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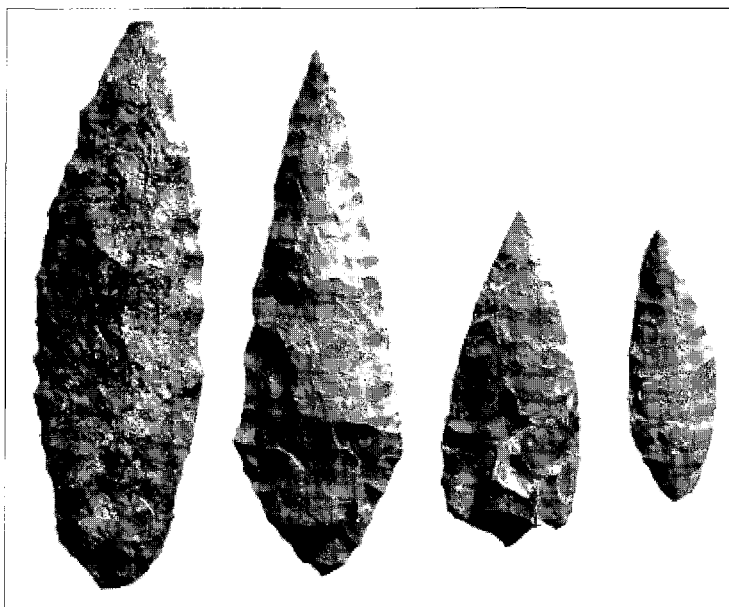
April 1998

BLOMBOS CAVE: EXCITING NEW FINDS FROM THE MIDDLE STONE AGE

Christopher Henshilwood and Judith Sealy

Blombos Cave is a small cave on the southern Cape coast, near Still Bay. In 1993, Chris Henshilwood and Cedric Poggenpoel began excavations there, hoping to find a Later Stone Age sequence that could serve as a reference sequence against which to compare material from a number of open sites already excavated in the vicinity.

A small test trench revealed well-preserved Later Stone Age remains dating to the last 2000 years, with large quantities of shellfish and fish bone, as well as the remains of antelope and other animals. The LSA layers also yielded pottery and sheep bone; the sheep bone has subsequently been dated to 1960 ± 50 BP (3 AD to 119 AD), making it the oldest sheep bone known from the southern Cape.



Bifacially flaked Still Bay stone points, the largest 83mm long.

deeply stratified cave site, in association with food remains. Since stone tools on their own can yield only limited information, this find promised, for the first time, the opportunity to investigate the way of life of people who made Still Bay tools - their hunting and collecting strategies, the environment in which they lived, the process of making the artefacts - and perhaps most exciting of all, the possibility of dating these kinds of assemblages.

Below the LSA

deposits was a layer of sterile dune sand. This could well have marked the bottom of the archaeological deposits in the cave, but just to make sure, the excavation was continued downwards to see if there was anything underneath. More archaeological deposit was soon encountered, including bones and shells, and stone artefacts like those shown in the picture - finely flaked bifacial points of a type first described in the 1920s, when they were called "Still Bay". This was a great surprise. Still Bay points, although they have been known from surface collections for many decades, have never before been found in a

Still Bay assemblages are generally accepted as belonging to the Middle Stone Age, which lasted from about 200 000 years ago until about 30 000 years ago, but there has been no way of determining where, in this very long time span, the Still Bay fitted. Many archaeologists thought that, because the tools are so finely made, it was likely to date from the later part of the Middle Stone Age, but there was no hard evidence one way or the other.

This was clearly a big project, and one somewhat removed from the intensive study of the Later Stone Age already in progress. With no

more than a preliminary taste of what might be there, the site was closed up, and Chris settled down to write his PhD thesis on the Later Stone Age of the area. Five years later, in 1997, we returned to the site with a larger team to investigate the Middle Stone Age in more detail.

We have now had two field seasons, in January/February 1997 and 1998, in which we have focussed specifically

