At Olduvai Gorge in northern Tanzania natural erosion exposed a deep series of superimposed geological beds containing rich artefact and fossil assemblages spanning the last 1.8 million years. The site is famous as a result of excavations conducted there since 1951 under the direction of Mary Leakey and her husband, the late Louis Leakey.

The first definitive report on these excavations was published in 1965, followed by three further volumes over the next twenty-four years. Volume 5, written largely by Mary Leakey herself, is the last of these reports, and records the archaeological finds in the upper part of the Olduvai sequence from excavations carried out from the end of 1968 until 1971. The period covered here is from about 1.2 to 0.4 million years ago, and the finds include artefacts and faunal remains excavated from sites in Beds III, IV and the Masek Beds. The volume follows on from the archaeological record in Beds I and II published in 1971 in Volume 3 of the series.

In addition to the chapters by Mary Leakey, Richard Hay has written a brief summary of the geology as a background to the archaeology, Derek Roe provides a metrical analysis of the handaxes and cleavers, Paul Callow describes the technology and raw materials, and Peter Jones details experimental work on the manufacture and use of tools, in particular those associated with butchering and skinning. Celia Nyamweru's appendix describes the mapping out of the JK Pits archaeological site at Olduvai. An overview by Derek Roe sums up the entire volume and draws the contributions together, interpreting and expanding upon their conclusions.
OLDUVAI GORGE

VOLUME 5
Frontispiece: Olduvai Gorge, view across the Main Gorge
OLDUVAI GORGE

VOLUME 5

EXCAVATIONS IN BEDS III, IV

M. D. LEAKEY WITH D. A. ROE

WITH CONTRIBUTIONS BY
P. CALLOW, R. L. HAY, P. R. JONES,
CELIA K. NYAMWERU AND D. A. ROE

CAMBRIDGE UNIVERSITY PRESS
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Introductory Note to the 50th Anniversary of the Discovery of
‘Zinjanthropus’

The Olduvai Gorge in the Republic of Tanzania came to the attention of the world shortly after my mother Mary discovered the ‘Zinjanthropus boisei’ skull on July 17th 1959. The field of African prehistory, and in particular the study of human evolution, has changed and developed dramatically over the past 50 years. I am particularly pleased that Cambridge University Press have decided to republish the 5 monographs that comprehensively cover the many scientific studies that have been undertaken on the Olduvai material collected by my parents, Louis and Mary, working with a number of colleagues. As the Golden Anniversary of the discovery approaches, it is timely to reflect on the importance of that find.

I was lucky to arrive at Olduvai two days after the discovery and I well recall the excitement of the occasion. My parents were operating on a very tight budget and the field season was short. Fortunately, on hand was world-renowned photographer Des Bartlett who, aided by his wife Jen, fully recorded on film the first few days of excavations and reassembly of bone fragments back in camp. As pieces were glued back together, and the shape of the skull and its morphology became clear, my parents showed uncharacteristic and unrestrained emotion! At the time, ages for fossils were wild guesses and radiometric dating had not been done anywhere in Africa. The best, guessed age for Zinj was a little more than 500,000 years. Some months later, a real Potassium/Argon date was obtained by Jack Evenden and Garniss Curtis, and the 1,750,000 age was announced. This ignited huge excitement worldwide and for the first time my father was able to raise financial support for extended field work at Olduvai. Everything changed. The unqualified enthusiasm and support of the National Geographic Society from 1960 onwards had a major impact on the later work at Olduvai, and indeed on the growing international interest of Africa as the cradle of humanity.

Since those first exciting years at Olduvai, the investigation of human origins has gone forward and extended to many other sites in Africa. The age of hominins has been taken back to beyond five million years and the collected fossils and lithic records are now numerous. International multi-disciplinary teams are working in many parts of the world and, with the exception of a few fundamentalist ‘flat earth’ types, the acceptance of the fossil record of our past is widely accepted. Much of this has come about because of the initial Olduvai finds.

The pioneering work at Olduvai was the launch of this fantastic 50-year period when we as a species have come to realize and appreciate our common evolutionary past. Olduvai, conserved and protected by the Republic of Tanzania, remains as a landmark in the epic story of humanity, and these monographs are a wonderful testimony to that landmark.

Richard Leakey, FRS
ACKNOWLEDGEMENTS

Once more I wish to express my gratitude to the United Republic of Tanzania for permission to continue working at Olduvai Gorge, as well as to Mr A. A. Mturi, Director of Antiquities, and Mr A. J. N. Mgina, former Conservator of the Ngorongoro Conservation Authority, for their help and cooperation.

