

INTRODUCTION

The multidisciplinary studies of the Quaternary, which are continuously going deeper and deeper into knowledge of past geologic processes, mostly those connected with climatic changes and increasing human impact on the environment, call for reliable methods of dating of the past events occurring on various time scales. The potential significance of the radiocarbon dating method for studies of the Late Quaternary has been recognized more than thirty years before, almost immediately with the pioneering work of Willard Frank Libby. However, the radiocarbon method with all its well known advantages can hardly comply with all demands of the Quaternary studies, mostly because of its limited age range and low time resolution. These two limitations have been realized in the Gliwice Radiocarbon Laboratory since establishing close collaboration with the Quaternary students in Poland and stimulated our interest in other methods of dating. Thermoluminescence (TL) method of dating and dendrochronology were chosen as the most promising for geochronological studies in specific geological conditions of Poland. After several years of studies, devoted mostly to technical and methodical problems (Bluszcz, 1985; Bluszcz, Pazdur, 1985; Goslar, 1986), those two methods were finally developed and at present day can be regarded as irreplaceable tools in solving variety of chronological problems. The set of dating methods was in the last years supplemented with the Electron Spin Resonance (ESR) method of dating speleothems (Hercman et al, 1987; Goslar, Hercman, 1987, in print).

This volume, prepared on the occasion of the XII INQUA Congress in Canada, presents a review of already unpublished papers dealing with both methodical problems and specific results. It includes seven papers prepared by members of scientific staff of the Gliwice Radiocarbon Laboratory in collaboration with specialists from various fields of Quaternary studies, as well as two extralaboratory papers (presented at the II National Conference "Methods of Absolute Dating", held in Gliwice in 1986). The main body of this volume consists of papers related to the radiocarbon dating method; in three papers special attention is paid to simultaneous use of stable isotopes in reconstruction of environment. These papers form part of a research project devoted to studies of chronology and geochemistry of freshwater calcareous tufa sediments (A.

Pazdur, 1987; A. Pazdur et al, 1987, in print). Final papers present results of TL dating of sediments from northern Poland, obtained in TL Dating Laboratories in Gdynia and Gliwice. A geologist view on the validity of TL dates is presented in a critical paper dealing with Neopleistocene sediments in the Konin region.

All papers from the Gliwice Radiocarbon Laboratory, presented in this volume, contain results of studies included in the Central Research Projects CPBP 03.13 and CPBP 01.06.

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