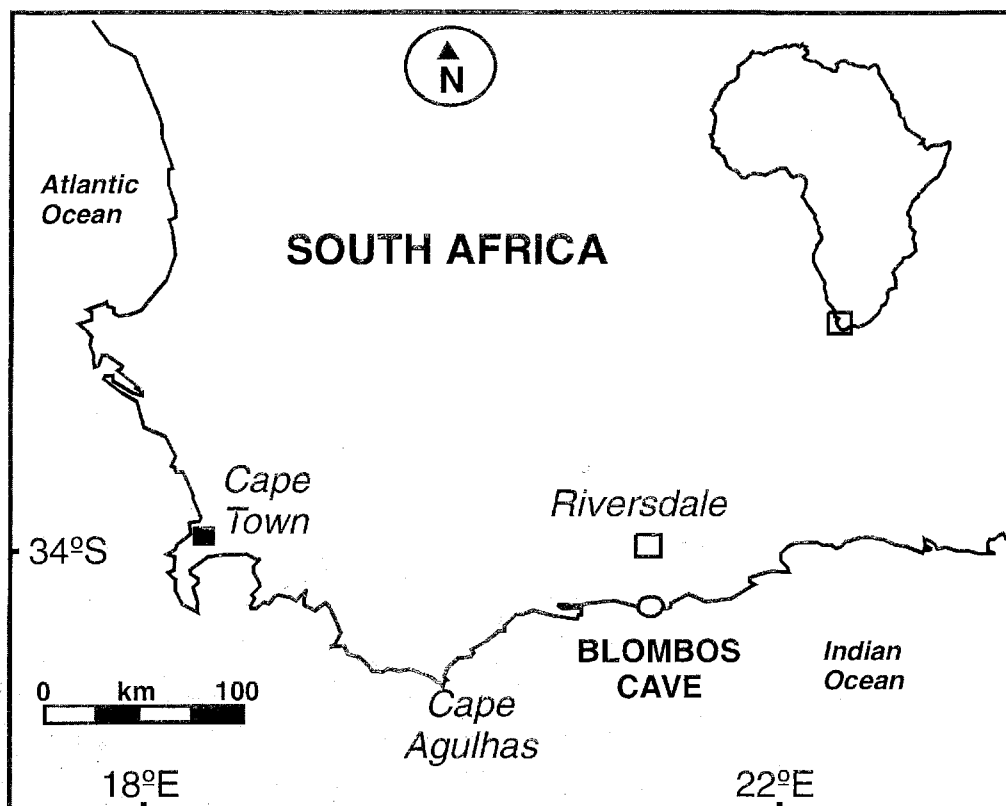
on the Middle Stone Age layers at Blombos. These have proved to be much more extensive than initially realised - at present, the deepest part of the excavation has a standing section 2.7 metres high, and we have not yet reached the floor of the cave! We can now see that the cave is not as small as it seemed at first - it has simply filled up with archaeological deposit.

The Middle Stone Age remains are extremely well-preserved. The cliff in which the cave has formed consists of consolidated dune material, including fragments of shell, so the environment in the site is alkaline, which is conducive to good preservation of bone. In addition, we believe that the MSA deposits may have been covered over fairly quickly and the cave subsequently sealed off by a large dune, which would prevent disturbance.

The uppermost metre or so of Middle Stone Age remains contains a Still Bay assemblage. The characteristic bifacial points are mostly made of silcrete - a fine-grained rock with good flaking properties, although a few are made of quartz or quartzite. Silcrete was probably brought in from the area around Riversdale,

about 40 kilometres away. Bifacial points are remarkably common in the assemblage - they are the most common type of formal tool, followed by scrapers. There are a few uni-facial points and some miscellaneous retouched pieces, but other MSA tool types, such as denticulates and the backed pieces characteristic of the Howiesons Poort are absent.

The process by which the bifacial points were manufactured is of considerable interest. Were they made on flakes, or are they core tools? How was the very fine flaking accomplished? There are almost no large silcrete cores in the deposit, so the original roughing-out of the pieces was done elsewhere, perhaps at the quarry site. There are several patches of very tiny flakes, all of the same raw material (sometimes silcrete, sometimes quartz) in the deposit, so some tools, at least, were finished on the site. Very fine flakes must have been detached by exerting pressure on the area to be removed (pressure-flaking), rather than being struck off, since pressure-flaking allows finer control. The degree of skill required to make these points is truly impressive.



The Still Bay artefacts are associated with sea shells, animal bone, ostrich egg-shell, ochre and bone artefacts. The sea shells demonstrate that, during Still Bay times, the sea shore was close to its present position - a useful clue to dating the site. The coastline has been in its present position for the last 10 000 years, or the current interglacial. Before that, it was at this position 120 000 years ago, during the last interglacial. In the intervening period (the last ice age) it was lower than at present, since much of the sea water was frozen into glacial ice-caps. We know that there were warmer episodes in the last ice age during which the sea shore, along this part of the southern Cape coast, reached to within a kilometre or so of its present position, at 50 000 years ago, at 60 000 years ago, at 80 000 years ago, and at 100 000 years ago. The Still Bay occupation probably dates to one of these episodes, when the sea was close enough for convenient foraging trips to the shore. Preliminary evidence from the dating labs hints that the older dates are the more likely.

The species of shells found in the MSA are the same as those that occur in the area today, further evidence for warm water temperatures. People collected alikreukel, brown mussels, small Venus ear shells (siffies) and chitons, as well as smaller numbers of other species. Animal bones show that they ate mostly tortoises, dune mole rats, dassies and steenbok/grysbok, occasionally obtaining a larger animal such as the extinct giant Cape zebra or quagga (*Equus capensis*) or a rhinoceros. There are a number of seal bones. Ostrich egg-shell is plentiful.

