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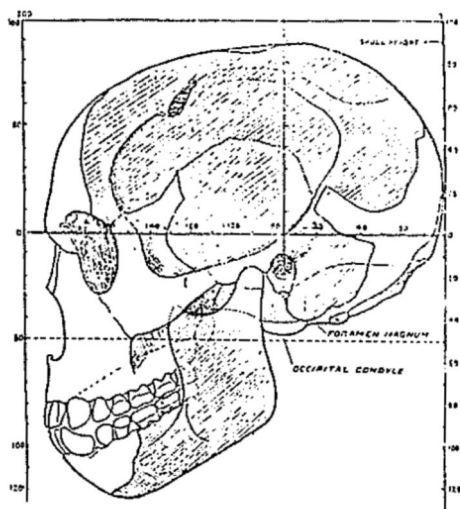
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PAL NEWS
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PILTDOWN PALAVER: A JOKE THAT WENT BADLY WRONG ?

Profile drawing of Sir Arthur Smith Woodward's first reconstruction of the skull of *Eoanthropus dawsoni*; reproduced from Sir Arthur Keith's book, *The Antiquity of Man*.

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EDITORIAL

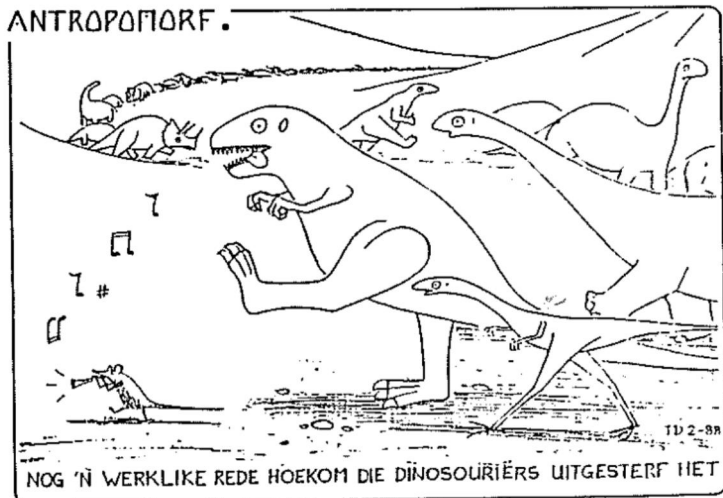
We are again very grateful to all contributors to Palnews. Many thanks to one and all!

This issue contains material relating to the possibility of establishing an Amateur Society for palaeontologists. This has been seriously considered by Colin MacRae who drafted a proposal earlier this year. The matter was taken up by the Executive Committee of the PSSA, after the National Monuments Council had thrown the ball into its court. The Executive Committee agreed in principle that an Amateur Society could be formed, but felt that the possibility should be aired with PSSA members. Thus it was that the possibility was mentioned in a circular distributed to all members of the PSSA earlier this year when an appeal was made for items for this issue of Palnews. Unfortunately, Colin's full proposal was not circulated (apologies from Francis, who economised by simply distributing a short circular which referred to the concept). In any case, we are very grateful for the responses which are published here, together with comments from Colin as well as his proposal, in full.

We sincerely hope that a happy arrangement can be found to accommodate amateurs in the field of palaeontology in this country. Whether or not a separate Amateur Society is formed, there is no doubt that amateurs have an important and valuable role to play. All Members of the PSSA are encouraged to read Colin's proposal carefully and any further comments can be relayed directly to him.

Francis Thackeray
Interim Editor

Anusuya Chinsamy
Co-editor



(ANOTHER REASON WHY THE DINOSAURS WENT EXTINCT)
(According to Francis Durand).

NEWS FROM FRIEDEMANN SCHRENK
Geological and Palaeontological Division,
Hessisches Landmuseum, Darmstadt, Germany.

For this issue of *Palnews* I can provide some information on what's going on at the State Museum of Hessa in Darmstadt.

After a long battle with several governments during the last few years, we are finally proud to announce that our Eocene locality "Grube Messel" has finally been saved from being turned into a rubbish dump! It was an extremely difficult task but was helped with the added weight of the opinion of colleagues from all over the world (including South Africa). It would have been a catastrophe if this natural monument had been buried with its beautiful contents. Thanks to all members of PSSA who helped us win!

Of course we continue our studies in Messel. At the moment we are developing a new technique for micro-radiography studies. By mounting a very thin metal sheet into the SEM, we turn the electron beam into an X-ray beam once it goes through the metal. What we get is an extremely high resolution x-ray (resolution as in an electron microscope). We are thus able to study our 50 million year old bacteria from Messel to detect their ultra-structure.

From 6 to 9 November 1991, there will be an International Messel Conference in Darmstadt. If there is any PSSA member interested in participating and giving a paper on either Eocene terrestrial fauna or the taphonomy of fossils in black shale, please let me know a.s.a.p. (Fax No 49-6151-28942).

We can provide partial funding. The second circular which also contains a preliminary list of speakers is with Francis Thackeray; please contact him for further information.

Another project in preparation at the moment is an excavation to be started in August this year at a newly discovered locality (Korbach in N-Hessia). Here we are excavating a Permian erosional filling. What do you think we found there? You won't believe it but it is a true-cynodont mammal-like reptile. (Kitch, what do you think of *Procynosuchus* from Germany?). The collection will be housed permanently in the State Museum of Hessa in Darmstadt. Could this be a reason for South Africans to visit us? We are only 15 minutes away from Frankfurt Airport.

I am still continuing work in Africa myself. Our "Hominid Corridor Research Project" in Malawi is growing, though a hominid has not yet been found. We are, however, pleased to have discovered quite a lot of faunal material including some baboons (an almost complete upper dentition of *Papio*) in 1990. I will give my paper on this Pliocene project which I had planned for the PSSA conference in 1990, at the conference in 1992. Last year I was engaged in fighting with the government about Messel during the time of the conference. I hope to visit at least the BPI when I am in Joburg on my way to Malawi this year.

During the past few months we have been involved with DINOSAURS. We have a very interesting exhibition on display at the moment - dinosaurs from China (26.4-10.11.1991). Maybe some of you saw the specimens in London two years ago. It was rather difficult to fit *Mamenchisaurus* into our museum! Within the first two weeks we had 30,000 visitors. If someone comes especially from Southern Africa I promise free admission!

NEWS FROM ARTHUR CRUIKSHANK, LEICESTERSHIRE, U.K.

News of the Leicestershire Museum's Plesiosaur project is that Mike Taylor has raised a Leverhulme Fellowship for me to work here part-time for two years on the Paleobiology of Plesiosaurs, and for the rest of the time I am to be revising the Geological Sites Register for the County of Leicester. Hey, I'm about to become a *professional* palaeontologist again!

We have submitted a letter to *Nature* on the possibility that plesiosaurs were olfactory hunter. We hope that the article will have completed the refereeing run by the time this appears in print. Most un-*Nature* like enthusiasm from the referees so far. Other projects concern the description of the skulls of two species of *Rhomaleosaurus*, one by Mike (submitted; Phil. Trans.) on bending loads, and the next (in preparation) on torsional stresses. On the stocks is a beautifully complete skull (1,5 metres long) of *Pliosaurus*, hitherto not at all well known. Following that we go to the base of the Lias for some small pliosauroids, with a hope to unravelling the early history and diversification of the plesiosaurs.

As they say, watch this space !

NEWS FROM BPI PALAEOLOGY COMMUNICATED BY ANUSUYA CHINSAMY

Over the past 6 months several new people have joined the Bernard Price Institute for Palaeontological Research as research staff. As a result the fields of research at the BPI have been broadened to include studies on fossil wood, palynology and bone-histology.

Bruce Rubidge is currently working on several aspects relating to taxonomy and biostratigraphy of Karoo mammal-like reptiles. He has recently published a paper on a new biozone at the base of the Beaufort Group which contains the most primitive fossil therapsid fauna from the southern hemisphere, and shows affinities with the most primitive therapsid fossil fauna from the Russian Zone I deposits. Bruce first recognised the existence of this biozone in the vicinity of Prince Albert and Rietbron. In February this year a field excursion was organised together with James Kitching, Mike Raath (Port Elizabeth Museum), Roger Smith (South African Museum, Cape Town) and John Nyaphuli (National Museum, Bloemfontein) to Laingsburg in order to trace the biozone to the western side of the basin. Some fossils were found and are presently being prepared for identification. The distribution of this biozone in the southern Karoo could assist in solving several problems relating to the age and deposition of the rocks of the lowermost Beaufort Group.

Currently Bruce is describing the skull of a brithopodine dinocephalian from this biozone, which is the first Brithopodine found outside of Russia and is of interest as it is as primitive as the most primitive Russian forms. Together with Professor Jim Hopson (University of Chicago) Bruce is describing the skull and skeleton of *Patranomodon* (the most primitive anomodont known), and also doing a study of the interrelationships of the most primitive anomodonts from South Africa and those from the Soviet Union. (After all this, we can hardly call Bruce "the most primitive" rubidgidont - *Eds*).

In collaboration with Gillian King (South African Museum, Cape Town), Rubidge has

recently completed a long overdue taxonomic revision of the numerous dicynodont genera from the lower Beaufort which have postcanine teeth.

Dick Rayner, among other things, is continuing his interest in the South African *Glossopteris* flora. Previous reconstructions of the palaeoecology of the Karoo have been based on the functional morphology of the fossil tetrapods. However, in many ways fossil plants are better understood than their animal counterparts. This is because most plants do the same things. Therefore they cannot be divided up into trophic guilds like animals. A thorough knowledge of the types of plants available to the herbivorous, mammal-like reptiles in Karoo times, therefore, may provide insights into the plant/animal interactions, and the evolutionary patterns of both.

Chris Gow has two papers in press. One is a description of an entirely new tiny diapsid reptile from the lower Triassic Fremouw Formation of Antarctica collected by Prof. James Kitching. The other concerns the ancestry of mammals: new anatomical data for several mammal-like reptiles indicate that the fossil record is not as complete as we might like to believe. Several key players are missing and it is possible to predict what they might look like. This work stands as a caution against over interpreting available data.

James Kitching has retired but remains as busy as ever. He has written up parts of the biostratigraphy of the Beaufort Group for South African Commission for Stratigraphy. He has also written a short article for the Weekly Mail on the dinosaurian eggs from the Elliot Formation in the Orange Free State and as far afield as Lady Grey in the Eastern Cape.

He also accepts invitations or makes excuses to get out into the field even if it is only for a few days at a time. During May 1991, for instance, he accompanied members of the Sedimentology Division of the Geological Society of South Africa to the Elliot and Clarens Formations in the Clarens/Golden Gate area. He is also looking forward to a few days in the field with the Zoology students from the University of Port Elizabeth during September 1991 and thereafter to at least a week's collecting from the Cretaceous bed in the Algoa basin.

