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SOME LITTLE KNOWN CHAPTERS IN THE EARLY HISTORY OF THE *MAKAPANSGAT FOSSIL HOMINID SITE*

by

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ABSTRACT

The opening up of the Makapansgat Limeworks deposit as an early hominid site was closely linked with the early years of the Bernard Price Institute for Palaeontological Research. Much of the history of the events leading up to James Kitching's recovery of the first australopithecine partial calvaria in 1947 is either scattered or remains unrecorded. An attempt is made here to recount the roles of W.I. Eitzman, R.A. Dart, R. Broom, C. van Riet Lowe, B.D. Malan, J. Kitching and his brothers Ben and Scheepers, R.J. Mason and Dr. Bernard Price in the revelation of the scientific significance of those Limeworks and of other important sites in the area, the Cave of Hearths, Rainbow Cave, Historic Cave and Mwulu's Cave. The historical part played by six student expeditions to the area in 1945-1947 is described. Save for palaeontological papers by J.S. Jensen, O.D.v.d.S. Mollett and M.M. Dale, and archaeological ones by P.V. Tobias, the major impact of these ventures has not hitherto been analysed. It is shown that the first expedition was responsible for drawing R.A. Dart back into the field after 20 years of virtual abstinence, for setting afoot a series of further ventures in that area, and for leading to the uncovering of the first hominid specimens from the Limeworks from 1947 onwards. New evidence is presented bearing on the relationships between R.A. Dart and R. Broom, which suffered strain after both the Sterkfontein discoveries of cercopithecids in 1936 and those at the Makapansgat Limeworks in 1945. A note is added about the original extensive report on the first student expedition, which independent referees had recommended to the Wits University Principal, H.R. Raikes, should be published. As a result of the unexplained loss of this report, at or en route to the publisher, it remains unpublished to this day.

KEYWORDS: Makapansgat, *Australopithecus*, Cercopithecidae, Buffalo Cave

INTRODUCTION

The Makapansgat Limeworks near Potgietersrus in the northern Transvaal was the fifth South African site to yield fossilized remains of early hominids. In September 1947, James Kitching discovered the posterior part of a calvaria which Dart made the holotype of a proposed new species, *Australopithecus prometheus*. This discovery followed the prior revelation of early hominids at four sites, namely those of Taung, Sterkfontein, Kromdraai and Cooper's B. Although Makapansgat is not the richest South African site to judge by the numbers of hominid specimens, it includes some of the most beautifully preserved Plio-Pleistocene fossil remains yet recovered from South and East Africa (Tobias 1972).

The recorded history of the complex of caverns in the Makapansgat area goes back to 1854, the year of the siege by the Boers of hundreds of Ndebele people of the Kekana lineage in the Historic Cave on the farm *Makapansgat* (Hofmeyr 1993). From then until 1925, these caves and that historical episode are mentioned in the accounts of W.L. Distant (1892), Paul Kruger (1902), G.G. Munnik (n.d.), G. Preller (1918-1925) and others (Figure 1). It was not, however, until the 1920s that the scientific potential of some of the caves was realised. At that time Wilfrid I. Eitzman, a teacher of mathematics and science, and sometime vice-principal, of Pietersburg High School (1919-1941), first drew the attention of the world of science to the rich fossil hoards at the Makapansgat Limeworks.

THE ROLE OF WILFRID I. EITZMAN

According to his own account, Eitzman (1958) first set eyes on the Makapansgat Valley in September-



Figure 1: A photograph stated to have been taken at the entrance to the Historic Cave in the Makapan Valley in 1912. At that date, 58 years after the siege of Kekana people in the cave, the picture shows that large parts of the defensive walling which they constructed across the mouth of the cave were still relatively intact. The identity of the person is unknown. The photo was given to the author by the late Mr. Derryck Humphriss of Benoni.

October, 1922. At the main limeworks the removal of lime had already resulted in a quarry "about 15 feet deep". On the other side of the valley, "exactly opposite the quarry", he found bones embedded in brick-red breccia. This probably referred to what came to be known later as the Buffalo Cave, though we cannot exclude the possibility that he was referring to one of a number of other breccial outcrops along the south-facing scarp of Zwartkrans. In fact, after mentioning the putative Buffalo Cave deposit, Eitzman states, "I wandered about in the valley and found several more such outcrops." (Eitzman 1958, p. 178). These "Swartkrans prospects" were later explored on the student expeditions of 1945-1946 and mapped by H.B.S. Cooke, whose plan of the sites on *Makapansgat* and *Swartkrans* was reproduced by Dart & Craig (1959, p. 90), and is reprinted here (Figure 2).

By the time Eitzman returned to the valley in 1924, in the company of D.J.J. Bezuidenhout, the road inspector for the district, the White Limes Company was operating vigorously at the Makapansgat Limeworks. Eitzman speaks of the miners penetrating into the hill and of fossil bone being apparent "on both sides of the tunnel". The breccia, he states, was similar to the brick red-brown breccia which he had seen two years earlier, on the opposite side of the valley (?Buffalo Cave). Lime kilns were being erected and a wood and iron dwelling was being constructed on the rising ground east of the Limeworks.

Through the courtesy of the White Limes Company, Eitzman collected samples of fossil bone in breccia, and sent some to the South African Museum (Haughton 1922; Malan 1988), but he failed to gain the attention of any South African scientist until 1925. In February 1925, the Taung skull, which R.A. Dart (1925a) made the type specimen of *Australopithecus africanus*, was announced to the world. During April 1925, Dart gave a series of lectures on physical anthropology in a vacation course for teachers at the University of the Witwatersrand. Among those who attended was Eitzman. He told Dart about Makapansgat. On his return to the northern Transvaal (now officially named the Northern Province), Eitzman revisited the Limeworks and stood amazed at the thick seams of bone which the further penetration of the limeworkings into the hillside had laid bare.

Large pieces of breccia rich in bones were sent to Dart's Department of Anatomy at the University of the Witwatersrand Medical School. According to Dart (1925b, p. 454),

> "The material consists of a bone breccia containing thousands of comminuted bone fragments. The pieces of bone are so small that the animals to which they belonged cannot be ascertained with certainty, but here and there are teeth of Ungulates, small and large, of the "bok" family. As the deposit seemed to be of the cave variety and some of the bone fragments had a blackened, charred appearance, the agency of man in its formation was highly probable."

