pine, Scotch fir) the sector „Fenyőháza” represented the vegetation of high mountains. With a highly developed artistic sense, Professor GYÖRFFY shaped the characteristic regional units of the Hungarian Lowland, the typical sweep-well, as well as the vegetation of the salt lakes with specially settled storks and other water fowl.

Prof. GYÖRFFY used the Botanical Garden also as means for bringing the students nearer to nature. Resting benches were arranged along the main roads of the garden in suitable environment with the purpose that the students should learn and work there in fine weather. With the same purpose he arranged walks every second Sunday (Botanical Garden, Kállai grove, Dorozsma, surroundings of Lake Fehértó), with possibilities for both botanical and zoological observations.

The Botanical museum was a remarkable establishment of the Institute occupying a rather big area (ca. 100 sq. m.). The exhibits included original collections of renowned scientists, various teratological phenomena, crops as well as objects collected by LAJOS BÍRÓ in New Guinea. As part of the museum let us mention the Alaska collection which the junior lecturer of the Institute, ERZSÉBET KOL, brought from her North American study tour. On payment of a modest entrance fee the museum could be visited by the public on the first Sundays of every month. Documentary films on the museum, the Alaska collection and the life of the Institute are kept at present in the Institute for Botany.

The return of the Ferenc József University to Kolozsvár marked the end of the first and the beginning of the second phase in the development of botanical activity in Szeged. As a result of Prof. GYÖRFFY's activity, the first 19 years may be characterized by the establishment of the Institute, the scientific-organizational work and as a consequence of these the rousing of international reaction. Although the Head of the Institute was not immune from the fashionable disease of those times, i. e. excessive nationalism and irredentism, this fact does by no means diminish the importance of his activity accomplished in the interest of botany.

Phase 2

In October 1940, Professor PÁL GREGUSS was appointed Head of the Institute for Botany. He introduced a new research trend, divergent from traditions, concentrated on Xylotomy and paleobotany. The examination of cryptogamous plants and taxonomic research work were fell into the Background. The organization of the new Institute was started with help of a few, but enthusiastic young botanists (ISTVÁN SZALAI, ISTVÁN VARGA, ERNŐ VAJDA, EMMA PÁHÁNY and, for a short while, ISTVÁN NAGY and MARGIT SZABADOS from the Institute headed by Prof. GYÖRFFY). As contrasted with former traditions, Prof. GREGUSS did not regard as the University's main task the training of scientists but rather the education of professionally highly qualified pedagogues who would be able to propagate botanical knowledge.

The work of the new Institute was sensibly impeded by the outbreak of the Second World War. Hardly did the educational and research work begin, when a number of staff members were called up for military service and the air-raids began. On account of successive superior orders (concerning civil defence and evacuation) the whole activity of the Institute became formal.

War did not spare University either. In 1945, the University building in Baross Street was temporarily used as a hospital. The library, the herbarium and part of the instruments (what remained of them after the war) were transferred into the building in Cathedral Square (Dóm tér): the furniture of the Institute was however almost fully destroyed. Only a small part of the instruments transferred by Government orders to Sopron was returned to the Institute.

The educational staff of the Institute was partly exchanged after the war. ISTVÁN NAGY, ISTVÁN VARGA, ERNŐ VAJDA and EMMA PÁHÁNY were replaced by GYÖRGY BODROGKÖZY, MÁTYÁS PÁLMAI and MAGDOLNA VARGA.

Socialist reorganization of the University began after Liberation with the admission of young workers and peasants, and continued with the gradual repression of bourgeois traits in university life with the development of a democratic way of life.

While the equipment was rather poor both in quality and quantity, the number of students increased every year (max. 140). The tasks of the Institute included not only the training of teachers but also the botanical instruction of pharmacy students. A major problem was the lack of manuals and lecture notes, being, anyway, lightened by the distribution of lecture notes (written by ISTVÁN SZALAI, with the cooperation of MAGDOLNA VARGA); the eight lecture notes treated the subject-matter separately for the future teachers and the pharmacy students.

Xylotomy, which was actually the backbone of research work, was developed both in Hungary and on international level mainly by Prof. GREGUSS and, under his guidance, by the working staff of the Institute for Botany (I. SZALAI, I. VARGA, M. PÁLMAI, I. HORVÁTH), after the early death of FERENC HOLLENDONNER. The results achieved in antracotomy, microtechnique and histochemistry (I. SZALAI) were closely attached to this field of research.

