OBITUARY

Mary Leakey 1913–96

FEW individuals have both the opportunity and the ability to transform their chosen field. Mary Leakey was such a scientist — she combined a flair for fieldwork with a legendary capacity for hard work and a formidable talent for analysis. This conjunction of abilities enabled her to change our understanding of human evolutionary history, with discoveries that are unrivalled in their variety and significance. And although her early years in research were spent under the shadow of her husband, Louis Leakey, in later life she justly came to be regarded as a remarkable archaeologist in her own right.

Mary Leakey's career in prehistory began in the 1930s, when excavation techniques were crude and stone tools were looked upon more as trophies than as objects of scientific study. Her first digs were in France and England, but her practical skills and excavation technique were honed during her first African site investigation at Hyrax Hill in Kenya. Between 1943 and 1947, she and Louis worked at the Middle Pleistocene site called Olorgesailie, where she developed and refined the excavation methods that later allowed the spatial relationships between artefacts and animal bones to be recorded and preserved on the so-called 'living floors' at Olduvai Gorge.

As well as her contributions to the Miocene and Plio-Pleistocene hominid fossil record, Mary Leakey's discoveries included the earliest direct evidence of hominid activity — the remarkable trails of footprints at Laetoli in Tanzania — and painstaking recordings of East African cave paintings. But of all these achievements, her research at Olduvai Gorge stands out in terms of both the results and the methods that were pioneered there.

The name Olduvai — which literally means 'the place of the wild sisal' — was given by the Masai to a gorge that extends for some 50 km into the Serengeti plains on the western margin of the Eastern Rift Valley in Tanzania. The main valley and 'Side Gorge' were produced by the erosion of sediments that had been deposited in the beds of lakes and streams. Interleaved between the layers of sand and clay that make up the bulk of the sediments are layers of volcanic ash from eruptions of the (now extinct) volcano called Olmoti. The glass in these ash layers, combined with the well-preserved record of the Earth's magnetic field in the other sediments, provided the reliable dating framework that was to become an important component of the scientific significance of Olduvai Gorge.

In 1935, Mary Leakey made her first visit to the place that she was to work in, and around, for over half a century. Until the mid-1950s, visits for survey and excavation were intensive, but sporadic. Many stone tools and mammal fossils were found, but there was no sign of the human ancestors who had so clearly been active there. Then, in 1959, a hominid molar tooth was found at site MNK in Bed I. Several weeks later, when Mary Leakey was examining what they had concluded might be a 'living floor' associated with crudely fashioned 'Oldowan' stone tools, she found the first fragments of an early hominid cranium. It was given the designation OH 5 and was initially referred to *Zinjanthropus boisei*, but it is now more usually placed in *Paranthropus boisei*.

John Reader/SPL

This discovery was a turning point because it enabled the Leakeys to attract much-needed funds to mount a sustained research programme at the gorge. Jack Evernden, a Berkeley geochemist, was invited to use the relatively new technique of potassium–argon dating to determine the absolute age of the sediments. With his colleague Garniss Curtis he proposed that OH 5 was just less than 2 million years old. By providing absolute ages for many of the other ash layers, Evernden and Curtis established the first absolute chronology for any early hominid site, and Olduvai Gorge soon became the yardstick by which the dates of other sites could be calibrated.

The early 1960s saw the discovery of the first of a series of hominid remains that were to be referred to *Homo habilis* — a hominid with a larger brain and smaller chewing teeth than *Paranthropus boisei*. Until 1964, publications announcing the discovery of hominid remains were all in the name of Louis Leakey. But thereafter, Mary Leakey's important, and then dominant, role in the research was more justly reflected in the authorship. She announced new hominid finds, including a cranium, OH 24, of *Homo habilis* and the limb bones of *Homo erectus*, and proposed new interpretations of the hominid remains from Olduvai.

Mary Leakey's 1971 monograph on the archaeological evidence from Beds I and II secured the widespread acceptance of her identification and interpretation of the Oldowan and the Developed Oldowan cultures of Beds I and II. Similarly, a more recent monograph in the Olduvai Gorge series presented scrupulously documented interpretations of the archaeology from the later sediments. All of this work was done in close collaboration with Richard (Dick) Hay, and their scientific partnership — which continued when they switched their attention to Laetoli — has not always been given the credit it deserves.

The discovery of hominid fossils from considerably older sites elsewhere in East Africa rekindled Mary Leakey's interest in Laetoli. Here, in 1974 and 1975, her team recovered fine examples of *Australopithecus afarensis* and, in subsequent years, she excavated footprint trails including several made by hominids. At around 3.7 million years old, these hominid footprints are still the earliest direct evidence of hominid behaviour, and they show that hominids of this antiquity could walk upright.

Once an archaeologist has excavated a site, important components of the information it contains — such as the spatial relationships between the artefacts — are lost forever. Mary Leakey realized that archaeologists have a special responsibility to record not only what they judge to be important at the time, but also evidence for others coming after them. Her meticulous excavation and recording of the archaeological record at Olduvai Gorge is a unique resource for testing hypotheses about artefact function and hominid land use. That alone would be a rich legacy, but coupled with her other achievements, they add up to a truly remarkable contribution to the study of human evolutionary history.

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