Intrigued by the blackening, and impressed by the results of some chemical tests that Eitzman had performed in the school laboratory at Pietersburg, Dart arranged for Dr. J. Moir of the Government Chemical Laboratories and Dr. F.W. Fox of the South African

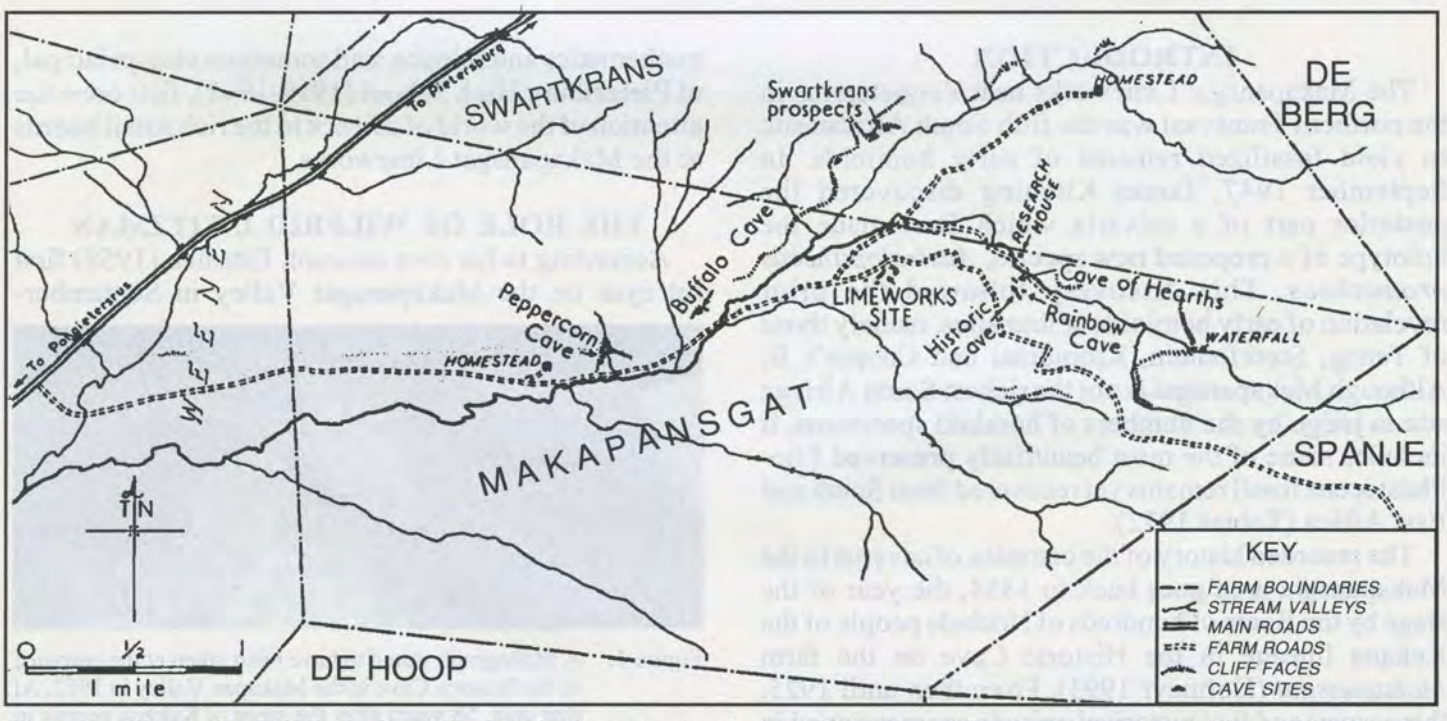


Figure 2: Plan by Dr. H.B.S. Cooke of the farm **Makapansgat** and parts of the adjacent farms, showing the positions of the principal named sites referred to in the text. The "Swartkrans prospects" were explored on the second and third student expeditions in 1945-1946 and a set of weathered hand-bones was discovered *in situ* in one of these deposits along the cliff face. This *Swartkrans* farm is not to be confused with the Swartkrans hominid site close to Sterkfontein. Mwulu's cave lies on the *Spanje* and *Portugal* farms to the east (off the map). Peppercorn cave and Ficus cave (not shown) were not visited on the six student expeditions of 1945-1947.



Figure 3: Some of the manganese-blackened bones *in situ* in the Makapansgat Limeworks deposit. Bones of this colour were sent to R.A. Dart by W.I. Eitzman in 1925 and, following chemical analysis, led to Dart's inference that they had been blackened by the action of fire and that the deposit represented a kitchen midden resulting from human occupation. Later it was concluded that the blackening was induced by the presence of manganese derived from the dolomite walls of the cave.

Institute for Medical Research to investigate some of the bone fragments (Figure 3). Their examination appeared to indicate the presence of a high percentage of free carbon. When Dart presented a brief report at the meeting of the South African Association for the Advancement of Science at Oudtshoorn on 7th July 1925, he claimed that the Makapansgat bone bed was the "kitchen-midden" result of human occupation at a remote epoch (Dart 1925b). Dart ended his communication with an appeal for the careful invigilation of the process of blasting at the site and for the complete geological history of the deposit to be investigated at the earliest opportunity. However, we have no evidence that Dart visited the site at the time, nor did it rate a mention in his chapter, "Anthropology" (Dart 1929), in the handbook on *South Africa and Science* (McCrae 1929) which was prepared for the meeting of the British Association for the Advancement of Science in Cape Town and Johannesburg in that year. [In the historical foreword to R.J. Mason's book *Cave of Hearths, Makapansgat, Transvaal* (1988), B.D. Malan states, "Two years later [1927] he himself collected fossils from the site now known as the 'Limeworks'...", but as both Eitzman and Dart had just been mentioned, it is not absolutely clear to which of the two men 'he' refers (Malan 1988, p. 9).]

Eitzman's account tells us that he conducted numbers of visitors over the Limeworks in the later 1920s, such as the Austrian palaeobiologist, Othenio Abel in 1928, and Lidio Cipriani, the Italian physical anthropologist in 1929. He apparently also played a part when some of the British Association visitors called at Makapansgat, on their way to the Zimbabwe Ruins in 1929. By that time, recalled Eitzman, "The mining had penetrated to the end of the first great cavern but some of the large bone stacks were still intact." (Eitzman 1958, p. 179).

Eitzman's visits continued as late as 1933-1937, by which time, he reports, at least 60,000 tons of lime had been removed from the Limeworks. From memory he drew in 1958 the stratigraphic sequence he had observed at the Limeworks in the early years of the mining of the lime deposit. The layer shown as Bone Breccia 2 matches the grey breccia which Partridge (1979) recognised as Member 3 of the Makapansgat Formation. It was apparently from Eitzman's Bone Breccia 3 that he obtained the water-worn cobble "of many faces" which H.B.S. Cooke reported "is probably a piece of banded ironstone but could possibly be a banded jaspertite" (cited by Eitzman 1958, p. 181).

Eitzman recognised the semblance of a human face on this cobble. Although he reported that both R.B. Young and H.B.S. Cooke regarded the impression as due to natural wear, Eitzman held that even if it were so, "the material is alien to the dolomite, so it must have been picked up and treasured by those responsible for the bone layer. That is why I have kept it ever since I first showed it to Professor Dart in 1925: and have now handed it over to him . . . I regard it as certain that this water-worn pebble of foreign material was carried there by *Australopithecus*." (Eitzman 1958, p. 182). Turning the cobble over and inverting it, Dart thought he could find not one, but three or four human faces caricatured on it and he supported Eitzman's claim that it had been deliberately collected and cherished by the Makapansgat *Australopithecus*: "This pebble, in brief, may not have been 'the god of those people', but it could have played an appreciable role in awakening the thinking and exciting the imagination of those nascent intelligences in ways beyond our comprehension, profound as we may deem them to be." (Dart 1974, p. 169). Building on these ideas, Irwin (1974) speculated: "Was this the beginning of magic and ritual, or was it simply the first exhibit in an ape-man's art gallery?"