In between his activities, he stalks of at times to the BPI fossil store to spend some time on the unpacking and classification of the hundreds upon hundreds of fossil mammalian remains from the Limeworks Quarry, Makapansgat, and Potgietersrus. Since the institute moved to the East Campus in 1985, this part of the collection have been neglected due to the shortage of staff and other institutional commitments.

At present, James is preparing a lecture on the fossil faunas from the Karoo Sequence of the Orange Free State, to be given in Bloemfontein. Imagine a Transvaaler going to that region to tell them about their fossils!!

Anusuya Chinsamy has obtained her PhD degree and will graduate in December. Anusuya's research dealt with femoral bone histology through ontogeny of a group of Archosaurs. By comparing the extant and extinct members of the clade, deductions concerning the physiology of dinosaurs was made. Growth rate and growth trajectories of the dinosaurs studied were also deduced.

Anusuya Chinsamy has been appointed to the Lecturing staff of the Department since January 1991. In August, she will be attending a conference on " Mesozoic Terrestrial Ecosystems and Biota "in Oslo, Norway, where she will be presenting two papers on her bone histological research. She will also be going on a field excursion to the Cretaceous- Tertiary boundary in Denmark, as well as to the Upper Triassic Danian estuarine and marine sections. Another paper will also be presented by her at the "39th Symposium of Vertebrate Palaeontology and Comparative Anatomy", at the University of Oxford, England in September.

At the present, Anusuya and Bruce are doing a joint project on the comparative bone histology of different dicynodont genera from various stratigraphic horizons in the Beaufort Group. The results of this study are preliminary at this stage, but it is evident that variations in the basic histology exists among these anomodonts.

Since April Ann Cadman has joined the BPI research staff. Ann had previously completed an MSc in Palynology at the BPI Palaeontology, and has just recently obtained her PhD in Botany. Her PhD thesis concerned the relationship of pollen rain to vegetation, climate, and land-use. Ann's research at BPI will include systematic work on fossil pollen as well as research on extant pollen.

Marion Bamford is currently undertaking post-doctoral research on fossil wood at BPI (see below). Heidie Fourie is in the final stages of the completion of her MSc which concerns the detailed description of the skull of *Emydops* (Therapsida: Dicynodontia) (see below).

NEWS FROM MARION BAMFORD, BPI Palaeontology

This year I am doing a post-Doctoral research study on fossil wood in southern Africa. The age and region are very broad at this stage. So far I have looked at Tertiary wood from Bushmanland which is proving to be very interesting as the wood, which I have identified to family level, indicates that the climate was tropical to subtropical.

Although there is much fossil wood in this part of the world, little work has been done on it for many years. In general the wood is extremely hard and it is difficult to cut and polish the three sections needed for any study. The sections are transverse, tangential longitudinal and radial longitudinal sections. The thickness of these thin sections depends on the preservation (grain size) and type of wood so it is initially a method of trial and error. It is well worth the effort because, not only the identity of the wood, but also the palaeoenvironment, can be revealed.

NEWS FROM HEIDI FOURIE, BPI Palaeontology.

Computer Aided Tomography is used in hospitals to provide cross-sectional images which represent the X-ray attenuation coefficient of the tissues or bone in the imaged plane. A 3D image is reconstructed by a computer from X-ray transmission data obtained during the scan. This technique is very expensive and not often used for Karoo fossils as the matrix is too dense.

CAT scanning was done for the type specimen of *Emydops minimus* (Broom, 1935) to examine the possibility of using this method instead of serial grinding or acid preparation. The scanning interval of 1mm was found to be too thick for this 5cm long specimen. On average a 5cm specimen took 45min to scan and back-up diskettes are always available from which extra sets of X-rays could be obtained. Only some transverse sutures, longitudinal sutures and teeth were visible, but overall the image was blurred.

CAT scanning proved to be a good and relatively quick method to determine whether a particular specimen was well enough preserved to be serially ground. It can also be a very promising tool for the study of fossils.

NEWS FROM SARA KERR, Geology Dept., University of the Witwatersrand.

Since my last addition to Pal News in December 1990 there have been some exciting developments regarding the Pretoria Saltpan. The controversy surrounding the origin of the crater has been settled by a detailed investigation carried out by Dr. W. U. Reimold of the Geology Dept., Wits University. Reimold et al. (1991) have proved that the crater is a meteorite impact structure. This is very exciting news for our study group as it is the only confirmed meteorite crater in South Africa besides the Vredefort structure which is still being heavily debated, and only one of two within Southern Africa, the other being the Roter Kamm crater in southern Namibia. My work on the sedimentary aspects of the crater is progressing well and I hope to be presenting some of the information in the near future.

Reimold W. U., Koeberl C., Kerr S. J. & Partridge T. C. (1991). The Pretoria Saltpan - the first firm evidence for an origin by impact. Abstrs. Lunar and Planet. Sci. Conf., XXII, pp. 1117-1118, Houston, U. S. A.

GG FROM GG (NEWS FROM GIDEON GROENEWALD, Golden Gate)

The transfer of more recent reptiles (*Cordylus giganteus*) to Golden Gate led to a general decline in time spent on the more important ancestors.

Since the 1990 conference Dr. Fred Grine and his wife Beth visited the Park and we rewalked the Bramleys Hoek section.

During November 1990 I invited the Botanical Club of Harrismith (people not only interested in plants) to attend the much awaited recovery of a *Lystrosaurus* from the dongas at the town. The specimen had to be collected to prevent damage due to erosion. 20 People, including pupils from the primary and high schools, and lectures from the QWA-QWA branch of the University of the North attended the meeting.

During December two informative talks on palaeontology were attended by several interested tourists at Golden Gate and we had some very interesting discussions. What strikes me most is the complete lack of layman's information on the geological evolution in the Karoo basin. PSSA members should send interesting notes on Karoo palaeontology which are related to

National Parks, to CUSTOS, the National Parks Board magazine, as this would increase the palaeontological awareness of the public visiting Golden Gate, Mountain Zebra and Karoo National Parks. (Susan van der Merwe, National Parks Board, PO Box 787, Pretoria, 0001)

I have had some interesting correspondence on the Evolution issue. The dedication of people arguing against the evolution of life astounded me, especially if one considers their acceptance of the fact of sedimentological evolution in the Karoo basin.

Colin MacRae and his team (Andr , Francois and Barry) spent 3 days in the vicinity of the Park looking for suitable sites for a forthcoming excursion aimed at the amateur palaeontologists. Unfortunately the old saying "Don't speak so loudly, the fossils will hear you!!" became very true and all my enthusiasm vanished when, after two days of fossil-hunting, we could only locate two *Lystrosaurus* specimens in what I described as "typical Zone material".

Sue took "Labour Day" (1 May 1991) very seriously and we would like to welcome Patricia Aun  to our family. Her Sesotho name says it all - Mampho, meaning "a gift ..from God".

Greetings from GG.

NEWS FROM NORTON HILLER, Department of Geology, Rhodes University.

The main thrust of our palaeontological activities at Rhodes in the first half of 1991 has been directed towards obtaining more material from the new plant and fish fossil locality just outside town. We have had a few problems with members of the public plundering the site, albeit in ignorance of the law and potential worth of fossils. To combat this we have been spreading the message that it is hands off unless you have a permit and even then only collect in co-operation with those actively working on the material.

Fiona Taylor, an honours student, is tackling the plants as parts of her honours project and she has been turning up some interesting specimens. We are grateful for the help Heidi Anderson is giving Fiona because we do not have any expertise in fossil plants here in Grahamstown. For work on the fish we have enlisted the help of Eric Anderson from the J.L.B. Smith Institute of Ichthyology and he seems quite excited about the specimens we are finding. Robert Gess, a third year student, has been working on some of this material. Hopefully we will be in a position to report fully on this work at next year's PSSA conference.

At the end of April, Billy de Klerk (Albany Museum) and I joined Mike Raath (PE Museum) and Gideon Rossouw (UPE) in a trip to the Bushman's River valley to look for dinosaurs. We were trying to locate the site from which Dr. W.G. Atherstone reported recovering bones of the "Cape Iguanodon" in 1857. We spent the morning working our way down and up very steep, crumbling slopes that were clothed in thick, thorny bush only to decide that we were in the entirely wrong area. After lunch we relocated to what we now believe is the correct area but soaring temperatures and rapid depletion of water supplies led to an

evaporation of enthusiasm. The fact that cold beer was available just along the road to Alexandria in no way influenced our decision to abandon the search when we did. Unfortunately, no bones were discovered although there was a considerable amount of fossil wood lying around. We have resolved to return to the valley when the temperature is somewhat less extreme.

Meanwhile I am frantically trying to put together a paper reviewing the Ordovician System as it is represented in South Africa. The sixth international symposium on the Ordovician System is being held in Sydney in July, and since I have no recollection of South Africa ever being represented at any of the previous five symposia I have taken it upon myself to redress this situation.

NEWS FROM MAGARET AVERY, South African Museum

Having felt for quite some time that I should join the PSSA, I was finally prodded into it by the fact that I have once again officially become a palaeontologist. I have moved back into the Cenozoic Palaeontology Department, where I began life in this museum, and I am pleased to say that Cenozoic, certainly Quaternary, palaeontology is back in business at the South African Museum, after Brett Hendy's departure. Truth to tell, I am essentially a palaeoecologists, working on micromammals, and my major interest is palaeoenvironmental reconstruction for the Quaternary. Recently I have been involved in projects connected with the International Geosphere-Biosphere Programme and it is good to discover that one's work may have some practical application. So far I have concentrated on the last 150 000 years but I have long wanted to move further back in time. That chance came recently with an invitation from Bob Brain to describe his material from Swartkrans, which I look forward to doing in the near future.

Avery, D.M. 1990. Holocene climatic change in Southern Africa: the contribution of micromammals to its study. South African Journal of Science. 86(1-10): 407-412.

Avery, D.M. 1990. Late Quaternary environmental change in Southern Africa based on micromammal evidence: a synopsis. Palaeoecology of Africa. 21: 131-142.

Partridge, T.C. et al 1990. Late Pleistocene and Holocene climatic change in southern Africa. South African Journal of Science. 86(7-10): 302-306.

Thackeray, J.F. & Avery, D.M. 1990. A comparison between temperature indices for the Late Pleistocene sequences at Klasies River Mouth and Border Cave, South Africa. Palaeoecology of Africa. 21: 311-316.

Avery, D.M. In press. Late Quaternary incidence of some micromammals in Natal. Durban Museum Novitates.

