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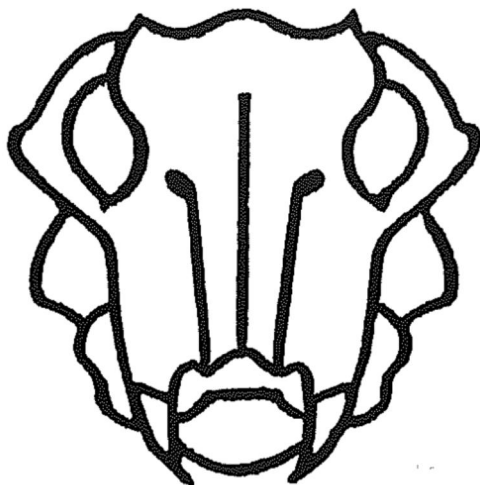
# **PAL** NEWS NUUS

Biannual Newsletter of the Palaeontological Society of Southern Africa

Halfjaarlikse Nuusbrief van die Paleontologiese Vereniging van Suider Afrika

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**Our Society's New Emblem**

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## EDITORIAL

### TALKING UP A STORM IN CAPE TOWN

The conference we all looked forward to so much has come and gone, as happens (alas) with all good things. But, happily, the memories linger on — all warm and pleasant ones for me. So far I've been to all four of our Society's conferences, and every one has been immensely enjoyable — each one seemingly better than the ones before. This one continued the trend; I think some would say that this was the most enjoyable and stimulating yet. I can say that without conceit because, although it happened during my term as President, I had nothing at all to do with the excellent arrangements. Credit for that must go to the staff of the Palaeontology Department of the South African Museum, and most particularly to Juri van den Heever. There *must* be something about the Cape! Do you remember the relaxed and laid-back atmosphere of the Third Conference in Stellenbosch? I thought to myself then that nobody else could hope to rival it; next thing, here we are at this equally relaxed (yet busy) gathering in Cape Town! Perhaps we should call for an official ban on all conferences or seminars in the whole country if they are scheduled to take place anywhere else but in that distant enclave of *real* civilisation down there in the southwest!

I think we all realised how honoured our Society was to be able to use the South African Museum's splendid new facilities. We owe the Board of the Museum and the Director, Dr Mike Cluver, our thanks for that privilege. The new extensions set a standard of quality, style, grace and grandeur that will be hard for other museums to follow, but equally hard for them to ignore. It's nice for a change to see a natural history museum succeeding in fields where usually only art museums can hope to aspire!

We were touched and delighted to learn that the venue of our meeting, the impressive new auditorium in the museum complex, is to be named in honour of the late Dr Tom Barry, who was Dr Cluver's predecessor in office and whose vision and determination the new extensions represent. We have proposed to the Board of Trustees of the South African Museum that the Society provide a suitable portrait of Tom Barry for the auditorium, as a tribute to his memory, his contributions to palaeontology and to museums in this country, and in appreciation of the privilege accorded us in inaugurating the museum's new facilities in palaeontological style.

It was a pleasure to see our "Founder", Dr Jacques van Heerden, among the delegates at the conference; we hope that this signals a return by him to palaeontology. It was also a pleasure to have with us two distinguished overseas guests, namely Prof Armand de Ricqlès of Paris, and Dr Rupert Wild of Stuttgart who came with his charming wife, Barbara. We hope they enjoyed their brief stay in South Africa, seeing something of the incredible palaeontological riches of this country.

Well, that leaves only Natal. See you there for the next one in 1988.  
Details to follow . . .

Oh, and by the way – Happy Christmas!

Mike Raath  
EDITOR





**FOURTH GENERAL MEETING  
HELD IN CAPE TOWN, 24 SEPTEMBER, 1986**

Due notice having been given, a General Meeting of the Society was convened in the South African Museum auditorium at 3:30 pm on September 24th, 1986.

**MINUTES**

**1. Present:**

The President (Prof. M A Raath), Immediate Past President (Dr. M A Cluver), Vice President (Dr. B W Oelofsen), Hon. Secretary (Mrs. I M Chesselet), Hon. Treasurer (Prof. J W Kitching) and about 30 members whose names are recorded in the attendance register for the meeting.

**2. Welcome:**

The President welcomed those present and expressed the thanks of the Society to the Board, Director and Staff of the South African Museum for permitting the Meeting to take place in the splendid new premises of the museum, and for making the necessary arrangements.

**3. Apologies:**

Apologies were received from Dr. A R I Cruickshank and Dr. R M S Falcon.

**4. Minutes of the Previous General Meeting:**

The Minutes of the Third General Meeting held in Stellenbosch on July 16th, 1984, having been circulated, were taken as read and *approved* (Prop. Dr. Gow, Sec. Mr. van den Heever).

**5. Matters Arising From the Minutes:**

There were no matters arising.

**6. President's Report:**

Prof. Raath presented his President's Report in which he looked back over the first ten years of the Society's history and advocated the adoption of a formal "Presidential Theme" for the term of office of future Presidents. He noted a suggestion from Dr. Brain that provision should be made within the programme of future conferences of the Society for the formal presentation of a Presidential Address. The meeting *endorsed* this suggestion (Prop. Dr. Gow, Sec. Mr. van den Heever).

**7. Hon. Treasurer's Report:**

Copies of the audited Financial Statements for the period 1982-86 were tabled.

Prof. Kitching reported that not only were the Society's finances reasonably sound, with a healthy balance in hand, but the books had now been professionally audited for the first time in about six years. Henceforth, keeping track of the Society's finances would be a simple matter as its accounts had now been computerised by the Society's auditors, Messrs Douglas & Co of Johannesburg. He appealed to Members to pay their subscriptions on time at the beginning of each year, without waiting for accounts, as this would mean that the Society could benefit substantially from the interest that would accrue.

The Hon. Treasurer's report and the audited financial statements were *adopted* (Prop. Dr. Cluver, Sec. Dr. Oelofsen).

**8. Hon. Editor's Report:**

Prof. Raath presented his report.

Since its inception, 16 issues of *Pal News/Pal Nuus* have been published at an average of 26 pages per issue. An appeal was made for more active participation in the life of the Newsletter by more of the Society's Members. The Editor reported that he intended to include more in the way of photographs in future issues, but that this would probably necessitate switching to a better (and therefore more expensive) type of paper. More "filler" items are required, and Members were asked to keep a lookout for appropriate material of this sort. It was also intended to introduce a "Guest Editorial" section which would feature in one issue in four. The Hon. Editor's Report was *adopted* (Prop. Mr. Smuts, Sec. Dr. Keyser).

**9. Society Emblem:**

The report of the Working Group set up at the Stellenbosch Meeting, Consisting of Mrs. Chesselet Dr. Brink and Prof. Raath, was read. It reaffirmed that what the Society wanted at this stage was *not* a Coat of Arms, but rather a simple "logo" or emblem mainly for use on stationery and other such items (i.e. a letterhead logo). It was noted that 19 entries had been submitted in terms of the original design competition, and the meeting was now requested to decide whether it wished to adopt one of those designs or begin again.

It was *agreed* to adopt as the Society emblem the design submitted by Dr. F. Grine and Mr. J. van den Heever (drawn by Mr. C. Hunter), namely a stylised frontal view of the skull of *Lystrosaurus*, but without the scroll that accompanied it in the original design (Prop. Dr. A.S. Brink, Sec. Dr. Q.B. Hendey).

It was suggested that the Society should consider commissioning ties, scarves, etc., featuring the emblem, as these are popular as "collectables".

#### **10. Amendments to the Constitution:**

Proposals for the amendment of the Constitution had been circulated to all Members before the Meeting, together with a document by the proposer and seconder (Profs Raath and Kitching) in support. In essence they were intended to streamline and simplify the existing Constitution. The main changes concern:

- a) stipulation of a "Headquarters" of the Society which is tied to the location of the incumbent President
- b) a revision of the aims of the Society;
- c) formalisation of four categories of membership: Honorary, Ordinary, Student and Associate;
- d) scrapping of the large Committee of regional representatives and entrusting management of the Society to an Executive Committee consisting of the Society's elected office bearers;
- e) a number of minor revisions to other clauses.

After full discussion it was *agreed* to adopt the amendments as set out in the document circulated under cover of the letter from Profs Raath and Kitching, dated 31 July 1986 (Prop. Dr. Gow, Sec. Dr. Oelofsen).

*(Editor's note: all the adopted amendments are incorporated in a revised version of the Society's Constitution which will be circulated to Members as soon as it has been translated into Afrikaans. Therefore the amendments will not be repeated here).*

#### **11. Election of Office Bearers:**

In terms of the Constitution, the Vice President automatically succeeds to the presidency and the retiring President becomes the Immediate Past President, consequently Dr. B W Oelofsen will take over as President at the close of this meeting, and Prof Raath becomes Immediate Past President. The following office bearers were duly elected, having been properly nominated in terms of the constitution:

As Vice President: Prof. J W Kitching

As Hon. Secretary: Dr. J F Thackeray

As Hon. Treasurer: Mr. J A van den Heever (Dr. Gow, who had also been nominated, asked that his nomination be withdrawn.

As Hon. Editor: Prof. M A Raath

#### **12. General:**

12.1 Proposed Joint Meeting with the Herpetological Society:

Dr. Oelofsen asked that the Society investigate the possibility of arranging one of its meetings in conjunction with the Herpetological Society because of the proximity of interests of several members of both Societies. *Agreed* that the Executive Committee would look into it.

12.2 Tributes to Deceased Colleagues:

Dr. Brain proposed that a letter be sent to Mrs Alice Barry by the President on behalf of the Society expressing regret at the death of her husband, Dr. Tom Barry, and recording its appreciation of his services to our discipline. *Agreed*.

The President also expressed the Society's regret at the deaths of Dr. Ann M Anderson and Prof. Oliver Davies. Members stood to observe a moment's silence in memory of all these colleagues.

12.3 Statement by Dr. J. van Heerden:

Dr. Jacques van Heerden apologised to the Society for what he regarded as the inconvenience he had caused when his move to a new post outside of museums and palaeontology precipitated "The Crisis" in 1980. The President responded that no apology was necessary, and that instead the Society owed Dr. van Heerden a deep debt of gratitude for his initiative which had led to the foundation of the Society ten years ago.

12.4 Liaison with the National Monuments Council:

Dr. D E van Dijk called for pressure to be brought to bear via the NMC in an attempt to compel mining houses to surrender to appropriate scientific institutions the fossils that many have in their possession and which are often unknown to interested specialists. After considerable discussion it was agreed to leave the matter over, as many members felt that there were other means of dealing effectively with this problem.

12.5 Trading in Fossils:

Prof. Raath reported on a letter he had recently received from a member of the South African trade mission in Belgium regarding proposed commercial trade in fossils. He had replied to the effect that this sort of thing was not encouraged in South Africa, and had referred the matter to the Director of the

National Monuments Council with a covering letter expressing strong opposition to any such possibility here. He asked if the Meeting shared his view that commercial trade in fossils should be opposed in South Africa. Members strongly *agreed*.

Members also expressed the view that South African involvement in trade in fossils from other countries should also be discouraged, more particularly where it was known or suspected on reasonable grounds that those fossils had been illegally acquired in the first place.

It was suggested that the National Monuments Council should be approached by the new Executive Committee with a view to requesting that a greater number of palaeontologists be appointed Honorary Wardens *Agreed*.