Some thirty scientific publications written by the staff members of the Institute appeared in *Acta Bot. Univ. Szegediensis* and other periodicals (Borbásia, Földtani Közlemények, etc.). A monograph by Prof. GREGUSS, „The Identification of Central-European Dicotyledonous Trees and Shrubs Based on Xylotomy”, which started a series of xylotomic monographs, was also published at that time.

After 1945 the Institute accomplished a substantial work in propagating popular science and raising the cultural standard of the masses. The young staff members held lectures in villages and towns and contributed largely to the success of the secondary study courses (preparation for the final examination of the secondary school), organized for workers who previously had no chance of studying (I. SZALAI, MAGDOLNA VARGA, GY. BODROGKÖZY).

Right from the beginning (1940), Prof. GREGUSS introduced the dendrological trend in the development of the Botanical Garden; many trees and shrubs were brought from the Szarvas arboretum founded by Count BOLZA (the

so called „Pepi Garden”). When the „Pepi Garden” was declared a nature conservation area (Nov. 4, 1943), the proprietor, Count BOLZA, did his best to remit the arboretum to the management of the Institute for Botany. Unfortunately he failed as did also the Institute in its efforts to obtain a new and more suitable area for the Botanical Garden after the catastrophic devastations caused by groundwater in 1940–1942.

By the end the forties (1948), the scheme of another institute (No. II) for botany was outlined, for the primary reason that the educational staff was too small to fulfil the increased scope of duties. In 1948 Prof. GREGUSS suggested the idea of establishing a new institute for botany and of augmenting the area of the Botanical Garden from 10 to 15 hectares. On the sports ground next to the University building a botanical garden was suggested to be established for demonstration purposes — but none of the plans as realized.

The year 1952 is an important mile-stone in the history of botany in Szeged University. The Institute for Botany was divided and a new Institute established. Headed by senior lecturer ISTVÁN SZALAI, the new Institute for Plant Physiology was detached from the mother institute which was named henceforward Institute for Plant Taxonomy and Morphology. So the new Institute was not started according to former conceptions on the taxonomic line, but was specialized — in compliance with the growing importance of physiological research work — on plant physiology and microbiology and thus independent research work could be started within the Faculty of Natural Sciences on these two disciplines, too.

With the detachment of plant physiology, the Institute for Plant Taxonomy and Morphology obtained new possibilities of development. Scientific activity could be differentiated and extended on domains which, so far, had not been investigated in Szeged.

After the departure of the physiologists (I. SZALAI, M. VARGA, É. SIBALIN, K. KISS) the ranks of the Institute were filled with young educational and scientific forces. Xylotomic examinations were continued on conifers, together with successive paleo-xylotomic publications (P. GREGUSS) and, as a result of the activity of GYÖRGY BODROGKÖZY, with works on plant geography and coenology (1955). Cytological (I. MARÓTI) and histological (S. GULYÁS) examinations were started. The application of electronmicroscopic technique was introduced by the works of SZERÉN PATAKI. Especially in the early sixties, the main field of palynological research work, i. e. paleopalynology, made considerable advances. In chronological respect the palynological research work was concentrated on the miocene (P. SIMONCSICS), the eocene (M. KEDVES) and the lower cretaceous period (M. JUHÁSZ). In this domain important international contacts were established and intensified by a sudden increase in the number of publications; this in turn, expressed the intensification of research work.

In connection with the development of the Botanical Garden, the greenhouses were modernized. The first ironstaged hothouse was built in 1953 and was followed in 1958 by two others. The Botanical Garden was subdrained for better protection against the high groundwater level (1965).

In 25 years, the professorship of PÁL GREGUSS and particularly the xylotomic and palynologic works earned for the Institute a world-wide reputation; extensive international contacts were established and are still maintained. The comprehensive activity of Prof. GREGUSS resulted in a significant synthesis of

xyotomy which keeps Hungarian research work on level with international standards.

When Prof. GREGUSS retired in 1965, the Institute and the Botanical Garden were temporarily committed to Professor ISTVÁN SZALAI, Head of the Institute for Plant Physiology, until senior lecturer IMRE HORVÁTH was appointed the new Head of the Institute (Sept. 1, 1965).

Phase 3

The development program of Prof. HORVÁTH was aimed primarily at the introduction of research work on a field of science expressing the demands of the age: production biology. At the same time, the training of biologists was started to be modernized; the Institute played a major role in that large-scale work.

After the subjective and objective fundamentals had been ascertained, the available instruments, laboratory equipments, etc. were completed and modernized.

