



SOUTH AFRICAN HERITAGE RESOURCES AGENCY  
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**FOR OFFICIAL USE ONLY:**

File No.: .....  
Date received: .....  
Date approved: .....  
Applicant: .....  
Site / Object: .....  
Permit No.: .....

**APPLICATION FOR PERMIT:  
ARCHAEOLOGICAL AND PALAEOONTOLOGICAL SITES AND METEORITES**

Please note: Permit Applications expire one year after the date of receipt.

*In terms of Section 35 (4) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) no person may, without a permit issued by the relevant heritage resources authority, destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or material or any meteorite; or bring onto, or use at an archaeological or palaeontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.*

Other application forms are available for shipwrecks (303), heritage objects, export of archaeological and palaeontological material (304), burials (305), the built environment and landscape (307) or the registration of private collections (402).

**Applicants are advised that without full details no permit may be issued.**

**A. APPLICANT'S DETAILS**

1. Name and address of applicant: John Francis THACKERAY in collaboration with Ron Clarke, Kathy Kuman and Dominic Stratford  
Phone: (H) 012 991 2821 (W) 011 717 6659 (Cell) 083 414 3772  
Fax: 011 717 6694 E-mail: francis.thackeray@wits.ac.za  
Identity number of applicant (or passport): 521121 5105 089
2. Academic qualifications of applicant: PhD (Yale) MPhil (Yale) MSc, BSc Hons, BSc (UCT)
3. Previous relevant experience of applicant: Directed excavations at Kromdraai, Bolt's farm and Plover's Lake
4. Name and address of a person who can serve as a reference, i.e. a qualified archaeologist, palaeontologist or geologist, as relevant: Dr. C.K. Brain brainnew@iafrica.com
5. Name and address of the South African scientific institution with which the applicant collaborates: University of the Witwatersrand, P.O. WITS, Johannesburg 2050
6. Name and address of the South African scientific institution that will curate the material recovered: University of the Witwatersrand, P.O. WITS, Johannesburg 2050
- B. DETAILS OF SITE(S) OR OBJECT(S)**
7. Name(s) of site: STERK FONTEIN

8. Nature of site or object(s) e.g. archaeological, palaeontological, meteorite\* Palaeontological, Archaeological  
 \* Please supply a short description of the site, including, type and approximate date on a separate sheet of paper

9. Period, era, age or date of site or object(s)\* Late Pliocene, to late Pleistocene

10. Geographical situation of site / object MARK POSITION OF SITE ON A PHOTOSTAT OF A 1:10 000 or 1:50 000 MAP:  
 Province: Gauteng  
 Magisterial district: E 27 44 20.1 1: 50 000 Map number : ..... (or SAN chart)  
 Latitude & Longitude: S 25 00 38.7 Recording method  GPS Trig., Other) : .....  
 Farm Name and No.: ..... / Town : .....  
 Nearest Town: Krugersdorp / Street address & Erf # : .....

11. If it is a national or provincial heritage site / object, the number and date of the notice in the *Government Gazette* .....

**C. PURPOSE OF APPLICATION**

12. Purpose of and reasons for application\*  
To continue palaeo-anthropological research at the site through excavation and analysis of palaeontological and archaeological assemblages.  
\* PLEASE SUPPLY FULL MOTIVATION OR RESEARCH PROPOSAL

13. Nature of activity. Please circle the appropriate activities below  
 Destruction or Damage\* for: Analysis / Dating / Restoration / Security / Other\*  
 Excavation or disturbance\*  
 Alteration\*  
 Removal from original site\*  
 Exhumation and re-interment\*  
 Explore with a metal detector or other equipment\*\*  
 Other (e.g. removal of graffiti at rock art site)\*  
 Please supply extra details on a separate sheet of paper\*:

14. Period for which permit is required. Permits are not normally issued for periods longer than three years:  
 From June 2012 To June 2015

15. Have you consulted the landowner about this project? Please supply documentation.

16. Institutional support (as relevant):  
 I, YUNUS BALLIM Head of VICE-PRINCIPAL OF WITS  
 (South African Institution) where the applicant will be based while undertaking this project, hereby state that I support the application.  
 Signature: [Signature] Date: 14 August 2012

I, Bernhard Zipfel Head of Curator  
 (Institution) hereby undertake to store in our Institution the material and records from this project once completed.  
 Signature: [Signature] Date: 15/08/2012

I, John Francis Thackeray

undertake strictly to observe the terms, conditions, restrictions, regulations and guidelines under which the Council may issue the permit to me.  
 Signature: J.F. Thackeray Place: Johannesburg  
 (APPLICANT) Date: 13 August 2012

## **Sterkfontein Description and Motivation**

### **Sterkfontein History and Significance**

Sterkfontein was first recognised in 1936 as an important heritage site with Robert Broom's discovery of the first adult fossil of *Australopithecus africanus*. Dating from *ca* 3 Myr to 100,000 yrs, Sterkfontein is the richest site of palaeontological deposits in South Africa because it preserves the largest number and longest sequence of fossil fauna, hominids, and early cultural remains.

In 1998, the most complete ape-man skeleton yet discovered in Africa was announced and, even though still under preparation, 'Little Foot' has been published in a series of preliminary papers by Director of research, Prof. R.J. Clarke. Today, Clarke has finally lifted this 3 Myr old skeleton from an underground cavern and is in the process of final cleaning, 3D scanning, and reconstruction for comprehensive publishing. This work will undoubtedly further highlight and profile the importance of this historically rich heritage site.

In addition to these two remarkable finds, Sterkfontein contains palaeontological and archaeological deposits which span several critical periods in human evolution. Deposits in the Jacovec Cavern appear to be of similar age to Little Foot and include nine hominid fossils (some of which may be a different species to the skeleton) and two rich faunal assemblages. Younger breccias in Member 4, *ca* 2.6-2.1 Myr, contain over 600 specimens of other ape-man fossils, including the two species of *Australopithecus* (*A. africanus* and *A. prometheus*).