Members were reminded that, at the request of the NMC some years ago, the Society had nominated Dr. Hendey as an official consultant to the Council, and that therefore the Society has very close links with it.

12.6 Society Project: Time-stratigraphic Column:

Prof. Visser asked that the Society consider taking on the task of initiating and co-ordinating a project to draw up a time-stratigraphic column for South Africa. It was *agreed* that, although there might be some overlap with the work of the Geological Survey in this regard, the Society should proceed. Prof. Visser and Mr. van den Heever agreed to co-ordinate the project on behalf of the Society.

12.7 Field Workshops:

Arising from informal suggestions made at one of the social functions during the Conference, it was suggested that it might be useful to consider arranging some other kind of Society activity in the years intervening between the biennial conferences. Several members had expressed an interest in holding field workshops at places of palaeontological interest, where people from a variety of disciplines could participate in a "team approach" to the interpretation of the chosen locality in a cross-disciplinary way (e.g. palaeontological,

sedimentological, palaeoenvironmental, etc). After much discussion this was strongly supported, and it was *agreed* that the first of such field workshops should be arranged in mid-1987, preferably at a locality such as the Golden Gate National Park. Personnel from the Bernard Price Institute agreed to handle arrangements.

- 12.8 Venue for the Fifth Biennial Conference and General Meeting:  
It was *agreed* that the next meeting would take place at Giant's Castle in Natal in 1988, provided the venue was available and suitable facilities could be provided. The incoming Executive Committee was requested to go into the matter.

- 12.9 "Life Through the Ages" by B. Rubidge and J. Brink:  
Dr. Cluver wished to compliment Messrs Rubidge and Brink, and the National Museum, Bloemfontein, for the production of the guide booklet to their palaeontological gallery, which had just appeared and which he thought was an excellent introduction to South African palaeontology. *Agreed*.

- 12.10 Publication of Conference Proceedings:  
The President announced that the Director of the South African Museum, and the Editor of the *Annals*, had agreed that the *Annals of the South African Museum* would be made available to publish the refereed proceedings of the Conference just completed, provided all house rules and editorial standards were rigorously maintained. The President expressed the appreciation of the Society for this privilege, and it was agreed that Prof Raath would collect all papers offered before forwarding them to the Editor of the *Annals*.

There being no further business to conduct, the President thanked Members for their attendance and for their participation in what had been in his view an excellent Conference and a very worthwhile and positive meeting. He wished the incoming Executive well in its endeavours and closed the meeting at 5:17 pm.

(Editor's note: Since these minutes have yet to be confirmed, Members who disagree with them as an accurate record of the meeting are invited to write to the Hon. Secretary, setting out their objections in detail).

### SOCIETY EMBLEM (AT LAST!)

At long last the controversy has been settled and the Society has adopted an emblem! This historic decision was taken at the General Meeting in Cape Town. Funnily enough, unlike all previous discussions of this matter, there wasn't very much talking this time! The design entries that had been submitted for the original competition years ago were put up, and Members were asked if they wanted to settle for one of them, or start again. In no time we had a decision: the Grine/van den Heever/Hunter version of the *Lystrosaurus* skull which adorns the cover of this issue of *PAL News/PAL Nuus*.



Delegates to the Conference must have thought that a "fast one" had been pulled when they registered — their registration package contained three souvenirs of the conference: a specially designed folder for documents, a coffee mug, and a specially printed car-licence sticker. From each of them stared the face of *Lystrosaurus*! But this wasn't an attempt to force the Society's hand; it was just Juri trying to brighten up Conference items with something unusual, distinctive and appropriate, rather than the usual dull old bank or insurance company logo that has become so much a part of the conference scene in this country.

For the record, the original motivation that accompanied the entry from Fred Grine and Juri van den Heever (drawn by Cedric Hunter) was published in *PAL News/PAL Nuus* vol. 2 (4) five years ago. I repeat it here:

- "1. In view of the various disciplines in palaeobiology, an emblem which attempts to represent each branch would have to be so vague as to be meaningless or, alternatively, it would consist of an artistically impractical agglomeration of symbolic elements.
- "2. Whilst all branches of palaeontology are of equal importance, the therapsids (mammal-like reptiles) are probably the most well-known South African fossils because of their unique evolutionary context.
- "3. Amongst the therapsids *Lystrosaurus* occupies a central position in as much as it is found in the middle of the Beaufort sediments. Furthermore, *Lystrosaurus* is not only abundant in South Africa, but it is also represented in the various elements of Gondwanaland. This genus therefore serves as an excellent palaeo-geographic link.
- "4. Therefore we suggest . . . a graphic reconstruction of an idealized *Lystrosaurus* skull in frontal view. The initials of the Society appear . . . below the skull in a simple legible manner.

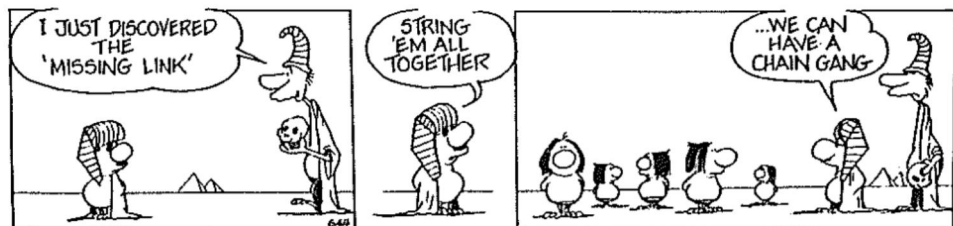
"We feel that this emblem is immediately recognisable and would be suitable for use on letterheads and Society publications, and lapel badges, tie pins, etc."

One change adopted by the meeting was to omit the scroll below the skull, on which the designers wanted the Society's initials. It was felt that the name does not need to be part of the emblem.

What did the winners win? A souvenir mug each! *There's value!!*

## KING TUTT

by Gim





**FOURTH BIENNIAL CONFERENCE HELD AT THE  
SOUTH AFRICAN MUSEUM, CAPE TOWN, SEPT. 22-25, 1986**

**ABSTRACTS OF PAPERS PRESENTED**

**THE PALAEOGEOGRAPHY AND PALAEOCLIMATOLOGY OF  
THE KAROO BASIN IN SOUTHWESTERN GONDWANA**

Johan Visser

Geology Dept., Univ. of O.F.S., Bloemfontein

The major late Palaeozoic to early Mesozoic basins of southwestern Gondwana were located on a platform surrounding a highland interior. A palaeo-Pacific ocean formed the western margin of the platform. The Karoo Basin, which was perhaps the major depocentre in the region, had an oblong shape with a long axis of more than 2000 km, but it changed in size since late Palaeozoic glacial deposition to small enclosed fluvial basins during the early Mesozoic. The major cause for the shrinking of the basin was a migrating mountainous region which can be attributed to subduction of the palaeo-Pacific plate.

The palaeolatitude of the basin margins varied from about 80° during the late Carboniferous to 40° S during the early Jurassic. Climatic conditions ranged from polar during the Permo-Carboniferous glaciation to warm and arid later on. There is reasonable correlation between the south pole position and basin climate except during early Permian Whitehill deposition, when apparently warm conditions occurred in the Karoo Basin while the palaeolatitude was between 60° and 70° S. This climatic anomaly can be attributed to a combination of factors which include a lowering of albedo due to a sea-level rise, pole migration from land into the ocean, and a possible rise in atmospheric CO<sub>2</sub> levels.

The sedimentary filling of the Karoo and other southwestern Gondwana basins was controlled by climatic changes and tectonism related to plate tectonics. These in turn influenced life in the basins as continental seas, highlands and land connections determined biogeographic provinces.

## THE TRIASSIC PERIOD AND VERTEBRATES OF MIDDLE EUROPE

Rupert Wild

Staatliches Museum für Naturkunde, Stuttgart, W. Germany

The epicontinental Middle European basin (the so-called Germanic Basin) is the classical region for the Triassic Period and its subdivision into three epochs, Lower, Middle and Upper Triassic. They were named Buntsandstein, Muschelkalk and Keuper by Friedrich Von Alberti (1834). In the terrestrial Buntsandstein mainly stegocephalians are found. The marine Muschelkalk was deposited by an ingression of the Tethys sea. Apart from the fish fauna, nothosaurs and placodonts dominate. The mainly terrestrial Keuper has produced stegocephalians, thecodontian reptiles, dinosaurs and teeth of early mammals. The problems of stratigraphic correlation of the Germanic Triassic with the Triassic in other regions of Europe and the world were discussed.

### REPORT ON A NEW COELACANTH FROM THE DWYKA

B.W. Oelofsen<sup>1\*</sup>, J.C. Looock<sup>2</sup>, J.N.J. Visser<sup>3</sup> and J.C. Terblanche<sup>4</sup>

<sup>1\*</sup>Dept. Zoology, Stellenbosch Univ.

<sup>2-4</sup> Dept. Geology, Univ. of OFS, Bloemfontein

Coelacanth remains from southern Africa are extremely rare and the discovery of the remains of a fish in a borehole core in the North-west Cape is therefore of some interest.

The scale pattern of this specimen is unlike any of the other coelacanthids known from the literature and it is thought to be a new species. The environment in which the fish lived is of interest being in a probably marine Dwyka fjord.

### A NEW PRIMITIVE DROMASAUR FROM THE ECCA OF SOUTH AFRICA (THERAPSIDA : DICYNODONTIA).

Bruce Rubidge

Nasionale Museum, Bloemfontein

The Dromasauria are a poorly known group of small therapsid reptiles of which only four specimens representing three different genera have been reported so far. All of these specimens are preserved as natural

moulds in the rock and hence do not provide a 3-dimensional image of the fossil. The discovery of a dromasaur skull and lower jaw in rocks of the Upper Ecca in the southern Karoo is of extreme importance as, apart from being the oldest dromasaur yet discovered, it is also the first which is not preserved as a natural mould. As this skull is particularly well-preserved, it sheds much new light on the structure of the palatal and occipital regions of the dromasaurian skull. It is considered that the new dromasaur is more primitive than all described dromasaurs. This discovery has important implications in the placing of dromasaurs in the dicynodont phylogenetic hierarchy, and also in showing how very early in therapsid history the dicynodont branch led off from the main therapsid branch, leading to dinocephalians and theriodonts.

## ASPECTS OF THE NORTHERN TRANSVAAL REGION PALYNOSTRATIGRAPHY PROJECT

Colin MacRae

Geological Survey, Pretoria

The Waterberg and Soutpansberg/Pafuri coal-bearing basins occur as two unconnected basins in the northwest and northeast part of the northern Transvaal, Republic of South Africa. The Hammanskraal plant macrofossil locality occurs within sediments of the Springbok Flats deposit, some 200 km to the south of these basins. The study records the qualitative and quantitative character of the palynological material from 145 samples. Eighty four assemblages come from borehole ET 61 collared above the coal horizons of the Waterberg Basin and drilled to the base of the Karoo succession. Sixty assemblages of fossil pollen and spores originate from KNP 8 and KNP 7, two boreholes in the centre and southern extension respectively of the Soutpansberg/Pafuri Basin, and one assemblage comes from the Hammanskraal fossil macroplant locality. It is proposed that the ET 61 borehole from the Waterberg Basin be designated an initial palynological reference section for the Karoo Sequence of South Africa.