Lasting two years, this „installation” created the conditions for the modernization of educational work and, by establishing an up-to-date degree of instrumentation, laid the material foundations for the accomplishment of new research tasks. The substantial help of the University and of the Hungarian Academy of Sciences permitted jointly to achieve these objectives in a comparatively short time.

The five years from 1965 to 1970 brought important changes in the life of the Botanical Garden as well. The garden area was increased from 10 to 15 hectares, but unfortunately the manpower remained unchanged.

By 1970 a phytotron was built in the Botanical Garden, with a total investment of 2,5 million Forints. Up-to-date dressing and bathing accommodations and eating-rooms were built additionally.

Asphalted roads were made in 2 km length, modern illuminators were installed. Due to the renovation of the rosary and the cleaning of the paths, the Botanical Garden makes the impression of a cultivated and wellkept garden. Training in plant morphology, taxonomy and ecology is given to the teacher-trainees in biology and biology-chemistry as well as to pharmacy students according to the requirements of the respective specialities. As shown by the growing number of special workers and members of students' associations, the students are highly interested in the lectures of the Institute. In compliance with the requirements of the up-to-date training of biologists, the Institute organizes special courses on subject-matters that are not included in its own research program, but are of actual interest for the students; frequently even specialists of the Hungarian Academy of Sciences are invited as lecturers (A. GARAY, P. TÉTÉNYI, I. PRÉCSÉNYI). In co-operation with the Institute for Zootaxonomy, the Institute takes its students every year for botanical and zoological field work in the Soviet Union, in the regions of Odessa, the Caucasus and the Black Sea.

In the last five years the life of the Institute underwent some changes not only in so far as a new research trend (production biology) joined the scientific domains investigated so far but also on account of the development of science organization combined with adequate participation in public life. As the Hun-

garian representative of the Photosynthesis Committee of the COMECON, Prof. I. HORVÁTH has established active international scientific contacts. As a result thereof, the Institute was able to receive for a rather long time six specialists from abroad (1 Czecho-Slovak, 1 Indian, 2 Arabians, 1 Soviet, 1 Vietnamese); the Indian specialist is actually working at the Institute for a higher scientific degree.

The members of the educational staff have undertaken study tours ranging from 1 month to 1 year.

The members of the Institute staff are publishing their papers mainly in Hungarian periodicals, first of all in *Acta Biol. Szegediensis* and in other Academic journals (*Acta Bot. Hung.*, *Acta Biol. Hung.*, *Acta Bioch. et Biophys. Hung.*, *Bot. Közl.*, etc.) as well as in foreign reviews.

Educational lectures were held in radio and television, and some articles were published on popular scientific matters.

B. History of the Institute for Plant Physiology

For want of adequate equipment and instruments, the Institute for Botany had but modest possibilities for educational and research work in plant physiology and microbiology.

The large-scale development of university education and the growing requirements of modern agriculture in the fifties of this century emphasized the necessity of developing and dividing the Institute since, within the narrow range of its actual possibilities, it was unable to comply perfectly with the scope of its manifold duties (training of teacher-trainees in biology and pharmacy students).

In March 1952, a decree of the Ministry of Public Education established the Institute for Plant Physiology which began to work in September 1952 under the leadership of ISTVÁN SZALAI, so far senior lecturer at the Institute for Botany.

The new Institute for Plant Physiology was accommodated in some of the premises of the Institute for Plant Morphology and Taxonomy.

It started working under rather modest conditions — with borrowed furniture, a minimum degree of instrumentation and a small staff. The educational tasks were performed by the Head of the Institute, the assistants MAGDOLNA VARGA and KLÁRA KISS and the research student LAJOS FERENCZY. In addition, the staff included a research worker, an administrator and an office attendant (Cf. I. SZALAI, *Acta Biol. Szegediensis* suppl. 1962. Tom. VIII).

The first task was to establish proper conditions for educational and research work. Material support permitted gradually the purchase of furniture and of the main instruments required for basic research and education. With growing requirements and the increase of the working-staff, however, the lack of adequate premises and hothouses became more and more detrimental. As a minimum, a small hothouse was built in 1961 in the widened hanging gallery on the 1st storey, but the disadvantageous light conditions and the lack of air-conditioning, in fact, of proper heating, made it difficult to rear the plants indispensable for the practices and research.

The working-staff of the Institute was augmented in the years 1957–1962. Together with the Microbiological Study Group established in 1969, any further development of the Institute seems to be impossible on the given area. As a matter of fact, the 30 members of the Institute staff are working under out-of-date conditions indeed.