The National Geographic Society, Washington, DC has been largely responsible for funding the work at Olduvai over many years. I am deeply indebted to the Committee for Research and Exploration for their generosity and to the late Dr Melvin M. Payne, then Chairman, for his interest and encouragement. The L. S. B. Leakey Foundation has also made generous grants, particularly for the purchase of vehicles. Other persons, who wish to remain anonymous, have made most welcome annual gifts. To all those whose financial aid has enabled me to work at Olduvai I tender my most grateful thanks.

Mr Peter Jones worked for several years at Olduvai as my assistant, I am greatly indebted to him for his skilful photography and help in camp logistics. His chapter in this volume describing his experimental work in the manufacture and uses of stone tools is a most valuable contribution which throws new light on some of the features that have long puzzled those of us studying stone industries.

I am once more deeply indebted to Dr Richard Hay for his help and cooperation in solving the stratigraphic problems of the sites excavated in Beds III, IV and the Masek Beds. Drs Andrew Brock, the late Alan Cox and Frank Brown have all contributed greatly to elucidating the geomagnetic sequence at Olduvai; their work has been invaluable. My particular thanks are due to Dr Raymonde Bonnefille for her study of the Olduvai fossil pollen spectra. When she began her work at the gorge it was widely considered to be a waste of time and money since the consensus of opinion held that pollen grains were almost certainly unobtainable from the highly alkaline Olduvai sediments. Dr Bonnefille’s identification of many hundreds of specimens and comparison with the extant flora has been an invaluable contribution to our knowledge of the past environment. Dr Derek Roe and Dr Paul Callow merit my special thanks for voluntarily undertaking to analyse the bifacial tools; this has been of very great help in studying the industries. Mr Gordon Hanes has made valuable contributions to Olduvai by financing the building of two site museums and two windmills to generate electricity. The late Mr George Dove, former owner of the Nduu Safari Lodge, most kindly devoted a great deal of time to building the camp and also supplied furniture from his own house before leaving Tanzania for Australia. Mr R. I. M. Campbell and Mr John Reader, both professional photographers, have made available their skill to photograph sites and specimens; they have my particular thanks.

Many others have helped the work at Olduvai, directly and indirectly. My thanks are especially due to Mrs John Brindeis, Mrs Janet Leakey, Dr R. J. Clarke, Mrs M-A. Harms, Dr John Harris, Miss Mary Jackes and Dr Celia Nyamweru, for their active assistance at Olduvai.

By 1968 the late Mr Heslon Mukiri, who had been my excavation foreman since 1937 during my first dig in Kenya at the Neolithic site of Hyrax Hill, sadly found himself unable to continue active field work. He was sorely missed but I am greatly indebted to my Wakamba staff for their skill and patience in excavation.

Since I left Olduvai and returned to live in Kenya the Governors of the National Museums of Kenya and my son Richard have made available to me study space to prepare this volume for publication. I am most grateful for their courtesy.

M. D. Leakey
**ABREVIATIONS FOR ARTEFACTS SHOWN IN SITE PLANS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AWL</td>
<td>Awl</td>
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<tr>
<td>CH</td>
<td>Chopper</td>
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<tr>
<td>D</td>
<td>Debitage</td>
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<tr>
<td>DC</td>
<td>Discoid</td>
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<tr>
<td>HM</td>
<td>Hammerstone</td>
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<tr>
<td>HX</td>
<td>Handaxe</td>
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<tr>
<td>LTF</td>
<td>Laterally trimmed flake</td>
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<tr>
<td>OE</td>
<td><em>Outil écaillé</em></td>
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<tr>
<td>PAV</td>
<td>Pitted anvil/hammerstone</td>
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<tr>
<td>PU</td>
<td>Punch</td>
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<tr>
<td>SC</td>
<td>Scraper</td>
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<td>SPH or SP</td>
<td>Spheroid</td>
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<tr>
<td>SSP</td>
<td>Subspheroid</td>
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<tr>
<td>ST</td>
<td>Sundry tool</td>
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<tr>
<td>UT</td>
<td>Utilised</td>
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<tr>
<td>UTH</td>
<td>Utilised heavy-duty</td>
</tr>
<tr>
<td>UTL</td>
<td>Utilised light-duty</td>
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