Long before ape-man remains came to light, there was the common story of human remains found and lost. Says Eitzman,

> "In 1925 a complete fossil man was found just near the end of the first great tunnel in a crevice above the grey breccia on the east side. This fossil was destroyed and cast into the lime kilns. A certain person employed by the Northern Limes was responsible. The truth of this was beyond doubt; schoolboys heard about it independently. I questioned many natives who worked at the quarry and they confirmed it. The same person boasted about it as late as 1929 in the presence of Professors de Sitter [an astronomer from Leiden], [Ruggles] Gates [of London] and others."
>
> (Eitzman 1958, p. 182).

Eitzman indicates also that, after the lime company stopped working in 1935, another company removed from the dumps even the lowest grade of limestone to put

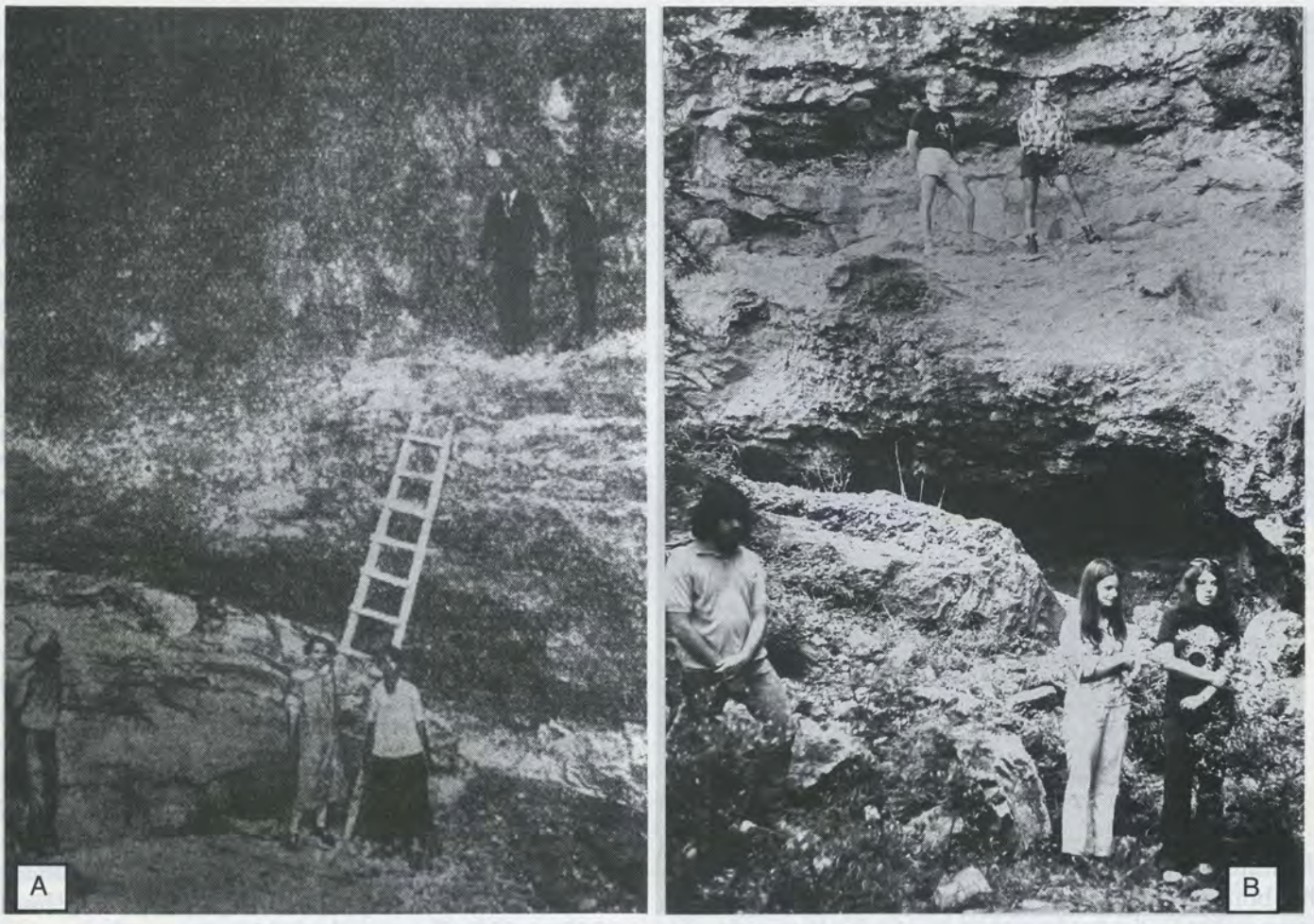


Figure 4: A comparison between (A) a photograph taken by W.I. Eitzman in the Makapansgat area in May 1925 and (B) one taken at Buffalo Cave by P.V. Tobias in 1973, with students posed in similar positions to the figures in the earlier picture. In the Eitzman photograph (published by courtesy of *The Star* newspaper), the two figures of men on the ledge were touched up about 1957, as they had faded and appeared to be reproduced indistinctly in the two earlier published versions in 1925 (*The Star*) and 1958 (*South African Journal of Science*).

into kilns at Potgietersrus. This resorting of the dumps, he says, explains why only a fraction of the original bone breccia had been recovered.

MISIDENTIFICATION OF A PHOTOGRAPH?

In the middle of May 1925, Eitzman took a photograph in the Makapansgat area and it appeared in *The Star*, Johannesburg, of 10th August, 1925. Eitzman later wrote of that photograph, ". . . it is the only photographic evidence available today of what the Makapansgat cavern looked like before the lime and bone-breccia had been almost completely removed from [it]" (Eitzman 1958, p. 178). The photograph thus purported to be of the Makapansgat Limeworks and the caption read, "*A storehouse of fossils*: The Lime working at Makapans, in the Northern Transvaal, which are described today. The strata in which numbers of fossils exist is [sic] at the level where the two men are standing in the upper part of the photograph." (Figure 4A). The persons shown are Mr. Mahlala (left), Wilfrid Eitzman's wife Annie (middle) and Mrs. Petrus Verceuil née Martins (right) who died in 1928. Above are the mine manager, Mr. Darling (left) and his assistant (right).

When Eitzman showed this photograph to Dart in August 1957, Eitzman indicated that the breccial layers shown were the bone and lime beds at the Makapansgat Limeworks. Dart accepted Eitzman's identification of the photograph as showing what the Limeworks had looked like 32 years earlier. A copy of the photograph was reproduced with Eitzman's (1958) article in the *South African Journal of Science* in July 1958. In that article Eitzman stated, "My copy of that issue [of *The Star*] had [faded] so badly by 1957 that Professor Dart tried to get the original block from *The Star*, but it had been destroyed. The editor, however, kindly arranged for a reproduction to be made from their own copy of that issue. It also has faded..." (Eitzman 1958, p. 178).