The curriculum of the Institute includes plant physiology, plant cultivation and microbiology. In both the preparation and the realization of the educational reform in biology, the Institute accomplished a significant work in the formal and substantial reformation of the instruction in plant physiology and microbiology. The students are keenly interested in these two important and highly practical disciplines, as shown by the number of students' association members (yearly 4–8) and of the authors of special dissertations.

From the very beginning up to the present day the research work of the Institute is concentrated on the examinations in genetic physiology, particularly on the mechanism of action of hormones and hormone-like compounds regulating growth and the state of rest. Internationally recognized results were achieved in this work (I. SZALAI, M. VARGA, E. KÖVES, M. NAGY). The physiological tests on potato should be specially mentioned, performed on an operating scale by the Institute staff in 1952–1956 on behalf of, and sponsored by, the National Patents Office, where by the problem of potato cultivation and the obtention of high-quality sowing-tubers was successfully resolved. Since the Physiological Research Group of the Hungarian Academy of Sciences was transferred from Vác-rátót to the Institute (1957), the research field was extended to the physiology of yeasts (J. ZSOLT), the uptake of mineral elements (F. ZSOLDOS) and the amino-acids (G. PÁLFI).

The double line of the Institute reveals itself more and more distinctly in research work. In addition to the investigations in plant physiology, a most intensive, collective research work is being accomplished by the Microbiological Study Group (L. FERENCZY, J. ZSOLT, R. VÁMOS, F. KEVEI). Besides physiological investigations on fungi, there is also an important research work done on pharmaceutical basic materials and compounds with antibacterial and anti-fungal effect as well as on their mechanism of action.

The members of the Institute staff have undertaken study tours ranging from 3 months to 1 year, and delivered regularly lectures abroad.

The fact that the scientific results of the staff members are referred to with growing frequency in foreign publications, shows also the development of the Institute. The primary condition there of is the publication of numerous papers abroad, as well as the fact, that, in compliance with their scientific standing, the Hungarian periodicals are being more and more widely read.

The Institute plays an outstanding role in text-book literature in Hungary. The activity of Prof. ISTVÁN SZALAI should be specially mentioned here as that of the author of the following university texts-books „Practical Exercises in Plant Physiology I.” (in co-operation with Professor SÁNDOR SÁRKÁNY), „Experiments in Plant Physiology” (in co-operation with Prof. VILMOS FRENYÓ), (1962), „Biology and Progress” (1968) and „Plant Physiology” (1968). Lecture notes were written on microbiology by J. ZSOLT–R. VÁMOS in 1963 and by L. FERENCZY–J. ZSOLT 1969, and published in 1970.

The members of the Institute staff are most active in the popularization of science, too. In 1970 they have organized a lecture series for radio broadcast and are regularly co-operating with the Society for the Propagation of Science (TIT); finally, they are writing a number of popular-scientific articles in various periodicals.

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A retrospection on the fifty years of botany in Szeged University fills us with satisfaction at the sight of the significant progress achieved in spite of smaller or greater difficulties.

The number of the botanical institutes has grown from 1 to 2, and that of the staff members from 5 to 47, including 3 professors, 5 senior lecturers, 6 junior Lecturers, 1 assistant, 4 research workers and 28 auxiliary employees.

In Szeged 14 students have taken their doctor's degree in botany during the professorship of ISTVÁN GYÖRFFY, and 39 others from 1945 to the present day. If we compare the situation prevailing before and after Liberation, the number of doctorates, proportional to the growing number of graduated students reveals the trend of development in this field.

Three members of the educational staff of the three Institutes have obtained the scientific degree „Doctor of Biological Sciences”, while 8 other members are „Candidates of Biological Sciences”.

Some members of the Institute staff have received high state and scientific distinctions: Professor emeritus Dr. PÁL GREGUSS was awarded the Order of Labour in gold in the year of 1955, 1959 and 1965 and the silver degree of Kossuth Prize in the year of 1958 while Professor Dr. IMRE HORVÁTH and senior lecturer Dr. ELIZABETH KÖVES have been conferred the title „Honoured Worker of Public Education”.

As a continuation of *Folia Cryptogammica* — the periodical founded by Prof. GYÖRFFY — *Acta Biologica Szegediensis (Nova Series)* has published since 1955, on a wider and more general line, a total of 333 articles and constitutes the very basis of the important library exchange of the two Institutes (210 exchange partners).