In deposits *ca* 2 Myr, Sterkfontein has yielded a small number of *Paranthropus robustus* fossils, a sister hominid species which became extinct *ca* 1 Myr, plus a large number of Oldowan stone tools. These tools are the oldest cultural remains yet discovered in southern Africa. In another infill *ca* 1.7/1.6 Myr, the site has preserved the next phase of cultural development in the form of early Acheulean artefacts, which include handaxes and cleavers. These tools are associated with some fossils of *Homo ergaster*, our most direct human ancestor, which appeared *ca* 1.7 Myr. Thus far, Sterkfontein has provided the most direct association in Africa between *H. ergaster* fossils and this important industry, which led to the successful and widespread Acheulean technological development across the African continent.

Additional research highlights at Sterkfontein over the decades include the only demonstrated fossil wood of Pliocene age in South Africa, excavated from the Member 4 *Australopithecus* deposits. Study of the wood by Dr M. Bamford has shown that remnants of tropical/sub-tropical forest survived in the Sterkfontein river valley in the time of *Australopithecus*. Most numerous of all have been studies of the many thousands of faunal remains by environmental specialists, who have used this data to reconstruct the environments and landscapes in which the early hominids lived for the last three million years. Faunal studies are today highly advanced and also include isotopic work to reconstruct diet. Sterkfontein has been a key site in many of these interpretations and debates.

### **Research Proposal**

Since the early 1990s, Professor Ron Clarke has held the permit for excavations of Sterkfontein and Professor Kuman has been the senior archaeologist for the site. Both have supervised a number of field and laboratory-based theses on Sterkfontein. This year Prof Clarke turns 68 and he wishes to assist a new generation of palaeoanthropologists to take increasing responsibility for the direction of research. He will remain involved with Stratford as a collaborator and mentor but from 2013 will devote most of his time to completing the

cleaning and publishing of the StW 573 skeleton known as Little Foot. Prof Kuman continues to be employed by the university until the end of 2013, and she wishes to continue her involvement with the archaeology and site formation issues at Sterkfontein that she has developed over the years. Stratford has completed two theses on Sterkfontein research. Both have involved his own excavations of underground deposits in several locations (in the Milner Hall and the Name Chamber). This has been specialised work which has not received adequate attention in the past. He has advanced training in microstratigraphy and chemical analysis of the breccias and is working on a clearer, more detailed picture of the inter-relationship of the various cave infills<sup>1</sup>.

The research projects outlined below are part of the ongoing palaeoanthropological research programme which has been conducted for over 70 years at Sterkfontein. The projects fit within Sterkfontein's primary palaeoanthropological research questions. These include: qualifying and quantifying the different morphologies of the multiple hominid species found at Sterkfontein; clarifying the functional and cognitive capabilities of the hominids through the analysis of hominid anatomy and stone tool assemblages; understanding the role and place of the hominids in their original environmental context through the study of associated faunal, archaeological material and stratigraphy. Concurrently to the projects described below, long-term processing of the lime-mining dumps is carried out to supplement our hominid and faunal assemblages. This has been ongoing since the start of work at Sterkfontein and still produces important specimens (e.g. a molar and premolar originally belonging to the important TM1511 specimen found by Broom in 1936). The main areas of focus for the next three years are: the detailed analysis of the morphology and context of the StW 573 'Little Foot' skeleton of *Australopithecus*; detailed stratigraphic analysis of the underground cave system; further research into Member 4; and excavations in the Member 5 artefact-bearing deposits.

### STW 573

Prof R.J. Clarke (Director of Excavations and Research) will carry on with the lengthy process of cleaning and describing the complete skeleton known as Little Foot, which he has published in a preliminary paper as a second species of *Australopithecus* (*A. prometheus*). The entire fossil has now been removed from its underground cavern and is systematically being developed from the breccia by Clarke and two skilled technicians, Abel Molepolle and Stephen Motsumi. Concurrently, parts of the skeleton still encased in hard breccia will be scanned with the newly acquired micro-CT scanner at the university. This scanning will produce a virtual 3D reconstruction of the skeleton, and it will also create the first resin casts of the individual elements. Dr Kris Carlson (IHE) will work with Dr D. Stratford to produce the scans. Stratford will be in charge of the lengthy process of assembling the component scans, using special software applications which accurately join the individual images. For detailed study of the anatomy and for research exchanges between specialists, each bone must

<sup>1</sup> Stratford, D.J. 2008. A Study of Newly Discovered Lithics from Earlier Stone Age deposits at Sterkfontein, Gauteng Province, South Africa. Msc. Thesis. University of the Witwatersrand, Johannesburg. Avery, M., Stratford, D.J., & Senegas, F. 2010. Micromammals from the Name Chamber at Sterkfontein, South Africa; a contribution to site correlations and palaeoenvironments. *Geobios* 43(4): 379-387. Stratford, D.J. 2011a. The underground central deposits of Sterkfontein, South Africa. PhD. Thesis. University of Witwatersrand, Johannesburg. Stratford, D.J. 2011b. Cave excavation: Some methodological and interpretive considerations. *Journal of Cave and Karst Science* 38 (3): 112-116.

also be cast individually in the traditional method, which preserves the most precise detail. Two of the permanent technicians at Sterkfontein (A.Molepulle and S.Motsumi) are experts in moulding and casting and will be working with Professor Clarke to produce these.

Clarke and Stratford will carry out further excavation in the grotto in 2013-2014, which has three main objectives:

- 1) to extract fossils of animals associated with the skeleton;
- 2) to further elucidate the stratigraphic history and clarify dating of the deposit, which has been controversial; and
- 3) to explore deposits beneath the *Australopithecus* skeleton, with the hope of obtaining further fossil remains, and perhaps even more hominid fossils.

In addition, computer scientists from France collaborating with our karst stratigrapher, Dr Laurent Buxelles (INRAP, CNRS), have completed 3D scanning of the skeleton within the cave before it was removed, and they return in 2012 to scan the chamber itself and work towards producing a virtual 3D projection of the chamber to aid our understanding of the formation history of the Silberberg Grotto.

