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REVIEW OF INVESTIGATIONS ON POLISH JURASSIC FLORAS

Stan badań nad florami jurajskimi w Polsce

During the Lower Jurassic the Polish territory was part of a continental area. On this land were present many freshwater basins and there were deposited the important plant-bearing strata in the Cracow—Wieluń region and the Holy Cross Mts. (Góry Świętokrzyskie) region. In the north western part of the territory existed estuarine conditions. There the sedimentation went on throughout the Rhaetic and the Lias, and the strata contain rich floras of spores. These spore-bearing strata are divided occasionally by marine bands containing animal fossils.

During the Middle and Upper Jurassic the land became gradually submerged by the western marine transgression which reached its maximum during the Upper Jurassic (Oxfordian). In consequence, only scarce plant remains were found in strata younger than the Lias.

The fossil plants were first noticed by geologists (Pusch 1833, Zeuschner 1847, Roemer 1870). Palaeobotanical work started with Goeppert who described in 1844 and 1845 the Rhaetic flora from Kluczbork. In 1881 Alth described Upper Jurassic algae from Niżniów in Podolia. The first description of fossil plants from Grojec was given by Stur in 1888.

The period of great development of research on Jurassic plants was connected with Marian Raciborski. Raciborski described fossil floras of different age but papers on Jurassic plants form the greatest part of his palaeobotanical work. The most important among them are the papers dealing with the flora of the Grojec area situated close to Cracow, where Raciborski was a professor at the Jagellonian University.

In 1889 appeared two short publications on the Grojec flora giving lists of plants determined by Raciborski. In 1894 followed the widely known monograph: „The fossil flora of the Cracow refractory clays",

containing descriptions of 63 species of plants. In this monograph Raciborski gave also his opinion about the age of the Grojec flora, which was, according to him, younger than the Lower Lias but older than the Middle Jurassic.

In 1891 and 1892 were published Raciborski's descriptions of plants from the vicinity of Ostrowiec (Holy Cross Mts. region) in Central Poland. He found there more than 30 species. In 1890 appeared his paper on the Rhaetic plants from the Tomanowa pass in the Tatra Mts., with 10 species described. In his paper of 1889 (b) Raciborski dealt with some woods from the Upper Jurassic in the vicinity of Grojec.

Unfortunately Raciborski abandoned palaeobotany in his later years and after his works there appeared only one longer one on palaeobotany. This was „The Lower Liassic flora of the environs of Ostrowiec" by A. Makarewiczówna (1928), dealing with the flora of the same area as Raciborski's papers of 1891 and 1892. Makarewiczówna described 43 species and added a chapter discussing the age of the flora.

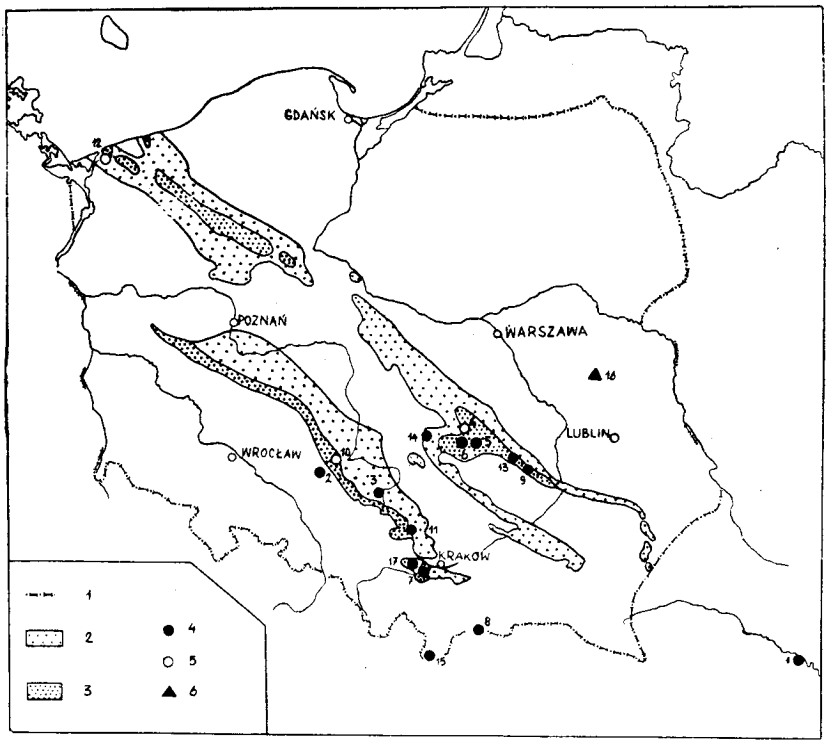
Apart from the works of Raciborski and Makarewiczówna there appeared only descriptions of a few plants, often included into geological works. Most of them concerned plants from the Lias of the Holy Cross Mts. region (Cz. Kuźniar 1924, 1943, Samsonowicz 1929, Passendorfer 1939, Grabowska 1962). Grabowska is the first to describe cuticle structures. Interesting are the rare founds from the Upper Jurassic (Premik, Zabłocki 1925, Lilpop 1937). Also some woods have been described (Gothan 1906, Lilpop 1917, Reymanówna 1956).