The three boreholes are subdivided vertically on biostratigraphic principles into a total of five concurrent range zones and one interval zone, the Hammanskraal material being defined as a single assemblage. The oldest biozone of borehole ET 61 from the Waterberg Basin is the *Plicatipollenites gondwanensis* - *Granulatisporites trisinus* Concurrent Range Zone (zone A), overlain by the *Potonieisporites novicus* - *Cannanoropollis densus* Concurrent Range Zone (zone B). The *Cyclogranisporites gondwanensis* Interval Zone (zone C) is the next in the succession,

followed by the *Laevigatosporites vulgaris* – *Alisporites australis* (zone D) and finally by the *Kraeuselisporites rallus* – *Striatopodocarpites cancellatus* (zone E) Concurrent Range Zones. The youngest zone is the *Striatopodocarpites fusus* – *Weylandites lucifer* Concurrent Range Zone (zone F) from borehole KNP 8 drilled in the Soutpansberg/Pafuri Basin. The Hammanskraal assemblage is equated with the ET61 zone E.

The biozones defined are first correlated with the most complete palynological composite reference section with marine invertebrate age control from Australia, and then with similarly documented zones from Australia, Antarctica, India, South America and the African continent.

The age of the sediments intersected by borehole ET 61 range from upper Carboniferous (? Kassimovian to Gzelian Epoch) for zone A, to the Ufimian and lowest part of the Kazanian Age (Late Permian Epoch) for zone E. The age of the sediments studied from the Soutpansberg/Pafuri Basin range from unknown for the palynologically barren lowest coal and carbonaceous mudstone units though to Kazanian and part of the Tartarian Age (Late Permian Epoch) for zone F of borehole KNP 8. Periods of erosion or non-deposition are evident in both sections. The Hammanskraal site is dated as occurring within the Ufimian to the lowest part of the Kazanian Age (Late Permian Epoch). The presence of an unconformity in borehole KNP7 illustrates the practical application of palynology.

## A CLASSIFICATION OF THE EARLY THEROCEPHALIA

J.A. van den Heever  
South African Museum, Cape Town

The cranial morphology of the early Therocephalia is discussed on a historical, comparative and taxonomic basis. It is shown that the family name Scylacosauridae has precedence over the generally used name Pristerognathidae and that other historical therocephalian family names, viz. Alopecodontidae and Ictidosauridae, fall within the parameters of the Scylacosauridae and are therefore invalid. In addition, new material has shown that a dichotomy exists within the early Therocephalia and a second taxon can consequently be identified on a large number of anatomical features. The family name Lycosuchidae is available for this taxon.

Into these two groups are incorporated all the valid taxa previously placed in the Pristerognathidae, Lycosuchidae, Alopecodontidae and Ictidosauridae. From the above the conclusion is drawn that the Scylacosauridae may be more closely related to the rest of the Therocephalia than to the Lycosuchidae.

## A REVISED DESCRIPTION OF THE *MOSCHORHINUS* SKULL

J.F. Durand

Bernard Price Institute for Palaeontological Research  
Univ. of the Witwatersrand, Johannesburg

The skull of *Moschorhinus* has been described by Broom (1920), Boonstra (1938), Brink (1958) and Mendrez (1974). The elements forming the anterior half of the skull are well known from these descriptions. However, due to the poorly preserved braincases in most *Moschorhinus* specimens, or insufficient preparation thereof, certain misconceptions have arisen concerning the relations of the elements constituting the posterior half of the skull. In this paper the external morphology of the posterior half of the *Moschorhinus* skull is discussed in detail.

## ON THE VALIDITY OF THE TRITYLODONTID GENUS *TRITYLODONTOIDEUS* SP. *MAXIMUS*

S. Fourie

Dept. Zoology, Univ. of O F S, Bloemfontein

A re-examination of *Tritylodon toideus maximus*, based on a comparison with extensive new material of *Tritylodon* from the B.P.I. and casts, photographs and drawings from Dr. G.E. Lewis of *Nearctylodon broomii* collected in the Kayenta Formation of Arizona, U.S.A., has shown that at least the cheek teeth (postcanines) are sufficiently distinct to merit the retention of this form as a valid genus and species.

## CYNODONT AND MORGANUCODONT PERIOTICS COMPARED

C.E. Gow

Bernard Price Institute for Palaeontological Research  
Univ. of the Witwatersrand, Johannesburg

Now that the skull of *Morganucodon* is known in great detail it is necessary to bring knowledge of cynodonts up to the same standard. The complex bones which wall the brain cavity and house the inner ear are particularly important in this regard. This paper presents new details of the periotics of *Thrinaxodon* and *Tritylodon* and demonstrates a significant apomorphy of morganucodonts.

## ON THE USEFULNESS AND PROSPECTS OF BONE HISTOLOGY FOR VERTEBRATE PALEONTOLOGY

A. de Ricqlès

Université Paris VII, 75005 Paris, France

Because the gross shape, size and relationships of bones readily offer so much information on the structure, function and evolution of fossil vertebrates, Vertebrate Paleontologists have, by training and tradition, generally tended to remain anatomists and morphologists (as well as geologists). However, fossil remains of vertebrates also very commonly contain well preserved information at the microstructural, histological level of biological organization. How and why this is so depends on the intimate fabric of the hard tissues concerned, as well as on mechanisms of fossilisation.

Now at last there is a growing awareness among Vertebrate Paleontologists that histological details are more often than not available for description and study, but it seems that there are still many problems over how to deal meaningfully with histological data, and whether they are really useful in the field, or not. Indeed, the approach to bone paleohistology has been unfortunately pervaded by the emphasis of traditional paleontology on formal taxonomic-systematic issues, in a way that can be summarised by the traditional request of the Vertebrate Paleontologist to the Histologist: "Give me a name for that scrap!". That a reliable and precise answer to such a request is, for good reasons, most often impossible does not detract from the usefulness of bone histology, but simply shows that the question is ill-founded because the research strategy is bad. This point is developed and a contrasting research strategy is advocated — one emphasizing the significance of histological differences not in terms of gross systematics, but rather in terms of functional and local ontogenetic peculiarities of bone deposition and further remodelling (in fact, a local "stratigraphy").

In this way, many biological issues can be meaningfully addressed by critical paleohistological studies: ontogeny, growth dynamics, individual age, ecology, development trajectories and heterochronies, actual ontogenetic changes underlying evolution of morphological traits (and hence phylogenies), biomechanics, physiology, etc.

Paleohistology really opens up a whole new realm of studies for Vertebrate Paleontologists that immensely widens and deepens the amount of valuable information made available to us by fossil vertebrates — towards a better record of the patterns, and a better understanding of the process, of evolution.

REPORT ON FIRST DINOSAUR SYSTEMATICS SYMPOSIUM,  
TYRRELL MUSEUM, DRUMHELLER, CANADA,  
2-5 JUNE 1986

M.A. Raath

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The First Dinosaur Systematics Symposium was held at the newly opened (Sept. 1985) Tyrrell Museum of Paleontology in Drumheller, Alberta, Canada, in June 1986. It was attended by 60 people from 11 countries; I was the only delegate from Africa. The formal sessions focused on means of quantifying morphological variation among known dinosaurs, and techniques to assess the meaning of such variation in a taxonomic and systematic sense. Several statistical and computer-graphics techniques were applied to the solution of these problems by a number of delegates. Cladistic analysis once again showed its great strength and utility in assessing phylogenetic relationships among taxa, but strong criticism was voiced at some aspects of its methodology — especially the insistence that for a clade to be monophyletic it must include all its descendant taxa, no matter what taxonomic rank those descendant taxa might attain (e.g. the clade "Coelurosauria" must include its descendant taxon "Aves", even though it is generally agreed by all that Aves represents a new and higher taxonomic rank [Class] than Coelurosauria [Infra-order]). It is argued that this serves only to sow confusion).

One delegate noted that the animal kingdom seems by-and-large to be characterised by a uniform diversity at the Ordinal level (i.e., many animal Classes each contain about 30 Orders; the significance of this figure, if any, is not clear). However, among the dinosaurs, only two Orders are currently recognised; he suggests that dinosaurs are seriously under-classified at the ordinal level.

Even though dinosaurs have now been known for more than a century and a half, new taxa continue to be discovered — but at a slower rate than before. Nevertheless, too many new taxa still find their way into the literature based on woefully inadequate materials. This, of course, ensures that palaeontologists in years to come will have no difficulty in finding an adequate excuse to arrange further meetings to discuss the problems of dinosaur systematics — as prophesied by the word "First" in the title of the symposium in Drumheller, June 1986.

## THE AMMONITE SUBFAMILY LABECERATINAE SPATH, 1925 : SYSTEMATICS, PHYLOGENY, DISTRIBUTION AND IMPLICATIONS.

H.C. Klinger

South African Museum, Cape Town

The ammonite subfamily Labeceratinae is an easily identifiable group of heteromorph ammonites, restricted to the Upper Albian *dispar* Zone. Phylogenetic analysis of the subfamily shows it to consist of two genera only – *Labeceras* and *Myloceras*. *Hamitoides* definitely does not belong here. Geographic distribution of the subfamily shows concentrations in south eastern Africa/Madagascar and Australia respectively. Absence in India is possibly due to limited Upper Albian exposures. Apart from Patagonia, absence of Labeceratinae in the South Atlantic is due to several factors: absence of suitable sediments in the Cape Basin, in the Angola Basin probably due to a combination of effects which may include the restrictive effect of the Walvis Ridge, combined with the unknown factors of differential requirements of different ammonite taxa.

## BENTHIC COMMUNITIES AND SEDIMENTARY FACIES IN THE WITTEBERG GROUP

Norton Hiller

Dept. Geology, Rhodes University, Grahamstown

Rare Middle-Upper Devonian marine invertebrate fossils are recorded from a few scattered localities in the lower part of the Witteberg Group. The specimens represent a number of shallow water communities similar to those recognised in Silurian and Devonian rocks from other parts of the world.

At a single locality near the top of the Weltevrede Formation near Grahamstown, four co-existing communities are recognised: a linguloid-orbiculoid community, a *Tropidoleptus* community, a homalonotid-*Plectonotus* community, and a community of largely infaunal bivalves. An assemblage of this sort is interpreted as representing the restrictive conditions of an intertidal flat environment. These are reflected especially by the low diversity within the brachiopod communities the more stable infaunal environment permits a somewhat higher diversity bivalve fauna to be present.

Analysis of the sedimentary facies shows that the fossils come from a sequence of interbedded shales, siltstones and sandstones arranged in a



number of thin upward-fining cycles and displaying flaser, lenticular and wavy bedding. This sequence rests on lithic arenites at the top of a coarsening-upward unit and is overlain by thick cross-bedded quartz arenites of the Witpoort Formation. The top part of the Weltevrede Formation is interpreted as having formed in back-barrier tidal flats during transgressive reworking of a delta top.

In the Western Cape, two localities in the Wagen Drift Formation have yielded a number of brachiopods, including *Tropidoleptus*, *Australospirifer*, chonetaceans and linguloids, as well as bivalves and possible Bryozoa. The greater diversity of this brachiopod assemblage suggests somewhat deeper water conditions than the Weltevrede Formation assemblage, probably subtidal. The sedimentary facies of the Wagen Drift Formation have been interpreted as having formed in the subaqueous portion of a growing delta pile. The different interpretation of the faunal assemblages from the two areas accord well with the different interpretations of the containing sedimentary facies.