### **Stratigraphic research**

In addition to his work on the skeleton, Stratford is working on deciphering the complex stratigraphic relationships between several of the underground deposits, including the one which contains the skeleton (M2). Stratford uses a comprehensive multidisciplinary approach to stratigraphy that combines the traditional faunal analyses of taphonomy and taxonomy, and integrates these data with chemical and physical sedimentological analyses and biofabric analyses. By analysing the position, condition and associations of every component of the deposit (sediments, fossils and artefacts), Stratford is able to clarify how the deposits have formed and identify the source of the sediments. This is particularly important as the deeper, lesser known deposits are explored. Stratford's methods also allow the identification of damage and modification to the assemblages at different stages of the deposit formation, thereby providing a formation sequence and a perspective on the original depositional conditions. Ongoing multidisciplinary research of this kind will enable a greater level of contextual control at Sterkfontein and will enable a better understanding the original associations between the hominids and other fauna. Stratford recently received training in soil micromorphology at the University of Central London, Department of Archaeology. His specialist training will allow this powerful microstratigraphic technique to be applied to the Sterkfontein deposits, pioneering the technique within the Cradle of Humankind sites. The combination of these complementary techniques enables the complex site formation processes found in caves to be clarified. This is of the utmost importance for providing a clear context for the hominid fossils and providing the support needed for the environmental and behavioural reconstructions for the hominids at Sterkfontein.

#### Member 4

Over the next two years, excavations within the breccias exposed at the surface will also continue. Member 4 has yielded the bulk of the *Australopithecus* fossils, and we will uncover more hominids in order to improve our understanding of the anatomy and variability of *Australopithecus*. Concurrently to the Little Foot investigations, Stratford will be applying the same stratigraphic methods to Member 4 and subsequently the other, younger, Sterkfontein deposits to clarify the formation history and contexts of the many cave infills and associated faunal and archaeological assemblages.

#### Member 5

The oldest stone tools in southern Africa were obtained in the early 1990s from the Member 5 breccias. The older of the assemblages contains a large number of Oldowan artefacts, dated by the cosmogenic nuclide burial technique to *ca* 2 million years. We are working on applying the same technique to dating of the early Acheulean assemblage in an adjacent infill. The faunal age suggests it is about 1.6 Myr old, but further excavations are required to provide cobbles deep enough for dating with the cosmogenic burial method to confirm and refine this age. Another benefit of continued excavations in the archaeological breccias is that we may recover more early *Homo* remains. In contrast with the ape-men, such fossils are always very rare finds. Both *H. habilis* and *H. ergaster* were highly intelligent species that coped well with the challenges posed by predators on the African landscape. Early *Homo* fossils across Africa are limited and are the subject of much debate over their species identification. Sterkfontein can contribute significantly to this debate.



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UNIVERSITY OF THE WITWATERSRAND

Private Bag 3, WITS 2050, South Africa

13 August 2012

TO WHOM IT MAY CONCERN

This is to certify that the University of the Witwatersrand, Johannesburg, as the owner of the land on which the Sterkfontein Caves are situated, grants permission for the palaeontological and archaeological excavation and research, associated with the South African Heritage Resources Agency (SAHRA) permit application in the name of Professor Francis Thackeray, Director of the Institute for Human Evolution at the University, to take place.

A handwritten signature in blue ink, appearing to read "Ballim".

Professor Yunus Ballim  
Vice-Principal

**5-Year Report – 2006 to 2011**  
**Professor R.J. Clarke**  
**Institute for Human Evolution**  
**University of the Witwatersrand**

The main object of my research during this period has been the excavations at Sterkfontein Caves. In addition, I have been involved in ongoing research projects at Olduvai Gorge, Tanzania, and in China, with two institutions. I have also supervised excavations at the Goldsmith's Lower Pleistocene site near Sterkfontein, and I am a team member of the renewed excavations at Swartkrans run by Prof. T. Pickering.

At Sterkfontein caves, deep excavations in Member 4 close to the Type Site have continued to yield hominid fossils, as well as other hominid material. The continued exposing and under-cutting of the Member 2 *Australopithecus* skeleton (Little Foot) has now allowed for removal of most parts to the surface in blocks of breccia. These fossils, including the skull, both arms, and the lower legs, are currently being cleaned of breccia prior to their reconstruction. Meanwhile, the pelvis, with the upper parts of the femora, is still being undercut with an aircscribe. This is of necessity a very slow process due to the presence beneath the bones of many rocks interspersed with faunal remains of mainly monkey and carnivore. Prior to the removal of the fossils, we made a silicone rubber mould of the whole skeleton in its surrounding breccia. Epoxy resin casts were made for record and display. One part is displayed in the Sterkfontein museum, another at Maropeng, and a third in the American Museum of Natural History in New York. A fourth cast is kept for record and reference purposes at Sterkfontein, and a fifth cast is a master positive from which future production moulds can be made. The excavation and cleaning of this skeleton continues to be filmed by Paul Myburgh, who has been recording the process since the first discovery for archive and in order that documentary films can be produced. The stratigraphy and dating of the skeleton has received much attention, with stratigraphic interpretations being produced by myself and being further investigated by Dr Laurent Bruxelles (INRAP, CNRS, France).

Dating based on the cosmogenic nuclide burial method and on Uranium-Lead has resulted in publications which have provided controversial dates ranging between ca 4 and 2 million years, and thus investigations on this aspect are still under way. Cosmogenic burial dating of an Oldowan assemblage manuport from Member 5 has provided a date of about 2 million years, which accords with known dates for the early Oldowan in East Africa.

Sterkfontein research projects by students supervised by me during this five year period have resulted in a PhD on stratigraphy and fauna of Member 5 by Christine Ogola, a PhD on stratigraphy, fauna and archaeology of the Sterkfontein underground cave deposits by Dominic Stratford, a Masters degree on the morphometric analysis of *Australopithecus* molars by Cinzia Fornai, and a PhD thesis currently being written up by Winnie Mokokwe on the fossil monkey postcrania.

Our excavations of the nearby site of Goldsmith's have continued the work previously undertaken by us which produced a large quantity of mainly *Dinofelis* (false sabre-toothed cat) fossils, as well as apparently early Acheulean stone tools. These provided material for the Masters thesis of Winnie Mokokwe. The current excavations being supervised in the field by Barry Jacoby and surveyed by Natasha Phillips continue to yield a rich haul of fossil material, as well as some stone tools, including an early Acheulean handaxe. The importance of this site is in the wealth of postcranial fossils of *Dinofelis*, and in the apparent absence of hominid fossils and paucity of monkeys. This is in contrast to sites such



as Sterkfontein, Swartkrans and Kromdraai, which have large percentages of hominids and/or monkeys in some deposits. This poses interesting questions for taphonomic and palaeoenvironmental research.

