



Smithsonian
National Museum of Natural History

Guide to the Richard L. Hay papers, 1953-2005

Lorain Wang

2009 July

National Anthropological Archives
Museum Support Center
4210 Silver Hill Road
Suitland 20746
naa@si.edu
<http://www.anthropology.si.edu/naa/>

Table of Contents

Collection Overview	1
Administrative Information	1
Scope and Contents.....	5
Arrangement.....	5
Biographical Note.....	2
Names and Subjects	6
Container Listing	7
Series 1: Correspondence with Mary and Louis Leakey, 1961-1970, 1988-1996.....	7
Series 2: East Africa Research, 1958-2005.....	8
Series 3: Non-East Africa Research, 1953-2004.....	14
Series 4: Sample Descriptions, 1956-2001.....	16
Series 5: Specimen Sample Lists, 1959-1998.....	17
Series 6: Publications, 1959-2004.....	20
Series 7: Photographs, 1957-1972, 1989-2001.....	24
Series 8: Fieldwork Tools, undated.....	26

Collection Overview

Repository:	National Anthropological Archives
Title:	Richard L. Hay papers
Identifier:	NAA.2008-09
Date:	1953-2005
Extent:	15.97 Linear feet ((13 document boxes, 3 flat boxes, 8 card file boxes, and 1 oversized box) plus 1 CD-RW and 1 map folder)
Creator:	Hay, Richard L. (Richard LeRoy), 1926- Leakey, L. S. B. (Louis Seymour Bazett), 1903-1972 Leakey, Mary D. (Mary Douglas), 1913-1996
Language:	English
Summary:	Richard LeRoy Hay was a geologist, known for his contributions to sedimentary petrography and archaeological geology. This collection contains field notebooks, maps, photographs, data, and documentation of geological specimens he collected, primarily in Africa, but also in the United States, Europe, and Asia. He was known for his work with Mary Leakey, in which he provided the geological framework for Olduvai Gorge and Laetoli in Tanzania.

Administrative Information

Provenance

These papers were donated to the National Anthropological Archives in January 2009 by Richard L. Hay's widow, Lynn Hay.

Related Materials

Hay's collections of thin sections and geological specimens from Olduvai Gorge, Laetoli, Oldoinyo Lengai, and Kerimasi volcano are held by the Smithsonian Institution's Human Origins Program.

For other materials at the National Anthropological Archives relating to Olduvai and Laetoli, please see the Louise Marie Robbins papers.

Processing Information

The papers of Richard L. Hay were received partially organized. Most of the collection was packed and sent from Hay's home in Tucson after his death. A small portion of Hay's Olduvai photos, reprints of his publications, and X-ray diffraction data were sent to the archives later by his colleague Marie Jackson. The processing archivist kept existing groupings and arrangement and organized the collection into eight series. Original folder titles were retained with titles assigned by the archivist placed within square brackets. Oversized materials were separated and replaced with notes indicating original and new locations.

Processed by Lorain Wang, July 2009

Encoded by Jocelyn Baltz, July 2012

Preferred Citation

Richard L. Hay papers, National Anthropological Archives, Smithsonian Institution

Restrictions

CD-RW containing scans of maps of Angata, Endulen, and Ngorngoro is restricted due to preservation concerns.

Conditions Governing Use

Contact repository for terms of use.

Biographical Note

Richard LeRoy Hay was a geologist, known for his contributions to sedimentary petrography and archaeological geology. He worked closely with Mary Leakey for more than thirty years and provided the geological framework for Olduvai Gorge and Laetoli in Tanzania.

Hay was born on April 29, 1926 in Goshen, Indiana. He attended Ursinus College briefly (1944-45) before transferring to Northwestern University, where he received his B.S. (1946) and M.S. (1948) in geology. In 1952, he earned his Ph.D. in geology from Princeton University and served in the U.S. Army Corps of Engineers (1952-54).

After leaving the army, Hay worked as a geologist for the U.S. Geological Survey (1954-1955) and in 1955 began his academic career at Louisiana State University, Baton Rouge (1955-57). In 1957 he accepted a position at University of California, Berkeley and remained there until his retirement in 1983. From 1983 to 1997, Hay was Ralph E. Grim Professor of Geology at University of Illinois, Urbana Champaign, and later had an appointment as adjunct professor at the University of Arizona, Tucson (1998-2006).

Hay made his first trip to Olduvai Gorge in 1962 and continued to research and publish numerous articles on Olduvai for the next four decades. His most significant publication was his monograph, *Geology of the Olduvai Gorge* (1976), in which he provided a detailed study of the geologic history of Olduvai, placing hominid remains and other archaeological findings at the site in a paleogeographic context. Also significant was his geological analysis of tuff at Laetoli bearing early hominid footprints; he coauthored with Mary Leakey "Pliocene Footprints in the Laetoli Beds at Laetoli, Northern Tanzania" (1979) and "The Fossil Footprints of Laetoli" (1982).