#### ARTHROPOD TRACKWAYS IN THE LOWER PART OF THE DWYKA FORMATION ALONG THE KRANSGAT RIVER BETWEEN NIEUWOUDVILLE AND LOERIESFONTEIN

Johan Looek and Johan Visser

Dept. Geology, Univ. of O F S, Bloemfontein

*Umfolozia* trackways were found on thinly bedded silty sandstone forming part of a 30 m thick diamictite-sandstone-conglomerate sequence in the Permo-Carboniferous Dwyka Formation. Excellent outcrops occur about 20 m above the base of the Dwyka Formation along the Kransgat River on the farm Vondeling Extension 479, Calvinia District. Numerous sets of arthropod tracks, burrows and undefinable imprints are present along the bedding planes. The sandstone was deposited by turbidity currents. Sedimentation occurred in the ancient Hantams Valley during an interglacial and the track makers lived in a shallow proglacial environment with distal icebergs or winter ice and a strong inflow of cold fresh water.

The angle of the footprints in the trackways corresponds with that of trackways found at Klipneus along the Orange River by Anderson (1981) and suggests an older age for these interglacial deposits than for varved mudrocks with trackways found in valleys along the northern and north eastern parts of the Karoo Basin.

## TRACE FOSSILS AND FACIES ANALYSIS OF THE EARLY ORDOVICIAN SARDINIA BAY FORMATION

R. Shone  
Dept. Geology, Univ. of Port Elizabeth

The Sardinia Bay Formation is part of the lowermost Table Mountain Group in the Eastern Cape. Although the strata have been folded and subjected to low grade metamorphism, they have retained many characteristic sedimentary features. Trace fossils resembling *Ophiomorpha*, *Thalassinoides*, *Diplocraterion*, *Skolithos*, *Chondrites* and other enigmatic forms are preserved in some of the sandstones. The mudrock units are devoid of trace fossils. Sedimentary facies interpreted as shallow-shelf megaripple, sandwave, beach and shallow-water turbidite deposits are palaeontologically barren, but associated herringbone cross-bedded sandstones are often intensely bioturbated. These burrowed sandstones and the interbedded mudrocks could represent sedimentation at the tidal limit of an ancient epeiric sea.

## A STUDY OF THE BULWER FOSSIL SITE

D.E. van Dijk

The site is situated in a quarry in the town of Bulwer, Natal. Discovered by Geoff and Margaret Grantham, then young children, probably in 1960, the first collections were made by the Wyatt-Goodall and Van Dijk families in 1966. Most of the best material comes from the horizon first investigated, the preservation differing somewhat on either side of a dyke. Much material could still be extracted from the northern end of the quarry, but a bypass road is planned which may pass through the site.

The fossils include sphenopsids (Order Sphenophyllales and Equisetales), pteropsids, pteridosperm leaves of several types, including some with reticulate venation and sometimes auricles, scale leaves, fructifications, especially *Rigbya*, trace fossils, and insects including Hemiptera, Plecoptera, Miomoptera and Proelytroptera. The fossil assemblages are noteworthy for the relatively small size of the pteridosperm leaves mostly  $\pm 20$  mm diameter, few exceeding 30 mm) and the relative frequency of *Rigbya* and infrequency of other fructifications. There are several layers with the type of organic material associated with accumulations at the margins of water films.

## DIICTODON AND THE DEVILS CORKSCREW!

Roger Smith  
South African Museum, Cape Town

Large helical burrow casts of vertebrate origin have been discovered at several localities in the lowermost strata of the Teekloof Formation of the Beaufort Group (Permian) in the southwestern Karoo basin, South Africa. They are not only the oldest but also the only vertebrate burrows of helical geometry to be found in rocks of pre-mammalian age.

The burrow casts are vertically disposed spiralling tubes filled with fine-grained sandstone or siltstone, often with a calcareous cement. Tube diameters gradually increase from 60 mm in the upper entrance decline, through two non-contacting dextral coils, to about 160 mm at the base of the spiral, whereupon the tube straightens and widens into a horizontal terminal chamber. Burrow depths range from 0,5 – 0,75 m and the ramp angle ranges from 10° to 32° although within any single spiral it is constant.

Articulated skeletons of the small dicynodont *Diictodon* have been found within the terminal chambers and spirals of three sand-filled burrows. Linear ridges preserved on the outer walls and floor of some of the terminal chambers resemble scratch marks possibly made by the claws and "beak" of *Diictodon* during burrow excavation.

The sedimentological sequences in the host strata at two separate localities are interpreted as having been deposited by episodic sheet floods and distributary splay-fans in the proximal floodbasin areas flanking an aggrading meanderbelt rise. Stratigraphic, taphonomic and palaeopedologic analysis of the burrow sequences supports the interpretation that climatic extremes may have forced normally non-fossorial mammal-like reptiles to excavate aestivation or hibernation burrows.

Comparison is drawn between helical burrow casts of the Lower Beaufort and other recorded occurrences, in particular *Daimonelix*, a beaver burrow from the Miocene of Nebraska. Fundamental similarities far outweigh differences to the extent that the Beaufort helical burrows may be grouped with the "daimonelixes".

It is concluded that the excavation of the large helical burrows, an activity usually attributed to rodents, was pre-empted by mammal-like reptiles, suggesting that some therapsids may have already been "behavioural mammals" some 50 million years before the first "anatomical mammals" evolved.

## A RECONSTRUCTION OF A *DIICTODON*.

Clive Booth

South African Museum, Cape Town

A detailed step-by-step account, accompanied by slides, of the technical aspects in the reconstruction of a *Diictodon*, based on two superb fossilized specimens prepared by Miss A. Crean of the S.A. Museum. The specimens, when prepared, enabled me to take exact measurements of the various parts of the anatomy, which helped to produce a very accurate reconstruction leaving very little to imagination.

The palaeontological gallery that forms part of the new extensions to the S.A. Museum, will display this and other larger reconstructions made by the same technique. It is interesting to note that after the reconstruction of this *Diictodon*, tracks were found which are believed to belong to the same genus. These tracks seem to indicate that our reconstructed specimen would have made identical footprints had it moved across this sand surface some 240 million years ago.

### SOME OBSERVATIONS ON PLESIOSAURIAN RECONSTRUCTION WITH REFERENCE TO THEIR LOCOMOTION

B.H. Newman

South African Museum, Cape Town

The reconstruction of a plesiosaurian and a giant pliosaur is discussed and the reasoning as to how the animal appeared in life is demonstrated. The manner in which plesiosaurs made their way through water is discussed with reference to flying versus rowing underwater and the observations of workers are examined.

The anatomy of plesiosaurs is considered with special reference to muscle developments as an indication of their mode of locomotion.

### TRIASSIC TRACKWAY SITES IN NATAL

D.E. van Dijk and J. van Dijk

Trackways attributable to dinosaurs occur at Giants Castle, Kamberg and near Drakensberg Gardens. The palaeoenvironment in each case is apparently an ephemeral lake (playa lake). Mudcracks provide evidence of desiccation, graded beds with sole marks evidence of influx of turbulent debris-laden sheet-flows, lap marks, rills and rünzels evidence of shallow water, while rain-pitting appears to have occurred mainly in water-filled sediments; evidence of deposition of salts has been sought but not found. Besides vertebrate trackways there are a few traces attributable to invertebrates, including tracks and coprolites. Of particular interest is *Cruziana*-like paired depressions, which occur parallel with sole marks and also in a more or less hexagonal array; these are attributed to crustaceans related to *Triops* and the possible feeding strategies are illustrated.

## THE LOWER CRETACEOUS FLORA FROM THE KIRKWOOD AND SUNDAYS RIVER FORMATION, ALGOA BASIN, SOUTH AFRICA

Marion Bamford

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Univ. of the Witwatersrand, Johannesburg

A new collection of plants was made from three main localities within the Kirkwood Formation, along the Sundays, Wit and Bezuidenhout rivers, in 1983. Brief geological background to this region is given; there is still much debate about its stratigraphic sequence. The fluvial and estuarine deposits intergrade with the marine deposits but this study concentrated on the land plants.

Three groups of plants, the Cycadophyta, the Coniferophyta and the Pteridophyta, are represented in the Kirkwood Formation. The Sundays River Formation yields a great abundance of coniferous wood but with little detail preserved. One of the two types of bennettitalean fronds found, *Zamites recta*, has preserved cuticle. The scale leaf, *Cycadolepis jenkinsiana*, has cuticle which was bennettitalean but different from that of *Z. recta*. The only cycad, *Pseudoclenis* sp., has cuticle with typical cycadean stomata but the distribution of the stomata does not fit into any established cycad genera. The leafy twig, *Brachyphyllum* sp., and the ovuliferous scale, *Araucarites rogersii*, represent the only conifers found in the Kirkwood Formation. A number of ferns without fertile parts, and, therefore, of unknown affinity, comprise the third group of plants, together with a whole plant specimen of *Onychiopsis psilotoides*. These plants are described and information they provide for palaeoclimatic conditions is discussed.

## CRETACEOUS FOSSIL INSECTS FROM ORAPA, BOTSWANA, WITH SPECIAL REFERENCE TO THE CARABIDAE (COLEOPTERA).

I.J. McKay

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Univ. of the Witwatersrand, Johannesburg

A new site yielding fossil insects and angiosperms has recently been discovered at Orapa, Botswana. The fossiliferous sediments have been dated independently as early Upper Cretaceous. In this paper the site and sediments are briefly described and a preliminary study of the insects, concentrating on carabid beetles, is presented. The evolutionary significance and the importance of the insects as palaeoenvironmental indicators are discussed. Some of the insects show affinities to the fauna of present forests of the south western Cape, which suggests a similar type of environment at Orapa 93.1 million years ago.

## BIOZONES AND GEOLOGICAL TIME

A.W. Keyser and C.J. van Vuuren  
Geological Survey, Pretoria

A model is presented showing the relationships between biozones based on benthonic or terrestrial (autochthonous) and air-borne or planktonic (allochthonous) fossils and lithostratigraphic boundaries in a regressive sedimentary sequence. It is concluded that biozones based on autochthonous fossils will incline not to transgress lithostratigraphic boundaries but will tend to transgress time lines while the opposite will hold true for biostratigraphic units that are based on allochthonous fossils. It is therefore possible that biostratigraphic units can transgress one another. This may account for many of the cases in which palaeontologists working on different fossil groups differ in their age determination of a particular rock unit.

## ECOLOGICALLY DIAGNOSTIC XYLEM ANALYSIS (EDXA)

A. Scholtz

South African Museum, Cape Town

A computer-based system designed to facilitate the quantitative analysis of xylem tissue is described. The system comprises a computer package and a set of described procedures for measuring cell diameters, the incidence of certain features and the dimensions of the various tissues comprising the xylem, from an image of the transverse section of a piece of wood. The aim is to produce standardised and relatively sensitive measures for the range of wood anatomical variables to which functional significance can be attached. Since it was developed as a means to reconstruct past climates through analysis of the anatomy of fossil and subrecent wood, the system has been referred to as Ecologically Diagnostic Xylem Analysis, or EDXA.

The results of a trial application of the system in the analysis of assemblages of pieces of charcoal from a cave deposit is reported. The total assemblage and a range of morphological types were analysed as separate units. In most cases the results were complementary and this has allowed a relatively confident reconstruction of climates in the time range concerned.

