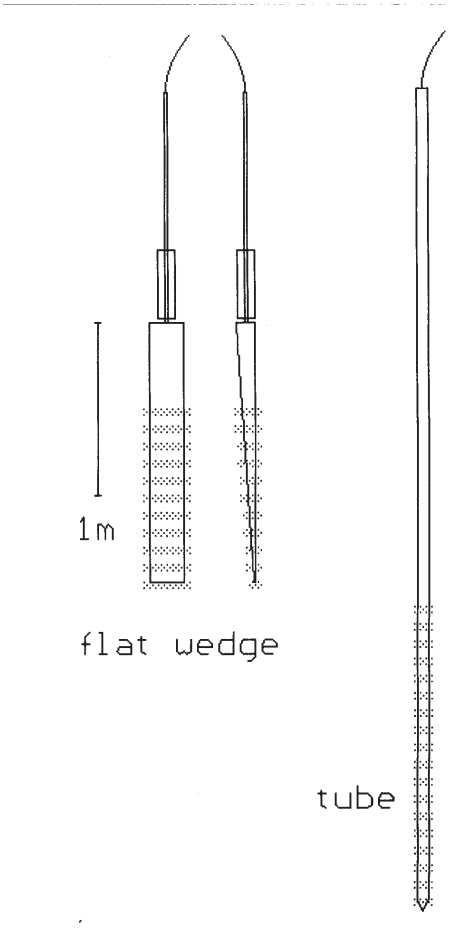

Fig. 4.1. Two types of freezing samplers.

and the age of samples are given by Goslar (Chapter 9.2.2).

4.1.3. Sediment subsampling

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In the case of annually laminated sediments the samples to be used for the majority of analyses (mineralogy, chemistry, stable isotopes, pollen, cladocera, diatoms, etc.) were collected from the same sediment slices, and their resolution followed the sediment laminations. Slices of a known number of laminae couplets were cut with a sharp knife or scalpel through the whole or half of the cleaned core. Laid flat, they were then divided into 1 cm^2 squares by pressing in a metal grid (Fig. 4.2). The full sediment squares were then used for the volumetric (influx) analyses. Routine sampling included 10 couplets, with 40 couplets left inbetween, but some sediments sections were sampled additionally for special purpose with higher time resolution, or continuously. The samples from non-laminated sections were collected in a similar way from slices 1 cm thick or with a 1 cm^3 volumetric device.

The samples were packed in plastic tubes and stored in a cold room. In profile T1/90 the halves of slices were packed in 25 cm^3 or 50 cm^3 samples for macrofossil analysis (Demske 1995).

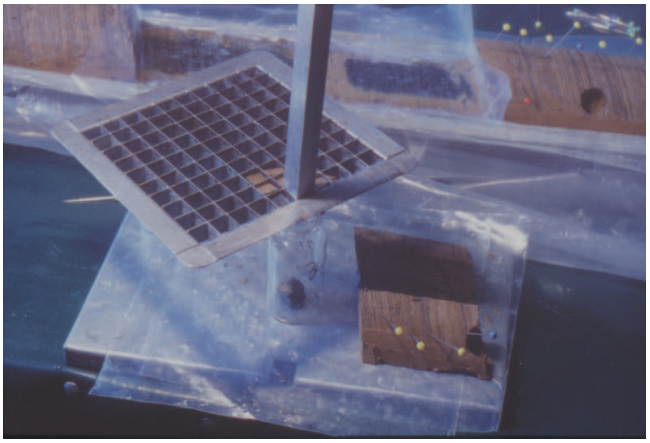

Fig. 4.2. Subsampling of laminated core section. The sediment slices of known number of yearly couplets are divided into 1 cm^2 samples to enable later calculation of microfossils influx values (Phot. T. Goslar).

The subsampling of frozen cores was done by two different methods, depending on device (tubular or wedge) used for freezing *in situ*. The subsamples from tubular cores were cut out with a scalpel from the core surface air-dried in a deep-freezer. This procedure, however, had two serious drawbacks. First, in order to get sufficient amount of dried sediment, the cores had to be stored in a freezer for several months. Besides, the freeze-dried sediment was very light and loose, and it was extremely difficult to handle it without any loss or mixing material from adjacent subsamples. The subsampling of cores collected with a wedge sampler was much easier, for two large flat pieces of sediment could be cut out and melted with no risk of collapse. The subsamples were then taken from melted surface of core pieces with a small brass trough. All subsamples were collected continuously, with a time resolution of 1–2 years, sometimes 3 years, depending on sampling difficulties. Their volume, attempted to be 1 cm^3 per year, appeared in practice not quite uniform.

4.2. CHRONOLOGICAL METHODS

Tomasz Goslar

4.2.1. Radiocarbon dating

Since its introduction (Libby 1946) radiocarbon dating has become well established and the generally accepted method of age determination of organogenic sediments. The discovery that the concentration of radiocarbon in the atmosphere (and hence in the biosphere) was not con-