Since the war special interest has arisen around the Jurassic plant microfossils. The investigations are being carried out by mainly scientists of the Geological Institute and their purpose is to work out the stratigraphy of the Lower Jurassic sediments which are usually not dated by animal fossils.

The first paper of this sort was written by M. Rogalska (1954) and it concerned the microspores and pollen grains macerated from the Blanowice coal from Upper Silesia. Rogalska described 42 sporomorphs, 8 of which are new species, and determined the age of the coal as Lias α.

In 1956 Rogalska described the microspores and pollen grains of a series of strata from Mroczków—Rozwady in the Holy Cross Mts. region. Rogalska (1962) found there 80 types of sporomorphs, 6 of them new species, and determined the age of the whole series as Lias α. Later on, the same author described microspores and pollen grains from the Cracow—Wieluń region.

In 1960 T. Orłowska-Zwolińska wrote about the age of the Lower Jurassic Zagaje series and recently (in the press) she has prepared



Map of Jurassic in Poland (accor. Pożaryski and Rühle 1956) with localities of fossil floras of this age

1 — boundary of Poland, 2 — Dogger and Malm, 3 — Lias, 4 — outcrop, 5 — borehole, 6 — ice transported block of the Jurassic at Łuków

Mapka utworów jurajskich w Polsce (na podstawie Pożaryskiego i Rühlego 1956) ze stanowiskami flor kopalnych tego wieku

1 — granice Polski, 2 — dogger i malm, 3 — lias, 4 — odkrywka, 5 — wiercenie, 6 — kra jurajska koło Łukowa

LOCALITIES — MIEJSCOWOŚCI

1. Niżniów (Alth 1881). 2. Kluczbork (Goeppert 1844, 1845). 3. Częstochowa (Gothan 1906). 4. Mroczków-Rozwady (Grabowska 1962, Rogalska 1956). 5. Chlewiska (Kuźniar 1924). 6. Końskie district-powiat konecki (Kuźniar 1943). 7. Grojec (Lilpop 1917, Raciborski 1889 a, c, 1894, Roemer 1870, Stur 1888, Zeuschner 1847, Znosko 1955). 8. Pieniny (Lilpop 1937). 9. Ostrowiec (Makarewiczówna 1928, Pusch 1833, Raciborski 1891, 1892). 10. Praszka (Marcinkiewicz 1957, Marcinkiewicz, Orłowska, Rogalska 1960). 11. Zawiercie (Marcinkiewicz 1957, Lilpop 1917, Rogalska 1954). 12. Mechowo — Kamień Pomorski (Marcinkiewicz 1962). 13. Northern slopes of the Holy Cross Mts. — Północne stoki Gór Świętokrzyskich (Orłowska-Zwolińska 1960, Passendorfer 1939, Samsonowicz 1929). 14. Sulejów (Premik, Zabłocki 1925). 15. Tatry (Raciborski 1890). 16. Łuków (Reymanówna 1956). 17. Environs of Chrzanów — Okolice Chrzanowa (Raciborski 1889 b)

a paper dealing with the Rhaeto-Liassic boundary in the sediments of north western Poland, based on microspore analysis.

Interesting from the botanical point of view is the paper of J. Oszastówna (1957) who found in the Grojec clays the spore *Tricolpites Troedssoni* which had previously been regarded as the oldest known remnant of an angiospermous plant.

Megaspores were also investigated. Although Zerndt (1938) was the first to describe Jurassic megaspores in our country it was Znosko (1955) who first used them as a basis for the stratigraphy of Rhaeto-Liassic sediments in the Cracow—Wieluń region. T. Marcinkiewicz (1957, 1960) found the megaspore *Lycostrobus Scotti* in many localities, always in strata belonging to Lias α_1—α_2. Using this evidence she was able to determine the age of the upper Helenów beds as Upper Liassic, though they had previously been regarded as Lower Liassic. In 1962 Marcinkiewicz described one assemblage of Rhaetic megaspores and three Liassic ones from the stratigraphic section containing a complete series of Liassic sediments from north west Poland. This section which contains also layers dated by marine animal fossils is considered as a standard section for Liassic deposits.

For practical purposes of great value will be the „Biostratigraphy of Poland" prepared by the Geological Institute. It will contain a list of all hitherto found Jurassic plants and data about their stratigraphic position.

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