In 50 years some 900 scientific publications have been edited in Szeged on botanical and phytophysiological subjects. (bot. bibliography, MSS) 450–500 papers resulted in 50 years from botanical research work, while plant physiology was treated during the last 18 years in nearly 400 papers. In the 20 years before the war the Institute for Botany has published only one text-book, while a dozen of scientific monographs and text-books, were published by the staff members of the two Institutes since 1945. To sum up what has been said: — There were five principal research trends developing during the fifty years of botanical activity in Szeged, representing at the same time the successive stages of development of botany in this town:

- I. Research of cryptogamic plants (1921–1940) by Prof. Dr. I. GYÖRFFY.
- II. Development of the xylotomic paleo-botanic and palynologic trend since 1940), attached to the name of Prof. Dr. P. GREGUSS.
- III. Start of research work on plant physiology under Prof. Dr. I. SZALAI (1952). The main subject was the research on growth-regulating substances, but other fields of metabolic research work and isotope technique are also involved.

IV. With the appointment of Prof. Dr. I. HORVÁTH the plant ecological production tests were started in 1965.

V. In recent years microbiological research work is also playing a major role, leading to the establishment of a new Study Group headed by senior lecturer Dr. L. FERENCZY.

The introduction of new research themes indicates not only a general expansion of the spheres of interest, but reveals also an overall characteristic of the development of biology, i. e. the research work becoming more and more profound and exact with intensive application of instrumental methods. List of text-books published in 50 years during the activity of the authors in Szeged:

1. GREGUSS, P.: Bestimmung der mitteleuropäischen Laubhölzer und Sträucher auf xylotomischer Grundlage. Mit 1000 Orig. Mikrophotographien und 250 Tafeln mit Originalzeichnungen. Sopron 1947. The Identification of Central-European Dicotyledonous Trees and Shrubs based on Xylotomy, with 1000 microphotos and 250 plates of original drawings. Sopron 1947.
2. GREGUSS, P.: (Botanisches Institut der Univ., Kollaborator I. Varga): Xylotomischer Bestimmungsschlüssel der Pinus-Arten. Pp. 1—138, fig. 68, 95 photos. Szeged 1950.
3. GREGUSS, P.: Xylotomische Bestimmung der heute lebenden *Gymnospermen*. Mit 1500 Orig.-Mikrophot. und Zeichnungen auf 360 Tafeln, 8 Tab. Budapest 1955.
4. GREGUSS, P.: Identification of living *Gymnosperms*. With 1500 orig. photos and drawings on 360 pl. Budapest 1955.
5. GREGUSS, P.: Holzanatomie der europäischen Laubhölzer und Sträucher. Mit 1257 Orig.-Mikrophot. und Originalzeichnungen auf 307 Taf. 6 Tab. pp. 1—330. Budapest 1959.
6. Грегуш П.: Определитель древесины голосеменных по микроскопическим признакам (Пер. В. Р. Филина и О. Н. Чистяковой.) Рис. 1—86. стр. 1—157. Москва 1959.
7. GREGUSS, P.: Fossil-*Gymnosperm*-Woods in Hungary from the Permian to the Pliocene. 136 Pages, 14 maps, 670 orig. microphot. on 87 tabl. Budapest 1967.
8. GREGUSS, P.: Xylotomy of the living *Cydads* with a description of the leaves and epidermis. 950 microphot. and drawings on 185 plates, 80 fig. Budapest 1968.
9. GREGUSS, P.: Tertiary *Angiosperm*-Woods in Hungary. Pp. 1—151, 90 tabl., 750 photos. Budapest 1968.
10. GREGUSS, P.: Einführung in die Paläoxylotomie; Untersuchungsmethoden der fossilen Hölzer. 18 Tafeln mit 230 Photos. Geologie, Berlin 1968.
11. KEDVES, M.: Palynological Studies on Hungarian Early Tertiary Deposits. 84 pp. 22 plates, Akadémiai Kiadó, Budapest 1969.
12. KOL ERZSÉBET: Tiszaparttól Alaszkáig. (From the Tisza to Alaska). K. M. Természettudományi Társulat, Budapest 1940.
13. SZALAI, I.—SÁRKÁNY, S.: Növénytani praktikum I. (Practical Exercises in Plant Physiology). Practices in Plant Morphology. 3rd revised edition. Tankönyvkiadó, Budapest 1964.
14. SZALAI, I.—FRENYÓ, V.: Practical Exercises in Plant Physiology II. Experiments in Plant Physiology. Tankönyvkiadó, Budapest 1962.
15. SZALAI, I.: A biológia és a haladás (Biology and Progress). Tankönyvkiadó, Budapest 1967.
16. SZALAI, I.: Növényélettan (Plant Physiology). Tankönyvkiadó, Budapest 1968.

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