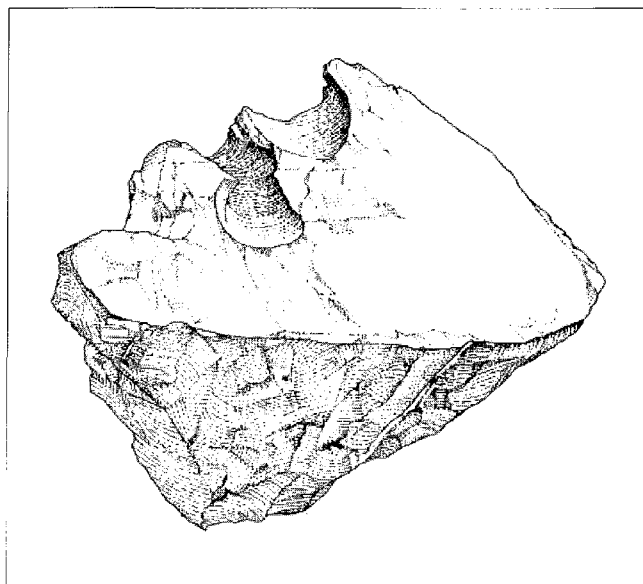
One of the most exciting finds has been bone artefacts from the Middle Stone Age: two symmetrically shaped bone points, similar to those used by Later Stone Age people on their arrows, and about twenty bone awls which were probably used as boring or piercing implements. Bone tools have not previously been recovered from reliable Middle Stone Age contexts; they have been considered characteristic of more recent periods - of the Later,

rather than the Middle Stone Age. Some archaeologists have suggested that the lack of bone artefacts in Middle Stone Age sites, and also in the more-or-less contemporary Middle Palaeolithic sites of Europe, is evidence that people had not yet acquired the flexible, wide-ranging approach to making and using tools that characterises modern humans - in other words, that Middle Stone Age people were behaviourally pre-modern. Proponents of this point of view argue that there is a range of artefacts - read behaviours - in Later Stone Age/Upper Palaeolithic sites which are absent from Middle Stone Age/Middle Palaeolithic sites. Since Later Stone Age/Upper Palaeolithic people were unquestionably modern humans, people like us, the contrast with the Middle Stone Age/Middle Palaeolithic may be read to indicate that these earlier people were different from us, or non-modern. The features most often cited include the use of a range of raw materials, apart from stone, for making artefacts, the use of symbols, shown by the presence of decorative items or works of art, and the more efficient extraction of resources from the environment, including fishing and fowling.

Thus the bone tools from Blombos are significant in that they show that Middle Stone Age people were quite capable of recognising bone as a good raw material for making artefacts, and to use it for this purpose if they chose to do so. In addition, there are fish bones in the MSA levels, further evidence of more advanced behaviour than previously recognised. Other coastal MSA sites, such as Klasies River Mouth, have not yielded evidence of fishing (there are small fish bones from Klasies, but these are likely to have been brought into the site in the stomachs of seabirds, rather than as food for humans). Some of the MSA fish from Blombos are very large specimens, and must have been brought in by humans. Fishing was not as important in MSA times as in the LSA - fish bones are infrequent in the MSA, whereas they are very common in the LSA - but the demonstration that MSA people were capable of fishing is significant.

Thus far, MSA deposit has been excavated only from eight square metres, to varying depths. In January/February this year, we excavated the LSA in a further ten square metres, so that the top of the MSA is now exposed in these squares. Next year, we plan to peel off the MSA, layer by layer, from this larger area, looking for spatial patterning in the distribution of remains that will give us a clue to how people may have used different areas of the cave. Did they make fires in the middle of the site, and sleep around the edges, as LSA people often did? Did they use the same areas for hearths repeatedly? We already have some tantalising clues to the use of space: there are several large boulders in the deposit, and we can see how people camped around and between these boulders, using them as site furniture. One boulder has a relatively smooth area on which ochre was ground. Another very pitted boulder had pieces of ochre stored in the recesses - it was used like a built-in cupboard!

Mapping the spatial distribution of residues, and obtaining larger samples of artefacts and food remains will take many months more excavation, and years of follow-up identification and analysis. Watch this space for reports as the project progresses.



Piece of drilled ochre, Blombos Cave.

SUGGESTED READING

Henshilwood, C. 1996. A revised chronology for pastoralism in southernmost Africa: new evidence of sheep at c 2000 b.p. from Blombos Cave, South Africa. *Antiquity* 70:945-949.

Henshilwood, C. & Sealy, J. 1997. Bone artefacts from the Middle Stone Age at Blombos Cave, Southern Cape, South Africa. *Current Anthropology* 38:890-895.