In addition to Olduvai Gorge and Laetoli, Hay conducted geological fieldwork at Oldoinyo Lengai, Ngorongoro caldera, and Kerimasi volcano in Tanzania, as well as Rusinga Island, Lake Magadi, Amboseli, and Mount Suswa in Kenya. He also worked at several sites in the United States, including the John Day region of Oregon, the Green River formation in Wyoming, Amargosa Desert in Nevada, and Searles Lake in California. Additionally, he worked in west-central Wisconsin where he discovered the replacement of uppermost Precambrian and Cambrian-Ordovician rocks by low-temperature potassium-feldspar.

During his lifetime, Hay received many honors for his accomplishments in geology. He was a Fellow of the Geological Society of America, American Association for the Advancement of Science, and California Academy of Sciences. He was awarded the Geological Society of America's Kirk Bryan Award in 1978

and the Rip Rapp Archeological Geology Award in 2000. In 2001, he received the Leakey Foundation's Leakey Prize, awarded for intellectual achievement in the field of human evolution. Posthumously, a memorial was held for Hay at the GSA annual meeting in 2007.

Hay died at the age of 79 on February 10, 2006.

Sources Consulted

Ashley, Gail and Enrique Merino. "Memorial to Richard Leroy Hay (1926-2006)." *Geological Society of America Memorials*, 35 (2006): 39-43.

"Curriculum vitae and letter." Series 2. East Africa Research. Richard L. Hay papers, National Anthropological Archives, Smithsonian Institution.

Chronology

1926	Born April 29 in Goshen, Indiana
1946	Earns B.S. in geology from Northwestern University
1948	Earns M.S. in geology from Northwestern University
1952	Earns Ph.D. in geology from Princeton University
1952-1954	Serves in U.S. Army Corps of Engineers
1954-1955	Geologist for the U.S. Geological Survey
1955-1957	Assistant Professor at Louisiana State University, Baton Rouge
1957-1983	Professor at University of California, Berkeley
1962	First visit to Olduvai Gorge in Tanzania
1978	Awarded Kirk Bryan Award by Geological Society of America
1983-1997	Ralph E. Grim Professor of Geology, University of Illinois, Urbana-Champaign
1998-2006	Adjunct Professor at University of Arizona, Tucson
2000	Awarded Rip Rapp Archeological Geology Award by Geological Society of America
2001	Awarded Leakey Prize by the Leakey Foundation
2006	Died at the age of 79 on February 10

Selected Bibliography

- 1963 Hay, Richard L. and John Stark. "Geology and Petrography of Volcanic Rocks of the Truk Islands, East Caroline Islands." U.S. Geological Survey Professional Paper 409, U.S. Government Printing Office, Washington, D.C., 1963.
- Hay, Richard L. "Stratigraphy of Beds I through IV, Olduvai Gorge, Tanganyika." *Science* 139, no. 3557 (1963): 829-833.
- Hay, Richard L. "Zeolitic Weathering in Olduvai Gorge, Tanganyika." *Geological Society of America Bulletin* 74, no. 10 (1963): 1281-1286.
- Hay, Richard L. "Stratigraphy and Zeolitic Diagenesis of the John Day Formation of Oregon." *University of California Publications in Geological Sciences* 42, no. 5 (1963): 199-262.

- 1966 Hay, Richard L. "Zeolites and Zeolitic Reactions in Sedimentary Rocks." Geological Society of America Special Paper 85, Geological Society of America, New York, 1966.
- 1968 Hay, Richard L. and A. Iijima. "Analcime Composition in Tuffs on the Green River formation of Wyoming." *American Mineralogist* 53 (January-February 1968): 184-200.
- Hay, Richard L. "Petrology of Palagonite Tuffs of Koko Craters on Oahu, Hawaii." *Contributions to Mineralogy and Petrology* 17, no. 2 (1968): 141-154.
- 1970 Hay, Richard L. "Silicate Reactions in Three Lithofacies of a Semiarid Basin, Olduvai Gorge, Tanzania." *Mineralogical Society of America Special Paper* 3 (1970): 237-255.
- 1972 Hay, Richard L. and G.H. Curtis. "Further Geologic Studies and K-Ar Dating of Olduvai Gorge and Ngorongoro Crater." In *Calibration of Human Evolution*, edited by W.W. Bishop and J.A. Miller, 289-301. Edinburgh: Scottish Academic Press, 1972.
- 1973 Hay, Richard L. "Lithofacies and Environments of Bed I, Olduvai Gorge, Tanzania." *Quaternary Research* 3 (1973): 541-560.
- 1976 Hay, Richard L. *Geology of the Olduvai Gorge*. Los Angeles: University of California Press, 1976.
- 1978 Hay, Richard L. and R.K. Stoessell. "Geochemical Origin of Sepiolite and Kerolite at Amboseli, Kenya." *Contributions to Mineralogy and Petrology* 65 (1978): 255-267.
- 1979 Hay, Richard L. and M.D. Leakey. "Pliocene footprints in the Laetoli beds at Laetoli, Northern Tanzania." *Nature* 278 (1979): 317-323.
- 1982 Hay, Richard L. and M.D. Leakey. "The Fossil Footprints of Laetoli." *Scientific American* 246 (1982): 50-57.
- 1983 Hay, Richard L. "Natrocarbonatite Tephra of Kerimasi Volcano, Tanzania." *Geology* 11, no. 10 (1983): 599-602.
- 1984 Hay, Richard L., H. Bowman, F.H. Stross, F. Asaro, R.F. Heizer, and H.V. Micel. "The Northern Colossus of Memnon: New Slants." *Archaeometry* 26 (1984), 218-229.
- 1986 Hay, Richard L., R.E. Pexton, T.T. Teague, and T.K. Kyser. "Spring-related Carbonate Rocks, Mg Clays, and Associated Minerals in Pliocene Deposits of the Amargosa Desert, Nevada and California." *Geological Society of America Bulletin* 97, no. 12(1986): 1488-1503.
- 1988 Hay, Richard L., F.H. Stross, F. Asaro, H.R. Bowman, and H.V. Michel. "Sources of the Quartzite of Some Ancient Egyptian Sculptures." *Archaeometry* 30, no. 1 (1988): 109-119.
- 1989 Hay, Richard L. "Holocene Carbonatite-Nephelinite Tephra Deposits of Oldoinyo Lengai, Tanzania." *Journal of Volcanology and Geothermal Research* 37, no. 1 (1989): 77-91.
- 1991 Hay, Richard L., S.G. Guldman, J.C. Matthews, R.H. Lander, M.E. Duffin, and T.K. Kyser. "Clay Mineral Diagnosis in Core KM-3 of Searles Lake, California." *Clays and Clay Minerals* 39, no. 1 (1991): 84-96.