In 2006, Dr Ruliang Pan (Wits School of Anatomical Sciences) and I began the process of formulating a bilateral palaeoanthropology research programme between Wits University and the IVPP in Beijing (Institute for Vertebrate Paleontology and Paleoanthropology). In 2007, with the support of China's President Hu Jintao, who visited and met with us at Sterkfontein, and with the financial support of the Chinese Academy of Sciences and the South African Dept of Science and Technology, this was formalized into a bilateral programme between South Africa and China. This has resulted in several research trips to South Africa by Chinese academics, and research visits to China by academics and students from South Africa. Three publications have so far resulted from this collaboration and others are currently in preparation. These papers in preparation cover the topics of the Lantian hominid cranium, the hominoid *Gigantopithecus*, and fossil hominids from the cave of Longgudong.

I have also been collaborating with a colleague, Prof. Ji Xueping of the Yunnan Institute for Cultural Relics, Archaeology and Palaeoanthropology, in Kunming. This work has involved advising on a new Miocene palaeontological site in the province, providing instruction in moulding, casting and painting of fossil casts, and consulting on work at a late Pleistocene Hoabinian site (Xiaodong) with illustration work. We also hosted Prof. Ji Xueping and Prof. Ma Juan from Yunnan Province in a research visit to South Africa in 2010. A publication on the late Pleistocene site is written and is awaiting dating results for submission.

Also during this five year period I have continued to be a member of the Olduvai Landscape Archaeology and Palaeoanthropology Project (OLAPP), with responsibility for cleaning, casting and analyzing hominid fossils recovered by the team led by Prof. R.J. Blumenshine (Rutgers University) and Prof. Fidelis Masao (University of Dar Es Salaam). A publication on these hominids has been submitted for inclusion in a special issue on the work of OLAPP for the *Journal of Human Evolution*.

I have during this five-year period been a member of the Swartkrans Research Project supervised by Dr C.K. Brain and Prof. Travis Pickering (University of Wisconsin at Madison), with responsibility for analyzing the fossil hominids recovered during their excavations. I have also provided logistical support and assisted with stratigraphic interpretations. Two publications on this work are listed below

Sterkfontein continues to draw a large number of visitors for personalized tours of the site, which I have provided. These visitors include presidents, ambassadors, politicians, filmmakers, writers, tour groups, judges, medical alumni, fieldschool students, Wits university officials, conference delegates, and officials from donor organizations, as well as representatives from UNESCO and Miss South Africa (Nicole Flint).

At the beginning of this five-year period, I was responsible for reading and correcting the texts for the displays at the new Maropeng and Sterkfontein museums. Over the five years, I have given the following presentations about my research work:

## PUBLICATIONS

- Pickering, T.R., M.B. Sutton, J.L. Heaton, R.J. Clarke, C.K. Brain and K. Kuman (in press). New stratigraphic interpretations and hominid fossils from Swartkrans Member 1 (South Africa). *Journal of Human Evolution*.
- Clarke, R.J. (in press). *Australopithecus* from Sterkfontein Caves South Africa. *Paleobiology of Australopithecus*. New York: Springer.
- Clarke, R.J. (in press). Brief review of history and results of 40 years of Sterkfontein excavations. *African Genesis*, edited by S. Reynolds and A. Gallagher. Cambridge: Cambridge University Press.
- Clarke, R.J. (in press). Biface-using hominids of the Lower and Middle Pleistocene in Africa. In H. de Lumley (ed.): *Les cultures à biface du Pléistocène inférieur et moyen dans le monde. Emergence du sens de l'harmonie*. Paris: Educom.
- Clarke, R.J. (in press). A *Homo habilis* maxilla and other newly-discovered hominid fossils from Olduvai Gorge, Tanzania. *Journal of Human Evolution* (special issue on Olduvai Gorge).
- Xing, S., Wu, X., Gibbon, V., Clarke, R and Liu, W. (in press). Geometric morphometric analysis of the orbital shape in Asian, African and European human populations. *The Anatomical Record*.
- Tong, H. Hu, N., Liu, J. and Clarke, R. 2011. Inter-regional comparisons on the Quaternary large mammalian faunas between China and sub-Saharan Africa. *Acta Geologica Sinica* 85(1): 91-106.
- Clarke, R.J. and T.C. Partridge (2010). *Caves of the Ape-Men*. Pretoria and Johannesburg: S.E. Publications and Wits University Press.
- Liu, W., Clarke, R.J. and Xing, S. 2010. Geometric morphometric analysis of the early Pleistocene hominin teeth from Jiashan, Hubei Province, China. *Science China, Earth Sciences* 53(8): 1141–1152.
- Sutton, M., T.R. Pickering, C.K. Brain, R.J. Clarke, J. Heaton, R. Pickering and K. Kuman (2009). Newly discovered fossil- and artifact-bearing deposits, absolute dates and early Pleistocene hominids at Swartkrans Cave, South Africa. *Journal of Human Evolution* 57: 688–696.
- R.J. Clarke (2008). A new look at *Australopithecus* and latest information on Sterkfontein's *Australopithecus* skeleton. *South African Journal of Science* 104: 443-449.
- Clarke, R.J. (2008). La grande tribu des australopithèques. *Les Dossiers de La Recherche* 32: 28-33.
- Reynolds, S.C., R.J. Clarke and K. Kuman (2007). The view from the Lincoln Cave: mid-to late Pleistocene fossil deposits from Sterkfontein hominid site, South Africa. *Journal of Human Evolution*.
- Clarke, R.J. (2007). *Taphonomy of Sterkfontein Australopithecus skeletons*. In: T.R. Pickering, K. Schick and N. Toth (eds): *Breathing Life into Fossils: Taphonomic Studies in Honor of C.K. (Bob) Brain*. Bloomington (Indiana): Stone Age Institute Press, pp 167-173.
- Falk, D. and R. Clarke (2007). Brief communication: new reconstruction of the Taung Endocast. *American Journal of Physical Anthropology*.
- Clarke, R.J. (2006). A deeper understanding of the stratigraphy of Sterkfontein fossil hominid site. *Transactions of the Royal Society of South Africa* 61(2): 111-120.
- Clarke, R.J. (2006). Dr Broom and the skeleton in the cavern. In G. Blundell (ed.): *Origins*. Cape Town: Double Storey, pp 24-33.