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NEANDERTHAL DNA - SUPPORT FOR 'OUT OF AFRICA' THEORY*

Hailed as "the biggest breakthrough in Neanderthal studies", DNA research results announced last year have also been described as "a technical tour de force".

Matthias Krings and Svante Pääbo of the University of Munich and Anne Stone and Mark Stoneking of Pennsylvania State University achieved the scientific feat of extracting and analysing a tiny snippet of mitochondrial DNA (mtDNA) from the circa 40 000 - 50 000 year old Neanderthal skeleton - the

type specimen of the species - found in the Neander Valley, Germany, and first described in 1859. The new findings constitute highly persuasive evidence that Neanderthals were a side branch of the human family tree and not direct ancestors of modern humans. It provides further support for the 'Out of Africa'

theory which predicts that our ancestors arose recently in Africa and then replaced other existing human species, such as Neanderthals.

Krings told *Science* of his excitement at the first signs the ancient DNA sequence would differ from that of living humans. Another three months of painstaking work lay ahead to piece together a total sequence of 379 base pairs. Stone repeated the procedure in Stoneking's laboratory in Pennsylvania and produced an identical sequence. "That's when we opened the champagne", Krings added.

The breakthrough consists as much in the experimental and procedural soundness of the study, as in the actual evidence it yields. Spectacular but since discredited claims about dinosaur DNA a few years ago tainted the nascent field of research on ancient DNA. But Krings *et al.* have now placed the study on a secure footing, suggest Ryk Ward and Chris Stringer, with the new Neanderthal findings being "merely a tantalising indication of the landmark contributions that can be expected over the next decade".

In summary, the analysis showed three times more differences between the Neanderthal and modern human sequences than amongst those of modern humans. In other words the Neanderthal sequence lay unambiguously beyond the statistical range of modern human variation. It was "highly unlikely that Neanderthals contributed to the human mtDNA pool", said Pääbo. The results support the idea that modern humans replaced, rather than intermingled with, Neanderthals - and although one sequence from a single individual is not definitive proof of this, other factors make an

exchange of genes from Neanderthals to the modern human population unlikely.

The scientists also calculated that the sequence ancestral to both modern human and Neanderthal mitochondria began to diverge some 550 000 to 690 000 years ago. These results imply over half a million years of independent evolution of Neanderthals and the line leading to modern humans. Viewed against the fossil evidence the divergence coincides with the period when two main lines of *Homo heidelbergensis* (archaic *Homo sapiens*) - one in Europe, another in Africa - became distinct. It now appears most likely that the European line led on to the early Neanderthals as represented by specimens from Atapuerca in Spain and later 'classic' Neanderthals as at Krapina and Neander. The African lineage on the other hand evolved through forms of archaic *Homo sapiens* such as those found at Guomde in East Africa and at Florisbad in the Free State, South Africa - ultimately giving rise to anatomically modern *Homo sapiens sapiens* - the ancestor of all living humans - at between 120 000 to 150 000 BP.

"For human evolution," Chris Stringer told *Science*, this breakthrough in ancient DNA studies "is as exciting as the Mars landing".

* Based on reports by Kahn, P. & Gibbons, A. 1997. DNA from an extinct human. *Science* 277:176-178; Ward, R. & Stringer, C. 1997. A molecular handle on the Neanderthals. *Nature* 388:225-226.



"So why is science on the school curriculum? After all, individuals can lead prosperous and (arguably) contented lives in complete ignorance of science. But at a deep and historical level our perceptions of nature have been radically transformed by science. Evolutionary theory and atomic theory, for example, have influenced our language, our thinking, our artistic and political movements."

- Ralph Levinson, 1996. "Teaching some home truths" *New Scientist*, 14 Dec 1996.

'BUSHMAN WELLS' IN NORTHERN PROVINCE, SOUTH AFRICA.

Cathelijne Cnoops

The Digging Stick of April 1997 contained an article on "Bushman water-holes". During the course of surveying rock art in the northern segment of the Northern Province, we have, sometimes literally, stumbled upon these water-holes in the Limpopo Valley and the Makgabeng plateau.