- 1993 Hay, Richard L. and R.H. Lander. "Hydrogeologic Control on Zeolitic Diagenesis of the White River Sequence." *Geological Society of America Bulletin* 105, no. 3 (1993): 361-376.
- 1999 Hay, Richard L., D.B. Finkelstein, and S.P. Altaner. "Origin and Diagenesis of Lacustrine Sediments, Upper Oligocene Creede Formation, Southwestern Colorado." *Geological Society of America Bulletin* 111, no. 8 (1999): 1175-1191.
- 2001 Hay, Richard L. and T.K. Kyser. "Chemical Sedimentology and Paleoenvironmental History of Lake Olduvai, a Pliocene Lake in Northern Tanzania." *Geological Society of America Bulletin* 113, no. 12 (2001): 1505-1521.
- 2003 Hay, Richard L., J. Liu, A. Deino, and T.K. Kyser. "Age and Origin of Authigenic K-feldspar in Uppermost Precambrian Rocks in the North American Midcontinent." *Geological Society of America Bulletin* 115, no. 4 (2003): 422-433.

Scope and Contents

This collection comprises the professional papers of Richard LeRoy Hay. Among his papers are his correspondence with Mary D. and Louis S. B. Leakey and his research at Olduvai Gorge and Laetoli, consisting of his field notebooks, maps, photographs, data, and documentation of geological specimens he collected. Also in the collection is his research at other sites in East Africa, including Kerimasi and Oldoinyo Lengai in Tanzania and Rusinga Island in Kenya. To a lesser extent (although still a significant amount) in the collection is the documentation of Hay's research in the United States. Present are field notebooks and photographs from his research in Amargosa, Nevada which served as a geologic analog for Olduvai. Also in the collection are field notebooks spanning from 1958 to 2004 containing his notes on his research in Oregon, Hawaii, Wyoming, California, New Mexico, Colorado, Arizona, Wisconsin, and other regions in the country. Mixed in are notes from his research in other countries including Pakistan, Scotland, and France. The collection includes his field notebooks from his service in the U.S. Army Corps of Engineers, during which he spent some time in Japan. There are no notes from his work as a geologist for the U.S. Geological Survey.

Please note that the contents of the collection and the language and terminology used reflect the context and culture of the time of its creation. As an historical document, its contents may be at odds with contemporary views and terminology and considered offensive today. The information within this collection does not reflect the views of the Smithsonian Institution or National Anthropological Archives, but is available in its original form to facilitate research.

Arrangement

This collection is organized into 8 series: (1) Correspondence with Louis and Mary Leakey, 1961-1970, 1988-1996; (2) East Africa Research, 1958-2005; (3) Non-East Africa Research, 1953-2004; (4) Sample Descriptions, 1956-2001; (5) Specimen Sample Lists, 1959-1998; (6) Publications, 1959-2004; (7) Photographs, 1957-1972, 1989-2001; (8) Fieldwork Tools, undated

Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:

Archaeological geology
Geology

Geographic Names:

Laetoli Site (Tanzania)
Olduvai Gorge (Tanzania)

Container Listing

Series 1: Correspondence with Mary and Louis Leakey, 1961-1970, 1988-1996

0.21 Linear feet

Mostly correspondence with Mary Leakey.

Folders are arranged alphabetically and letters are arranged chronologically.

Box 1 [Leakey, Mary D.], 1965-1968, undated

Box 1 [Leakey, Mary D.], 1968-1970

Box 1 [Leakey, Mary D.], 1988-1996

Box 1 [Leakey, Louis S. B.], 1961-1970

[Return to Table of Contents](#)

Series 2: East Africa Research, 1958-2005

3.57 Linear feet (plus 1 map folder)

Hay's fieldwork in Olduvai Gorge and Laetoli in Tanzania and other sites in East Africa spanned from 1962 to 2002. This series contains field journals, diagrams of stratigraphic sections, notes, data, photographs, and maps relating to his research in East Africa, which also included Oldoinyo Lengai, Ngorongoro caldera, and Kerimasi volcano in Tanzania as well as Rusinga Island, Lake Magadi, Amboseli, and Mount Suswa in Kenya. Absent from the collection are notes for his fieldwork in 1984, 1986-1988, 1990-1993, 1996, and 1997. Additional materials in this series are a curriculum vitae that he submitted for a grant to fund Olduvai research and reprints on Olduvai that he collected or were sent to him by the authors.