Avery, D.M. In press. Micromammals, owls and vegetation change in the eastern Cape midlands, South Africa, during the last millennium. Journal of Arid Environments

NEWS FROM ROGER SMITH, SOUTH AFRICAN MUSEUM

In February/March this year the "A Team" spent 4 weeks in the southern Karoo doing what it does best: collecting fossils. Roger Smith, Annelise Crean, and Paul October rolled up at Bruce's camp near Laingsburg in their spanking new 4x4 Toyota with designer safari trailer, ready and determined to find fossils. In the company of James Kitching and John Nyaphuli we entered uncharted territory to find fossils of the lowest (oldest) terrestrial vertebrates in the Karoo Basin. Four days later we were rather less enthusiastic as the "Eodicynodon Acme Zone" yet again failed to give up its wealth. The only collectable fossils were an Eodicynodon skull, a possible *Diictodon* skull and some fragments of an amphibian. The *Diictodon* fossil may prove useful in defining the lowermost range of this taxon.

Perhaps the most memorable event of these 4 days, apart from James' cooking, was when I lost my way walking back to the vehicle and had to route march for 4 hours in the dark. Many thanks to all for their patience and concern.

Fraserburg was our next stop. Here we worked on a footprint palaeosurface on Gansfontein. Our task involved exposing and cleaning the covered parts of sandstone, mapping the sedimentological and biogenic features preserved on the surface, and helping to exploit its tourist potential. With the help of 6 local labourers we cleaned an area of some 2000 square metres using wheelbarrows, brooms and spades provided by the roads department.

The crevasse splay surface consists of a series of isolated pools that remained after a flood and slowly dried up. The intervening ridges were used as walkways by the Karoo reptiles and are completely trampled whereas the pools have preserved trackways of several individuals that took a short-cut. Documentation of this surface will be included in a paper on freshwater trace fossils of the Beaufort group.

Our third task was to excavate a large *Endothiodon* skeleton that had been found on a previous trip on the farm Rosary in the Loxton district. Reassessing its display potential we decided to bring it back in one piece. However, the jacketed fossil (Mamafura) weighed more than we could lift so a special loading ramp had to be excavated to accommodate the 4x4.

To round off the field trip we excavated a very large disarticulated dinocephalian skeleton near Meltonwold, near Victoria West. The bones were individually lifted from the fissile shales and have been reassembled in the laboratory without the need for lengthy preparation.

In April I teamed up with Prof. Tom Mason (University of Natal) on a weeklong trip to the Kuiseb River, Namibia. Our task was to document the sediments and trace fossils in the sub-recent Homeb Silt Formation and Khommabes Pan deposits in the Gobabeb area. Among the more interesting discoveries was a new type of fossil termite nest (*Termitichnus*) and a 20,000 year old (bovid?) trackway. These data will be used to aid interpretation of arid zone fluvial deposits in the upper Karoo Sequence of South Africa and Namibia.

NEWS FROM RICHARD DINGLE, SOUTH AFRICAN MUSEUM MICROPALAEONTOLOGY RESEARCH UNIT

We have a new staff member: Dr Jacques Giraudeau has joined us on a 4 year contract from the Dept of Geology & Oceanography at the University of Bordeaux. Jaques recently completed his PhD thesis on modern and fossil coccoliths and planktonic foraminifera of the SE Atlantic off south western Africa.

Richard Dingle is continuing various projects: micro-paleontological oceanography of the south west margin . Two papers have been completed on the taxonomy of the Quaternary ostracod faunas , and work is proceeding on their distribution in relation to regional oceanography , and particularly upwelling. In this he is collaborating with colleagues at the Sea Fisheries Research Institute, and UCT.

Research projects include modern ostracod faunas from Marion Island; Miocene ostracods from off the Orange river; a synthesis of Cretaceous to Recent ostracod biostratigraphy (this is in connection with a book to be compiled with Ian McMillan on southern African stratigraphic micropaleontology); a regional survey of the Cretaceous to Recent continental rises off south western Africa (recently completed with Simon Robson of EPI Consulting).

Publications:

Dingle, R.V., Lord, A.R., & Boomer, I.D. 1990. Deep-water Quaternary Ostracoda from the continental margin off south-western Africa (SE Atlantic Ocean). *Annals of the South African Museum* 99 (9): 245-366.

Dingle, R.D., & Lord, A.R. 1990. Benthic ostracods and deep water-masses in the Atlantic Ocean. *Paleogeography, Paleoclimatology, Paleoecology*. 80;213-235.

NEWS FROM GILLIAN KING, South African Museum

Since things don't move too quickly in palaeontological circles, I'm probably still doing all the things I was doing last time I wrote. And will be next time I write.

One project which does look as though it might come to fruition some time in the next millenium, however, is a study of intraspecific variation in *Diictodon*. The progress here is entirely due to our preparators Jan Goodall and Sheena Kaal whose excellent work has produced several finely-prepared skulls. I'm looking forward to writing about them (the skulls) at some stage. Since I've now decided to stay in South Africa for the foreseeable future (whatever that is) I can now allow the project to proceed in an even more leisurely fashion.

NEWS FROM JOHAN WELMAN AND JAMES BRINK NATIONAL MUSEUM, BLOEMFONTEIN

The Palaeontology Department at the National Museum had a very busy first half of 1991. More than 12 field excursions for members of the public, students and scholars were undertaken and three temporary exhibitions organised. The annual weekend excursion in cooperation with the Free State branch of the Geological Society to the Verwoerd Dam area, went very well, with Bruce Rubidge as guest speaker, entertaining the audience with a very interesting lecture on the sedimentology and taphonomy of the region and Johann Welman giving a talk on the prehistoric animals of the Karoo.

At the beginning of May, Prof Jim Hopson visited Bloemfontein for a week. He gave a lecture at the Department of Zoology at the UOFS on the cynodont origin of the mammals. Jim also discussed recently found cynodont material with Johann Welmann and *Trirylodontoides* with Prof Steve Fourie. Steve departed on a six week study tour to Europe at the end of May.

Johann Loock is on study leave till the middle of the year. Dr Gidea van der Linde is making good progress with a project investigating the allometric growth in the skull of *Lydekkerina*. Patrick Bender and James Brink are in the process of revising the old collections from Cornelia, a Middle Pleistocene site, with the aim of establishing a preliminary checklist.

Excavations at Florisbad are still continuing. Zoë Henderson is taking charge of the extension of a Middle Stone Age horizon. James Brink is continuing with his work on the Late Pleistocene mammalian faunas from Florisbad, Mahemspan, Sunnyside Pan and Klasies River Mouth.

NEWS FROM FRANCIS THACKERAY, DEPARTMENT OF PALAEONTOLOGY AND PALAEOENVIRONMENTAL STUDIES, TRANSVAAL MUSEUM, PRETORIA

Things have been kept busy here since January. Work at Plovers Lake (near Sterkfontein and Swartkrans) continues. Ginny Watson has sorted most of the fauna from the site called Gondolin situated near Broederstroom - a remarkable site with excellent preservation of fauna in breccia which was excavated several years ago by Elisabeth Vrba and David Panagos. The fossils have been prepared during the past few years, and the results are astonishing. There is excellent preservation of foetal bone ! A large suid (*Metriodichoerus* ?) is apparently represented. It will be very interesting to see the complete faunal list in due course.

Work on the very large sample of bovid fauna from Sterkfontein is underway. This is material from the area between Members 4 and 5.

CT scanning (Computed Tomography) of hominid molars in the collections at the Transvaal Museum has been undertaken with Gabrielle Macho, who was based at the Transvaal Museum until mid-July, before returning to Austria. This work is an extension of research

previously undertaken by Frans Zonneveld, Fred Spoor and Glenn Conroy. Although there are difficulties with the technique, there certainly is considerable potential in the application of computed tomography to the study of hominid fossils. A co-ordinated scanning programme is being planned, hopefully to involve the analysis of material from both southern as well as eastern Africa. With teeth being far more abundant than complete skulls, there seems to be good sense in undertaking systematic CT studies of hominid teeth, with a view to sorting out at least some of the taxonomic problems that pervade the field of palaeoanthropology.

NEWS FROM THE GEOLOGICAL SURVEY (PALAEONTOLOGICAL SECTION) **Reported by Magdel Gricius.**

Presently the whole section is occupied with preparations for the launching of our "Fossils 2000" seminar, which is to be held in September this year.

In the meantime...

Eva Endrődy is working on plant fossils from Zimbabwe. Her paper on "The Late Permian Age of the *Eccla Glossopteris* Floras of the Transvaal Province, with a key to and descriptions of twenty-five *Glossopteris* Species" is finally in press.

Dr. Francois Durand has enrolled for the diploma in museology at the University of Pretoria this year. He is also involved with the creation of a new database programme into which our catalogue will be transferred. This database will accomplish more than our usual catalogue needs. It will also be a powerful instrument for biostratigraphic work, and will be connected to our big mapping computer. (More details later). Dr. Durand has just returned from Cape Town where he presented a poster about our national palaeontological catalogue (based on above mentioned database) at the conference of the South African Museum's Association. Meanwhile he is working on drawings of Professor Kitching's primeval tortoise.

The Haasgat dumps have proved to be prolific and exciting, and Dr. Keyser sees to it that Mrs. Sopik has enough material to clean and prepare.

Magdel Gricius is making headway with the curation of the fossil store, and is updating data.

In July there is to be a palaeontological display at the shopping centre at Menlyn here in Pretoria. Pam Prowse is busy preparing for this display, and producing a stock of various fossil casts completed and painted with the help and assistance of Simon Lebeso.

Barry Millstead continues his research on the palynology of the Permian sediments of the northern Karoo in general, and of the Vereeniging area in particular. He is also examining the bugs in Natal and Transkei, with some interesting results. Work is also in progress on some Permian material from Zimbabwe, and some Mesozoic from the Cape. Most of all Barry continues to enjoy life in South Africa, and greatly appreciates the warmth from everyone he has met.

In the palynology lab, Linda Karny is streamlining the processing of samples. She is also enjoying the new hot plate stirrer, which she says is also ideal for cooking hydrochloric soup. (Any takers?). At the moment she is working on Barry Milstead's samples from Vereeniging.

Wilson Lebesse is crushing samples to a remarkable fineness, and with a finesse not reached before. He is also doing photographic work for Dr. Keyser, and rearranging slides in the storeroom.

Last, but not least, Dr. Colin MacRae (Head of our section, confidant, administrator, slave driver, friend, organizer, peacemaker and scientist) still keeps a cool head. The following from his pen:

Work on the no. 4 Seam project is proceeding frustratingly slowly.

The recent field trip with Dave Roberts and Barry Millstead was a resounding success. A new *Glossopteris* site from the Vryheid Formation, very close to the type area, was discovered. This find will provide important information for comparative and reference purposes. Areas of low palaeotemperature were targeted for palynological sampling. These are awaiting preparation.

A fairly substantial collection of plant macrofossil material was made from the Port St. Johns area. This material is very fragmentary and not well preserved.

Small changes to the geological map (e.g. Permian to Cretaceous) will be made, based on fossils observed to the south of the Umgazi River mouth, and a few samples were taken for palynological analysis from the Bulwer plant site.