## CAINOZOIC SEA-LEVEL CURVES FOR SOUTH AFRICA: LOCAL, REGIONAL AND GLOBAL EVENTS

I.K. McMillan  
S.O.E.K.O.R., Johannesburg

Examination of Foraminifera assemblages from 150 offshore and onshore coastal boreholes drilled by SOEKOR and other companies in the course of hydrocarbon exploration, together with numerous onshore outcrop samples, and sea-floor samples and cores, has provided a comprehensive base for understanding changes in sea-level around the coast of South Africa during the Cainozoic.

Three major types of event can be recognised. Local events are, clearly, confined to a small portion of the South African continental margin, and are not typical of the general trends recognised elsewhere. One example is the rapid subsidence of the Tugela offshore in the earliest Palaeocene, and the resulting, localised marine transgression, evident in part in the Richards Bay area. A second example is the subsidence of the Orange and Lüderitz Shelves off South-West Africa in latest Middle and earliest Late Eocene times, resulting in a localised transgression that led to the accumulation of the Langental and Buntfeldschuh beds. Regional events are those which are developed extensively around the southern African coastline (Angola to Mozambique at least), but appear not to be typical of the other southern hemisphere continents. Examples are the latest Palaeocene-earliest Eocene marine transgression and regression (Cuanza Basin, Angola; borehole Kudu 9a-1 and other west coast offshore boreholes; eastern margin of the Agulhas Arch; Birbury, eastern Cape; Zululand; probably Mozambique onshore), and the Early to Middle Miocene (Aquitanian to Langhian, locally Serravalian) transgression and regression, which in South Africa transgressed inland of the present coastline only over the Zululand coastal plain (not the Uloa Formation). Because of the obscuring effect of the numerous local and regional events, global events can only occasionally be recognised. The most notable of these is the major distal offshore boreholes off the west, south and east coasts of South Africa.

Previous attempts to establish sea-level curves for the South African Cainozoic have relied on the presumption that southern Africa has acted as a rigid block throughout this time period, with equivalent transgressions occurring off all three coasts. In such a situation, only one sea-level curve is necessary for the entire continental margin. However, more detailed analysis of Foraminifera faunas, resulting in better dating of stratigraphic sequences, clearly shows the South African continental margin to have been subjected to significant, localised tectonic warping at a number of times during the 66 million years of Cainozoic time.

## FOSSIL MOLLUSCS FROM HONDEKLIPBAAI

John Pether

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Well-preserved shelly beds are present in regressive, shallow marine deposits exposed in diamond mines near Hondeklipbaai. Examination of the fauna and sedimentology of these deposits by Dr Brian Kensley (Smithsonian Institution) and the author has considerably improved our knowledge of the coastal plain succession in Namaqualand. The shelly layers were laid down in a range of palaeo environments which include muddy nearshore shelf deposits, gravelly deposits swept seawards during intense storms and laid down beyond the surf-zone, surf-zone deposits, tidal-inlet and lagoonal deposits.

The molluscan fauna comprises species living today on the coast (29%), extant species of West African (10%) and East Coast (12%) affinity, and extinct species (49%). The sedimentary geometry of the deposits is coincident with a faunal contrast, indicating the presence of two main shallow marine units (formations) of differing ages — the older 50 m Package and the younger 30 m Package. Twenty-six extinct species have been found only in the 50 m Package, eight extinct species only in the 30 m Package, whilst 11 extinct species are common to both packages. Thus considerable potential exists for the establishment of zone fossils and/or biozones as the ranges of the extinct species are defined with greater certainty by studies on a regional scale and the lower limits of extant species are found.

The presence of extra-limited West African and East Coast species indicates that during 50 m and 30 m Package times the Namaqualand coast was washed by waters warmer than the modern temperature regime. A temperature contrast between the 50 m and 30 m Packages is not clearly defined on the basis of the molluscan fauna, as species of warm-water affinity are present in both packages, most notably the oyster *Striostrea margaritacea*. However, decreased diversity, fewer extinct species, and the appearance of *Choromytilus* in the younger package may indicate cooling.

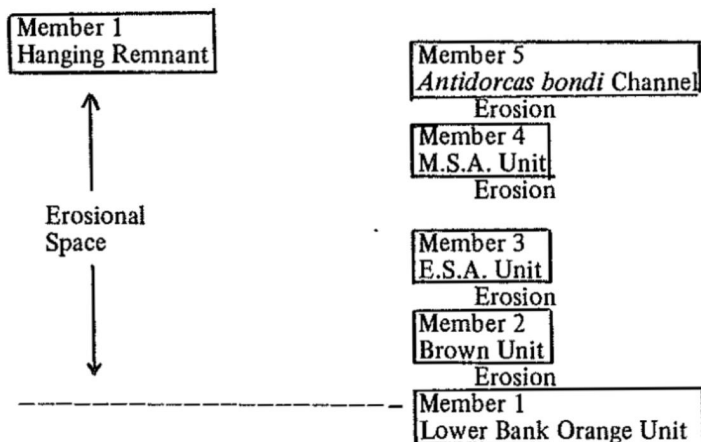
The high altimetric transgressive maximum (30 m above sea-level), the warmer-water nature of the fauna, and the high proportion of extinct species present suggests that a Late Tertiary or, at the youngest, Early Quaternary age is feasible for the 30 m Packages respectively. A recent vertebrate find now renders this interpretation problematic and Pliocene ages for both packages must be considered.



# NEW DEVELOPMENTS IN THE SWARTKRANS PALAEOONTOLOGICAL RESEARCH PROJECT

C.K. Brain  
Transvaal Museum, Pretoria

Insofar as this project is concerned, the Swartkrans Cave excavation has just been completed, and the complex stratigraphy is now much clearer. It may be summarised thus:



Remains of *Australopithecus robustus* have been found in Members 1, 2, and 3, and those of *Homo* sp. in 1 and 2. The first evidence of fire, in the form of charred bones, is found in Member 3, together with the first cut-marks on bones indicating hominid meat-eating inside the cave, an innovation not found in older Swartkrans members. Bone tools, thought to have been used for digging, occur throughout Members 1–3, indicating that this cultural tradition had a very long time span.

The youngest fossiliferous deposit, extremely rich in *Antidorcas bondi* remains, has been dated by  $^{14}\text{C}$  to 10 000 yrs B.P. and thus accumulated during the last climatic optimum. It seems very likely that the recurrent Swartkrans cycles of erosion and deposition can be linked to worldwide glacial-interglacial cycles, with deposition occurring during brief interglacials.

## MAKAPANGS GAT LIMEWORKS: INVESTIGATION OF THE FEASIBILITY OF POLLEN ANALYSIS OF DEPOSITS IN A DOLOMITIC CAVE SYSTEM

Ann Cadman

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Johannesburg

A recent palynological study of the M2 breccias (3 my B.P.) at Makapansgat indicate that conditions were warmer and drier than at present. One hypothesis states that wet conditions will prevail in the northern Transvaal due to the poleward migration of pressure belts in response to long-term increases in temperature. My data do not support this model. Scott, investigating Holocene sediments from the Transvaal, has also pointed out that drier conditions appear to accompany a warmer climate. Although the data at present are insufficient to come to any definitive conclusion, it does suggest that current climatic models need to be reassessed. Alternative models are currently being investigated by the Climatology Research Group at Wits University.

Several problems encountered in this study may have a bearing on palynological interpretations. First, recognition of contaminants in late Neogene-Holocene sediments: e.g. *Podocarpus*, an indigenous taxon, is often difficult to distinguish from the introduced extant bisaccate pollen of *Pinus*. Second, there is no in-depth quantitative survey of the modern pollen rain which can provide a reference point for interpreting the fossil dispersed pollen. Third, there seems to be a paucity of dispersed pollen in many late Neogene-Holocene sediments in southern Africa: thus, what are the factors that contribute to the degradation of pollen in sediments, and how do these factors affect interpretations?

## CARNIVORES, UNGULATES AND PRIMATES IN CAVE DEPOSITS FROM THE SOUTHERN CAPE: A RESPONSE TO BINFORD

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*Raphicerus* (the genus which includes grysbok and steenbok) has been documented in Late Pleistocene and Holocene deposits at the complex of caves at Klasies River Mouth and at Nelson Bay Cave in the southern Cape Province, South Africa. Binford has used the relative abundance of *Raphicerus* in an index assumed to measure the degree of hunting by Middle Stone Age hominids. However, the association between leopards and baboons with relatively high numbers of *Raphicerus* in some layers is

likely to have been due, at least in part to leopard activity, particularly at times when relatively large ungulates were not common in the palaeo-environment and when the cave sites were not frequently occupied by hominids with control over fire. Binford's indices are re-assessed in the light of other indices which are designed to identify assemblages that have a relatively high probability of having been accumulated by leopards and/or other carnivores.

#### THE FEEDING NICHE OF *ANTIDORCAS BONDI* AS A POSSIBLE CAUSE FOR ITS EXTINCTION

James Brink<sup>1</sup> and Julia Lee Thorp<sup>2</sup>

<sup>1</sup> Nasionale Museum, Bloemfontein,

<sup>2</sup> Dept. Archaeology, Univ. of Cape Town

Stable carbon isotope analysis of tooth enamel was used to test the hypothesis that the extinct antelope, *Antidorcas bondi*, was a grazer. The results of the analysis of six specimens each of *A. bondi* and the extant species *A. marsupialis* from the site of Florisbad are presented. There is a clear differentiation between the two, confirming that *A. bondi* was indeed a grazer. The results for *A. marsupialis* are consistent with an intermediate dietary niche. The small body size of *A. bondi*, its grazing niche, and the fact that it was a ruminant, imposed certain ecological limitations on the species. We suggest that a change in the structure of the grassland vegetation contributed largely to its decline and eventual extinction. The hypothesis that increased predation by Late Stone Age hunters contributed primarily to their extinction is thus redundant.

#### CALCIFIED TERMITE NESTS AS A "CLOCK" TO MEASURE THE DENUDATION RATE OF THE KAROO SURFACE

B. W. Oelofsen and A. Human

Dept. Zoology, Univ. of Stellenbosch

Calcified termite nests are found in abundance all over the Karoo. These nests may be of value in determining the denudation rate of the Karoo surface as radiometric datings can be done on the nests. The depth at which the nests are constructed is known, which allows calculation of the rate at which the Karoo surface is weathered away.

A PRELIMINARY REPORT ON THE FOSSIL VULTURE (AVES,  
ACCIPITRIDAE) FROM THE EARLY PLIOCENE, LANGEBAANWEG,  
SOUTH-WESTERN CAPE PROVINCE, SOUTH AFRICA

Philippa J. Haarhoff  
South African Museum, Cape Town

Only one species of vulture, possibly extinct, has been identified and is tentatively referred to the extant genus *Aegyptius*. The study is based on one partial associated skeleton of 24 incomplete bones and 55 other mostly incomplete specimens, together representing a minimum of four individuals.

This fossil falls roughly within the size range of the living Cape Vulture *Gyps coprotheres* but is morphologically more similar to the living Lappetfaced *Aegyptius* (*Torgos*) *tracheliotus* and Whiteheaded Vulture *Aegyptius* (*Trigonoceps*) *occipitalis*.