## CONFERENCE PAPERS AND TALKS

### 2011

- Jan. 8-14. "A mine of information: stratigraphy and dating of the Sterkfontein Cave." 23<sup>rd</sup> Colloquium of African Geology. University of Johannesburg.
- Feb. 8-11. "The record of human progression preserved in southern Africa." Paper delivered at the meeting on *African Human Origins sites and the UNESCO World Heritage Convention*. National Museum of Ethiopia, Addis Ababa.

## 2010

Sept. 28-30 ( 2 talks): "Little Foot' big find –a skeleton of *Australopithecus*". CARTA symposium: *Early Hominids*. La Jolla, California.

Nov. 9: "The geographic distribution of *Homo habilis* and *Australopithecus africanus*. Invited speaker at *The Role of Culture in Early Expansions of Humans*. Johannesburg Workshop organised by A. Kandel and N. Conard, Heidelberg Academy of Sciences, Germany.

## 2009

Feb. 23-24. "Early Hominids and artefact associations." Invited speaker at *The Role of Culture in Early Expansions of Humans*. Cape Town Workshop organised by A. Kandel and N. Conard, Heidelberg Academy of Sciences, Germany.

Aug. 16-21. "The early hominids of Olduvai Gorge." 2<sup>nd</sup> East African Association for Palaeoanthropology and Palaeontology (EAAPP) Conference, Arusha, Tanzania.

Oct. "An *Australopithecus* skeleton and the two *Australopithecus* species of Sterkfontein." *Symposium of The Royal Society*, London. (Delivered for me by Cinzia Fornai)

Oct. 19-23. "Who made the Acheulean handaxes?" *International Symposium on Paleoanthropology in Commemoration of the 80<sup>th</sup> Anniversary of the Discovery of the First Skull of Peking Man and the First Asian Conference on Quaternary Research*. Beijing, China.

Oct. 7-14. 30<sup>th</sup> "From Ape-man to athlete." *General Assembly of the International Union of Biological Sciences and Darwin 200 Symposium on Human Evolution*. University of the Western Cape, South Africa.

## 2008

March 2008. Sutton, M., T.R. Pickering, C.K. Brain, R.J. Clarke, J. Heaton and K. Kuman/ New interpretations of the Pleistocene fossil- and artifact-bearing deposits at Swartkrans Cave, South Africa. Paper delivered at the annual meeting of the *Paleoanthropology Society*, Vancouver, Canada.

May 26-28: "From ape-man to athlete." Invited speaker at *Conference in Commemoration of the 10th Anniversary of the Discovery of the Renzidong Cave and the Annual Meeting of the Paleoanthropology-Paleolithic Archeology Society and Stratigraphy-Paleontology Society under Chinese Association for Quaternary Research*, Anhui, China.

June 2008: Seminar at the *Institute for Vertebrate Paleontology and Paleoanthropology*, Beijing China.

Sept 17, 2008: "Tales of long ago: dragons and ape-men." Invited paper presented at the *Symposium for the Bilateral Collaboration in Palaeo Sciences between China and South Africa*, Dept of Science and Technology, Sandton Convention Centre.

## 2007

March 25: "Ancestors, caves and the Cradle of Humankind." Talk to the Reserve Bank of South Africa, Maropeng Interpretive Centre, Gauteng Province.

June 24-30: "Biface-using hominids of the Lower and Middle Pleistocene in Africa. Invited and funded plenary paper presented at: *Les Cultures à Bifaces du Pléistocène Inférieur et Moyen dans le Monde. Émergence du Sens de l'Harmonie (Biface Cultures of the Lower and Middle Pleistocene World. Emergence of a Sense of Harmony)*. International Colloquium, Centre Européen de Recherches Préhistoriques de Tautavel, France. Organised by H. de Lumley, L'Institut de Palaeontologie Humaine.

8 Aug.: 'The importance of the Cradle of Humankind.' Talk to education ministers from the African Union, Maropeng Interpretive Centre, Gauteng Province.

28 Aug. "Ancestors, Caves, and Cultural Origins." Public lecture at the Origins Centre, University of the Witwatersrand.

24-30 Sept. "*Australopithecus* in South Africa. Invited and funded symposium talk, Stony Brook University Workshop on *Australopithecus*, Stony Brook University, New York.

5 Nov. Talk at Maropeng for the First African Conference of Commandants for Development of Education in the Military.

15 Nov. "Ancestors and Evolution." Talk to the World Economic Forum, Motsetse, Gauteng Province.

Dec. 10-16: "Early hominids and culture in South Africa." Talk to the *Institute for Vertebrate Paleontology and Paleoanthropology*. Beijing, China.

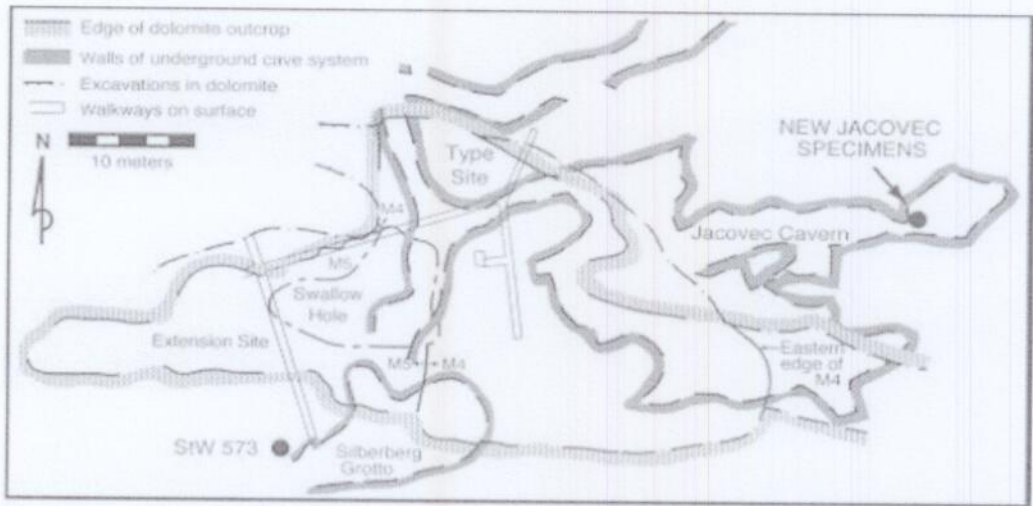
### **2006**

Jan. 8-14: Plenary/invited speaker at African Genesis, a symposium on hominid evolution in Africa. "Sterkfontein Australopithecus in the 40<sup>th</sup> year of current excavations. University of the Witwatersrand Symposium in Honour of Prof. P.V. Tobias.