Please see Series 4. Sample Descriptions for descriptions of geological specimens collected from Olduvai and Laetoli. See also Series 1. Correspondence, Series 5. Specimen Sample List, Series 6. Publications, and Series 7. Photographs for more materials relating to Olduvai and his other research in East Africa. Series 3. Non-East Africa Research may also be of interest as it contains Hay's Amargosa research, which served as an analog to Olduvai Gorge.

This series is arranged in 7 sub-series: (2.1) Field notebooks, 1962-2002; (2.2) Stratigraphic Sections, 1962-1982; (2.3) Olduvai, 1958-2005; (2.4) Laetoli, 1973-1982; (2.5) Rusinga, 1985-1987; (2.6) Oldoinyo Lengai (carbonatites), 1958-1998; (2.7) Maps, 1961-1964

2.1: Field notebooks, 1962-2002

Box 2	62 - I thru 6/25, 1962 June 7-25
Box 2	62 - II 6/26 - 7/16, 1962 June 26-July 16
Box 2	62 - III 7/17 - 8/6, 1962 July 17-August 6
Box 2	1964 I, 1964 June 11-July 4
Box 2	1964 [II], 1964 July 5-22
Box 2	Natron Area, July 25-August 4
Box 2	1964, 1964 August 8-December 16 Soughou, Kariandusi, Nivaska, Akisim, and Calico Mountains
Box 2	1967, 1967 June 28-August 13
Box 3	1968, 1968 June 10-August 13 Includes Sicily
Box 3	1969 - I thru 6/30, 1969 June 15-30 "Olduvai 1969 I"
Box 3	69 - II 7/1 on, 1969 July 1-23

"Olduvai 1969 II"

Box 3 70 I thru 6/18, 1970 May 17-June 18

Box 3 70 - II 6/19 on, 1970 June 19-July 8

Box 3 1972, 1972

Box 4 72 I, 1972 June 16-July 18

Box 4 72 II, 1972 July 2-23
"Olduvai II"

Box 4 1973, 1973 September 5-25

Box 4 1973-74, 1973 December 25-1974 January 11

Box 4 1975, 1975 June 30-August 3

Box 4 1976, 1976 July 3-November 18

Box 4 1978, 1978 July 1-28

Box 4 1979, 1979 August 14-31

Box 4 1981, 1981 July 16-31

Box 4 1982, 1982 July 16-August 20

Box 4 83, 1983 July 8-August 14

Box 4 Rusinga 85, 1985 March 17-April 13

Box 5 1989, 1989 July 21-August 7

Box 5 94- 95, 1993 August 14-1995 July 23

Box 5 98-99, 1999 July 3-August 6

Box 5 2000, 2000 July 15-August 6

Box 5 2001, 2001 July 1-August 7

Box 5 2002, 2002 July 6-July 30

Box 5 Swahili, undated
English-Swahili translations of phrases and words

2.2: Stratigraphic Sections, 1962-1982

Box 5 [Stratigraphic sections of Olduvai and Laetoli], 1970-1981

Box 25 Sections 1 thru 8 (N side of gorge, mouth thru CK), 1962-1973

Box 25 Sects 9-14 (3rd F -- Camp area, N side), 1962-1976

Box 25 Loc 15 thru 25a, 1962-1973

Box 25 Sects 26 to 32 (Balbal, S. of Gorge; mouth to ELK on S. Side), 1967-1973

Box 25 Sects 32a -- 45 (W. of 3d F.S. side, to FLK, VEK), 1962-1973

Box 25 Sects 47-66 (M. Gorge, S. side, to W. of FLK), 1964-1974

Box 25 Sects 67-84 (N side M. Gorge to W. FK), 1962-1974

Box 25 Sects 85-101 S.d Gorge -- SWK to Kelogi; 85-101, 203-5, 1962-1973

Box 25 [Loc. 1-10], 1975 July 4-21

Box 25 [Loc. 1-22], 1976-1979

Box 25 [Areas 2-14], 1975-1982

2.3: Olduvai, 1958-2005

Box 5 XRD Clay Mineralogy Olduvai '89, 1989-1996

Box 5 Clay Mineralogy XRD - Olduvai Loc 80, Sikes' Series, 1995-1996

Box 5 Clay Mineralogy XRD - Olduvai 95 (bulk) also 30% KF, 70%, Mg - smectek [?], 1995-1996