These specimens constitute the first known Pliocene record for this group in Africa. Langebaanweg, in early Pliocene times, with its abundant and diverse mammalian fauna and partially open habitat, would have provided a suitable environment for avian scavengers such as vultures.

PATTERNS OF MORPHOLOGICAL VARIATION IN FOSSIL  
GAMEBIRD BONES FROM THE EARLY PLIOCENE DEPOSITS OF  
THE VARSWATER FORMATION AT LANGEBAANWEG

N.S.H. Wilson and T.M. Crowe  
Percy Fitzpatrick Inst., Univ. of Cape Town

Fossil gamebird humeri, coracoids and tarsometatarsi, collected from three early Pliocene deposits spanning 0.5 Ma, have been measured. The measurements have been analysed using univariate and multivariate statistical methods. The following hypotheses are tested; the fossils are francolin (*Francolinus* spp.); the fossils represent more than one species of francolin; the fossils are different from any of the extant species of francolin; there is stability (*sensu* "stasis") in the mensural characters of the bones in each of three geological deposits which represent three successive time spans in geological history. Preliminary results are discussed as well as the relationship of these fossils to those found at Arrisdrift, Namibia (c. 15 Ma) and Anyskop, Langebaanweg (c. 2 Ma).

## ABSTRACTS FOR POSTERS

### A STORM BEACH DEPOSIT AT SUMMERSTRAND, PORT ELIZABETH, PUMICE AND THE DISTRIBUTION OF ANIMALS.

B.W. Oelofsen<sup>1</sup>, G.J. Rossouw<sup>2</sup> and D. Cornell<sup>1</sup>

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Floating pumice is a very likely vehicle for the transportation of small animals. This may have happened through time as volcanic eruptions, large enough to produce sufficient pumice, are known to have occurred through time.

One example is given where a link exists between pumice from Summerstrand, of Krakatau origin, and a lizard on the Natal coast.

### THE MACROFAUNA OF THE CRETACEOUS BRENTON FORMATION

Amanda Human

Dept. Zoology, Univ. of Stellenbosch

A study is being made of the fossil macrofauna found in the green-grey shales and conglomerates of the Brenton Formation, which outcrops only near Knysna. These fossils range from invertebrates (pelecypods, gastropods, cephalopods, echinoderms etc.) to vertebrates (shark-teeth, bone fragments, vertebrae).

A sound knowledge of the Brenton Fauna may aid in the correlation of this formation with other, better known Cretaceous formations.

### PROPOSED 'FOSSIL WALK' IN THE KAROO NATIONAL PARK, BEAUFORT WEST

Annelise Crean

South African Museum, Cape Town

For a long time the Museum has felt that it would be a good idea to create some form of fossil display in the Karoo National Park. For the convenience of tourists; the fossils should preferably be located on a flat outcrop fairly close to the road and within walking distance of the proposed rest-camp. We were extremely fortunate in discovering nine fossils in a single exposure, on level ground about 20 minutes walk from the site of a proposed new rest-camp and, once they were properly exposed, each one was given a coating of protective lacquer. They will eventually be protected by glass cases and labelled.

## A BEAUFORT PALAEOSSURFACE NEAR FRASERBURG, C.P.

C.H. De Beer

A palaeosurface occurring in fine-grained sediments of the Permo-Triassic Abrahamskraal Formation (Beaufort Group) near Fraserburg displays a variety of primary sedimentary structures, reptilian footprints and trace fossils. Such surfaces are seldom preserved and thus the locality at Fraserburg provides valuable clues concerning the sedimentary environment. An assemblage of rill marks, falling water-level marks, small ripples and late desiccation features reflects the prevailing conditions when the newly deposited sediments were gradually drying out. Faunal activity is documented by a great number of footprints of an early Karoo reptile of possible dinocephalian affinity, as well as invertebrate traces, fish trails and arthropod trackways.

## TWO SOUTH AFRICAN FOSSIL OPHIUROIDS

R.W. Shone

Dept. Geology, Univ. of Port Elizabeth

Morphology of two fossil ophiuroids, *Ophiolancea swartkopensis*, (new genus and species) from the Sundays River Formation (Valanginian) and an as yet unidentified *Oegophiuroid* from the Bokkeveld.

## THE USE OF BIOGENIC INDICATORS IN PALAEO-ENVIRONMENTAL RECONSTRUCTION, NEW BEACH, PORT ELIZABETH

W.J. Smuts and J.S.V. Reddering

Dept. Geology, Univ. of Port Elizabeth

At New Beach, 8 km north of Port Elizabeth, lies an actively eroding, 6m high sea cliff. Primary sedimentary structures are poorly preserved but various trace fossils and skeletal remains of numerous molluscs, echinoderms and crustaceans are common.

The sedimentary structures are too poorly preserved to determine the depositional environment. However, if the limited sediment structural data is used in conjunction with the information obtained from the biogenic traces and remains, a useful reconstruction of the environment can be made.

Three units can be identified:

1. The lower unit consists of clean carbonate bearing sand, with shell fragment layers and exhibiting large scale (6 to 10 m) troughs filled with flood-tide dominated planar cross-bedded sand. This unit is profusely bioturbated by *Echinocardium ?cordatum*. The burrows consist of horizontal to sub-horizontal traces of a type previously described as *Ophiomorpha*. The remains of *Echinocardium*, being fragile, are seldom found. The echinoid destroyed most of the sedimentary structures and the sand has a

mottled appearance. Articulated remains of *Panopea natalensis* and *Solen capensis* occasionally occur on crossbed foresets, but in an orientation not considered to be in the position of life.

2. The middle unit consists of neap and spring tide bundles of foresets in the cross-bedded sand. Burrows of *Echinocardium* are scarce in the lower part of the unit and absent towards its top. The unit is instead profusely burrowed by vertical traces of the type *Ophiomorpha nodosa* produced by *Callianassa kraussi*. The burrows exhibit escape branches of juveniles and shell-gravel filled living spaces. Observed burrow lengths are up to 2 m, but none was complete, so that longer burrows probably occur. Many cast-off *C. kraussi* pincers and fewer complete pincers occur in this unit. Worm burrows of the type *Planolites brillomorpha* are common in some areas of the deposit.

3. The upper unit consists of structureless, more consolidated, muddy sediment with articulated shells in the position of life. Bivalve species include *Anodontia edentula*, *Loripes clausus*, *Venus verrucosa*, *Dosinia hepatica* and *Solen capensis*; gastropods include *Nassarius kraussianus*, *Natica gualteriana* and *Bulla ampulla*. All these species are estuarine, and most are exclusively so.

Available physical, biogenic and regional evidence indicates that the New Beach section was deposited as an inlet approach channel of the paleo-Swartkops estuary. When the channel was active, flood-dominant, 0.6 m high megaripples occupied the channel floor while the underlying sediment was burrowed by *Echinocardium*. During episodic floods *S. capensis* eroded from their habitat were deposited in the channel freshly dead but still articulated. This scenario led to the deposition of unit 1.

At some later stage the channel was blocked at its seaward end and flow was reduced, creating a suitable environment for *C. kraussi* and later *Pseudonereis* sp. These produced respectively *Ophiomorpha nodosa* and *Planolites brillomorpha* types of burrow traces. Unit 2 was deposited during this phase.

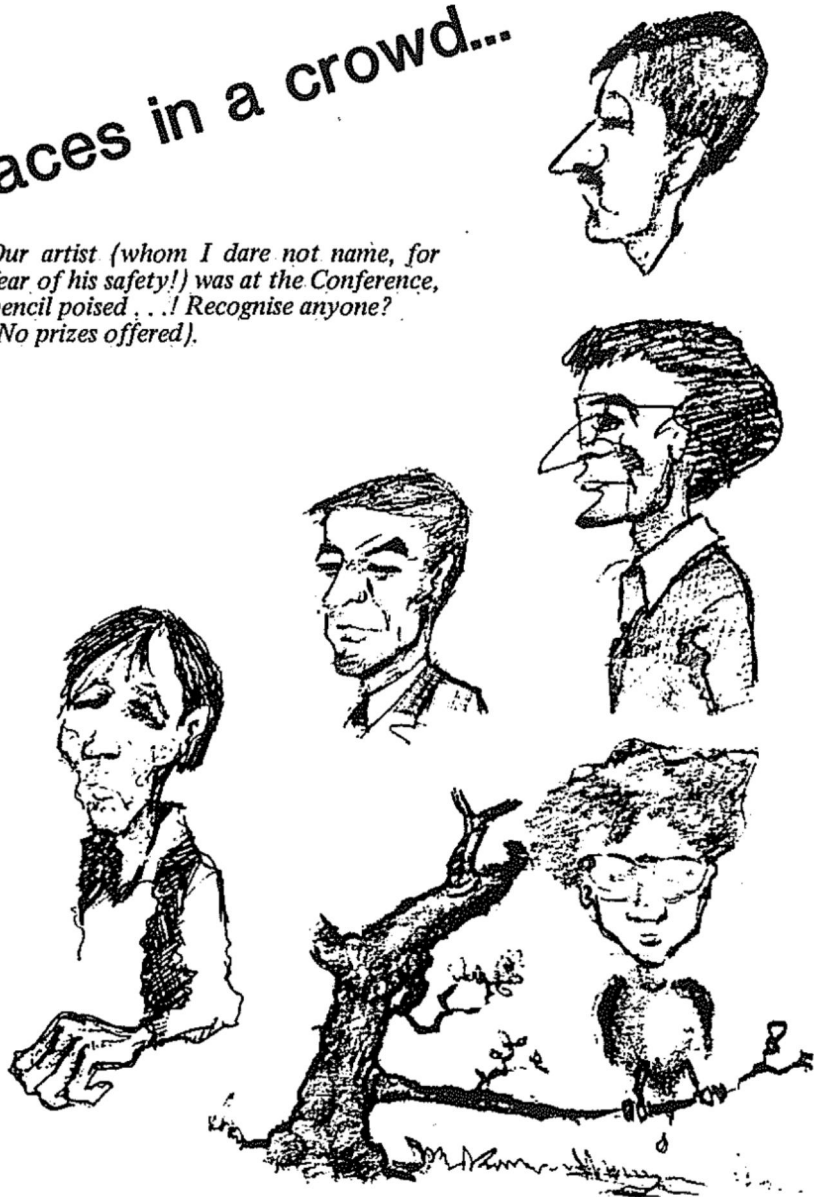
Unit 3 is the final preserved stage of development in the abandoned channel, during which conditions became unfavourable for the occupation by *C. kraussi* because a significant component of mud was introduced. This presumably occurred because tidal circulation was subdued. Muddy tidal flat conditions existed and the upper sediment was extensively colonised by a large group of burrowing and surface-dwelling molluscs.

The logical conclusion to deposition at the upper end of the sequence is not preserved.

Biogenic traces and their association with skeletal remains of molluscs, echinoids and crustaceans have irrefutably indicated the estuarine origin of the deposit and have aided identification of the depositional environment. Both these conclusions would have been difficult to establish on the grounds of physical parameters alone.