Oct. 19: "Out of the lime quarry--into the limelight. The renaissance of Little Foot." Talk to donors, Sterkfontein caves, Annual Standard Bank PAST keynote lecture.

Oct. 24: "Out of the lime quarry--into the limelight. The renaissance of Little Foot." Public talk, Great Hall, University of the Witwatersrand. Annual Standard Bank / PAST keynote lecture.

Oct. 25: "Out of the lime quarry--into the limelight. The renaissance of Little Foot." Special lecture of school groups, Great Hall, University of the Witwatersrand. Annual Standard Bank / PAST keynote lecture.



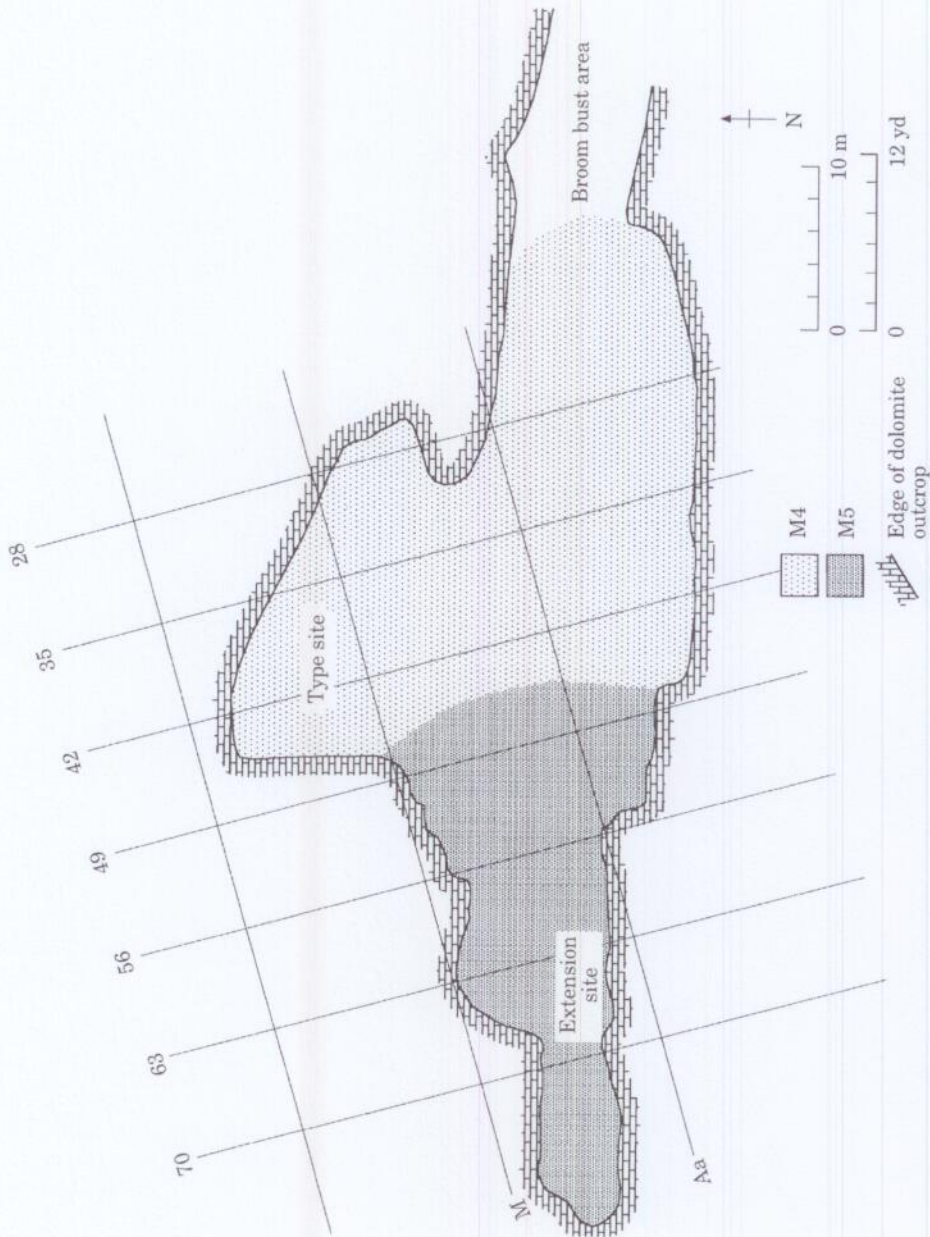


Figure 2. Traditional view (in plan) of the distribution at surface of Members 4 and 5 (after Partridge & Watt, 1991). The Type Site is the original lime-mining quarry at the northern end of Member 4. The Extension Site was the locality between lines 60-65 and M-T where Robinson first excavated the western breccias with artefacts.