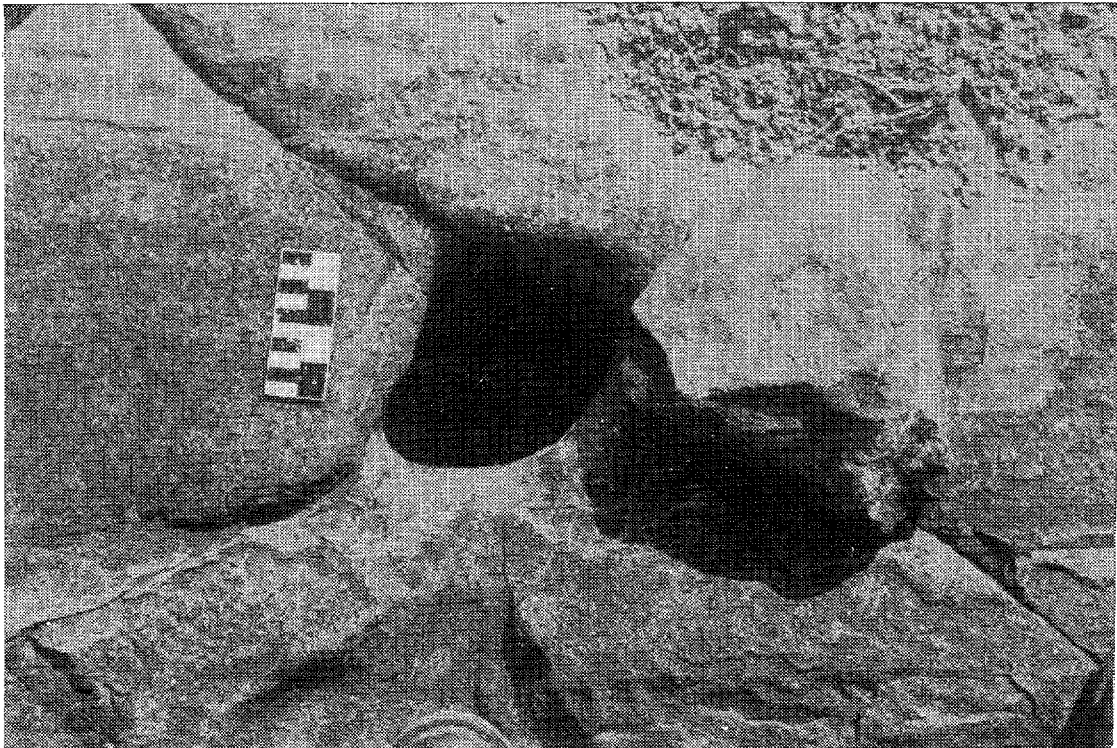
Generally these features are found in horizontal beds of sandstone. They consist of small circular or ovoid openings and are frequently covered by a stone 'lid'. The photograph shows a typical example from the Makgabeng plateau. The hole is some 700 mm deep and widens out from the entrance forming a small cistern which could possibly hold about 200 litres of water. The entrance hole has been abraded from use, and the stone cover appears to have been shaped to fit the hole.

On a number of visits to the area we have noted that this well retains water for about two to three months into the dry season, and would have been a useful additional water supply for hunter-gatherers. An old Sotho informant told us that there were several such

wells in the vicinity, and these had definitely been used by the Basarwa long ago. We have also found a similar Bushman well in the Limpopo-Shashi confluence area. This one too has a shaped and abraded stone lid which fits neatly into the entrance hole.

To the north and west of the Soutpansberg the rainfall ranges from about 100 to 400 mm per annum and is thus a fairly arid region. According to Venda oral history, the San have been absent from the Soutpansberg area for at least 300 years, and from the Limpopo-Shashi confluence for about the last fifty years. Certainly, in more recent history, the region would have been fairly arid, with water being an essential resource for hunter-gatherers. When the many small water-courses feeding the Limpopo River dried up shortly after the rains, small areas of seepage and these Bushman wells would have been a valuable addition to the meagre water resources of the San.

Palaeo-Art Field Services
P.O. Box 168, Louis Trichardt 0920



Lower lip of entrance hole clearly abraded, probably from use. The lid shows abrasion where it fits into the hole.

THRILLERS AND ARCHAEOLOGY: A SIXTH CUTTING

A.J.B. Humphreys

In earlier issues of *The Digging Stick* I have presented lists of novels which can broadly be described as thrillers wherein archaeology or archaeologists play a prominent role. The last such list appeared in Vol 12(3) in 1995. I venture to offer yet another list - the sixth - with the usual disclaimers about the relative literary merit or appeal of any particular book. But again I emphasise that to qualify for these lists archaeology must always be presented in an authentic way and so none of the novels involves the intervention of extraterrestrial beings, Phoenicians (except where appropriate!) or similar nasties which haunt the profession.

Perhaps a good point to start is with a book which involves the best of both worlds. Barrie Roberts' *Sherlock Holmes and the Devil's Grail* (London: Constable 1995) has the famous detective concerned with a riddle surrounding the grave of King Arthur. This involves Glastonbury and other megalith sites in England and Wales, as well as the early use of stereo photography in archaeology. The book is very well written by "the pen of John H. Watson, M.D." and includes some delightful quotable quotes. Some of Holmes' remarks are uncomfortably apt: "I grant you that there are no more dangerous animals than academics when their cherished beliefs are threatened, but their weapons are the heavily sarcastic review, the poisonous paper and the public lecture..." Of historians, Holmes comments, "I hold them in no esteem whatsoever. They rarely observe at first hand, they feed upon each other's mistakes, and they vie with each other to construct the most preposterous interpretation of what they believe to be the facts."

