A fossil trace of the interglacial flora from Katowice in Silesia

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Abstract

The age of an interglacial peat sample on the basis of the results of palaeobotanical studies, radiocarbon dating and the presence of *Caricoidea globosa* (C. et. E.M. Reid) Mai fruits was determined.

Key words: interglacial flora, peat, palaeobotany

INTRODUCTION

In June 1950 I received a sample of well-humified peat from Professor Tadeusz Bocheński (1901-1958), the outstanding palaeobotanist and stratigrapher of the Carboniferous. The sample has been taken incidentally during the sinking of a well at No 4 Oblatów Str. (nearer house No 3) in the region of J. Marchlewski Str. in Katowice. This sample, somewhat larger in size than a matchbox, came from a depth of 6 m. Its perfunctory macroscopic examination provided a leaf of dwarf birch (*Betula nana* L.), needle of larch (*Larix* sp.), needles and seeds of spruce (*Picea* sp), seeds of bog-bean trefoil (*Menyanthes trifoliata* L.), nutlets of sedges (*Carex* sp. div.) and several undetermined remains. Both the dwarf birch and larch from Katowice were shown on the maps of the distribution of their fossil sites in Poland (Ś r o d o Ń 1952, 1954).

RESULTS OF LATER STUDIES

Nearly 40 years have passed. At a revision of the above-mentioned undetermined remains my wife managed to identify 3 whole and 4 damaged fruits of *Caricoidea globosa* (C. et E.M. Reid) Mai, hitherto most frequently described as *Aracispermum johnstrupii* (Hartz) Nikitin. The measurements of the fruits are $1.5-1.7 \times 1.1-1.2$ mm (cf. Fig. 1). *Caricoidea* is a fossil genus (C h a n d l e r 1957)

of nondescript affinity, frequently given under various names from the younger Tertiary of Europe and West Siberia and from several European sites of the interglacial flora of the Middle Pleistocene (cf. Dorofeev 1963, Mai and Walther 1978, 1988, Fries 1985)*. Hartz's original material was re-examined by Fries (1985) and included in the modern genus *Myrica* as *Myrica johnstrupii* (Hartz) Fries.

Fig. 1. Fruits of *Caricoidea globosa* (C. et E.M. Reid) Mai (1-5) and the leaf of *Betula nana* L. (6) found in the peat sample from Katowice. The specimen 3 presented in the position 3a shows the probable remains of the seed-coat inside the pericarp. (Drawn by mgr. J. Wieser)

Katowice is a third Pleistocene site of fruits of this singular plant in Poland. The two sites of Mazovian Interglacial age discovered are Olszewice near Tomaszów Mazowiecki (Łańcucka-Środoniowa 1966) and Stanowice near Rybnik in Silesia (Sobolewska 1977). Three further sites of the same age are from the close neighbourhood of our state boundaries, namely, Żydowszczyzna on the Niemen near Grodno (Dorofeev 1959), Krukienice near Mościska, 25 km east of Przemyśl (Velichkevich 1982) and Suchá-Stonava in Moravia (Vodicková-Knebllová 1961, Mai and Walter 1988). The

* 1909 — *Carpolithus johnstrupii* Hartz; 1915 — *Hippuris globosa* C. et E.M. Reid; 1957 — *Aracites johnstrupii* (Hartz) Nikitin; 1963 — *Aracispermum johnstrupii* (Hartz) Nikitin; 1977 — *Aracites interglacialis* Wieliczkievicz; 1978 — *Caricoidea globosa* (C. et E.M. Reid) Mai.