# faces in a crowd...

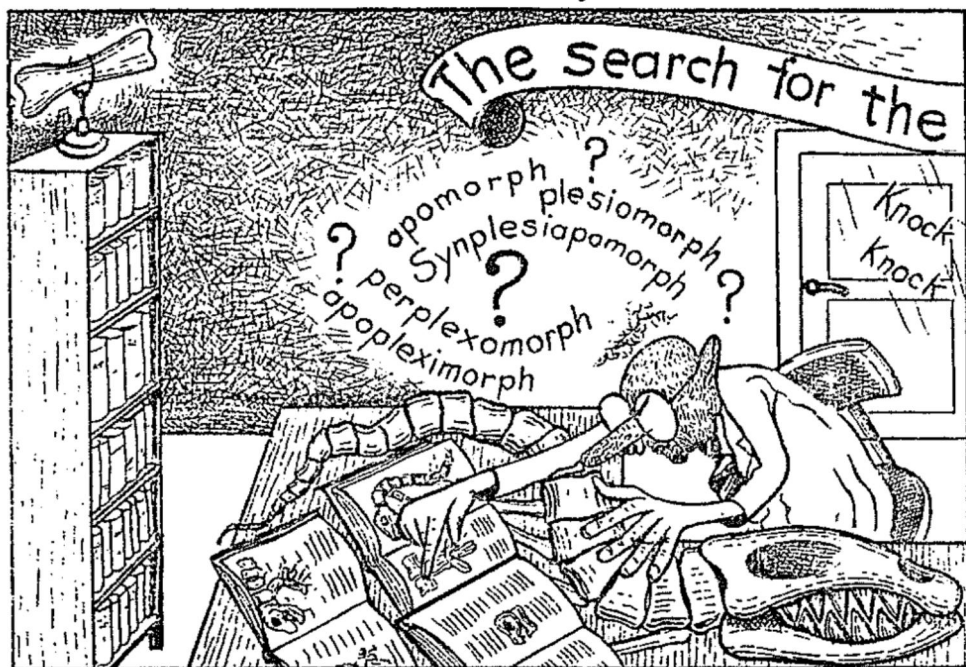
*Our artist (whom I dare not name, for fear of his safety!) was at the Conference, pencil poised . . . ! Recognise anyone? (No prizes offered).*







*Had problems with cladistics, out-group comparisons, phylogenetic systematics lately? Perhaps this will help. It was found on an old Christmas card sent to the BPI by the late Professor Erik Jarvik in 1975. The terminological confusion hasn't changed much in a decade!*



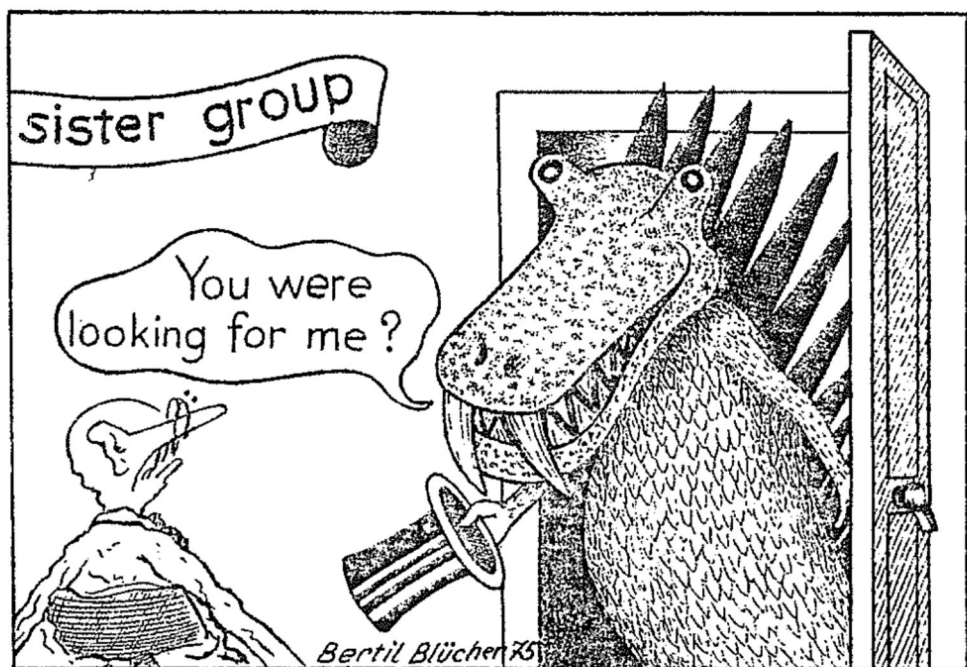
## **PRESIDENT'S REPORT TO FOURTH GENERAL MEETING**

### **Youth Amidst Antiquity – Ten Years of the PSSA/PVSA**

#### *In the Beginning . . .*

The circular from Jacques van Heerden dated 3 August 1976 opened with these words: "After discussing various problems with a number of fellow palaeontologists I have come to the conclusion that we are in dire need of a Palaeontological Society in Southern Africa. Such a Society will undoubtedly form a powerful and effective mouthpiece when authorities have to be approached eg. for the preservation of fossil localities which are in danger of disappearing such as at Harrismith, Thaba 'Nchu and Aliwal North".

He went on to say why he thought an association was desirable, and to outline his concept for a Newsletter that the association might wish to publish. The response from the addressees was positive, and in this rather unspectacular way our Society was born.



Quite which date should be regarded as the real date of our foundation as a Society is not easy to determine; at least two compete: the date of the original circular letter from Dr Jacques van Heerden (3 Aug 1976), and the date of a follow-up circular advising the outcome of the initial questionnaire and including the first voting form for the first office bearers (24 Nov 1976). The four months between the two make little difference; as I pointed out in the editorial to volume 4 part 4 of *PAL News/PAL Nuus* (June 1986), we are now officially ten years old, and about to enter our societal "teens". As with all teenagers, we have seen crises and problems, but our presence here today shows that we have weathered the storms and gained valuable insights and experience to help us tackle those other problems that lie in wait for us down the road ahead!

#### *Past Presidents on Parade*

In its ten years the Society has been served by only three Presidents. That venerable and highly esteemed "Old Gentleman" of North

American palaeontology, Dr. E H (Ned) Colbert, is fond of describing the most senior and respected palaeontologist in a country as "the Dean of Paleontology" in that country. That would not be an inappropriate description of our Founding President, Dr C K Brain, except that it implies advanced years — and Bob doesn't qualify on those grounds — yet! We clearly could not have found a more able or distinguished man in the local palaeontological fraternity to guide our fledgling society on its first faltering steps. But his election was not without a modicum of drama, as study of a circular (the forerunner of *PAL News/PAL Nuus*) from Jacques van Heerden on 4 April 1977 will reveal! Indeed, the result of the original ballot was a draw between Dr Brain and Dr M A Cluver. Only Foundation Members were entitled to vote in the first ballot, and 17 of the 21 did so — but one paper was unsigned, and therefore invalid; the other votes were divided equally between the two candidates. The circular notes that the invalid vote had been cast for Dr Brain, and it was therefore suggested that the simplest solution would be for Dr Brain to be declared the winner, and Dr Cluver to be appointed to the newly created office of Vice President. Bob Brain very properly declined, protesting that this procedure would be improper (probably the only time in the Society's history when the provisions of the constitution were paid the slightest heed!); he argued that the only acceptable solution was for the ballot to be repeated for these two offices. This was duly done. The Hon. Secretary, Dr. H C Klinger, notified Dr Brain of his election to the Presidency in a letter dated 19 Aug 1977, and so the "Dean of South African Palaeontology" assumed the cloak of office after a process more befitting the election of a Pope!

Dr Brain, at that time looking uncharacteristically venerable with a somewhat short-lived, but nevertheless distinguished and decidedly deaconial "George Vth" beard, handed over the reins of office to Dr Mike Cluver at the end of the First Biennial Conference and General Meeting of the Society hosted by the National Museum in Bloemfontein in July 1979. Dr. Cluver, too, was destined to run almost immediately into constitutional problems, the effect of which was to saddle him with two consecutive terms in office — notwithstanding its unconstitutionality! It was during his first term, at the end of 1980, that the real Founder and driving force behind the Society, Dr Jacques van Heerden, left the National Museum in Bloemfontein to join the University of Fort Hare. Sometime during the course of the move his office was broken into and much of the Society's archival material was stolen, including correspondence, membership information, financial documents vouchers etc. This plunged the Society into a crisis that has plagued it for much of the time since. The crisis was compounded by the fact that Dr. van Heerden not only left the field of palaeontology altogether (although recent indications are that he is not entirely out of it), but he was also the Vice President who would, in terms of the constitution, succeed to the Presidency at the end of Dr

Cluver's term. To this complication was due Dr Cluver's having to take on a second (unconstitutional!) term to keep the Society ticking over and functional. The other offices of the society were taken over in caretaker capacities by members of staff of the Bernard Price Institute for Palaeontological Research at the University of the Witwatersrand. There can be little doubt that but for the calm and unruffled efficiency of Mike Cluver the Society would have foundered and sunk during that dark period. It very nearly did, but he stuck to the helm and kept it on course. The indications are that it has now left "The Crisis" behind and is set fair to prosper under the administration about to take over its offices after this meeting.

Mike Cluver presided at two Conferences and General Meetings of the Society: the Second Biennial Conference hosted by the Geological Survey in Pretoria in July 1982, and the Third Biennial Conference hosted by the University of Stellenbosch in July 1984. His relief in handing over office to me at Stellenbosch was almost palpable!

### *A Presidential Theme: "Back to Basics"*

Many associations, societies and other bodies (even municipalities) nowadays formally adopt a theme proposed by the new chief officer upon his election, as the principal corporate objective for his term. It is a practice that I urge our own Society to adopt, because it serves the very useful purpose of formally focussing attention individually and collectively on a particular theme with which all members can identify. The theme itself, depending on its nature, could become the source of a considerable amount of material for the newsletter, and of publicity for the Society in the general media.

I have not had a formally stated Presidential Theme during my term, but I have pursued an objective which I sincerely hope has been achieved, at least to a measurable extent. My goal has been an administrative one — to get the Society's administrative structures back on track and operating smoothly, efficiently, and — above all — constitutionally! (Hence the phrase "Back to basics"). Our books have now been independently audited for the first time in eight years (probably for the first time ever by a qualified Accountant)! If the constitutional amendments proposed by me and seconded by Prof. Kitching are adopted, I feel a simpler and more workable constitution will have been brought into operation which should streamline the activities of the Society, identify the duties and responsibilities of the office bearers more clearly, and provide helpful prods to the memories of those organising future conferences. Our membership records have been thoroughly overhauled, and members in arrears with their subscriptions have been gently "leaned on"! As far as the newsletter is concerned, although I am the first to concede that there is room for a great

deal of improvement, I think the actual procedure and routine for producing it are now well established. We could certainly do with more active involvement by members, through the regular supply of copy for inclusion and comments and suggestions for improvement. It would be very nice for the Editor to be in the situation where he actually had to *select* from an oversupply of copy, but that is probably wishful thinking! So, in each of the main areas of administrative activity of the Society, I think procedures have become established and they are now "going concerns" which should be able to run with no more than a supervisory eye on them every now and then.

I would like to urge our incoming President, Dr Oelofsen, to give some thought to a potential theme for his presidential term, and as Editor I undertake to give it lots of publicity in *PAL News/PAL Nuus*.