Three other books are concerned with British archaeology. Sharyn McCrumb's *Missing Susan* (New York: Ballantine 1991) has forensic anthropologist Elizabeth MacPherson (who has featured in these lists before) on a Murder Mystery Tour along southern England. Apparently such tours are actually offered and take in localities like Tintagel, Stonehenge, Bath and many other sites. Again the book provides the best of both worlds as there are extensive references to detective fiction along the way. Dr Jeffery Flint, a lecturer in archaeology, becomes involved in the mystery surrounding the disappearance of a student in

Jason Foss' *Shadows in the Corn* (Sutton: Severn House 1993). The background involves Celtic religion and megalithic sites. It has an excellent academic setting, an eccentric museum curator and plenty of jargon, and remarks such as the following about PhD theses: "they don't mark 'em, just weigh 'em." In Andrew Garve's *The House of Soldiers* (London: Collins 1962) a pageant organised to raise funds for further excavations at the Hill of Tara near Dublin is exploited by Irish extremists. The archaeologist hero's knowledge of Ogam script proves to be vital in a matter of life and death.

As always, the Middle East is a source of great inspiration for thrillers. In Jack Higgins' *Sheba* (London: Michael Joseph 1994) the action takes place in 1939 as the Germans mount a secret plot to strike at the Suez Canal. Their desert base is located at the tomb of the Queen of Sheba. Reference to actual nearby sites such as Timna make the story suitably convincing. Ancient scrolls form the basis of the stories in the other two books. Relatively modest in scale is Laura Hastings' *The Turtledove's Secret* (New York: Dell 1992) which deals with a scroll allegedly written by Mary Magdalene. There is plenty of action even if the scroll does get treated with a casualness more appropriate to a daily newspaper! Far more grand in scope is Barbara Wood's *The Prophetess* (London: Little, Brown 1996). Here the end of the millennium is but two weeks away when an archaeologist discovers some ancient scrolls near the Gulf of Aqaba. These could have a revolutionary impact in a world moving towards an anticipated Armageddon. So valuable are the

finds that the FBI, CIA, Vatican and sundry other interested parties get involved in a frantic effort to track down the archaeologist and the scrolls. The book is absorbing, fast-moving and highly entertaining. It does assume, however, some familiarity with the workings of the Internet which plays a pivotal part in the story. Barbara Wood has been mentioned in earlier lists and this latest offering is fully up to standard.

We move across the Atlantic for the next two books. Award-winning Tony Hillerman's *Talking God* (London: Michael Joseph 1990) features his detectives Joe Leaphorn and Jim Chee. The main theme, as one character puts it, is "about the Indians wanting their skeletons back" and consequent tensions between museum authorities and Native American interest groups. The book raises issues particularly pertinent in South Africa today. Amateur archaeological digging in the Cascade Mountains leading to the discovery of a skull is the background to Bette Hagman's *The Death Beads* (New York: Dell 1974). Professional help is summoned but is the skull ancient - and what of the help ...? It is an entertaining book which would make a good TV adventure.

The final book on this list is borderline in terms of the criteria usually set for these lists. It is John Darnton's *Neanderthal* (London:

Hutchinson 1996). The story, inevitably in the realm of science fiction, involves the location of a surviving group of Neanderthal people in the upper reaches of the Pamir Mountains in Tajikistan. Two archaeologists, caught up in rival American and Russian government machinations because of some unique telepathic ability exhibited by the Neanderthals, are dispatched on a deadly expedition. The book is extremely well researched (complete with a bibliography - somewhat exceptional for a novel) and acknowledgement is given to advice received from Christopher Stringer and Myra Shackley among others. The book is a blood-thirsty but thought provoking blend of fantasy and solid fact by a Pulitzer Prize winner. It is this factual element that perhaps justifies adding it to the list. It also makes one reflect again on the observation that, "There are more things in heaven and earth, Horatio..."

On that note, back to the earth - or is it the library shelves?

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Contested images: diversity in Southern African rock art research - edited by Thomas A. Dowson and David Lewis-Williams. Witwatersrand University Press, 1994, 494 pp. Special offer at R70.

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1998 ARCHAEO-HISTORICAL TRANS-CHINA TOUR

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Lilith Wynne this year follows up her previous successful explorations of Egypt, Mexico, Guatemala and Peru with the offer of a tour to China which promises to be a varied once-in-a-lifetime experience. If you are interested and would like to be placed on the mailing list for details, please contact Lilith Wynne (see below).

China - the name probably from the early dynasty of the Ch'in - can claim the first making of silk and invention of the compass, gunpowder, porcelain, printing, paper (and paper money) and possibly ice cream, which was taken to Europe by Marco Polo in 1295!