BOOK REVIEWS

by Chris Gow

ON THE HISTORY OF CLADISTICS

Hull, David. 1990. *Science as Process*. Chicago University Press.

Sober, Elliot. 1988. *Reconstructing the Past: Parsimony, Evolution and Inference*. MIT Press.

Of the two I preferred Hull's book for clarity of style, though it would be fair to describe it as turgid - a heavy read. It deals with the history of cladistics and the personalities involved (interviewed by the author in most cases). It's interesting but depressing. So much heat, so little light - or as Hull puts it, "Seldom has so little done so much for so many as it has in scientific explanations".

The comprehensive reference list is useful.

My thanks to Prof. M. Henneberg for the loan of this book by David Hull.

SCIENCE FICTION !

You may decide to pass on the previous two but this one is a must: Crichton, Michael (1991). *Jurassic Park*. Century Press.

From the author of the *Andromeda Strain* comes another gripping bestseller - just watch the ratings!

Popular books that draw on one's own field are often a bit of a let-down, but not this one. Crichton is a graduate of Harvard Medical School, and the science in this book is state of the art and beyond. Maths (the best character in the book) is a philosophical mathematician. The book deals with DNA sequencing, computers, and paleontology - terrific stuff!

Odd little inconsistencies are amusing, but never irritating. One may wonder whether an animal with bird-like uric acid excretion could be said to possess a rectum, but so what. A reference to cartilaginous plates in stegosaurs actually relates to a scathing quotation from Linnaeus, who had a biblical attitude to reptiles.

Should you wish to clone dinosaurs (or find what might happen if you did), put this one on your Christmas list. Crichton has invented an ingenious, varied and most credible fauna.

MORE ON THE "VISITOR'S BOOK" STONE

H.B.S. COOKE

In my earlier account of the "Visitor's Book" Stone at Barkly West, I omitted the name of the Abbe Breuil, which is very clear on the photograph, just below the name of B.D. Malan. It has the date 20.9.1944, the same as that for D.R. MacFarlane. Evidently MacFarlane took the Abbe to the site.

The Abbe Breuil was one of the leading figures in European prehistory. When he had to leave France during the war, he came to South Africa at the invitation of Peter van Riet Lowe, who arranged a professorial appointment for him at Wits, and the Abbe stayed at his home for many months. The Abbe then travelled around visiting various institutions and examining important sites. I took him to some of them and was always amused at his referring to dams as "Ah, zee pond" !

The Abbe attended the first Pan-African Congress on Prehistory in Nairobi in 1947, travelling with the South African delegation in a special aircraft made available by General Smuts. He was elected as the first President of the Congress. He made a curious sight in the field as he wore knee-length shorts kept up by braces. We believed they dated to the First World War !

AMATEUR INVOLVEMENT IN PALAEOLOGY

COLIN MACRAE, GEOLOGICAL SURVEY, PRETORIA

In the circular calling for contributions to this issue of PalNews, comment on the issue of involving amateurs in the activities of our profession was called for. Unfortunately the full text of my proposal was not circulated and I feel that comment may have been more specific had this been the case. I accordingly include a copy and will attempt to address some of the comments sent in. This proposal was first formulated in February this year and after circulation to the Geological Survey management it was presented to and discussed with Dr. J. Deacon of the National Monuments Council. As many of you well know, the archaeologists also have a big problem with uninformed people collecting artifacts, resulting in tremendous damage and a lot of collected material that is absolutely worthless for scientific research. Dr. M. Cluver, Director of the South African Museum and palaeontological advisor to the Council also read and commented on my document. The proposal was then discussed at the next board meeting of the National Monuments Council, and in principle was accepted. It was, however, referred to the executive of the Palaeontological Society of South Africa for a final decision. A meeting was called where I represented the Geological Survey and Bruce Rubidge and Francis Thackeray the Pal Soc, with planned telephonic link-up with Juri van den Heever in Stellenbosch and Roger Smith in the S.A. Museum. This meeting accepted the proposals but we all agreed that it would, due to the vast implications to our science, be wise to call for comment - hence the note in the last circular. I am sure there is going to be further comment after this issue, and I feel this is necessary and trust that it will be constructive.

The proposal which I had drafted earlier this year is given below in full.

PROPOSAL REGARDING AMATEUR INVOLVEMENT IN PALAEOLOGY

C.S. MacRae - Geological Survey, Pretoria

AIM

The aim of this proposal is to create a structure which i) affords people who are not employed as professional palaeontologists the opportunity to become involved in fossil collecting and excavation and ii) that takes into account the limitations imposed by the law governing these activities.

BACKGROUND

Numerous requests have been received by staff of the Palaeontology Section of the Geological Survey from people wanting to assist in fossil excavations and collecting expeditions. Rock-hounds and amateur gem collectors have often "acquired" fossils, and being aware that it is in contradiction to the law, they approach us for advice on how they may legalize their fossils. The attached letter from an amateur collector clearly illustrates the sentiments of these keen collectors. To enforce the law and to police this type of contravention is an absolutely impossible task. I have recently, through contact with international palaeontologists and articles appearing in the literature, become increasingly

aware of the tremendously valuable contributions that amateurs can and do make in palaeontology. In the first instance the professional scientist has a keen, motivated and willing source of labour at his disposal. As labour costs soar and research budgets become drastically trimmed in the future, this option will become increasingly more attractive to scientists. The additional supervision and teaching that would be involved is a very small price for the obvious advantages. In the second case, there are a lot of very rare and valuable fossils hidden in rock and gem collections. Aware that possession of South African fossils is illegal and fearing confiscation and/or prosecution, collectors do not reveal their finds to palaeontologists. In this manner a lot of potentially valuable information is not available to scientists. Amateurs are very energetic, keen people, and on occasions discover new fossil localities. Often with illegal fossils already in their collection they are more easily tempted to keep the fossils they have found. They in turn do not reveal the find. Providing this type of person with an incentive to show his material to a professional and to reveal the new site has clear advantages to South African palaeontology in general. It is against this background that the present proposals were formulated. Being proposals, feed-back and constructive comment is sincerely encouraged.

PROPOSAL

i) Formation of an Association

Firstly a structure must be created to serve in a co-ordinating and controlling capacity. The formation of an "Amateur Palaeontological Association of Southern Africa" (APASA) is envisaged. This would have a formal and legally formulated constitution. The constitution would have to include an irrevocable clause that the association would operate under the authority of an institution (e.g. the Geological Survey or a museum) that had a S.A. National Monuments Council collecting permit, and that the institution would ultimately be responsible for the activities of the association. The constitution would also be subject to approval of the National Monuments Council. Clauses stating that the association would strive for scientific advancement and conservation of the country's fossil heritage would be included in the constitution.

ii) Grading System for Members

Members of the association would be graded according to a four stage classification. Admission to a particular grade or progression to a higher grade will be in accordance with requirements laid down and amended from time to time. Rights and tasks entrusted to members would be directly stipulated in the description of each grade. National Monuments Council sanction of the proposed grade requirements and tasks entrusted at each grade level is envisaged. As a starting point the following generalized grading scheme is proposed. These will be formulated and specified in more detail if the present proposals become accepted.

Grade D :-

Requirements: i) To have an interest in palaeontology and to be prepared to submit to the authority of a responsible palaeontologist. ii) To have the desire to learn more about fossils.

Tasks/Responsibilities: To accompany a responsible palaeontologist on collecting trips/fossil excavations and to perform tasks under continuous and direct supervision at all times. An

example would be to help excavate a fossil working alongside and under continuous supervision of a qualified palaeontologist. This would exclude work in close proximity to the actual fossil or to important parts e.g. the skull of the fossil.

Grade C :-

Requirements: i) To have a proven interest in palaeontology and to have shown/demonstrated on previous excursions a responsible attitude towards the conservation of fossils. ii) To have demonstrated competence in the excavation, numbering, documentation and responsible packaging of fossils. iii) To be able to understand a 1:50000 topographical map and be able to take a professional palaeontologist back to the exact position where a fossil was observed. iv) To have a desire to increase their theoretical knowledge and practical abilities in general palaeontology. v) Progression to the following grade would be dependent on passing an oral and practical examination confirming competence in all the aspects required for grade B.

Tasks/Responsibilities: To accompany a responsible palaeontologist on collecting trips/fossil excavations and to perform tasks under supervision, especially important or critical operations. An example would be to help excavate a fossil working in the close presence of a qualified palaeontologist and with periodic supervision. To number, document and package fossil material collected with periodic supervision of a palaeontologist.

Grade B :-

Requirements: i) To have a history over a reasonably long period of a deep interest in palaeontology and in the importance of conservation of our fossil heritage. ii) To have a broad but accurate knowledge of the classification (at least to the level of Phylum/Division) of fossils and a general theoretical knowledge of the inferences that can be made using fossils. iii) To be skilled in the responsible excavation of fossils. To have a sound knowledge of the reasons for the numbering, for recording the accurate locality and for other important data documentation and protective packaging of fossils. iv) To be able to perform elementary but responsible preparation of fossils under supervision of a professional palaeontologist. v) To be able to read and interpret maps, particularly 1:50000 topographic maps and to accurately position a fossil locality on a map. vi) To have a basic stratigraphic knowledge of all the major sedimentary units in South Africa. viii) To know the basic tenets of the National Monuments Act and the reason for its existence. ix) Progression to the following grade would be dependent on passing an oral, written and practical examination confirming competence in all the aspects required for grade A.

Tasks/Responsibilities: To accompany a responsible palaeontologist on collecting trips/fossil excavations and to perform tasks under occasional supervision, especially with important or critical operations. An example would be to excavate a fossil working in the presence of a qualified palaeontologist with periodic supervision. To number, document and package fossil material collected with periodic supervision of a palaeontologist.

Grade A :-

Requirements: i) To have a proven history over a long time of a deep interest in palaeontology and the need and importance of conserving our fossil heritage. To be active in promoting the goals of the association and in leading educational tours and excursions. ii) To have an accurate knowledge of the classification (at least to the level of Class) of both animal and plant fossils, and be able to identify to at least genus level the fossils that the person specializes in. A general theoretical knowledge of stratigraphic and palaeoenvironmental uses of fossils would be essential.

At this level publication of findings in geological/palaeontological journals would be encouraged.

- iii) To possess detailed stratigraphic knowledge of the strata in which the person specializes in.
- iv) To be skilled in the excavation, documentation, packaging and accurate positioning of a fossil location on a 1:50000 topographic map.
- iv) To fully understand the principles involved in the curation of a fossil collection and to demonstrate the ability to properly curate a fossil collection.

