

NOTAS E RECENSÕES

THE OLDEST PORTUGUESE LIVING BEING: A LICHEN IN THE SERRA DA ESTRELA?

MAXIMAL AGES OF ORGANISMS (LONGEVITY)

Man can reach sometimes the biblic age of more than a hundred years, which is already a high age for animals. Maximal animal ages of more than 200 years are reported from some turtles. Plants can live much longer, for instance oaks and the giant sequoia of California with ages of about 1000 and 2000 years; maximal ages of 4500 years are known from the bristle-cone pine (*Pinus aristata*) of California's White Mountains/Inyo Mountains. But lichens can reach ages much higher than that.

LATE GLACIAL LICHENOMETRY

MILLER and ANDREWS (1972: 1137) observed a lichen rhizocarpon geographicum with a diameter of 28 cm on a moraine at the head of Quajon Fjord north of Broughton Island/Canada; the moraine was dated to 9500-1500 B. P. based on deglaciation research and a shell sample close to the moraine dated to 8980 ± 180 B. P. So the moraine is about 9000 years old and this lichen individuum lives and grows since that time on the top of the moraine. But how can we state that?

BESCHEL investigated the relation of lichen-diameters and their ages on tombstones, and he found a pretty good linear relationship between diameter of those lichens and their age in the adult phase of growing (fig. 1). The youth-growth is logarithmic accelerated. So if the linear part of the growth curve is known we can use maximum lichen surfaces for dating purposes, which is the basic idea of lichenometry. Many works in different subarctic and alpine environments of the world show about the same centennial growth rate of 3,1 mm in 100 years. Despite different ecological and changing post- und lateglacial climatic conditions this value gives a rough age of such lichen individua.

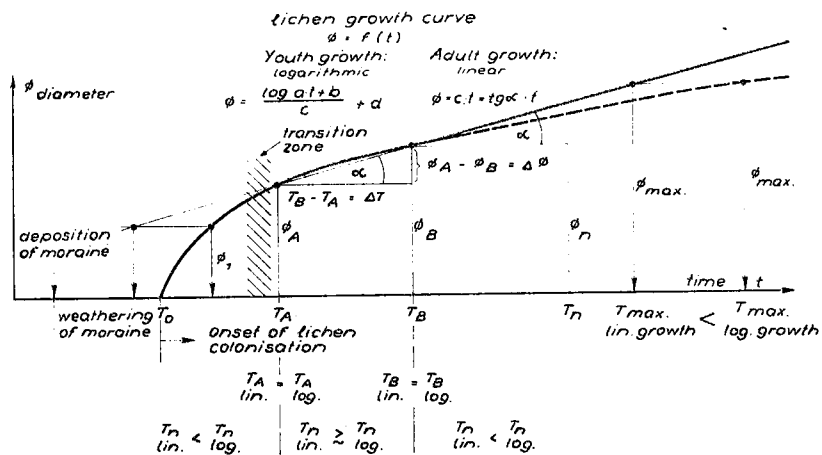


Fig. 1 — Lichen growth curve. The log-accelerated youth growth cannot be used for dating. If there are two «adult» lichens A, B with known age, linear adult growth curve (a straight line) can be determined and dating is possible. This is the basic idea of the BESCHEL method. (For more details see SCHROEDER-LANZ 1982).