From the first time I set eyes on that photograph, I strongly suspected that it had been taken not at the Makapansgat Limeworks but at the Buffalo Cave, which I had visited and worked at repeatedly from 1945. Among the features shown in the old photograph which tally with those to be seen in the Buffalo Cave, are the following: As in Buffalo Cave, there is a thick ledge on which Mr. Darling and his assistant are standing and this is sufficiently difficult to climb on to

that they have preferred to use a ladder. "The strata in which numbers of fossils exist" (*The Star*) including the bone-bed being pointed out by the manager's assistant match the layers of bone which formerly contained several crania and horn-cores of *Bos makapaani* at the time of our visits to Buffalo Cave in 1945-1946: although subsequently vandalised, these layers of very white bone are still evident *in situ* above the ledge in Buffalo Cave. The hollow beneath the ledge in the 1925 photograph matches a similar recess on the under surface of the thick ledge at Buffalo Cave. [In passing, it may be mentioned that the author extracted a bovid calvaria with endocranial cast in position from the dark red breccia in this recess in 1945-1946; and this breccia which is more accessible than the pink breccia above the ledge might have been the deposit from which Broom extracted the type specimen of *Bos makapaani* eight or nine years earlier (Broom 1937).] There is a large fallen mass in the left foreground, which in the old photograph and in Buffalo Cave tapers from the left (where Mahlala is standing) to the right (where the ladies are). The contour of the lower margin of the ledge – with a right-angled downward dip and a curving away to the right, and a semidetached fragment partially separated by a crack from the curved margin above it (some distance to the right of the ladder), are virtually identical in the 1925 photo and Buffalo Cave. Moreover, there is in both a smaller collapsed block beneath the ledge, reducing the darkly-shadowed recess to a narrow space running to the right.

To bring these resemblances out more clearly, in 1973, I posed some of my students in corresponding positions at Buffalo Cave. The resulting photograph (although taken from a slightly different angle from the 1925 picture) is a close match of Eitzman's photograph in general topography and in all details mentioned (Figure 4B). We know that Eitzman visited the side of the valley where Buffalo Cave is situated. Moreoever, limeworking operations were carried on at Buffalo Cave and the old limeworkers' roadway is still in evidence. The most reasonable interpretation is that when he examined his photographs after the May 1925 visit, Eitzman could well have confused a picture taken of Buffalo Cave with a view of the rapidly changing face of the Makapansgat Limeworks.

ROBERT BROOM AND THE MAKAPANSGAT VALLEY

In September 1936, Broom visited the valley and recovered from the large cave deposit opposite the Limeworks part of the skull of a dwarf buffalo which he made the type of a new species *Bos makapani* (Broom 1937). The cave subsequently came to be called the Cave of the Buffalo, or simply Buffalo Cave. Gentry (1978) considers this form to be an ovibovine species, though of uncertain generic identity. Because of the distance from Pretoria, Broom did not continue his collecting activities in the Makapansgat valley, but he did receive at the Transvaal Museum part of the lower jaw of a large fossil giraffid that a lady had picked up, presumably at the Limeworks. Broom states that "This giant giraffe may prove to be *Griquatherium cingulatum* Htn., but as the type is only an upper molar it is impossible to be sure whether this fragment of lower jaw is the same or different." (Broom & Jensen 1946, p. 337).

Broom's association, in 1945 and 1946, with the Wits Anatomy Science students and their expeditions to the Makapansgat Valley is discussed below.

VAN RIET LOWE, MALAN AND THE MAKAPANSGAT VALLEY

In 1936, the Historical Monuments Commission (later the National Monuments Council) considered the possibility of declaring the Historic Cave a national monument and asked C. van Riet Lowe to report on the cave. Lowe was not only a member of the Commission, but also Director of the Archaeological Survey of the Union of South Africa. He visited the site in January 1937. Close to the Historic Cave, he found an adit which had previously been abandoned by lime workers. Their drive had laid bare a wall of breccia from which the supporting lime and dolomite had been removed. In the exposed face Lowe observed an ashy layer which he regarded as a hearth and he named the site the Cave of Hearths.

In June 1937, Lowe visited the site again, together with Professor and Mrs. R.F.A. Hoernlé of Wits University and Mr. F.R. Paver, the Editor of *The Star* (Johannesburg). Between the January and the June visits, the breccia forming the right face of the drive had collapsed along a presumed horizontal plane of weakness thought due to an occupational level. Numerous stone tools, including polyhedrals, a hand-axe and a cleaver, and many flakes were recovered from the collapsed breccia, and their features suggested a late phase of the Earlier Stone Age. Bone fragments were apparent in the overhanging roof above the collapse. A further visit was paid to the Cave of Hearths in October 1937 by Lowe, B.D. Malan, Mrs. Alice Bowler-Kelly from Paris, and Mr. John Harcus (whose name is recalled in the archaeological site known as Harcus Donga at Germiston). Further collapsing had meantime occurred. It was clear that propping of the unsupported overhang and examination of the fallen debris were urgent necessities. Mrs. Bowler-Kelly offered to defray the costs of the initial shoring of the overhang. On this third visit, the Rainbow Cave was discovered and named thus, because of the multi-coloured layers of ash in an extensive system of hearths. Middle Stone Age tools were recovered.

In 1938, Lowe published his first account of the Cave of Hearths and in the same year Dart, Broom and Cooke visited the site. Malan and A.G. White of the Transvaal Museum broke up some 13 tons of the collapsed breccia in September 1938, recovering numerous stone tools. Cooke and two senior students made a geological survey of the area in 1939. A report

on the Cave of Hearths and the Rainbow Cave was published by Lowe in 1943. After World War II, L.C. King (1951) published the results of a geomorphological survey of the caves in the Makapansgat valley, and still later, C.K. Brain (1958) made comprehensive and detailed studies of the cave deposits as part of his doctoral work.

Interest was revived in the area in 1945 when P.V. Tobias organised the first of a series of student expeditions from the Wits University to the Valley, these having as objectives studies and collecting in the Cave of Hearths, Rainbow Cave, Historic Cave, Makapansgat Limeworks, Buffalo Cave and Mwulu's Cave.

THE CAVE OF HEARTHS, DR. BERNARD PRICE AND DR. R.J. MASON

That remarkable benefactor, Dr. Bernard Price, served the University of the Witwatersrand in many ways including the benefaction which enabled the University to establish the Bernard Price Institute for Geophysical Research. He offered to provide the funds for the resumption of work in the Cave of Hearths. The Bernard Price Foundation for Palaeontological Research was set up with a Board of Control which included H.R. Raikes (Principal of Wits University), Dr. Price himself, R.A. Dart (Anatomy), T.W. Gevers (Geology), C.J. van der Horst (Zoology), R. Broom (Transvaal Museum, Palaeontology), C. van Riet Lowe (Archaeological Survey), F.G. Hill of the Wits University Council, and subsequently S.H. Haughton (Geological Survey). Following Bernard Price's death in 1948, he endowed the University with a large sum which ensured the conversion of the Foundation into a permanent Institute.