Task and responsibilities: To undertake independent collecting trips/fossil excavations and to perform all the tasks expected of a qualified palaeontologist. To number, document, record the exact fossil position on a 1:50000 topographic map and package fossil material collected with utmost precision and responsibility. The material collected must be fully curated and at all times be available for inspection by office bearers of the responsible institute and/or the National Monuments Council. Publication on the collected material would be highly encouraged. The collection would automatically be transferred to the responsible institute upon the death of the collector. An example of an A grade collector would be Mr Roy Oosthuizen near Prins Albert in the Karoo.

GENERAL REMARKS

One of the obvious aspects that would arise is that grade D to B collectors who sacrifice their own money and time to assist in collecting trips or fossil excavations would appreciate some token reward in addition to the personal satisfaction gained. Two possibilities exist. The first would be to issue the helper with a fossil that has been seen by the responsible palaeontologist and found to be a common or not particularly well preserved specimen. The information regarding this fossil would be recorded in the database of the responsible institute and be available for scientific interpretations in the future. A certificate/permit could then be issued to the person which would legalize possession of the fossil. It is important to stress that the fossils would remain the property of the responsible institute and ultimately will be returned to it. The fossils would have to be returned to the responsible institute upon the collectors death to ensure that they are never sold. This would have to involve changes to the statutes and does not appear to be a practical option for the immediate present. The second possibility would be to produce high fidelity casts (hand painted and numbered) of one of the best fossils collected on that trip. This would be fairly expensive, but the advantages gained by the respective institutes should far outweigh the expense.

ADVANTAGES OFFERED BY THIS PROPOSAL

- i) The proposed system would create a keen, motivated and willing labour force to assist scientists in their collecting and excavations. With projected soaring labour costs and projected budget cuts in the future this must become increasingly attractive to scientists, university departments and museums with very limited budgets.
- ii) This would create a group of volunteers who could be called upon at short notice to collect fossils exposed in a quarry or mine where operations, due to economic reasons, can only be halted for a very short time.
- iii) This would enhance the study of palaeontology in South Africa by increasing the size, diversity and number of fossils available for study purposes. The South African professional palaeontological fraternity is, relative to other countries, very small. The greater majority of these have specialized in vertebrate studies. There are as a consequence many diverse groups

of fossils that have received very little attention due to the lack of trained palaeontologists. Highly motivated amateurs have in the past made significant contributions to the science of palaeontology and some have even progressed to hold highly prestigious academic posts (e.g. Professor James Kitching). Encouraging these people and channelling their energies in a positive direction will substantially widen the base of South African palaeontology.

iv) Providing a mechanism for keen collectors to legally possess fossils it will bring rare and well preserved fossils to the attention of the professional scientists that are at present concealed illegally in rock and mineral collections.

v) This would force collectors to properly document their collection and the importance of recording the exact locality of the fossils will be understood by them. The fossils in these instances will be of practical and applied use and not just pretty fossils in a collection.

vi) Association members will undoubtedly play a role in policing the illegal trade of our valuable heritage. With their greater numbers and with their "ears to the ground" they are more likely to become aware of any illegal trade and/or collecting that may occur. They would recognize the threat that such activities would pose to the continued legality of their own collecting and would readily bring such illegal practices to the attention of the authorities. This would provide a much less expensive and more effective policing of the law than is presently possible.

RESPONSES TO CIRCULAR REGARDING AN AMATEUR SOCIETY

LETTER FROM D. GIBSON

Dear Sir,

I read of your plans to form an Amateur Palaeontological Society in my Pretoria Gem and Minerals Club Newsletter and I am very interested to join as soon as possible. I am anxious to receive any further information and would be grateful if you would send me such.

Thanking you in anticipation,

Yours sincerely
D. Gibson.

LETTER FROM N. HILLER

Regarding the possible formation of an amateur Palaeontological Association, I think this might be a good idea. The potential to serve the science is enormous as are the educational possibilities. In my contribution to the newsletter I have mentioned the problems we have encountered with "amateurs" and I feel that the formation of some sort of association for such people might be a way to satisfy their needs. Of course, we as professionals can then keep a measure of control

on the activities of keen collectors and even make use of their energies. Through the auspices of an association we would find it much easier to educate the public in the techniques and legalities of fossil collecting. It would be a big mistake to shun those interested in palaeontology just because they are not qualified in the formal sense and there is always the danger of driving amateur collectors "underground". Thus the formation of an amateur association would receive my whole-hearted support.

Yours sincerely,
Norton Hiller.

COLIN MACRAE'S RESPONSE TO THE ABOVE TWO LETTERS

These letters reflect a very real need in the general public. The Palaeontology Section at the Geological Survey fairly regularly receives similar verbal and telephonic requests. Francis Thackeray at the Transvaal Museum and Hannes Oberholzer, director of the Durban Museum, have both related to us that this is also their experience. The increased coverage that SABC television has given to palaeontology lately must have contributed to this heightened awareness of fossils. I feel this interest is natural, healthy and if not met by our profession in a responsible manner it will be catered for by illegal activities.

LETTER FROM ARTHUR CRUIKSHANK

Re: Amateur Palaeontological Association of Southern Africa

I write as a founder member of the Palaeontological Society of Southern Africa and also as someone who depends to a high degree on the competence and keenness of "amateurs" for the material I use for research. We are also all aware of the value to the science of dedicated field workers such as Roy Oosthuizen. My message in brief and stated as strongly as it is possible to be stated, is that a separate society for amateurs is absolutely the last thing that palaeontology needs, in Southern Africa or elsewhere. Would Roy have been able to make easy contact with the profession if he had been a member of an "amateur" group only? It would have put at least one more step in the chain of contacts, and the feeling may well have been that he was a member of a slightly inferior organisation! At present we in the UK depend to a great extent on those who have the time and are in the right place (e.g. the English south coast or the area of the outcrop of the Oxford clay) for new material. Some of the new fossils have to be bought, but that is the price we have to pay for the museums not being able to afford their own field staff, in the financial climate of the 1990's. But over and above all else, by welcoming the amateurs into the ranks of the SVPCA and our annual meetings we keep track of what is going on, and we keep friends with those who are doing the digging.

By all means create a section within the Palaeontological Association for those who do not gain their daily bread by the study of fossils, but the need exists for a very close contact between the professional and the amateur. I do not believe that a separate organisation would prosper the study of fossils in Southern Africa. It would certainly not foster the science in the UK. Encourage the interested layman by all means, and by so doing make sure they are educated into good practice as well.

Damn it all, I have not earned my living for the last twelve years as a palaeontologist except for some brief periods ,so I suppose I must be regarded as an amateur in that respect! I would not have taken kindly to having to hibe myself off in some palaeontological Siberia on that account ,nor do I believe should anyone else. However it is up to the membership to decide. I would regret what I regard as a retrograde step if something other than a section were formed to look after the interests of the "amateur".

Yours sincerely,
Dr A/R.I. Cruickshank.

LETTER FROM GILLIAN KING

Re: Amateur Palaeontological Association of Southern Africa

Why can't amateurs be members of the PSSA? Amateurs seem to be welcome in the Palaeontological Association in the UK and the Society of Vertebrate Palaeontology in the US. My experience in the UK is that amateurs provide a stimulating and refreshing addition to VP meetings and frequently present papers which are of a higher quality than those of so-called professionals (is this what we are afraid of!!) It seems unnecessarily bureaucratic to have a grading system for amateurs, and very patronizing to allow the so-called most highly rated to be members of the PSSA. But then I'm just a zoologist -I probably shouldn't be allowed in the PSSA anyway!

COLIN MACRAE'S RESPONSE TO LETTERS FROM ARTHUR CRUIKSHANK AND GILLIAN KING:

Firstly it is pleasing to note Arthur's acknowledgement of the very real role amateurs play and their valuable contribution to palaeontology in the United Kingdom. In my original proposal, I specifically stated that from grade B, the amateurs would be strongly encouraged to become members of Pal Soc of Southern Africa and that membership of Pal Soc would be a compulsory requirement for admission to grade A. This is embodied in the draft constitution of the South African Society of Amateur Palaeontologists (SASAP) that Francois Durand has produced. Incorporating the amateurs either as individuals or as a branch within Pal Soc, was fairly extensively discussed at the meeting held between myself and representatives of the Pal Soc executive committee. I feel very strongly that the needs of the majority of the amateurs is sufficiently different to require a separate structure and method of operation. The mechanics of arranging lectures, field trips, producing relevant newsletters would be more logically organized and controlled from the separate institutes responsible for the local branch of SASAP. In the constitution of SASAP the position of chairman is by definition a palaeontologist from the responsible institute i.e. in practice a member of Pal Soc. The point here is that all activities will in effect be controlled and monitored by members of our society. One of the issues that arose from the National Monuments Council discussions was that it would be impossible to issue a collecting permit to a society e.g. Pal Soc. Permits can only be issued to institutes and people (in exceptional cases) who are held accountable for their activities. As the interest, involvement and responsibility of the amateurs grow they must definitely be incorporated into Pal Soc. This

will, in the near future become a source of trained motivated recruits for our society and that amateurs, I believe, will make a meaningful contribution towards palaeontology in South Africa. Again the contribution of Roy Oosthuizen is a good example. The emphasis is definitely on *different* in the initial stages of involvement of the amateur, not *inferior*.

LETTER FROM CHRIS GOW

Re: Amateur Palaeontological Association of Southern Africa

How do you "control" people ? Authority of an institution soon becomes institutions (plural) and control becomes even more of a pipe dream. How do you hold an institution "accountable" ? Would they take out insurance for R1 million in the event that it becomes necessary to buy back fossils sold overseas ?

There are good and bad "amateurs". Rare vertebrate fossils in particular have a very high cash value - much higher than ivory and rhino horn. To illustrate my point, an example is the recent Scottish fossil that went for R500,000. The bad amateur is a charming fellow who may behave impeccably when taken into the field and who then goes behind one's back and with beginner's luck collects say a bird ancestor from Stormberg, puts it in his luggage and finances an overseas holiday on the proceeds. I have no axe to grind with the overseas buyer. Our villain may even buy the landowner who will then become evasive in his dealings with the professional to the extent of revealing finds only to his amateur pal. Note also that as our law stands amateurs may not "legalise their fossils". Unless Colin has some magic formula for avoiding the scenario sketched above, I remain implacably opposed to this proposal. Note that what I've said above could apply equally to con artists from overseas.

My main point would be this: as things stand there is nothing to preclude me from taking a layman on a fieldtrip. This has been done very successfully in the past. I then take personal responsibility for such a person. Let sleeping dogs lie, I say.

I am not opposed to casts but a cast never satisfied an acquisitive rock hound.

One cannot force people. One of the important reasons why professionals have to have a university degree is to imbue in them the ethics of the profession.

It takes a palaeontologist to know one fossil from another. A naughty amateur could keep important material.

I wonder what the archaeologists feel about this.