This being the third largest country on earth, the comprehensive itinerary is an endeavour to cover as much as possible of China's many faces - from cultural relics half a million years old to modern revolution, exciting architecture and breathtaking natural scenic wonders. In addition to visits to archaeological sites - including several not normally on the tourist map - the tour will take in cultural events such as a Peking opera, one of the famed Chinese acrobatic performances and a Tang Dynasty musical concert.

Highlights are to include:

史 Scenic cruise through the famed Three Gorges of the Yangtze River, deeply rooted in history. Stops and sampan excursions up tributaries en route. This is likely to be one of the last chances to do this cruise as the gorges are soon to be swamped by the world's largest dam construction project.

史 From the nation's capital and heart for seven centuries, Beijing, the tour takes in Zhoukoudian, the cave site of Peking Man. Another excursion will be to the Great Wall - not to the very crowded tourist mecca of vendors and curio stalls, but to a less frequented and partly restored section in a wilder part of the countryside.

史 In Beijing itself there are palaces, pagodas, pavillions, temples and of course the Forbidden City.

史 Perhaps the highlight is to be the 300 BC site near Xian where thousands of life-size terracotta soldiers are being revealed by on-going excavations.

史 Close by but further back in time - about 5000 BP - is the excavated and reconstructed neolithic village of Banpo, a matriarchal commune where child pot burials were found. A break from archaeology will be a brief look at a beautiful hot spring where emperors and their concubines languished!

史 At Dazu tour members will be able to experience something of the immense legacy of Buddhist history and art. A horseshoe-shaped grotto - a seldom seen Buddhist refuge - is lined with 15 000 dramatic statues including the famous 31 X 5 m Reclining Buddha.

史 Shanghai, frenetic, wicked cosmopolitan city of the 1930s, and Suzhou, Marco Polo's Venice of the Orient are on the route. A boat journey on the Grand Canal that once linked Suzhou with Beijing in the far north is planned - to pass under arched bridges, appreciate ancient village architecture and visit classic gardens of wealthy retired madarins.

史 Finally the tour group will fly to Guilin, the hauntingly beautiful landscape of jagged limestone peaks captured in misty Chinese watercolours, and travel by boat to Yangsou, a relatively unspoiled village with cormorant fishermen and a colourful market.

The brochure promises a "best value for least rands" 19-day all-inclusive package at around R18 500 (excluding only tipping, airport departure taxes and some lunches). Meals will vary as the tour moves from province to province. Hotels are being selected for ambience and architectural authenticity. The tour will be escorted by national and local guides in accordance with regulations. Contact Lilith Wynne at tel 011-7064781.



BRIEFLY

400 000 YEAR OLD SPEARS

Working just ahead of monstrous rotary bucket excavators at an open-pit coal mine at Schöningen, Germany, in 1995, rescue archaeologist Hartmut Thieme and his team made an extraordinary find. In an accumulation of stone artefacts and more than 10 000 animal bones - mainly horses - were three unambiguous wooden throwing spears. The organic mud deposit in which they were amazingly preserved is well dated at around 380 000 - 400 000 years old. The discovery challenges conventional ideas on the economy and technology of *Homo heidelbergensis*, a form of archaic *Homo sapiens*: "the spears strongly suggest that systematic hunting, involving foresight, planning and the use of appropriate technology, was part of the behavioural repertoire of pre-modern hominids," writes Thieme. "The use of sophisticated spears as early as the Middle Pleistocene may mean that many current theories on early modern behaviour and culture must be revised."

Measuring about 2 m long, the spears were carved from trunks of spruce trees. The tip in each case was carved at the base of the trunk where the wood is hardest, and the spear shaped with long tapering tail. The javelin-like design suggests they were meant for throwing rather than jabbing.

In 1948 a similar spear was found inside an elephant skeleton at Lehringen, Germany,

about 115 000 to 125 000 years old; while in 1911 the tip of what might have been a spear was unearthed at Clacton, England, in deposits about the same age as those at Schöningen. But these came to be interpreted as digging sticks of one kind or another - rather than spears - in line with thinking on the hunting vs scavenging capabilities of Pleistocene hominids. "Hunting has become profoundly unfashionable in discussions of the Lower, and even Middle, Palaeolithic over the past twenty years," comments Robin Dennell, reviewing implications of the new finds. The Schöningen artefacts are unquestionably spears and must have been used for hunting large mammals, he contends. Further, they represent considerable investment of time and skill not previously associated with hominids of the period. The discovery may help explain the earliest hominid colonisation of northern Europe: efficient hunting technology could have been pivotal to survival in a harsh environment sometimes colder than today's.