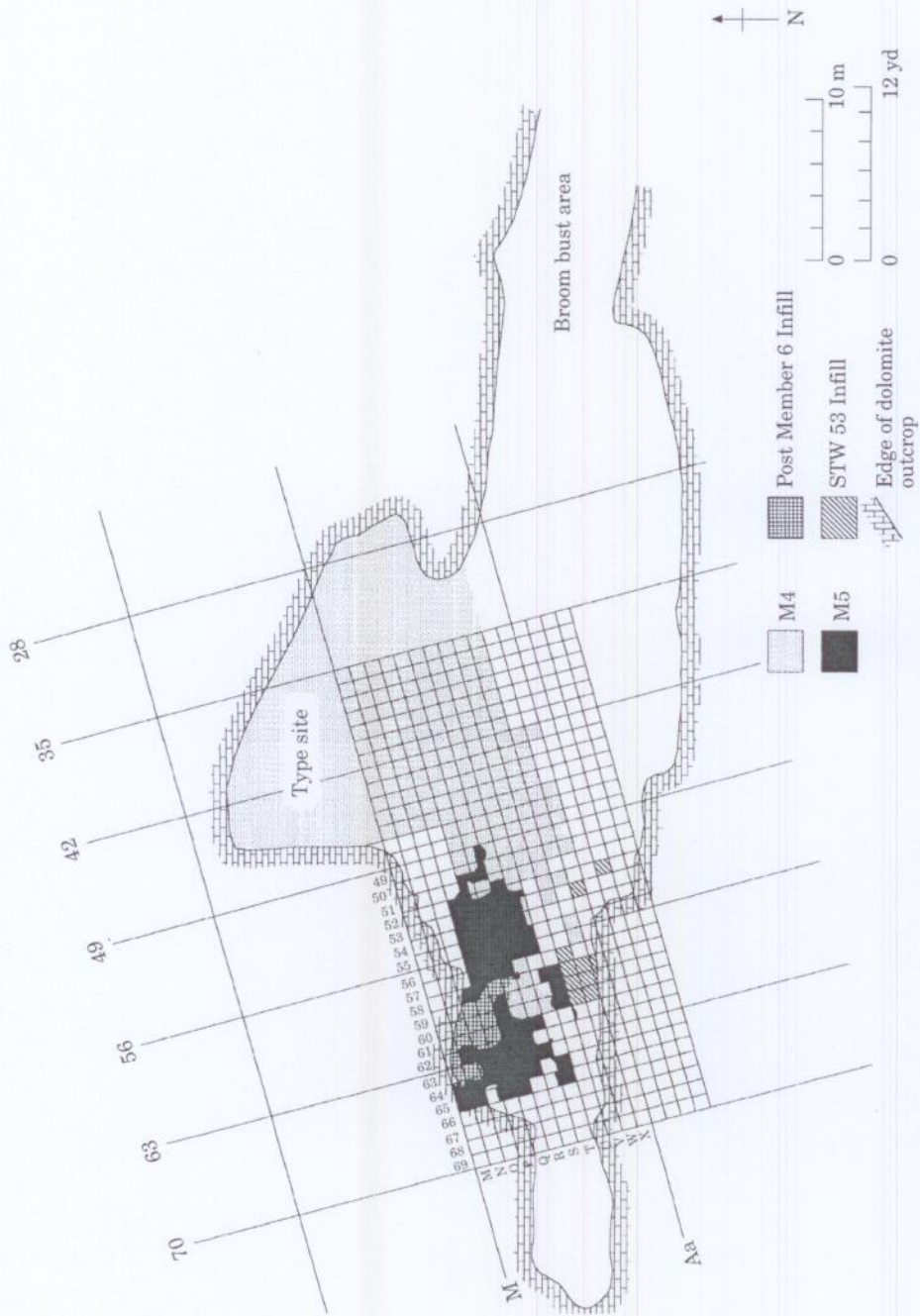


Figure 3. Revised view (in plan) of the distribution at surface of Members 4 and 5 (M4 and M5). Member 5 is shaded in black and separated for study purposes into Member 5 East (lines 49-58), Member 5 West (lines 59-65), and Member 5 South (southern lines 58-61). Blank squares are not devoid of breccia but are still under study. The distributions are portrayed schematically because breccia is excavated in spits of 3' x 3' x 1' volume.