Box 5 Clay Mineralogy XRD - Olduvai 1995 + '93 (oriented), 1993-1996

Box 5 ISGS Cores, undated

- Box 5 Clay Mineralogy XRD (1962-64) - Olduvai Pre-89, 1962-1964, 1991-1992
- Box 5 Clay Mineralogy XRD - Olduvai '69, 1969, 1991-1992
- Box 5 XRD Clay Mineralogy - Olduvai 72-74, 1972-1974, 1996
- Box 5 XRD Clay Mineralogy - Olduvai 1996 - 060, 1996
- Box 5 Olduvai 96 work, 1996-1997
- Box 5 XRD 2001, 2001-2003
- Box 6 Illustrations for Presort [?], undated
Olduvai and Ngorongoro
- Box 6 [Curriculum vitae and letter], 1988, Undated
Curriculum vitae for Olduvai-related research proposal plus a letter from Robert J. Blumenschine inviting Hay to act as geological consultant for the Olduvai Archaeological Project
- Box 6 [Miscellaneous], 2002-2005, undated
Materials separated from Olduvai reprints: 2004 final report for "Revised stratigraphy: geochemical fingerprinting, paleomagnetism and $^{40}\text{Ar}/^{39}\text{Ar}$ dating, Olduvai Gorge, Tanzania"; e-mail regarding Olduvai faunal evidence for Serengeti chapter; figures and tables; page from article; and notes
- Box 6 Geological Survey of Tanganyika Report RP/23: A Contribution to the Geology of the Olduvai Gorge by R. Pickering, undated
- Box 6 Olduvai Reprints, 1958-2005
2 Folders
Includes articles and papers, some inscribed to Hay by the authors

2.4: Laetoli, 1973-1982

- Box 6 Laetoli 1982 -- Footprint Tuff data, 1978-1980, undated
- Box 6 First Draft - Leakey & Hay -- Laetoli, 1982, undated
Includes 35mm slides
- Box 6 Laetoli - Lith. Photos & gen. [?], 1978
Includes negatives, prints, and a contact sheet
- Box 6 Laetoli 1982 -- Laetolil Photography FPT, 1973-1982, undated

2 Folders

Includes negatives and prints of photos of Laetoli footprints and Olduvai.

2.5: Rusinga, 1985-1987

- | | |
|--------|---|
| Box 7 | [Articles on Rusinga], undated |
| Box 7 | Rusinga [charts], 1985-1987 |
| Box 7 | 93-95 [Rusinga], 1985 |
| Box 21 | Rusinga [air photos], undated |
| Box 21 | Rusinga -- Mfangano Air Photos for Dr. Alan Walker (55 photos), undated |

2.6: Oldoinyo Lengai (carbonatites), 1958-1998

Oldoinyo Lengai (carbonatites), an original grouping and name assigned by Hay, contains materials on both Lengai and Kerimasi and reprints on carbonatites.

- | | |
|-----------------|--|
| Box 7 | Keramasi + Lengai Slides, 1979-1984
Includes 35mm slides and a list of photos taken in 1983 |
| Box 7 | Keramasi + Lengai photos, 1978-1987
Includes prints, negatives, and lists of photographs |
| Box 7 | Lengai Figs, undated
Includes negatives, prints, and a map |
| Box 7 | Carbonatite Photomicro, 1983, undated
Includes negatives, prints, contact sheets, and lists of photographs |
| Box 7 | Carbonatite, 1978-1997
"Lengai - new isotope data" |
| Box 7;
Box 8 | Carbonatite Reprints, 1958-1998, undated
<i>3 Folders</i>
Includes articles and papers, some inscribed to Hay by the authors |

2.7: Maps, 1961-1964

- | | |
|--------------|---|
| Box 8 | [Ngorongoro Conservation Area map], undated |
| Map-folder 1 | Geological Survey of Tanganyika. Angata Salei - Quarter Degree sheet 39, 1961 |

Box 8 Olduvai Geologic Map + LSBL Section at MK, 1964, undated

Box BD-2 Tanzania Geological Maps - Angata, Endulen, Ngorongoro, undated
CD-RW containing Tiff files of scans of maps: Geological Survey of
Tanganyika. Angata Salei - Quarter Degree sheet 39, 1st edition; Endulen -
Quarter Degree Sheet 52, 1st edition; Ngorongoro - Quarter Degree Sheet 53,
1st edition; close-up of Ngorongoro crater

RESTRICTED

[Return to Table of Contents](#)

Series 3: Non-East Africa Research, 1953-2004

0.83 Linear feet

This series mostly contains field notebooks from Hay's research in the United States, with some notes mixed in from his research in other countries including Pakistan, Scotland, and France. At the beginning of the series are field notebooks and photographs from his Amargosa research, which served as an analog to Olduvai Gorge. The notebooks in the rest of the series cover his research in Oregon, Hawaii, Wyoming, California, New Mexico, Colorado, Arizona, Wisconsin, and other regions in the country. Also in the collection are his 1953 to 1954 field notes while stationed in Japan as a member of the U.S. Army Corps of Engineers. Only select sites covered in each notebook are listed below.

A few of the field notebooks in Series 2. East Africa Research contain some notes from Hay's research outside of East Africa. Please also see Series 7. Photographs.

After the first 6 folders, the series is arranged chronologically.