The large spears imply use by powerfully built people. An extremely robust human tibia found at the 500 000 year old Boxgrove site in England indicates that the earliest colonisers of northern Europe were indeed well built. Another Boxgrove feature that acquires new significance is the occurrence of a circular hole in the scapula of a rhinoceros - could this have been made by a thrown spear? Study of impact marks on bone from other sites may be

a way of detecting wooden spear technology in situations where ancient wooden artefacts are unlikely to have survived.

The Schöningen site is a fluke of preservation. In the mine nearby the giant rotary excavator - its cutting wheel 11 m in diameter - rips out several tons of deposit a minute, day in, day

out. Salvaged from the very edge of destruction, it is miraculous the spears were spared at all.

* Reports by: Thieme, H. 1997. Lower Palaeolithic hunting spears from Germany. *Nature* 385:807-810; Denell, R. 1997. The world's oldest spears. *Nature* 385:767-768.

HIGH RESOLUTION CLIMATE RECORD

The March 1998 *SASQUA Newsletter** reports a spectacular high-resolution Holocene climate record from the Northern Province, South Africa. Stable oxygen and carbon isotope analysis on precisely dated stalagmites from Cold Air Cave - which is in the Makapan's Valley, near the hominid Limeworks site - have yielded a stable isotope record for the last 6000 years with an average resolution of about 10 years. There is less detailed information for the late Pleistocene periods back to 200 000 years. Varying carbonate values track temperature

shifts through time. Significant variance is noted within the Holocene. The Little Ice Age, including a warmer interlude, is well defined in the stable oxygen isotope data. Additionally, laminae (thin growth layers) of the same stalagmites have been analysed, and annual bands identified. Variations in the grey scale of these bands correspond well with tree ring dating records, temperature records of the region, as well as with the stable oxygen isotope data of the stalagmites. The isotopic and laminae characteristics of the stalagmites seem to be determined

by precipitation and temperature, the authors report. On this basis "it may be possible to produce a palaeo-climatic record with yearly resolution for the last 6000 years" for that part of the subcontinent.

* Holmgren, K., Lee-Thorp, J., Repinski, P., Stevenson, C., Svanered, O., Partidge, T., Tyson, P. & Lauritzen, S. 1998. A high-resolution Holocene climate record from stable isotopes and laminae analysis of precisely dated stalagmites from the Northern Province, South Africa. *SASQUA Newsletter* 27:7-8.

HOW 'PRISTINE' CAN PRISTINE BE?

"Neo-ecologists make assumptions about a 'natural' or potential vegetation" in management of the environment, write Karl and Elisabeth Butzer in a recent paper examining the complexity of environmental history in Mexico: "...some idealists have been prone to believe that the environment was 'pristine' prior to 1492".*

Showing how early colonial records in Mesoamerica could assist both neo-ecologists and palaeoecologists as a reference datum for that region, the authors begin by addressing, more generally, the concept of a 'natural' environment. Evidence of variable but sustained human land-use impacts even of pre-agricultural context in both the Old and New Worlds brings into question the notion of a pre-disturbance environment that is relevant to the present. "Holocene vegetation and human land-use co-evolved so that even

the rank order of characteristic species cannot be predicted for a hypothetical 'natural environment'". Recent research reveals deforestation and soil degradation as a result of pre-agricultural land-use in Mesolithic Britain and in Greece. And one of the more dramatic instances cited from precolonial Mesoamerica is evidence that the Petén rainforest was totally cleared during the first millennium AD, suggesting that "primeval" forests seen here by the first Spaniards can indeed regenerate within centuries, perhaps even on degraded soil. That raises doubts about some popular assumptions regarding biodiversity".

* Butzer, K.W. & Butzer, E.K. 1997. The 'natural' vegetation of the Mexican Bajío: archival documentation of a 16th century savanna environment. *Quaternary International* 43/44:161-172.

LETTER TO THE EDITOR

From Neil Lee

Dear Editor,

The Digging Stick 13(3):7-8 (November 1996) contained some rather complimentary remarks concerning the presentation of my collection of colour slides of Southern African rock paintings to the Rock Art Research Unit at the University of the Witwatersrand in August 1996 ("The Neil Lee Collection"). Unfortunately the commentary contained two errors which at the time I simply ignored. The letter from Val Ward (*The Digging Stick* 14(1):8, April 1997) reminds me that I should not have done so.

Ms Ward is quite correct in pointing out that southern African rock paintings were reproduced in colour long before the Abbé Breuil did so. In doing this she has listed a most useful set of references, so some good has come from this faux pas. However, she missed

out on the second point, namely that the Abbé's reproductions "...were done in the 1890s..." This cannot be. He first came to South Africa in 1929 as a result of an invitation to attend a joint British and South African Congress for the Advancement of Science. A condition of his acceptance was that arrangements be made for him to visit rock art sites under the guidance of local specialists. This he did between July and October of that year. He returned to South Africa in 1942 in response to a personal invitation received from the late Field-Marshal Smuts. I have no idea where the reference to the 1890s came from.

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