Table 1
 Palynological spectrum of peat sample. Katowice

Names of plants	I	II
Trees and shrubs (AP)	500	78.5
<i>Abies</i>	1	0.2
<i>Alnus glutinosa</i> typ	2	0.3
<i>Alnus viridis</i>	1	0.2
<i>Betula alba</i> typ	188	29.5
<i>Betula nana</i>	19	3.0
<i>Carpinus</i>	2	0.3
<i>Corylus</i>	1	0.2
<i>Hippophaë</i>	1	0.2
<i>Juniperus</i>	30	4.7
<i>Larix</i>	30	4.7
<i>Picea</i>	122	19.2
<i>Pinus cembra</i>	1	0.2
<i>Pinus sylvestris</i> typ	86	13.5
<i>Populus</i>	8	1.2
<i>Salix glauca</i> typ	8	1.2
Herbs (NAP)	137	21.5
<i>Artemisia</i>	1	0.2
<i>Chenopodiaceae</i>	1	0.2
<i>Compositae</i> Lig.	1	0.2
<i>Cyperaceae</i>	93	14.6
<i>Filipendula</i>	3	0.5
<i>Gramineae</i>	18	2.8
cf. <i>Ledum</i>	1	0.2
<i>Melampyrum</i>	1	0.2
<i>Menyanthes</i>	4	0.6
<i>Plantago maritima</i> s. str.	1	0.2
<i>Rosaceae</i>	3	0.4
<i>Rubiaceae</i>	1	0.2
<i>Rumex crispus</i> typ	3	0.4
<i>Thalictrum</i>	2	0.3
<i>Umbelliferae</i>	1	0.2
<i>Urtica dioica</i>	3	0.4
Total sum (AP + NAP)	637	100.0
Taxa excluded from total sum		
cf. <i>Myriophyllum spicatum</i>	1	0.2
<i>Potamogeton</i> sect. <i>Coleogeton</i>	1	0.2
<i>Ranunculus trichophyllus</i> typ	1	0.2
<i>Typha latifolia</i>	1	0.2
<i>Pteridium</i>	1	0.2
<i>Equisetum</i>	205	24.3
<i>Sphagnum</i>	1136	64.1

I — absolute values, II — percentage values. Percentages of taxa excluded from the total sum were calculated in relation to the basic sum = total sum + taxon. Bryales = 45/100 AP. The analysis was made by Dr. K. Mamakowa.

nearest site of Pliocene age is Ruzów near Żar in Bory Dolnośląskie, reported by Baranowska-Zarzycka (1988). In all the sites mentioned *Caricoidea globosa* (C. et. E.M. Reid) Mai was noted under the name *Aracispermum johnstrupii* (Hartz) Nikitin.

RESULTS OF PALYNOLOGICAL STUDIES

The results of these studies are very scanty, for they have been achieved on the basis of only one sample of material and the geological situation of its origin is not known exactly at that. An analysis was carried out by Dr. K. Mamakowa of the Institute of Botany, Polish Academy of Sciences, who obtained a spectrum of cool forest of the Boreal type, dominated by spruce, pine and birch with a fairly high proportion of larch, aquatic plants and *Sphagnum* (cf. Table 1). The presence of *Caricoidea globosa* (C. et E.M. Reid) Mai, with the simultaneous lack of traces of the Neogene vegetation in the spectrum, suggests the Quaternary age of the flora from Katowice.

Stanowice, named above, lies about 25 km south-west of Katowice and Suchá-Stonawa somewhat farther, about 60 km in the same direction. These sites have provided continuous pollen diagrams of rich composition, showing features characteristic of the vegetation of the Mazovian Interglacial. The pollen spectrum from Katowice resembles the declining, cool, but still forest spectra of the diagrams from both former sites. Essential in this case are high proportions of spruce and larch (micro- and macrofossils) and the presence of dwarf birch (micro- and macrofossils) and *Juniperus* in our spectrum.

DATING AND POSITION IN THE STRATIGRAPHIC SCHEME

The peat sample from Katowice was dated by the method of radiocarbon chronometry in the C-14 Laboratory of the Institute of Physics, Silesian Technical University of Gliwice. The age of the Katowice 1950 sample determined by measurement Gd-2997, exceeds 37 000 years BP.

The result of dating does not prevent and the presence of fruits of *Caricoidea globosa* (C. et E.M. Reid) Mai supports the admission of the fact that the sample from Katowice is a trace of sediments of Mazovian Interglacial age. It supports this admission also because *Caricoidea globosa* (C. et E.M. Reid) Mai has not as yet been found in the plant composition of the Eemian Interglacial, which is younger, known much better and from a larger number of sites. The profile from Katowice deserves a close and comprehensive study.

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Kopalny ślad flory interglacjalnej w Katowicach na Śląsku

Streszczenie

Określono wiek interglacjalnej próbki torfu na podstawie wyników badań paleobotanicznych, datowania węgla radioaktywnego i obecności owoców *Caricoidea globosa* (C.E.M. Reid) Mai.