It was with this generous financial support that the excavation of the Cave of Hearths was begun in April 1947 by Captain Guy Atwater Gardner, who had excavated in Egypt and under Leo Fouché at Mapungubwe, northern Transvaal. After Gardner resigned six months later, James Kitching was appointed to excavate the Cave of Hearths from October 1947, under the direction of Lowe, Malan and Cooke, and with the help of his brothers, Ben and Scheepers Kitching. The visits by Teilhard de Chardin in 1951 [followed by a second visit in 1953] and by George B. Barbour (1949), both of whom had worked at Zhoukoudian in China, led late in 1952 to a generous grant by the Wenner-Gren Foundation for Anthropological Research to Lowe for the Cave of Hearths dig (Malan 1988). In 1953 the Archaeological Survey was joined by Revil J. Mason and he was placed in charge of the field operations at the Cave of Hearths. To him, in the main, is owing the monumental excavation of the Cave of Hearths, while members of the Bernard Price Institute continued to help with the field work from time to time. At Mason's hands it became, and remains, the first excavated and completely published South African site showing a remarkable stratigraphic sequence that embraces Early Stone Age, Middle Stone Age, Late Stone Age, Iron Age and historical artefacts, fauna and human remains (Mason 1988).

THE FIRST OF THE STUDENT EXPEDITIONS OF 1945-1946

Ever since R.A. Dart set up the Medical BSc course in Anatomy and Anthropology at the Wits Medical School in 1923, there had been a tradition of fieldwork by third year medical science students. In 1924, a member of the first such class, Josephine Salmons, had borrowed from her fellow-student, 'Pat' Izod, a fossil baboon that his father E.G. Izod, had brought to Johannesburg from Taung. This unleashed a chain of circumstances leading to the recovery of the Taung child skull in November 1924 (Tobias 1984). In 1935, another of Dart's students, Trevor Jones, recovered baboon crania from Sterkfontein (Jones 1937). Bachelor of Science student Harding Le Riche, and a lecturer G.W.H. Schepers, in 1936 obtained more cercopithecids from Sterkfontein: when they took these to Broom, another sequence of events was set on foot, leading to the recovery of the first adult *Australopithecus* nine days later, on 17th August 1936 (Broom 1936, 1951).

A similar train of events started when, in July 1945, members of my own Science class discovered the first cercopithecoid fossil specimens to be found at the Makapansgat Limeworks and the first hominid specimen was recovered there by J.W. Kitching two years and two months later. Shortly after our first Makapansgat expedition, we obtained the first fossil baboon specimen at Gladysvale: but in this case the latent period before the first hominid remains were found was 47 years (Berger, Keyser & Tobias 1993).

Lectures which my third year medical B.Sc. class received from Broom once a week fired us with enthusiasm for field-work and palaeo-anthropology. This must have been apparent to our mentor for, on 12th May 1945, Broom wrote to Mrs Eunice Wells (the wife of Doctor, later Professor L.H. Wells), "My lectures at the University...seem to have given some pleasure to the students." We made our first excursion from 5th to 10th May 1945 to Sterkfontein, Kromdraai, Bolt's Farm and Gladysvale. So successful was this venture that we determined to plan a larger undertaking in the July vacation and to make it multidisciplinary.

It was almost by chance that we chose Makapansgat for the winter expedition. We first consulted Professor John Phillips, head of the Botany Department, and he suggested the Zoutpansberg as the most suitable spot. When we found from our atlas that this was nearly 400 miles from Johannesburg, we presumed that the rail fare would be exorbitant. Halfway, approximately, lies Potgietersrus, which I thereupon suggested. We returned to Phillips and, as soon as we mentioned Potgietersrus, he told us about the Makapan Valley, including its patch of relic, Knysna-type forest (which he had previously surveyed). He wrote to the Maguires of Potgietersrus on our behalf, helped us to obtain a railway concession, and sent us across to Professor Van Riet Lowe. Like Phillips, Lowe was extremely helpful, giving unfettered access to his Makapansgat files and with B.D. Malan aided us in a myriad ways. Enthusiastic support was



Figure 5: View of the Makapansgat Limeworks forty years ago, as captured by telephoto lens from a point across the valley close to the boundary between *Makapansgat* and *Swartkrans*. Of the Limeworks itself, three tiers may be seen: in the foreground, nearest the road, are white dumps of spent lime. In the second tier behind the lime dumps are dumps of breccia interspersed among deep lime kilns through which passed many thousands of tons of limestone between the 1920s and about 1940: it is from this second tier that enormous quantities of bones were recovered between 1945 and about 1965. The third tier is marked by *in situ* material penetrated by the limeworkers' major drives.
Photo by Alun R. Hughes.

given also by Professor T.W. Gevers of Geology. When Broom lectured to my class on 6th June 1945, we asked him to tell us about the palaeontological remains in the Makapansgat area and he, too, was most encouraging. As part of our preparations we received talks from Lowe and Malan on South African archaeology and on how to recognise stone tools. (There was at the time no Department of Archaeology at Wits and Lowe was designated an Honorary Professor.) We interviewed the Abbé Henri P. Breuil as he was on the eve of returning from South Africa to France: his chief advice was that we avoid the nettles near the entrance to the caves. Professor C.J. van der Horst was most helpful and materials needed by the zoology students were loaned by his department. Professor Dart was favourably disposed and encouraging: he reminded us that it was exactly 20 years since he had first drawn attention to the significance of the Makapansgat Limeworks as "a site of early human occupation" (Dart 1925b).

Our expedition lasted from 28th June to 8th July 1945. We took the train to Potgietersrus, spent the night camped in and around the Maguires' house, and hired Mr. Amm's truck to take us out to the Makapansgat Valley, where we lived under canvas.

Apart from the work of the geology, botany and zoology students, some of the medical science students spent their time breaking up collapsed breccia at the Cave of Hearths and the Rainbow Cave, and collecting the archaeological objects laid bare. From the Rainbow Cave breccia, I recall recovering a superb circular scraper, with which Lowe was later so impressed that he declared it alone had justified the entire expedition! The other group of medical BSc. students worked at the Makapansgat Limeworks (Figure 5). On 2nd July, they recovered the first primate known from the Limeworks: there were a cranium, endocast and close by a mandible. The jaw which was recovered by the deputy leader, Joseph Stokes Jensen, was subsequently made the type of a new species, *Papio darti,* named in honour of Prof. R.A. Dart (Broom & Jensen 1946). However, the authors added, "So markedly different is the 3rd molar that there seems some reason for regarding the fossil form as being worthy of being placed in a distinct genus." (p.340). Later, a number of other specimens from Makapansgat were referred to the same species and Kitching (1953) proposed to transfer the species to the genus *Gorgopithecus*. However, Freedman (1957) demonstrated that this Makapansgat taxon belonged to the genus

Simopithecus. The latter genus, in turn, has since been relegated to the status of a subgenus under *Theropithecus* (Jolly 1972). Eisenhart (1974) thus pointed out that the valid name for the species would be *Theropithecus (Simopithecus) darti* (Broom & Jensen 1946). Later usuage has tended to drop the subgeneric nomen and the species is most commonly referred to simply as *T. darti* (e.g. Delson 1984). Other fauna which we recovered from the Limeworks included equid and bovid specimens.

Broom was very pleased with what we had achieved and was especially impressed that we had found a new type specimen of cercopithecid. As class representative and expedition leader, I found myself writing to him on 8th August 1945 –

> "We were all very encouraged by the favourable manner in which you viewed our recent expedition, and the several finds which were made. You have more than kindled a spark for the future, in several of us, and I am sure that your work on anthropology and palaeontology will be taken up and pursued in this fruitful field of South Africa."

