

OBITUARY: GEORGETTE DÉLIBRIAS (1924–2015)



Georgette Délibrias, who was one of the pioneers in the radiocarbon research fields, passed away on May 2015. She graduated from the Ecole Polytechnique Féminine de Paris in 1946, and then was recruited at the Commissariat à l'Énergie Atomique (CEA) into the Service des Constructions Électriques. She participated in the first test of divergence of the French nuclear reactor ZOE in 1948 by constructing boron trifluoride neutron detectors (in Jacquemond 2014). She further investigated with her colleague J Labeyrie the properties and dosage of the α -aerosols and their biological effects (Delibrias and Labeyrie 1953). In the same time, their common interest in the newly developed method of ^{14}C dating brought them to realize unofficially the first proportional counters filled with CO_2 and the first dating in Saclay at the CEA (Labeyrie and Delibrias 1955). She was then the Head of the β -counting ^{14}C laboratory of the Centre des Faibles Radioactivités (CFR) at Gif-sur-Yvette, a joint laboratory of CEA-CNRS created in 1961 (now the Laboratoire des Sciences du Climat et de l'Environnement), until her retirement in 1988.

Georgette contributed greatly to the creation of numerous ^{14}C laboratories, in receiving in the early 1960s numerous scientists who created their own laboratories. Among them, Professor Cheikh Anta Diop developed a laboratory at the Institut Fondamental d'Afrique Noire in Dakkar (Sénégal); Dr Shawki Nakhla, of the Center of Research and Conservation of Antiquities, Organisation of Egyptian Antiquities, Cairo (Egypt); Pr J M Flexor of the Instituto de Física da Universidade Federal da Bahia (Brazil); and Dr O Ramouni at the Service des Applications Nucleaires, Algiers (Algeria); and many others. In 1961, Murry Allen Tamers studied at the CEA the cross-sections for ^{14}C production from proton spallation of water to forecast the measurable quantities of ^{14}C in meteorites (Tamers and Delibrias 1962).

During Delibrias' career, more than 8000 samples were dated in the β -laboratory encompassing geologic, marine, and archaeological research topics. Georgette was interested very early in dating the rapid variations of sea level, as attested by more than 40 articles as author or coauthor. She developed very small proportional counters in order to date the different steps of the last deglaciation using the biological carbonate fraction in marine cores. Her efforts were rewarded, just before the use of AMS technology, with the publication of the first chronology of the deglaciation in the North Atlantic (Duplessy et al. 1981).

But Georgette's first passion was archaeology, and especially the knowledge of the environmental settings of hominids. She contributed to several research papers and books including *La préhistoire dans le monde* (in Chavaillon et al. 1992). Her first dating concerned wood fragments from Angkor temples (Delibrias et al. 1964). Benefitting from the presence of the mummy of Ramsés II at the CEA (Saclay) for gamma-ray disinfection in 1976–1977 (prg Nuclart), she proceeded to the dating of two wrapping bands that showed one restoration step after the initial inhumation (Delibrias et al. 1986). A collaboration of importance was with her friend and colleague Nicole Petit-Maire, a quaternary geologist expert in the Sahara evolution. Their contribution based on archaeology and environmental conditions pointed out the presence of a much wetter period than the present in Sahara between 8000 and 4000 yr BP (Delibrias et al. 1976; Petit-Maire et al. 1983), which is well recognized today.

A very big moment in Georgette's career was the meeting and the collaboration with the famous Brazilian archeologist Niède Guidon in the early 1980s. Georgette was always passionate about the archaeology of the New World and especially Brazil. In the late 1950s, in collaboration with Brazilian and Franco-Brazilian teams, she began to establish a chronology of coastal occupations (*sambaquis*). She quickly realized that the Brazilian archaeology was not limited to coastal regions and her dating showed that the central regions of Brazil were populated very early as shown by the Lapa Vermelha IV site (Lagoa Santa-Minas Gerais) with Luzia the oldest Brazilian woman (Delibrias et al. 1986). After many seasons of excavation at the Boqueiro Pedra Furada in Piauí in the Serra de Capivara National Park, a series of hearth charcoals were dated to around 32,000 yr BP (Guidon and Delibrias 1986). This major discovery challenged North American theories that dated the first settlements in the Americas before 13,000 yr.

Very discrete and efficient, Georgette Delibrias contributed greatly to the scientific renown of the CFR. She helped numerous young researchers in testing new hypotheses. She led a well-known radiocarbon laboratory and created an exceptional database of knowledge. The laboratory pursued this activity and the LSCE team is greatly indebted to her.

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