With reference to the Gem Club's outing to Ventersdorp. It is obvious that no competent palaeobotanist was present on the outing. Shades of things to come ? Also, as the law stands Colin has no right to issue specimens to individuals not attached to scientific institutions on any sort of loan arrangement whatsoever. What does he mean by "suggesting" that rare fossils remain in collections. The word is "insisting".

It is essential to consult the Archaeological profession on this matter.

Chris Gow.

COLIN MACRAE'S RESPONSE TO CHRIS GOW'S LETTER

It is important to note that Chris has read the proposal and his comments are more to the point than some others from people who did not see the proposal.

Anyone who thinks that trade in South African fossils does not occur, or that outstanding examples of rare fossils are not possessed by rockhounds and gem collectors, is sadly mistaken. I also know that the demand will increase and to be totally realistic the means to police this trade and possession is rapidly decreasing. One of the main thrusts of SASAP is to inform and educate amateurs. This does not alter the law, but in effect gives the law more teeth. Bad apples we will always have with us, but I will not hesitate to ruthlessly initiate prosecution of an informed amateur who turns bad. Here again a well formulated and very specific law (Law No. 28 of 1969) will ensure success and act as a deterrent to potential offenders. Well motivated amateurs, as in the case of honorary wildlife wardens, have their ears to the ground and will provide a far more effective policing force than presently possible.

I envisage co-operation with local museums, universities and institutes. This does not change anything. The fact still remains that the responsible institute will be held accountable for the control of fossils collected under its auspices. Once again irresponsible behavior of amateurs coming to the attention of the National Monuments Council will severely jeopardize the continued grant of a collecting permit to that institute. This is a serious threat and, I believe, a very effective controlling mechanism. The R1 million insurance is totally irrelevant. Any fossil sold overseas would be the result of an illegal activity, just as money obtained fraudulently in S.A. and banked overseas is, and exactly the same procedural channels exist to recover the specimen.

Competition is a very real element in the world and is often used to effectively motivate people to perform to the best of their ability. Many people require recognition of small attainable achievements along the path to their final goal to remain motivated e.g. grades in music tuition, belts in karate etc.

With reference to sleeping dogs - I suggest that the dog is alive and awake. Let's tame him and get him as under control as soon possible, before we get bitten whilst being asleep ourselves.

I fully agree that a cast will not fully satisfy the acquisitive rockhound. This is exactly part of the reason for my initiating this proposal. They already have fossils and this will not change. In this instance it is far better to bring this type of person out into the open, train him and motivate him to do everything correctly than to have him destructively hacking away at fossils, not recording the exact provenience, storing the fossils he does have incorrectly and finally not instructing his family that it is illegal to sell the fossils in the event of his death. In addition you the scientists are more likely to get to study material that otherwise would have been hidden away because the collectors (although pleading that they do not know it is illegal to possess fossils) are all aware that they are contravening the law.

There is absolutely no implication (or intention) that a group of amateurs will be sent to a quarry unsupervised. The whole approach to amateur involvement is one of responsible involvement and supervision. Under the tasks/responsibility section from grade D to B my proposal specifically and repeatedly states that activities would occur under the supervision of a qualified palaeontologist.

If the amateur does not know one fossil from the other, how is he going to know which are the important fossils. Could anyone imagine Roy Oosthuizen (my example of a well informed, motivated grade A collector) naughtily withholding fossil material and preventing a scientist from studying it? Remember that Roy's collection will eventually be housed in the collection of the S.A. Museum.

Force is appropriate. Before anyone is allowed to keep fossils at his home (only a proven grade B and a grade A collector like Roy Oosthuizen) he would have to have demonstrated the abilities required for the grading. This includes recording the location and responsible curation. His collections would be open to Monuments Council inspection and he would lose his privilege immediately if he did not comply with requirements.

The model of honorary wildlife wardens appears to be working well.

The gem club outing was arranged to collect manganese minerals from the relevant mine and was advertised as such. No mention at all was made of fossils. The mine foreman mentioned the presence of the fossils to the group and some of the members obviously investigated and collected specimens. These they brought to the Survey for identification and to inform us of the presence of the fossils. This interaction led to the discovery of a new and very interesting palaeobotanical site for the Geological Survey. This illustrates the positive results that can be obtained by encouraging amateurs to report their finds. Shades of good things to come.

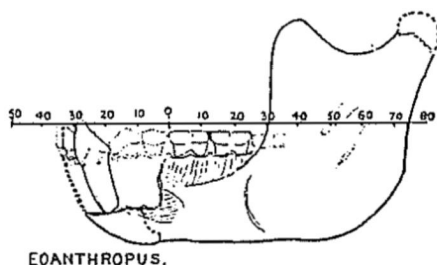
With regard to the second point he indicates that "as the law stands" I am not authorized to issue specimens to individuals not attached to scientific institutions. I have a copy of the Act (No. 28 of 1969) before me and this is not stated therein. PLEASE NOTE -: this situation has not occurred up to the present and part the motivation for initiating my proposal stems from my personal reservation regarding this very point. To issue a fossil to someone who is not trained, motivated or has proven his ability to conserve fossils is, I feel, extremely unwise. I accordingly have never put this preliminary suggestion I made into practice.

Archaeologists. I have had consultations Dr Janette Deacon and other archaeologists. Their practice is that both an amateur society and a professional body exists. Admission to the professional body is strictly by nomination, approval by at least six members and dependent on suitable university qualification. Secondly I refer you to an article written by Dr. Deacon in the June 1990 issue of the South Africa Archaeological Bulletin addressing the very same problem of amateurs destructively collecting artifacts. I saw this for the first time on my visit to the National Monuments Council offices, and what struck me is that there is the practical realization that the big stick of the law is almost impossible to apply without winning the support of the amateur.

I look forward to discussing any aspect of this proposal with colleagues and trust that you have many constructive criticisms.

Colin MacRae

PALAUVER



This column gets its name from the verb, palaver, "to discuss, to jaw" (O.E.D. definition); it is a column in which anybody can chew on any subject, just as anybody can (if they dared) in Hyde Park Corner in London. In this instance, Francis Thackeray gets his teeth into the Piltdown Palaver.

TEILHARD de CHARDIN, A VILLAIN OF THE PIECES AT PILTDOWN?

Francis Thackeray

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The story of Piltdown Man, so-called *Eoanthropus dawsoni*, is a remarkable one. A human skull had been buried in a gravel pit in Sussex, England, together with a chemically stained orang-utan jaw. This mandible had no canines, and its molars had been carefully worn down to look like the teeth of a hominid rather than those of a pongid. The "discovery" was announced officially on December 18, 1912, by Charles Dawson (who lived near Piltdown) and Smith Woodward (vertebrate palaeontologist and Keeper of Geology at the British Museum) in a large lecture room at Burlington House in London. The announcement immediately attracted world-wide attention. It certainly sparked controversy and stimulated a search for more material. Smith Woodward said that the controversy surrounding an association between a hominid cranium and an ape-like jaw would be resolved if a canine of the same individual could be found. Remarkably, an isolated canine was found at the same site ("Piltdown I") on August 30, 1913, by Teilhard de Chardin, who happened to live in the area for a period of four years and had a strong interest in palaeoanthropology. The canine found by Teilhard at Piltdown conformed to Smith Woodward's reconstruction - it corresponded more closely to a canine of a pongid rather than that of a hominid. Thus by 1913, many believed that the Piltdown I gravels provided evidence for a primate that had a human-like cranium with an ape-like lower dentition. However, doubts were still expressed as to whether the primate fossils were necessarily associated, belonging to the same individual. It is therefore all the more remarkable that in 1915, the same kind of association was found again at a nearby site ("Piltdown II"), where two human skull fragments were found with a pongid molar (also filed down to give it the appearance of being hominid), and painted brown. The discovery of two instances of human cranial fragments with curious pongid-like dentition was apparently enough to persuade a distinguished French palaeontologist, Marcelin Boule, that the existence of *Eoanthropus dawsoni* was valid. Boule happened to be the supervisor of Teilhard de Chardin's PhD thesis.

The forgeries were not exposed until 1953, when Kenneth Oakley and others at the British Museum undertook chemical tests and microscopic analyses of the Piltdown specimens. John Weiner, a South African, gave an account of this "discovery" in his excellent book entitled

"The Piltdown Forgery", published in 1955. It was Weiner who first suspected a forgery, having seen that the molars of the primate mandible were not worn down in the same plane (strongly suggestive of forgery). Since exposure of the fraud, Weiner and many others held the view that the perpetrator must have been Charles Dawson, a lawyer, who, as Steward of Barkham Manor, certainly had the opportunity to explore sites in the area of Piltdown. He had collected fossils for the British Museum. Like Teilhard de Chardin, he had a strong interest in palaeontology. In fact, it was palaeontology that brought the two men together.

The case against Charles Dawson would seem very strong, especially since he was one person who was present at all of the discoveries in the Piltdown gravels. However, this fact by itself is not surprising since he lived in the area. Besides, his own writings reflect an enthusiasm which is not always easily compatible with the idea that he perpetrated the hoax.

Recently, attention has been given to the possibility that a distinguished anatomist, Sir Arthur Keith, was responsible. This idea, generated by Ian Langham, has been taken up by Frank Spencer who recently compiled two volumes on Piltdown:

Spencer, F. 1990a. "The Piltdown Papers"

Spencer, F. 1990b. "Piltdown: A scientific Forgery".

(Both published by Natural History Museum Publications, Oxford University Press).

The collected papers are certainly a valuable and easily-available source of information for anyone interested in the case. Indeed, the case is now wide open for anyone to do some "sleuthing" of their own.

No new evidence is presented in this short article, apart from the fact that I refer to a meeting which I had with Kenneth Oakley in August 1977, when Oakley mentioned that he was puzzled and surprised by the behaviour of Teilhard de Chardin during an exhibition on Piltdown at the British Museum (Natural History), following the exposure of the forgery. Essentially, this article serves simply to bring together a number of facts which raise the question as to whether Teilhard was partly if not entirely responsible for a joke that went wrong. The only new aspect of this article is that it provides a possible motive for the joke that went wrong with the Piltdown I "*Eoanthropus*", and a different motive for the "planting" of similar material at the second site, Piltdown II.

Did Teilhard de Chardin conceive the idea ?

Alfred Romer, Brian Patterson, Louis Leakey and Stephen Jay Gould, all highly respected palaeontologists, have pointed a finger at Teilhard, a Jesuit priest whose very profession (or "calling") would make it seem unlikely that he was responsible for the forgery. However, there are a number of facts which, when taken together, are really rather startling when seen in the context of Piltdown. These facts are listed below. I have chosen to italicise certain statements for reasons that will become apparent later, when a scenario based on these facts is presented.

1. For four years (1908 - 1912) Teilhard de Chardin was stationed at a Jesuit Seminary at Ore Place, in Hastings, *very close to Piltdown*.
2. It was within this period (1908 - 1912) that chemically stained bones were found in the

Pitldown gravels. The specimens had been stained with *potassium dichromate*.