In reply he wrote to me on 10th August 1945,

> "...I saw enough [of your Makapan finds] to know that you are on a good wicket. A brief look over your fossils showed that you have two skulls of Primates which when cleaned out may prove to be new and may help us to date the other fossils. You have one or two antelopes which should be identifiable at least generically. You appear to have the tooth of [a] new animal quite unknown to me. All this shows you have been working in a bed of an age different from the Kromdraai and Sterkfontein deposits. In fact you are exploring a Terra Nova. Quite likely in the same deposit you may find some new sort of early man or pre-man which may be even more important than the discoveries made at Taungs or Sterkfontein or Kromdraai.
>
> "Good luck to you all. Your explorations may prove to be quite as important – far more important than Stanley's opening up of The Dark Continent.
>
> Sincerely - R. Broom"

On 27th September, Broom followed this up with a letter to our lecturer Dr. Alexander Galloway:

> "You might tell the students that they have made a discovery of considerable importance. The 'baboon' they found at P.P. Rust [=Potgietersrus] appears to represent a new genus. Probably it is also a new species. I have named a fossil "baboon" *Parapapio major* from Kromdraai, but this is only known from a few upper molars. Of the P.P. Rust specimen we only have lower jaw teeth. Still I feel almost sure that it will turn out to be new. Certainly it is not a *Parapapio*.
>
> Please ask them to do no further development till I see them – as they may do harm. Of course the beast is clearly a Cercopithecid, and not a *Papio*, a *Parapapio*, nor a *Dinopithecus*... This will cheer them."

FURTHER EXPEDITIONS TO THE MAKAPANSGAT AREA, 1945-1947

That first student expedition to Makapansgat had important consequences. Our revelation of extinct cercopithecids at the site kindled in us the high expectation that hominids would follow (Tobias 1945a). We were well aware that, at both Taung and Sterkfontein, the recovery of cercopithecids had presaged the discovery of hominid specimens.

There followed six more expeditions from the Anatomy Department in the ensuing eighteen months. In September 1945, I led a team on our second expedition to break up breccia and collect fossils at the Makapansgat Limeworks. On our third expedition in December 1945 (our student group this time being joined by Eric Williams, the Senior Technician of the Anatomy Department and his brother Dennis), we recovered a number of additional "baboons" and monkeys. Our finds in December 1945 included the type specimen of a new genus and species. It was described by one of the Anatomy Honours students, Ollerais Mollett (1947), and named *Cercopithecoides williamsi*, after Eric Williams who recovered it. Its affinities were not appreciated at the time, but on a later visit to Johannesburg, L.S.B. Leakey declared it to be a colobine and after careful comparative studies this reassignment is now accepted: *Cercopithecoides* is one of the recognised genera of the Colobinae, though it appears to be closely related to *Paracolobus* (Simons & Delson 1978).

The fourth expedition took place from 30th May to 2nd June 1946: we were accompanied by Professor and Mrs. Dart and their two children. Physically, it marked the return of Dart to the field. It might well have been his first visit to the Limeworks or, at least, the first since 1927 (Malan 1988), for his visit in 1938 had had the express purpose of seeing the Cave of Hearths.

The fifth student expedition, in July 1946, was led by a fellow Honours student of the Anatomy Department, M. Maureen Dale. She afterwards published an account of suid fossils from the Makapansgat Limeworks, for one of which she created the new genus *Potamochoeroides* (Dale 1948). At the same time I participated in the excavation of the Rose Cottage Cave at Ladybrand, O.F.S., under Malan and Lowe. On this dig, I learned systematic excavation technique which thus equipped me to obtain a permit for the ensuing venture.

As the sixth venture, in January 1947 I took a student team, as well as anatomy technician Owen Jones, to make a systematic excavation of Mwulu's Cave, about eight kilometres from the Makapansgat Limeworks. Brian Maguire had first shown us this cave on one of the preceding expeditions, his interest having been aroused by a botanical feature, the rooting in the deposit, and the growth in creeper fashion along the surface, of a *Podocarpus* tree. It was while I, on all fours, was being shown this tree by Maguire that my hand, grovelling just below the surface of the soft, sandy deposit, lighted on a stone tool with affinities to the Pietersburg Industry. This find and additional specimens then recovered from the talus slope determined me to conduct an excavation of this cave deposit. I named the site Mwulu's Cave after a recluse called Mwulu who Mr. C.D. Maguire stated in 1949 had lived in the cave about 1820 and whose pots still littered the surface of the deposit on our

early visits. It proved to contain a sequence of three occupation levels rich in stone tools of several phases of the Pietersburg Industry. This was the first systematic archaeological excavation of a cave deposit ever made in the Transvaal (Tobias 1949, 1954).

SOME OTHER CONSEQUENCES OF THE JULY 1945 EXPEDITION TO THE MAKAPANSGAT VALLEY

An intensified programme of field activities followed these six student expeditions and led to the discovery of an australopithecine specimen by James Kitching in September 1947 (Figure 6). The Makapansgat hominid had at last been found, 26 months after the first student expedition.

Secondly, the role of the first student expedition in coaxing Dart back into palaeo-anthropology is best recounted in Dart's own words: "It is improbable that I would ever have returned to the Australopithecinae had it not been for the strange series of events set in train . . . in 1945 by the student expedition to Makapansgat Valley organised by P.V. Tobias . . .." (Dart 1957, p. viii). More explicitly, in his autobiographical *Adventures with the Missing Link* (Dart & Craig 1959), we read,

> "Then in 1945 a student adventure led by a member of my science class, P.V. Tobias – the man who succeeded me as professor of anatomy on my retirement this year – was responsible for thrusting me back into the maelstrom of man's beginnings. Tobias and his group, thirty strong [actually 21], visited the Makapansgat Valley...and brought back a story so astonishing that I could no longer resist returning to that earlier field of activity." (Dart & Craig 1959, p. 83)
>
> "When the party returned they said that the two sites [those from which stone tools and fossil ash came and the source of Eitzman's 1925 bones] were a mile apart. There were many Old Stone Age implements at the Cave of Hearths and plenty of Middle Stone Age implements at the Rainbow Cave. However, at the limeworks site a mile lower down the valley – where the fossil-bearing gray breccia was found – there were no traces of implements. But they had brought back something much more significant than Stone Age tools. Among the gray breccia they collected was the skull of a fossil baboon, indistinguishable from the *Parapapio broomi* first found by Trevor Jones at Sterkfontein in 1936 and now recognized as a characteristic of australopithecine deposits.
>
> "'Doesn't this mean, sir,' Tobias asked, 'that Makapansgat may be far older than you or anyone else imagined?' 'It does indeed. It certainly looks that way,' I replied. 'Then,' asked the young student, 'doesn't this tempt you back into the field of anthropological research?' Hesitantly, he added, 'It might even prove to be contemporaneous with Sterkfontein.'
>
> "It was almost as if he had read my thoughts. It might not only prove to be as old as anything yet discovered but might also yield a more complete man-ape than those found by Broom. Summoning Tobias to follow, I went to my workshop and took down my hammers, chisels and other anthropological tools which had lain neglected for so many years.
>
> 'You have my answer,' I told him." (Dart & Craig 1959, pp. 90-92)

Dart's return to palaeo-anthropology was marked by the revelation of a series of hominid specimens from the Limeworks, recovered for Dart by James Kitching and his brothers Ben and Scheepers, and by Alun Hughes (see account of Hughes's role by Tobias 1991a). It produced also Dart's ingenious but flawed concept of the Osteodontokeratic Culture which he supposed had been practised by *Australopithecus*. The work at Makapansgat gave Dart a major new scientific career between 1947 and 1966, beginning some twenty years after his earlier meteoric phase with the Taung child (Figure 7).