Box 9	1979 Amargosa, 1979
Box 9	80-81 Amargosa II, 1980-1981
Box 9	82-84 III Amargosa, 1982-1984
Box 9	Amargosa 84, 1984
Box 9	Amargosa [prints], 1979-1981
Box 9	Amargosa Slides, 1977-1990, undated <i>2 Folders</i>
Box 9	[1953], 1953 Japan
Box 9	[1953-54], 1953-1954 Japan
Box 10	[1954], 1954 Japan
Box 10	1958, 1958 June 16-August 5 Clarno Study
Box 10	1959, 1959 August 1-September 11 Oregon - Crater Lake, Ochoco, John Day Fossil Beds
Box 10	Misc. '59-71, 1959-1971 California

- Box 10 1960, 1960 July 2-29
John Day area
- Box 10 1961, 1961 July 1-August 14
John Day area
- Box 10 1965 II, 1965 July 1-August 16
Oahu - Koko Crater, Rabbit Island, Tantalus, Salt Lake, Pearl Harbor; Green
River (Utah?); Columbine, Colorado
- Box 10 1972-77, 1972-1977
Point Reyes Beach, Sarna, Oahu, California
- Box 10 1977, 1977 June 26-December 31
Southwest
- Box 10 1978-79, -80, 1978-1980
California, New Mexico, Utah
- Box 10 81, 82, 83, 1981-1983
France, California
- Box 10 1987 & 88, 1987-1988
Hawaii, CA, Grand Canyon
- Box 10 89-91, 1989-1991
Tri-state, Mo, Wisconsin, Pakistan, Scotland
- Box 10 2002-2004, 2002-2004
Tahiti, Colorado Plateau, Tucson, Chile, Argentina

[Return to Table of Contents](#)

Series 4: Sample Descriptions, 1956-2001

4.89 Linear feet

Descriptions on file cards of geological samples collected from Olduvai Gorge and Laetoli.

Box 11	Olduvai Gorge Beds I - III, 1962-1974, undated
Box 12	Olduvai Gorge II, III-IV & Natron, 1962-1972, undated
Box 13	Olduvai Beds III-IV Masek, Ndutu; Stones, 1962-1970, undated
Box 14	Olduvai (47B), 1956-1978, undated
Box 15	Olduvai & Carbonatite, 1964-2001, undated
Box 16	Olduvai Ns. 1972 Calcrete, L. Ndutu, 1962-1975, undated
Box 17	Laetoli & Carbonatites, 1964-1982, undated

[Return to Table of Contents](#)

Series 5: Specimen Sample Lists, 1959-1998

0.42 Linear feet

Lists of Hay's collections of geological specimens from various sites around the world, including Olduvai.

Box 18	Specimen List - Summer 1962, 1962
Box 18	Specimen List - Summer 1964, 1964
Box 18	1967 Spec. List (also MDL 64, 65, 66, 67), 1959-1967 Also includes Hawaii, 1959
Box 18	Specimen List 1968 + MDL 1969, 1968-1969
Box 18	Specimen List 1969 + MDL 70, 1969-1970
Box 18	Olduvai - Sample data -- 1969-1970 Sample list, 1962-1970 Includes samples from 1962
Box 18	Specimen List 1970[-72], 1970-1972
Box 18	Specimen List 1972, 1972
Box 18	Specimen List 1973, 1973
Box 18	Samples 73-74, 1973-1974
Box 18	75 Clear Cr. - Spec. List 1975, 1975
Box 18	Specimen List 1976, 1976
Box 18	Specimen List - 1977, 1977
Box 18	Specimen List 1978, 1978
Box 18	Specimen List - 1979 - I (North Amargosa, March & Oct), 1979
Box 18	Specimen List - 1979 - II, 1979
Box 18	Spec. List 1980, 1980
Box 18	1981 Spec. List, 1981
Box 18	Specimen List 1982, 1982

Box 18	1983 Samples & Cp [?], 1983
Box 18	1984 Samples, 1984-1989 Includes samples from 1989
Box 18	1985 Samples, 1985
Box 18	1986, 1986
Box 18	1987, 1987
Box 18	1988, 1988
Box 18	1989 Samples, 1989
Box 18	1990 Specs List, 1990
Box 18	1991, 1991
Box 18	Liu Specs, May 92, 1992 May
Box 18	1992, Also 93 for Mo trip, 1992-1993
Box 18	1993 & 4, 1993-1994
Box 18	1995, 1995
Box 18	1996, 1996
Box 18	1997 Samples, 1997
Box 18	98 - Collecting, 1998
Box 18	98 - VI/AZ Collections, 1998
Box 18	G.R. Fm KF, 1986-1988, undated
Box 18	Laetoli - Boxed Spec, 1983, undated
Box 18	Boxed Samples, UC --> UI, 1983-1984, undated
Box 18	Packing & Organization, 1998, undated

[Return to Table of Contents](#)

Series 6: Publications, 1959-2004

0.42 Linear feet

Reprints of articles by Hay and a copy of his monograph *Geology of the Olduvai Gorge* (1976). Also in this series is the "Medals and Awards" section of the *Geological Society of America Bulletin* for 1978, which includes Hay's acceptance speech for the Kirk Bryan Award.

The publications are unarranged.