3. Prior to 1908, Teilhard had spent three years teaching chemistry at a Jesuit school in Cairo. It was during this period, while in north Africa on the Mediterranean coast, that he was *in a position to obtain fossils*. It so happens that the primate material at Pitldown I was "associated" with fossilised hippopotamus teeth (probably from Malta in the Mediterranean) and an elephant tooth (probably from Tunisia in north Africa).

4. When he was undergoing his training at the Jesuit Seminary at Hastings, near Pitldown, he had ample opportunity to explore the area. In fact, it was *"thanks to the liberal attitude of the Rector at Hastings, that Teilhard was allowed to go more frequently on scientific walks and excursions [than as usually allowed], finding specimens to offer to the British Museum or the Museum at Hastings. He had now advanced beyond the amateur class [in the seminary], and was manifesting a clear bent towards the palaeontology of the vertebrates"* (quote from the biography of Teilhard de Chardin, by Claude Cuenot, p. 12; also cited by Stephen Jay Gould in "Hen's Teeth and Horse's Toes", 1984, p. 234). *There is thus no doubt that Teilhard had a strong interest in vertebrate palaeontology when he was living not far from Pitldown, during the very period when fossils were "planted" at Pitldown I.*

5. It appears that Teilhard was bright but *bored* at the Jesuit seminary near Pitldown. In a book entitled "The Pitldown Men", Millar (1974:115) says that Teilhard found theological studies "boring", and that "his extramural studies sustained him...he seems to have been delighted by all he saw of Sussex".

6. Teilhard de Chardin met Charles Dawson on a "scientific walk" in 1909. Evidently they met frequently thereafter. Writing to his parents on May 31, 1909, Teilhard wrote

"In the past two weeks I've become acquainted with Charles Dawson, a geologist in the area. *It happened under amusing circumstances*. While visiting a quarry close by, we [Teilhard and a French companion, presumably Felix Pelletier] were surprised to see the "manager" take on an understanding attitude when we discussed fossils with him. He had just discovered an enormous pelvis bone from an iguanodon and was *very anxious to talk about it*. I knew then that it was almost a whole iguanodon being found piece by piece, and the fragments are piling up one by one *in a crate destined for the British Museum*. Mr Dawson always arrived when we were on the grounds and immediately he would come over to us full of joy and say 'Geologists?' " (Quoted from Spencer 1990a:7).

From this account it is possible to detect that Teilhard was amused by Dawson (a stout Englishman who was a keen collector of fossils; at the time, Teilhard was a bored but bright student; do we have here the ingredients for a "forgery" that was intended as a joke, played by a young Frenchman, intended for a portly Englishman who sent fossils to the British Museum ?)

7. Dawson had informed Smith Woodward of the British Museum that he had "some friends" helping him find fossils in the Wealden gravels (Spencer 1990a: 6). These "friends" would have been Teilhard de Chardin and Felix Pelletier, since, in a letter to Smith Woodward at the British Museum (dated January 15, 1910), Dawson referred to a fossil that

had been discovered by Teilhard and his French friend Pelletier. This specimen had been sent to the B.M. by Dawson, supplementing other specimens that Dawson himself had collected.

8. In the letter to Woodward dated January 15, Dawson asked for "some sort of solution for preserving the specimens when they are found" (quoted from Spencer 1990a:7). Evidently, Woodward sent Dawson some *potassium dichromate*, prepared by Frank Barlow, a technician at the B.M. (Spencer 1990a:8). Dawson would certainly have made this chemical available to Teilhard de Chardin and his companion, Frank Pelletier, for purposes of preserving fossils. We can infer that *both had access to potassium bichromate by 1910*.

9. Smith Woodward had written to Dawson, saying that if he (Dawson) so wished, steps could be taken to prevent the "poachers" (the young Frenchmen) from entering sites with fossils - a sentiment that would have offended Teilhard de Chardin had Dawson mentioned this to him. Woodward gives the following account of Dawson's reply to the suggestion:

"Mr Dawson, with characteristic generosity and scientific zeal, replied [to Woodward] that the workmen should rather welcome his fellow collectors [the two young Frenchmen], and he himself [Dawson] would give them the 'tips' of which they [the workmen] felt deprived.

Here we have the possible setting for a joke involving one or two young French students taking advantage of a situation in which poorly paid workmen could be encouraged to find "fossils", then given to Dawson who would pay those workmen and who would submit the material to palaeontologists at the British Museum, notably to the very person who had regarded the two young Frenchman as "poachers" - an insult to Teilhard de Chardin.

10. Although a human cranial fragment had been found by workmen in 1908, attention was centred on the Piltdown gravels following excavations there in the winter of 1911. This would have been about two years after Teilhard de Chardin had first met Dawson in a quarry, in the company of poorly paid workmen. 1910 and 1911 were also the years in which Teilhard would have gone beyond the "amateur class" at the seminary, allowing him freedom to *amuse* himself in the Piltdown area.

A SCENARIO INVOLVING PILTDOWN I AND TEILHARD DE CHARDIN

From the facts listed above, we can reconstruct the following possible scenario. In this scenario, Charles Dawson is innocent, and several anatomists, including Smith Woodward, Sir Arthur Keith and Sir Grafton Elliot Smith, are all taken in by the hoax.

In 1909, Teilhard de Chardin was a young man with a strong interest in palaeontology. He had not yet established a reputation as a palaeontologist. He had met Dawson, a portly, jolly Englishman, who had always bounded up to him whenever they had met on Teilhard's "scientific walks". In this scenario, we see Teilhard as a bored but bright student, who wanted to play a joke on Dawson and Smith Woodward.

In this scenario, Teilhard prepared certain bones available to him (from his own collection of fossils, supplemented by other material from other collections), and stained them with potassium bichromate (which had been provided to him by Dawson, who had obtained them

from Woodward of the British Museum, for purposes of preparing fossils). Teilhard (with or without his young French friend Pelletier) then planted them in the Piltdown gravels, together with fossilised hippopotamus teeth from Malta in the Mediterranean, and an elephant tooth from Tunisia; bone and stone artefacts were included for good measure.

In the winter of 1911, (as in earlier winter months), gravel was required for "road-mending" in the Piltdown area. Rain had simply accelerated the rate of erosion. In the scenario presented here, workmen digging in the gravels in the winter of 1911 found human cranial bones that had been planted by Teilhard de Chardin; the bones had been planted some time earlier when he was bored with theological studies, and prior to his ordination as a priest on August 24 1911; once the workmen had reported news of the finds to Dawson, they were duly rewarded, and Dawson sent the news to Woodward at the British Museum.

On account of wet conditions in winter, further excavations at Piltdown were discontinued until the summer of 1912, when the beds had dried out. Dawson wrote to Woodward on May 27, saying "Next Saturday [June 2, 1912], I am going to have a dig at the gravel bed and Fr Teilhard de Chardin will be with me. *He is quite safe.* Will you be able to join us?"

In this scenario, Dawson's statement that Teilhard de Chardin was "quite safe", reflects the fact that by June 1912 Dawson was already duped by Teilhard; Teilhard, as a theologian ordained in the previous year, could consider himself probably safe from suspicion; however, his conscience reminded him that he was responsible for the planting of fossils (including human skull fragments, artefacts and Pleistocene fossils from foreign areas) in the Piltdown gravels *prior to his becoming a priest*. To protect his future career as a palaeontologist, and indeed to protect his reputation as a theologian, he must certainly not let it be known that he was responsible for the planting of fossil material in earlier years. To do this, why shouldn't he, as an ordained priest on the first joint expedition involving Woodward of the British Museum, find a fossil?

The story can be taken up by Teilhard de Chardin himself, who wrote the following account of what happened on the day that he joined Dawson and Smith Woodward to look for fossils in the Piltdown gravels in June 1912:

"We embarked in a motor car, with the elements of a picnic. [The car] took us three miles across Uckfield Park and deposited us at the place where the hunt was on. This was a stretch of grass, four or five metres in width, beside a wooded glade leading to a farm. Under this grass was a layer of pebbles, about 50 centimetres thick, which they are digging up, bit by bit, for road-mending. A man was there to shift the earth for us. Armed with spades and sieves etc, we worked away for hours, eventually with success. Dawson unearthed a fragment of the famous human skull - he had already found three other pieces - and I myself laid hands on the fragment of an elephant's molar. This find considerably enhanced my reputation with Woodward, who jumped on the piece with the eagerness of a boy and I could see all the fire which his apparent coldness conceals" (quoted by Millar, 1974: p. 123).

Work continued in the Piltdown gravels during the months following June 1912. On occasion, Teilhard stayed with Charles Dawson while they (together with Woodward) worked on the Piltdown gravels in the summer of 1912 (Millar 1974: 133). Material retained by sieves were

spread out on the ground to be washed by rain, and spread out for examination. Woodward wrote that in the months after June 1912, they found

"...three pieces of the right parietal of the human skull...I found in another heap an important fragment which fitted the occipital bone. Finally, on a warm evening after an afternoon's vain search, Mr Dawson was exploring some untouched remnants of the original gravel at the bottom of the pit, when we both saw the human lower jaw fly out in front of the pick-shaped end of the hammer which he was using. Thus was recovered the most remarkable portion of the fossil which we were collecting" (quoted by Millar, 1974:124).

In actual fact, it is now known that the so-called "human jaw" was that of an orang-utan, and this mandible was certainly not in primary context. Attempts may have been made to make it appear that the mandible was in fact in undisturbed deposits. Certainly, if the mandible had been in the gravel pit for several days or weeks, if not months, any rain and subsequent erosion would have led to an appearance that the gravel had been deposited over the pongid mandible under natural circumstances.

According to the scenario presented here, the mandible and other specimens at Piltdown I had been deliberately planted as a joke on Dawson and Woodward. However, what was the motive for this joke ?

Motive for Piltdown I ?

It should be remembered that at the beginning of 1910, Woodward had once said to Dawson that arrangements could be made to prevent the French "poachers" from gaining access to sites with fossils. Dawson did not agree to such action. His reply to Woodward makes it clear that he was happy to "welcome his fellow collectors". In this scenario, it is suggested that Teilhard as a young enthusiastic collector had heard (through Dawson) that Woodward had contemplated barring him and his French friend from entering fossil sites; Teilhard would have been offended by this, and for fun if not for spite, would have conceived the idea of planting specimens in the Piltdown gravels as a joke upon both Woodward and Dawson. In the scenario presented here, this constitutes a motive for the "hoax": a joke that went wrong. In this scenario, Teilhard wanted to play a joke, but did not believe that experts at the British Museum would accept that the fossils were genuinely associated. In that respect, he was wrong for forty years, since the fossil specimens had been "doctored" too well.