Thirdly, there was another interesting and slightly amusing consequence of our 1945-1946 expeditions. We handed over to Dart and Wells a number of primate crania, among other fossils from the Limeworks. One day, Dart came into the Medical B.Sc. Laboratory with a beatific expression on his face and, without saying a word, walked around the room shaking hands with each one of us who had been on the expedition. Then he stated simply, "Congratulations. You have discovered the Makapansgat apeman." He had identified one of our primate skulls as that of an australopithecine! As leader of the expedition I was privileged to be allowed into the technical laboratory two doors away, where, under powerful lights, the telltale specimen was being photographed. Dart had already sent a note to *Nature* in



Figure 6: James Kitching searching for bone-bearing breccia in the "Exit Quarry" of the Makapansgat Limeworks in 1947. In September of that year he found the first specimen of a hominid in the Limeworks: it was the posterior part of an australopithecine calvaria (MLD 1). Photo: by courtesy of *The Star*.



Figure 7: A gathering at the Makapansgat Limeworks on 13th March 1965 on the day following the delivery of the 2nd Raymond Dart Lecture by Sir Wilfrid Edward Le Gros Clark and his receipt of a doctorate of science *honoris causa* from the University of the Witwatersrand. Right to left: Lady Le Gros Clark, Sir Wilfrid, Raymond Dart, Peter Brain, Phillip Tobias and, from above down, Professor N.W.G. MacIntosh of Sydney University, Anne MacIntosh and Brian Maguire (shoulder to camera).

which he announced the discovery of the first hominid from Makapansgat. Mindful of the earlier finding of blackened bones there, which, following laboratory tests by Moir and Fox, he had interpreted as having been darkened by fire, he had even named the new hominid, *Australopithecus prometheus* (Dart & Craig 1959, p. 51).

It will be recalled that Prometheus was one of the Titans, those gigantic mortals who lived on earth before the creation of man. Prometheus and his brother Epimetheus made man – but with what could they endow him? – for Epimetheus had given away most resources, such as courage, strength, swiftness, sagacity, to the other animals. So Prometheus, with the help of Minerva, went up to Heaven, stole fire from the chariot of the sun...and brought fire down to man. With this story in mind and remembering the apparently cooked meat-bones, Dart named the new hominid from Makapansgat after Prometheus.

The name had been created, the paper had gone off, and it remained only for the photographs to be taken and sent to *Nature*. There, in the laboratory, the specimen was posed, the lights were adjusted, the camera was poised – when I saw Lawrie Wells, his head on one side, frowning slightly. He then turned his head the other way and frowned more deeply. In a small voice, he said, "Professor, if you look at it this way, it looks like the skull of a baboon." Indeed that is what it turned out to be! The note to *Nature* was withdrawn, feelings were doubtless bruised, the name was left hanging fire, as one might say, and Wells's powers of observation and his morphological skills had won the day. When two years later James Kitching recovered a genuine australopithecine at the Limeworks (Figure 8), Dart resurrected the same name (Dart 1948).

Was there perhaps another – fourth – consequence of these early student endeavours which started when I was not yet out of my teens? An onlooker would doubtless claim that these undrilled and rather rough-hewn adventures played a seminal role in determining the direction of my own future career (Tobias 1991b).

A fifth sequel of our expedition was the flaring up of a feud that had simmered between the Anatomy Department and Broom in and after 1936. The fact that we were students from **Dart's** anatomy department, but that **Broom** (with Jensen) published the first identified Makapansgat fossil baboon in 1946, certainly generated some tension which echoed the hard feelings of 1936.

To hark back, there had been pain in Johannesburg over Broom's having made Sterkfontein his own site, in 1936. Trevor Rubidge Jones, a student of Dart, had obtained cercopithecid specimens at Sterkfontein in 1935 and was working on them for an MSc dissertation project in 1936. In that year Harding le Riche, another science student of Dart, visited Sterkfontein and received from G.W. Barlow (the manager who had earlier worked at Taung) a baboon endocranial cast. G.W.H. Schepers, a neuro-anatomist in the Anatomy Department, accompanied Le Riche on further visits during which they recovered a number of baboon crania,

mandibles and endocasts. Dart being away at the time, and Broom having recently announced his discovery of a giant baboon (*Dinopithecus ingens*) in a cave near Hennops River in the Skurweberg, Le Riche and Schepers took the material to Broom. He accompanied them to Sterkfontein on Sunday 9th August 1936 and eight days later, on 17th August, Barlow handed Broom fragments of the first adult australopithecine.

Apparently both Trevor Jones and Schepers were irate at these developments. Jones was upset that the latest baboon finds from Sterkfontein had been taken to Broom: thereby, he said, Le Riche "had mucked up his MSc thesis which was to have been on the Sterkfontein fossils" (Findlay 1972, p. 65). Jones (1937) described and named the new genus and species, *Parapapio broomi*, from Sterkfontein. The hard feelings in the Wits Anatomy Department towards Broom are portrayed in George Findlay's biography of *Dr. Robert Broom* (1972): "[G.W.H.] Schepers felt that Broom minimised the importance of their [the students'] contribution, and after cooling their ardour took over the site for his own work. He apparently echoed the sentiments of others in the department: that Broom had seized the opportunity to take over 'their' site." (Findlay 1972, p. 66).

Findlay defended Broom's actions in the following terms:

> "Broom felt hurt at this view. In any case he could put the question of "rights to the cave" very simply. Dart and his staff were not actually working at the site in any real sense. The limestone was being burnt commercially all the time, and no arrangements had been made to preserve fossils disclosed during working operations. In fact, had Broom not gone out when he did, the Sterkfontein ape [sic] may not have been preserved. For this risk it seems strange to resent Broom's success.



Figure 8: Parieto-occipital fragment with many sutural ossicles of an australopithecine calvaria found in the Limeworks by James Kitching in September 1947. This was the first hominid specimen from Makapansgat and initially it was made the type of a new species, *Australopithecus prometheus* Dart. Subsequently John T. Robinson re-assigned it to *A. africanus transvaalensis*, the same subspecies as that to which he assigned the Sterkfontein [Member 4] hominid.