Box 19 [List of Publications], 2005

Box 19 [Reprints], 1959, 1973-2004
[1 of 3]

2004	The Judicious Selection and Preservation of Tuff and Travertine Building Stone in Ancient Rome
2001	Chemical Sedimentology and Paleoenvironmental History of Lake Olduvai, a Pliocene Lake in Northern Tanzania
1999	Origin and Diagenesis of Lacustrine Sediments, Upper Oligocene Creede Formation, Southwestern Colorado
1991	Clay Mineral Diagenesis in Core KM-3 of Searles Lake, California
1996	Stratigraphy and Lake-margin Paleoenvironments of Lowermost Bed II in Olduvai Gorge
1983	Spheroids at the Cretaceous-Tertiary Boundary are Altered Impact Droplets of Basaltic Composition
1973	$^{18}\text{O}/^{16}\text{O}$ Ratios in Cherts Associated with the Saline Lake Deposits of East Africa
<i>Undated</i>	Zeolites in Sedimentary Rocks
1995	Magnesium-Rich Clays of the Meerschaum Mines in the Amboseli Basin, Tanzania and Kenya
1993	Potassic Alteration in the St. Francois Mountains of Missouri
1995	Investigation of Al,Si Order in K-feldspars using ^{27}Al and ^{29}Si MAS NMR
1992	Potassium-Argon Dating of Bed I, Olduvai Gorge, 1961-1972
1991	Laser-fusion $^{40}\text{Ar}/^{39}\text{Ar}$ dating of Bed I, Olduvai Gorge, Tanzania
1991	Field Trip #2 Precambrian-Cambrian Boundary in West-Central Wisconsin
1989	Potassic Diagenesis of Cambrian Sandstones and Precambrian Granitic Basement in UPH-3 Deep Hole, Upper Mississippi Valley, U.S.A.

- | | | |
|--------|-----------------------------------|---|
| | 1988 | Sources of the Quartzite of Some Ancient Egyptian Sculptures |
| | 1987 | Diagenetic Alteration of Silicic Ash in Searles Lake, California |
| | 1984 | Sepiolite in the Amboseli Basin of Kenya: A New Interpretation |
| | 1983 | Natrocronatite Tephra of Kerimasi Volcano, Tanzania |
| | 1983 | Carbonatite Tuffs in the Laetoli Beds of Tanzania and the Kaiserstuhl in Germany |
| | 1982 | The Fossil Footprints of Laetoli |
| | 1986 | Role of Tephra in the Preservation of Fossils in Cenozoic Deposits of East Africa |
| | 1979 | Pliocene Footprints in the Laetoli Beds at Laetoli, Northern Tanzania |
| | 1982 | Chronological Position of the Fossil Hominids of Tanzania |
| | 1959 | Formation of the Crystal-Rich Glowing Avalanche Deposits of St. Vincent, B.W.I. |
| | 1981 | Paleoenvironment of the Laetoli Beds, Northern Tanzania |
| | 1980 | Zeolitic Weathering of Tuffs in Olduvai Gorge, Tanzania |
| | 1980 | The KBS Tuff Controversy May be Ended |
| | 1980 | Pellets, Ooids, Sepiolite and Silica in Three Calcretes of the Southwestern United States |
| Box 19 | [Reprints], 1963-1984
[2 of 3] | |
| | 1979 | [Encyclopedia entry for Olduvai Gorge] |
| | 1979 | Globule Ignimbrite of Mount Suswa, Kenya |
| | 1978 | Medals and Awards for 1978 |
| | Undated | Environmental Setting of Hominid Activities in Bed I, Olduvai Gorge |
| | 1978 | Volcanic Ash - Diagenesis |
| | 1978 | Melilitite-Carbonatite Tuffs in the Laetoli Beds of Tanzania |
| | 1978 | Calcretes of Olduvai Gorge and Ndolanya Beds of northern Tanzania |
| | 1978 | The Geochemical Origin of Sepiolite and Kerolite at Amboseli, Kenya |
| | Undated | Isotopic evidence for dramatic climatic changes in East Africa during the Pleistocene |

- 1976 Fossil hominids from the Laetolil Beds
- 1976 The Olduvai Event at Olduvai Gorge
- 1974 The MNK Chert Factory Site, Olduvai Gorge, Tanzania
- 1973 Lithofacies and Environments of Bed I, Olduvai Gorge, Tanzania
- 1972 Weathering of Basaltic Tephra on the Island of Hawaii
- 1972 Stratigraphy, archaeology, and age of the Ndutu and Naisiusiu Beds, Olduvai Gorge, Tanzania
- 1971 Geologic Background of Beds I and II Stratigraphic Summary
- 1984 The Northern Colossus of Memnon: New Slants
- 1964 Preliminary notes on the Stratigraphy of Beds I-IV, Olduvai Gorge, Tanganyika
- 1965 Evernden and Curtis: Potassium-Argon Dating
- 1963 Stratigraphy of Beds I through IV, Olduvai Gorge, Tanganyika
- 1963 Authigenic Silicate Minerals in Searles Lake, California
- 1966 Environment and Archeology
- 1967 Geomagnetic Polarity Epochs: New Data from Olduvai Gorge, Tanganyika
- 1967 Stratigraphy and Paleoclimatic Interpretation of Beds I through IV in Olduvai Gorge
- 1967 Tuff lava
- 1967 Hominid-Bearing Deposits of Olduvai Gorge