By December 1912, Woodward evidently felt he had enough material to warrant public announcement of the "discoveries". The meeting that took place at Burlington House on December 18 certainly stirred controversy. In the context of the scenario presented above, Teilhard would have cringed. He would have heard how experts from the British Museum and elsewhere had been intrigued by the fossils, and were risking their reputations on them. Woodward and Sir Arthur Keith were at logger-heads over the reconstruction. In the absence of a canine, there could not be any certainty as to who had reconstructed "Piltdown Man" correctly from the fossils available at the time. Woodward recognised the importance of finding a canine.

At this juncture, whoever was responsible for Piltdown I might have felt the need to expose the joke before it went any further, but the question was how to accomplish this without exposing the joker ? Perhaps the answer was: let there be a canine, as a continuation of the joke, and let all the world know that it *had* to be a preposterous primate - a "monster" (the very term which Teilhard used to describe *Eoanthropus* when he spoke to Kenneth Oakley about it).

THE CANINE AT PILTDOWN I

Writing to his parents, Teilhard de Chardin said "In my opinion all these reconstructions [by Smith Woodward and Keith] add nothing definite to the interest of the fragments. *The important thing is to look for more pieces*" (quoted by Millar 1974:133). In the context of the scenario presented here, such letters to his parents, after 1912, were intended to serve as a record of Teilhard's apparent innocence regarding any fossils that might be found in future.

It is remarkable that Teilhard de Chardin found the much sought-after canine *in the presence of Smith Woodward and Dawson* in 1913. Woodward had expressed amazement that Teilhard had found it after he himself, with Dawson, had searched the very area without finding anything in the way of fossils. These are the very words of Woodward:

"We had washed and sieved much of the gravel, and had spread it for examination after washing by rain. We were then excavating a rather deep trench in which Father Teilhard, in black clothing, was *especially energetic*; and as we thought he seemed a little exhausted, we suggested that he should leave us to do the hard labour for a time while he had comparative rest in searching the rain-washed gravel spread. Very soon he exclaimed that he had picked up the missing canine tooth, but we were *incredulous*, and told him that we had already seen several bits of ironstone which looked like teeth, *on the spot where he had stood*. So we [Dawson and Woodward] both left our digging to verify his discovery. There could be no doubt about it".

This account of Teilhard's "discovery" on August 30 in 1913 is very interesting. We learn from Woodward that Teilhard had been "especially energetic" during the digging operations, prior to his finding the canine. In the context of the scenario presented above, Teilhard had the canine on his person, hidden in his "black clothing", and his "especially energetic" digging was stimulated not so much by the desire to find a fossil, as much as nervous energy: he had to chose an appropriate moment and an appropriate situation for the canine to be found. The mandible had previously been planted in the gravel in a situation which had been interpreted as "primary context". Could a second important fossil be planted without raising suspicion?

Woodward recorded the fact that he found it difficult to believe that Teilhard had found the canine on the very spot which he and Dawson had already combed for fossils. Woodward in fact uses the word "incredulous":

"He (Teilhard) had picked up the missing canine tooth, but we were *incredulous*, and told him that we had already...looked...on the spot where he had stood".

PILTDOWN II

The discovery of the canine was made in 1913, but this was not the last discovery in the Piltdown area. "Piltdown II" was a second site which had yielded evidence of a human cranium and a curiously worn primate molar. Can Teilhard have been responsible for this too? According to Stephen Jay Gould, the answer is yes, despite the fact that the "Piltdown II" fossils were discovered in 1915, when Teilhard was in France. The basis for Gould's claim lies in Teilhard's letters to Kenneth Oakley, written after the forgery had been exposed. Teilhard wrote:

"He [Dawson] just brought me to the site of Locality 2 and explained [to] me that he had found the isolated molar and the small pieces of skull in the heaps of rubble and pebbles raked at the surface of the field".

Gould correctly identifies an anomaly in this account from Teilhard. The French cleric *had* been taken by Dawson to see another site near "Pitldown I", but this was in 1913, whereas "the isolated molar and the small pieces of skull" had been found by Dawson in 1915, when Teilhard was in France. Gould infers that Teilhard "could not have seen the remains of Pitldown 2 with Dawson, unless they had manufactured them together before he left".

Here it is suggested that Dawson was innocent. The question remains as to whether "Pitldown II" material was linked to Teilhard.

Possibilities and motive regarding Pitldown II

If Teilhard can really be linked to Pitldown II, as suggested by Stephen Jay Gould, it would seem probable that Teilhard's motive must have been different from that associated with Pitldown I: perhaps it was done to cover up any suspicion of his involvement in the joke that had gone too far, for too long, involving too many distinguished anatomists to permit Teilhard to own up with dignity. After all, his own reputation was also at stake. What to do? Plant *another* hominid/pongid "monster" at another site, and have things arranged in such a way that he (Teilhard) could not be linked to it? Teilhard either planted another hominid/pongid "fossil" at Pitldown II before leaving for France, or arranged with a friend to "plant" certain fossils in his absence, at Pitldown II. Could such "friends" or accomplices have included Felix Pelletier?

Recently Keith Thompson (1991, in *American Scientist* 79:194-201) has suggested that Martin Hinton - a zoologist at the British Museum, and known to be a practical joker - may have planted the Pitldown II material in an attempt to flush out the hoaxer responsible for Pitldown I. Certainly, the molar at this site had been painted with brown paint, whereas the molars at Pitldown I had been stained with potassium bichromate, and this could suggest that Pitldown II was perpetrated by someone different.

What evidence do we really have against Teilhard? Shortly before he died, Kenneth Oakley stated in *The Times* that he felt that Teilhard de Chardin should be given the benefit of the doubt, if no strong evidence could be levelled against him. Strong supporters of Teilhard de Chardin would go along with this view. After all, Teilhard was a respected cleric. However, there is one thing that Oakley did not emphasise as "evidence" against de Chardin. This concerned Teilhard's curious behaviour at an exhibition at the British Museum (Natural History) in London, following the public exposure of the fraud. Oakley invited de Chardin to see the exhibition on Pitldown, but once there Teilhard expressed no real interest in it at all. Instead he rushed through the displays and did not want to talk about the matter. Kenneth Oakley mentioned this to me when I met him in South Kensington in August 1977. He also mentioned it to Stephen Jay Gould, who has used this as additional evidence against Teilhard de Chardin.

Gould notes that Teilhard wrote very little about Pitldown after the young Frenchman had left England to become a fully trained palaeontologist (under Boule in France). However, in one instance, Teilhard mentions that the manibular condyle of the Pitldown I mandible may

have been *deliberately* removed, a statement which reflects the possibility of forgery. Gould uses Teilhard's statement almost as an admission of guilt, and he interprets it as a signal from Teilhard to caution his readers.

Conclusion

The evidence presented in this article has been drawn together from published accounts, and has been used to reconstruct a scenario for Piltdown I that points a finger primarily in the direction of Teilhard de Chardin as the man responsible for conceiving the idea of combining human cranial fragments with a pongid jaw, disguised in such a way to make it appear hominid.

It may not be possible to find convincing evidence against Teilhard de Chardin, but there is certainly strong circumstantial evidence that turns him into a likely villain of the Piltdown I pieces. It is unfortunate that Louis Leakey did not live to complete the book which he promised to write on Teilhard de Chardin, relating to Piltdown.

The fact that Teilhard was a young man when he lived at Piltdown, only a few kilometers from the Piltdown gravels, at a time when his interest in palaeontology was growing, and at a time when he was bored with theological studies, must be considered seriously in relation to the so-called "hoax". If it was a joke, it went wrong, and perhaps Teilhard felt that it had gone on for too long for him to be in any position to own up with dignity.

The motive for the joke at Piltdown I? In this scenario, it is suggested that Teilhard was offended by the fact that Smith Woodward of the British Museum had even contemplated barring him access to sites with fossils. Such action would have destroyed the fun of the two enthusiastic young Frenchmen. After all, searching for fossils was one of the pretexts for escaping from the boredom of theological studies at the seminary. In this scenario, Teilhard conceived the idea of a hominid/pongid "monster", planted in the Piltdown gravels, for fun if not for spite, expecting that specialists at the British Museum would know better than to accept it as a genuine Old English Gentleman.

If this scenario is correct, it is probable that Teilhard's conscience would have preyed upon him very heavily for all of his life since those student antics, which he must have regretted once he had obtained a doctorate and gone on to achieve fame in later years (during which he said hardly a word on Piltdown, despite his being a palaeoanthropologist). Did he make a confession? If so to whom? Perhaps to Felix Pelletier, himself an ordained Jesuit priest and perhaps also associated with the original Piltdown "sin" (intended as a joke that went horribly wrong)? And did Felix make his confession through Teilhard? If so, perhaps both felt at peace with themselves on account of the fact that they had made their peace with their maker? And perhaps Teilhard kept very quiet throughout his life about Piltdown - to do otherwise could have meant excommunication.

MORE PALAVER...ON PALS AT SAMA FROM GILLIAN KING

I recently attended the Southern African Museums Association meeting in Cape Town. It was a very interesting meeting - not so much for the content of the papers (as far as I was concerned) but for experiencing the museum community of South Africa at close quarters. However there were very few delegates from research departments in natural history museums and when I asked colleagues in the SAM why they hadn't attended, they made the justifiable point that there were few papers dealing with natural history or research. But this of course is a Catch-22 situation- there are no such papers because there are few delegates there to give them. What I wonder is, since many of my palaeontological colleagues work in museums, is there any reason for scientists to want a higher profile in SAMA and its conferences? Can we gain from it or contribute to it? I'm not advocating anything - I'm just interested to know what other people think.

CLASSIFIEDS

Births

Congratulations to Gideon and Sue GROENEWALD, who have a girl, Patricia Aunè, otherwise known as "Mampho", which in Sesotho means a "gift from God".

Greetings also to Henry Robert THACKERAY, who was delivered by pterodactyl on May 25, 1991, weighing all of 2.1 kg. Both "Henry" and "Robert" are family names in Francis and Anne's ancestry. (There is no truth to the rumour that Robert is in any way linked to a Broom).



Degrees

Congratulations also to ANN CADMAN and ANUSUYA CHINSAMY who successfully delivered their PhD degrees (without the help of the pterodactyl).

Conferences

By consensus, the 7th Biennial Conference of the PSSA will be held at the BPI Palaeontology, University of the Witwatersrand, between September 7 - 13, 1992. All enquiries can be directed to the Organising Committee (Anusuya Chinsamy, Chris Gow, Bruce Rubidge, & Dick Rayner), PSSA Conference '92, BPI Palaeontology, Wits University, Private Bag 3, 2050.

Two post-conference excursions are planned: one to Sterkfontein, Kromdraai, Swartkrans and Plovers Lake (the latter currently being excavated by Francis Thackeray); the other will be an overnight trip to Makapansgat. More details will be circulated in due course.