> "Harding Le Riche summed the matter up neatly. On getting the baboon brain cast back from Broom...he wrote to Broom: 'I fetched the little brain at the station. I am going to keep it as a memento of a rather interesting bit of unpleasantness which led to your fine discovery.' Dart's position was equivocal. It would have been nicest had his students been less disobedient and consulted him first, but who could guarantee that the discovery, which was to vindicate his reputation over the Taungs skull, would then have been made?"
>
> (Findlay 1972, p. 66)

Ten years later, neither the Anatomy Department nor Broom had forgotten the disgruntlement of 1936. Eunice Wells, the wife of L.H. Wells, apparently raised the matter in a letter to Broom in 1946. He explains his attitude in a series of letters to her in August and September 1946:

> "...neither [Jones] nor anyone else of the dept. was working there in 1936. The rule in all such investigations is that if one man or expedition is working at a spot he is left alone while he works. But as soon as he is finished at the spot anyone else is at liberty to work there ... Neither Trevor Jones nor Dart nor anyone else from the Dept. ever went to Sterkfontein so far as I know after 1936. If it is argued that I should not have gone to Sterkfontein because T. Jones had worked there, the same argument would hold against any one going to P.P. Rust because I had been working there."

In a more expansive tone, Broom adds, "The field is so large that there is room for all." (Broom to E. Wells, 21st August 1946).

Then it emerges, in Broom's letter of 28th August and in another dated simply "Sunday afternoon" (probably 1st or 8th September 1946), that her husband, Lawrence Wells, had himself cherished ambitions to carry on working at Sterkfontein after the students' recovery of cercopithecids a decade earlier. However, "D." [presumably Dart] would not allow him. Comments Broom:

> "What a pity. It is like Turner and Girton. Turner said 'Had Girton lived I would have starved.' So had Wells been working at Sterkfontein I would not have barged in, and to day he would have been a famous man, and I just an ordinary authority on fossil reptiles." (Broom to E. Wells, 28th August 1946).

Broom refers to this again in his Sunday afternoon letter:

> "But what was to stop him [L.H.Wells] going [to Sterkfontein] on a Sunday? In the 1935-6-7 period and probably before this Mr. Barlow always kept a big collection of all the best things he came across on a large table in the rondavel to dispose of to visitors – and something of value could have been had every Sunday. When I first went there I thought the collection was a sort of museum or I would have bought a valuable specimen. It was an arm – with much of hand – of perhaps *Plesianthropus*. When I was there the next week this was gone. Barlow had no idea or wouldn't tell me who got it. I tried to recover it thro' the press but without success. Barlow said 'You should have taken it when you got the chance'. In the two years that I worked at Sterkfontein I always searched Barlow's table, and found there many valuable things. It was there I got the fragment of femur. Of course Dart himself should have visited [Sterkfontein] every Sunday from 1925 onwards, and

> if he could not have gone he should have arranged for G. [Galloway] or your husband or one of his students or assistants to go, and never to miss a Sunday. What a collection he would have made! Alas we all have regrets for the 'might have been'."

It is clear from these quotations and other letters that Broom was shocked that Dart and his Department had for so long neglected their opportunities at Sterkfontein and elsewhere. Unfortunately, no relevant correspondence by Dart has come to light.

This was the background to a new bout of pique following our first student expedition in July 1945. Apparently there was chagrin that Broom had published Jensen's baboon. Dart was apparently aggrieved over this, as emerges clearly in the correspondence between Broom and Eunice Wells. Thus, in his letter of 15th August 1946, Broom states,

> "You told me that those at the Med. School are jealous of my even looking at the stuff the Kitchings collected at P.P. Rust. So though I was at the Medical School last week I didn't go near the cave stuff. I'll soon have plenty of stuff of my own."

Although I have not had access to Mrs. Wells's letters to Broom, his replies are frequent and explicit. Thus, a few days later, he writes:

> "I am sorry to learn of all my sins re Dart and others.
> "Re Jensen. Jensen was one of my students.

[This refers to Joseph Stokes Jensen who was my deputy leader of the July 1945 expedition and who recovered the type specimen of *Theropithecus darti*. He was co-author with Broom of the article on this cercopithecid that appeared in the *Annals of the Transvaal Museum* in 1946 and which seems to have angered Dart.] Broom continues in his letter to Eunice Wells,

> "It was I who suggested going to P.P. Rust. [Broom is not accurate in this respect: see my earlier account, based on my detailed day-by-day record of the preparations for the first 1945 expedition to Makapansgat.] "I mapped out all the route where finds can be made. He and others went there – shown me all the specimens. One is a new Baboon which was partly worked out by Jensen – partly by me. In fact I worked out all the delicate teeth which had been much broken. As Jensen found the specimen and he and I had worked it out I have described it (with Jensen). Dart had nothing whatever to do with it – (except the University partly financing the trip). P.P. Rust caves have been there for 20 or more years. I doubt if Dart has been there. Certainly he had never been nor anyone else till I started working there in 1936 or 37. Dart has no *locus standi* in this matter. Of course there is no objection to anyone working there."
>
> (Broom to E.Wells, 21st August 1946)

It is interesting that, whereas in 1936 everyone (Schepers, Jones, Le Riche, Wells, Galloway) seemed to have known about the dissonance between the Anatomy Department and Broom, in 1946 neither I nor, I believe, any of us (other than the most senior people such as Lawrie Wells) had the slightest presentiment that vexation had flowed from Jensen's baboon being given to Broom for evaluation. Broom, after all, was our teacher of primate evolution, in his capacity as a part-time lecturer in Dart's Anatomy Department. It was only years later, in discussion with the late Professor Wells, and very recently from my study of the letters from Broom to Eunice Wells, which had been generously made available to me by Dr. Gregory Wells, that I became aware of these strains. Happily these problems seem to be well behind us and inter-institutional and interpersonal relationships have been kept on a somewhat more even keel by the later generations of palaeontologists.

TAILPIECE

My colleagues and I prepared a lengthy, 60-page report on the pioneering expedition of July 1945. This comprised an Introduction by Tobias; Geological Report by J. Kirkness; Archaeological Report by Tobias and Jensen; Palaeontological Report by Jensen; Botanical Report by B. Maguire; Ornithological Report by A.C. Allison; Conclusion and Recommendations by Tobias (1945b). Our professors were eager for the report to be published and C. van Riet Lowe was especially helpful and enthusiastic. They persuaded the Principal of the University, Mr. H.R. Raikes, to agree to pay for the publication. Then a tragedy befell. After I had devoted a substantial part of several vacations and of my Honours year to the preparation of the Report, the entire manuscript disappeared at the publishers – or somewhere between the office of the Science Students' Council and the publishers. Heavily involved in Honours and MSc projects, I was not able to find the time to prepare another clean copy of text and illustrations after this severe loss. The clean copy has never been found and the Report remains unpublished to this day. I have only an imperfect carbon copy. Thus, I welcome the opportunity to place these facts on record on the historical occasion of the golden jubilee of the Bernard Price Institute for Palaeontological Research.

ACKNOWLEDGEMENTS

I pay tribute to the memory of Dr. Bernard Price much of whose concept of the Bernard Price Institute for Palaeontological Research evolved in the caves of the Makapansgat Valley. After 50 years I extend my thanks to my fellow-members of the first Makapansgat Student Expedition, to our professors and mentors. I thank Dr. Gregory Wells for making available to me the correspondence from Dr. Robert Broom to his mother, Mrs. Eunice Wells. My thanks are extended to the Editor of *The Star* for permission to reproduce part of Figure 4 and Figure 6 and to Heather White for her uncomplaining and cheerful response to eleven years of publication pressures. My thanks are due also to Peter Faugust for valuable help with illustrations.

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