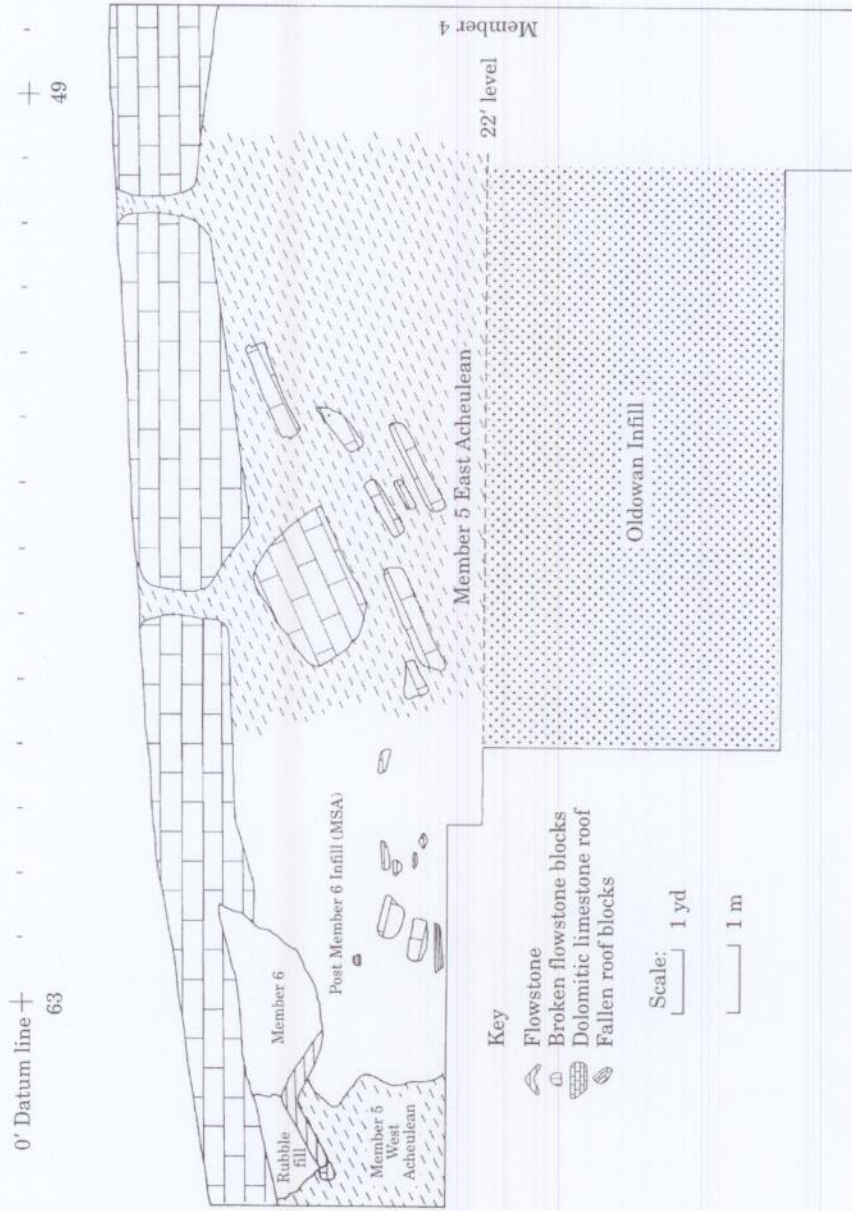
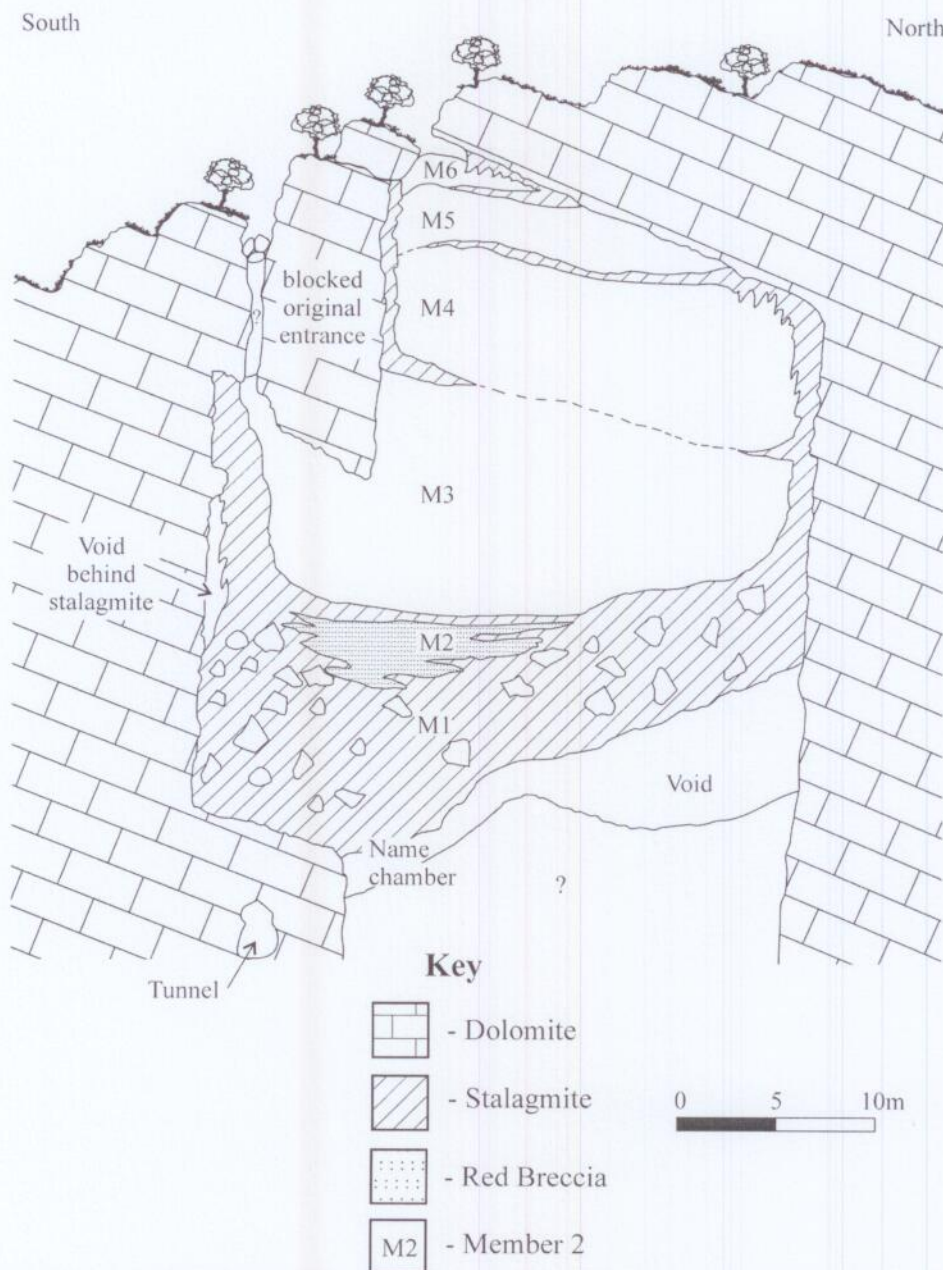


Figure 4. East-west stratigraphic profile of the northern wall of the Member 5 excavation area, showing the distribution of the artefact-bearing infills, the position of Member 6, and the Post Member 6 Infill which has divided Member 5 into Member 5 West and Member 5 East. Only the westernmost area of Member 4 is shown in this profile. Member 4 south and the StW 53 Infill are found in the southernmost squares of the excavation.





**Figure 13.** Schematic north-south section of Sterkfontein to show general relationship of breccias with suggested original openings and possible surface topography. Modified from Partridge & Watt (1991).

stratigraphic study of Sterkfontein breccia we have formed a much deeper understanding (about 30 m deeper!) of what has proved to be a very productive fossil hominid site.

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I am particularly grateful to the editors of this Festschrift for inviting me to contribute and thus enabling me to show my appreciation to Basil Cooke for more than forty years of friendship, collegiality and inspiration. I first met Basil and Dorette Cooke following my employment in 1963 by Louis Leakey at his Centre for Prehistory and Palaeontology in Nairobi, Kenya. They were regular visitors and always showed great kindness to me, a young man just setting out on his career in African palaeoanthropology. Little did I know then that, one day, I would be making significant discoveries at the site of Sterkfontein where Basil, as a young man himself in 1938, made his early contribution to African palaeoanthropology. I wish to

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