Box 19

[Reprints], 1963-1971, 1986-2003
[3 of 3]

- 1967 Revised Stratigraphy of Olduvai Gorge
- Undated [chart]
- 1968 Petrology of Palagonite Tuffs of Koko Craters, Oahu, Hawaii
- 1968 Chert and Its Sodium-Silicate Precursors in Sodium-Carbonate Lakes of East Africa
- 1970 Makatite, A New Hydrated Sodium Silicate Mineral from Lake Magadi, Kenya
- 1971 Geomagnetic Polarity Epochs: Age and Duration of the Olduvai Normal Polarity Event
- 1970 Paleomagnetism and Potassium-Argon Ages of Volcanic Rocks of Ngorongoro Caldera, Tanzania

- 1966 Zeolites and Zeolitic Reactions in Sedimentary Rocks
- 1964 Phillipsite of Saline Lakes and Soils
- 1963 Zeolitic Weathering in Olduvai Gorge, Tanganyika
- 1990 Olduvai Gorge; A case history in the interpretation of hominid paleoenvironments in East Africa
- 1993 Zeolites and Clay Minerals at Olduvai Gorge: a Look Back
- 1992 Potassium-Argon Dating of Bed I, Olduvai Gorge, 1961-1972
- 1992 Tephrochronology of Bed I, Olduvai Gorge: An Application of Laser-Fusion 40AR/39AR Dating to Calibrating Biological and Climatic Change
- 1993 New Developments in the Geology of Natural Zeolites
- 2002 Sedimentation Patterns in a Plio-Pleistocene Volcaniclastic Rift-Platform Basin, Olduvai Gorge, Tanzania
- 2003 Late Pliocene Homo and Hominid Land Use from Western Olduvai Gorge, Tanzania
- 2003 Dating the Naisiusiu Beds, Olduvai Gorge, by electron spin resonance
- 1970 Silicate Reactions in three Lithofacies of a Semi-Arid Basin, Olduvai Gorge, Tanzania
- 1986 An Isotopic Study of Paleosol Carbonates from Olduvai Gorge

Box 19

Geology of the Olduvai Gorge: A Study of Sedimentation in a Semiarid Basin,
1976*[Return to Table of Contents](#)*

Series 7: Photographs, 1957-1972, 1989-2001

5.09 Linear feet

This series is mostly comprised of photos of rock samples and aerial and site photos of Olduvai, Laetoli, and surrounding areas. Folders with alphanumerical titles in boxes 21 through 23 refer to site numbers in that region and contain aerial photos. Also in this series are photos of Panamint Springs, a crater in Panama, and unidentified rock samples.

More photos can be found in Series 2. East Africa Research and Series 3. Non-East Africa Research.

Box 20	Misc. Photos, undated Panamint Springs, Panama Crater, and unidentified rock samples
Box 25	[Scrapbook photos], 1962-1969, undated Field photos of East Africa, Sicily, and Syracuse; also Life magazine article on Richard Leakey, "On safari with a man called ostrich."
Box 20	[Olduvai photos with cropping marks], undated <i>2 Folders</i> Includes prints and negatives
Box 20	Has 2d fault, undated
Box 20	[Olduvai transparencies], undated <i>3 Folders</i>
Box 20	1995 (Olduvai), 1972 (old), 1995 (SPA), 1972, 1995
Box 20	Olduvai - Photos, undated
Box 20	E. Af. Chert Photos, undated
Box 20	Concretures etc. -- Olduvai, 1999
Box 20	Olduvai & Self, 2000 October-November Only photos of rock samples; no photos of Hay
Box 25	[Unidentified aerial photos], undated
Box 20	Laetolil Flight lines & photo nos., 2001, undated
Box 20	Olduvai Gorge - Field Air Photos, Working Set, 1960-1972, 1989, 2000, undated
Box 21	[Notes, maps, and aerial photos], 1972 January, undated
Box 21	29TN1, 1957 July 21, undated

Box 22	29TN2, 1957 July 22, undated
Box 22	35TN2, 1958 January 15, undated
Box 22	[35TN3], 1958 January 19, undated
Box 22	35TN5, 1958 January 21, undated
Box 22	35TN6, 1958 February 17, undated
Box 22	35TN8, 1958 February 20
Box 22	35TN10, 74-80 L. Ndotu S. toward Eyasie, 1958 February 22
Box 23	35TN11, 1958 February 23, undated
Box 23	35TN12, 1958 February 23, undated
Box 23	35TN14, 1958 February 27
Box 23	35TN15, 1958 February 28, undated
Box 23	35TN16, 1958 March 1, undated
Box 23	Kerimasi & Vicinity, 1957 July 22-1958 January 19
Box 23	Enlargements, 1958 January 21, undated

[Return to Table of Contents](#)

Series 8: Fieldwork Tools, undated

0.54 Linear feet

This series contains magnifiers and surveying tools used by Hay in the field.

- | | |
|--------|--|
| Box 24 | [10x Hastings Triplet magnifier], undated |
| Box 24 | [Magnifying glasses (Q-O-S COR, New York) in leather pouch], undated |
| Box 24 | [Matuzaki Seiki #8020 surveying tool set], undated |

[Return to Table of Contents](#)