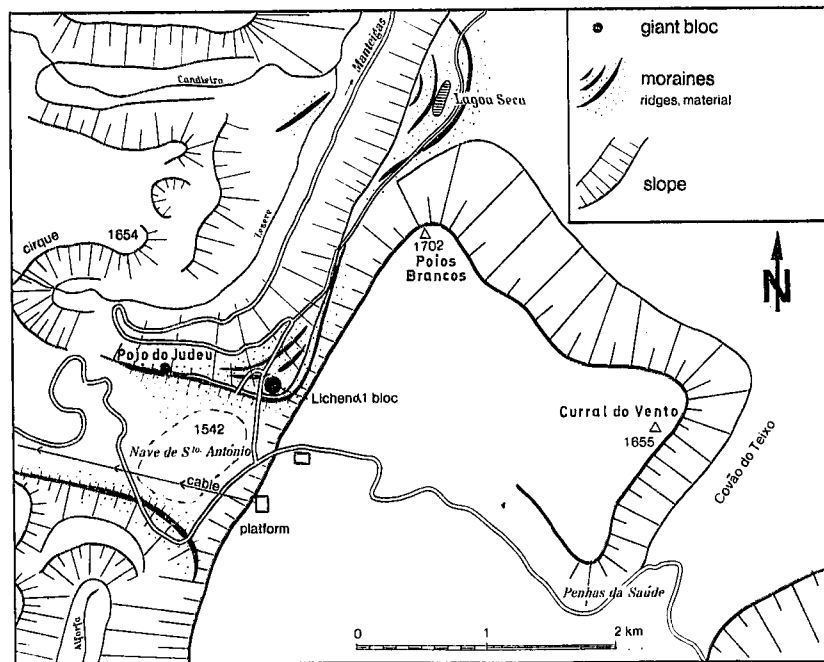


Fig. 2 — Location of the erratic bloc in the Serra da Estrela. (For more details of glacial geomorphology see DAVEAU 1977 and of periglacial phenomena SCHROEDER-LANZ 1982/83).

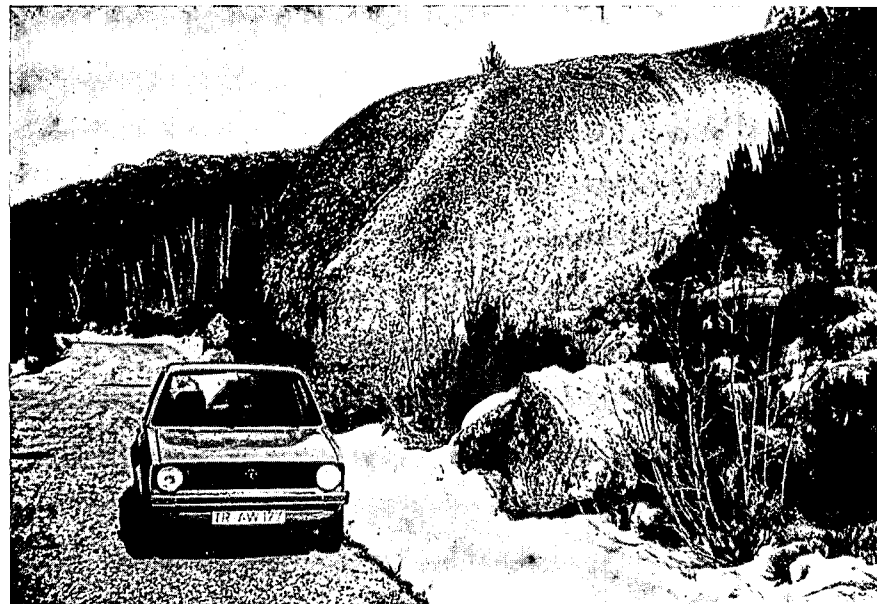


Foto 1 — The sunny side of the erratic bloc at the right side of the street.



Foto 2 — Enlarged part of giant lichen α_1 . Note to the right the still greater lichen α_2 with an empty center; its diameter is 30-32 cm, that means — if it is still alive — it is about 10,000 years old!

THE GIANT LICHEN α_1 OF THE SERRA DA ESTRELA

During field work on periglacial phenomena of the Poios Brancos plateau (SCHROEDER-LANZ 1982/83) a giant lichen named α_1 was detected on a very big erratic granitic bloc of the southern lateral moraine of the Zêzere-glacier (fig. 2). This bloc is situated directly at the south side of the street leading from Penhas da Saúde to Manteigas just where the road departs to Nave de Santo António. The southern sunny side of this huge bloc is free of any lichen and moss, but its northern shady side is covered by lichens of different species and sizes. The giant lichen α_1 of the species *Rhizocarpon geographicum* (foto 1) in 3-4 mm height has a diameter of 24-25 cm. Using the world wide determined centennial growth rate of 3,1 mm per 100 years for *Rhizocarpon geographicum* this giant lichen α_1 has an age of about 7700-8000 years.

There might be bigger giant lichens α_1 of rhizocarpon at that place around; I spend one day to find a bigger one without success. There might prevail extreme favourable ecological conditions on the bloc; but even if we use the extreme high, double value of 6 mm per 100 years for the centennial growth rate, this lichen individuum is still about 3500-4000 years old. So up to now giant lichen α_1 , is the oldest living being of Portugal; it deserves to be put under protection of nature and to be studied in more detail.

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