There will be another occasion when I will be able to express the Society's and my own thanks to the people who have been of help in the functioning of the Society over the past two years, particularly those responsible for making the arrangements for this conference and meeting at this impressive and highly appropriate venue. However, I would like to use this opportunity to thank a number of people from Wits University who have been of great help to me, particularly in the routine production of *PAL News/PAL Nuus*. In particular I wish to thank Mrs Denise Smith, Mrs Jean Haworth, Mrs Jenny Saley, and Mr Basil Darlington, and I am also grateful to Mr David Douglas for taking our Society's books and making some auditing sense out of them. *That*, I think, has been the greatest relief of my period of office!

M A Raath  
President

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**THE FAR SIDE**

By GARY LARSON



"I see your little, petrified skull . . . labeled and resting on a shelf somewhere."

## NEW JOURNALS IN THE GEOLOGICAL ABSTRACTS SERIES

Arthur Cruickshank has advised us of the birth of three new journals in the *Geological Abstracts* Series:

### ECONOMIC GEOLOGY

Includes literature on all aspects of the fossil fuel and mineral industries, from exploration to exploitation. A regional section covers general geological reports, surveys, area and map memoirs. There will be a regional index at the end of each year.

Editor: Dr J. Barber

### PALAEONTOLOGY AND STRATIGRAPHY

Covers all aspects of palaeontology (description, classification, palaeoecology, and applications). Includes full coverage of new species and a regional section concentrating on biostratigraphical studies. Subdivision is by fossil type and each section is ordered according to age and There is an annual subject and author index.

Editor: Dr A Cruickshank

### SEDIMENTARY GEOLOGY

Relevant material from parts A and G of *Geographical Abstracts* has been drawn together in one volume of *Geological Abstracts* for the greater convenience of geologists. This allows comprehensive indexing of geology. The arrangement includes rocks of all ages up to the present from the main sedimentary environments, geochemistry, diagenesis, hydraulics and sedimentary mechanics, and research techniques.

Editors: Dr A. Pitty and Professor K. Clayton.

The format of the new journals will match that of *Geophysics and Tectonics* and each will appear six times a year with approximately 400 abstracts per issue. These abstracts are arranged so that there is no duplication of material between the separate parts of the *Geological Abstracts*.

Orders may be placed via:

Geo Abstracts Ltd, Regency House, 34 Duke Street, Norwich,  
NR 3 3AP, England.

The 1986 subscription price for each title was £54.00/US \$84.00.

Douglas & Co

Chartered Accountants (SA)

PO Box 32707

Broomfontein

2017

Tel 724-0261/2

12 September 1986

**REPORT OF THE AUDITORS**

**TO THE MEMBERS**

**PALAEONTOLOGICAL SOCIETY OF SOUTHERN AFRICA**

We have examined the annual financial statements set out on pages 2 to 4. Other than as explained in the following paragraph, our examination included such auditing procedures as we considered necessary.

In common with similar organisations, it is not feasible for the society to institute accounting controls over cash collections prior to the initial entry of the collections in the accounting records. Accordingly it was impracticable for us to extend our examination beyond the receipts actually recorded. Further, we have also relied on the opening balances at 1 April 1982 arising from previous annual financial statements as being correct.

Subject to the effects of any adjustment which might have been necessary had it been possible for us to extend our examination of cash receipts or the fact that the opening balances may not be wholly correct, although we have no reason to believe this to be the case, in our opinion the financial statements referred to above fairly present the financial position of the society at 31 March 1986 and the results of its operations for the years then ended in accordance with generally accepted accounting practice.

*Douglas & Co.*



PALAEONTOLOGICAL SOCIETY OF SOUTHERN AFRICA  
BALANCE SHEET AS AT 31 MARCH 1986

	R
ACCUMULATED FUNDS	1,043
Balance at beginning of period	706
Add: Surplus for the year	<u>337</u>
	<u>1,043</u>
Represented by:	
NET CURRENT ASSETS	1,043
CURRENT ASSETS	
Savings account balance	<u>1,343</u>
	<u>1,343</u>
CURRENT LIABILITIES	
Creditors	<u>( 300)</u>
	<u>( 300)</u>
	<u>1,043</u>

PALAEONTOLOGICAL SOCIETY OF SOUTHERN AFRICA  
INCOME STATEMENT FOR THE FOUR-YEARS ENDED 31 MARCH 1986

	R
INCOME	2,169
Subscriptions received	1,115
Interest received	315
Conference subscriptions	39
Grant	<u>700</u>
Less: EXPENDITURE	(1,832)
Audit fee	300
Conference expenses	1,015
Postage	120
Printing	379
Stationery and photocopies	8
Sundry Expenses	<u>10</u>
SURPLUS FOR THE PERIOD	<u>337</u>

NOTES TO THE FINANCIAL STATEMENTS  
31 MARCH 1986

1. ACCOUNTING POLICY

The Society adopts a cash basis of accounting for transactions. Consequently no accruals are made for income or expenses incurred but not recorded.

2. COMPARATIVE FIGURES

It was not possible to insert comparatives in the financial statements as these were not available.

## PROJECT TO COMPILE A SOUTH AFRICAN TIME-STRATIGRAPHIC COLUMN

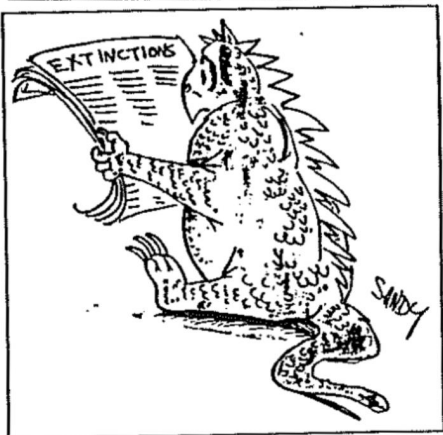
At the recent General Meeting held in Cape Town, it was decided that the Society should initiate a project to compile a time-stratigraphic column for South Africa to fulfil a need felt by many geologists, teachers, and others with an interest in the dating of events in South Africa's long geological record. Prof. Johan Visser and Juri van den Heever were appointed co-ordinators of the project, with a request that they report progress at the next meeting of the Society in two years time.

Anyone who has reprints or unpublished reports dealing with palaeontological (or any other) age data for the South African Phanerozoic (Palaeozoic, Mesozoic and Cenozoic) is asked to send copies to the co-ordinators at the addresses given below. If you don't have reprints available or if you know of work by others which is relevant, it would be appreciated if a full citation could be provided of the relevant publication or document. Information that is confidential should, of course, not be sent as it cannot be incorporated.

Please send your reprints, references or data to:

Prof Johan Visser  
Dept of Geology  
University of the Orange Free State  
P O Box 339  
BLOEMFONTEIN 9300

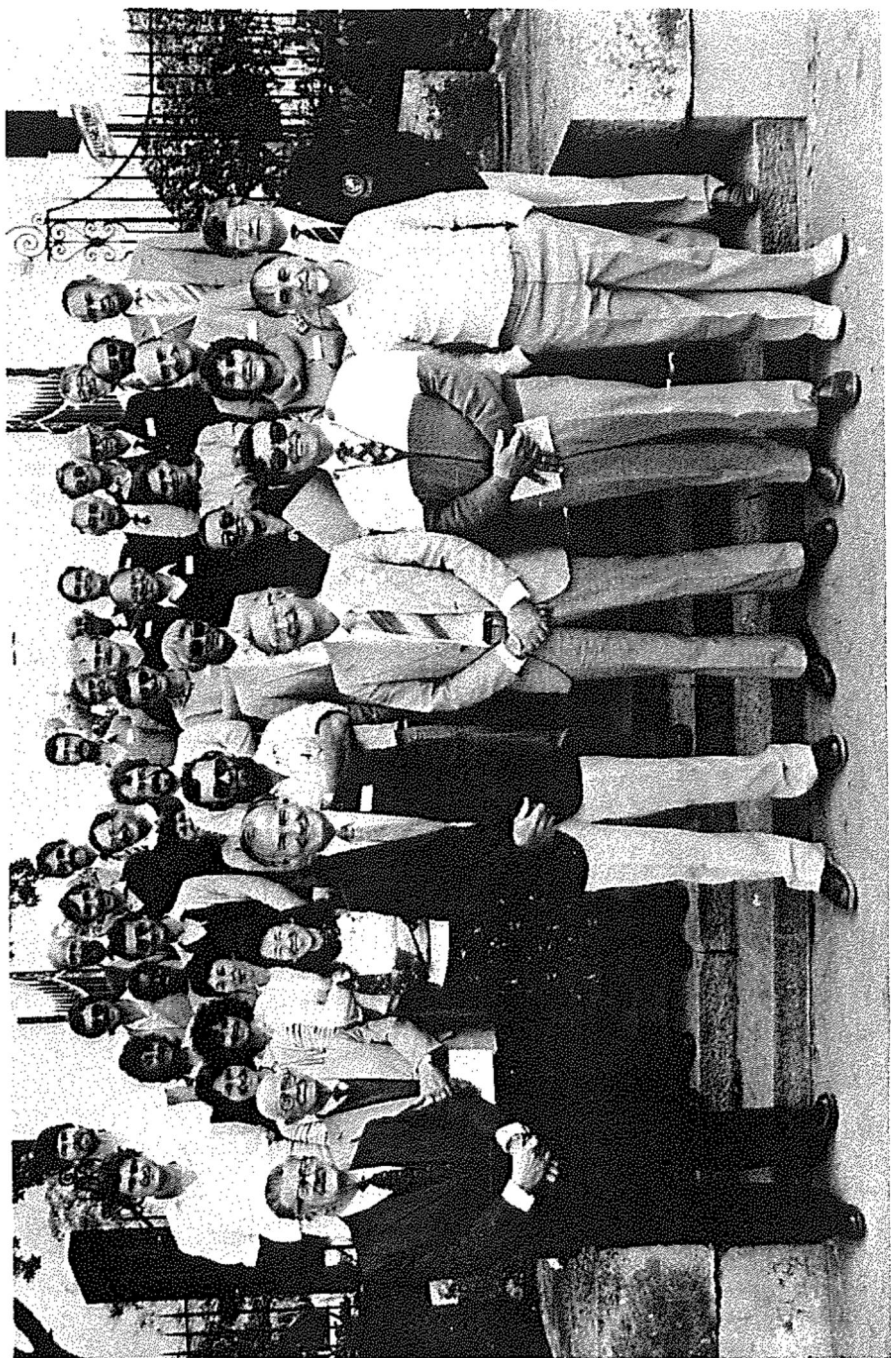
OR to:  
Juri van den Heever  
South African Museum  
P O Box 61  
CAPE TOWN 8000



*Delegates to the 4th PSSA/PVSA Biennial Conference and General Meeting, photographed in The Gardens, Cape Town, September 1986.*

*(photo: S A Museum)*





## CONFERENCE SOUVENIRS AVAILABLE

Limited stocks of the Conference souvenirs were left over at the end of the meeting. Anyone wishing to buy one or more (first come, first served) is asked to contact Juri van den Heever at the South African Museum (P O Box 61, Cape Town). They cost:

Coffee Mug ..... R3,00 each  
Car-Licence Sticker ..... R1,00 each  
Document Folder ..... R1.00 each

During the Society Dinner the donors and sponsors of these souvenirs were warmly thanked on behalf of the Society. It is my pleasure to repeat those thanks especially to the members of the Boonstra family and the Boonstra Trust.



the souvenir licence sticker

WHILE completing a master's degree in geology, I did some field work collecting fossils. One morning I drove up to an old farmhouse. I was met at the front door by a tall, barefooted fellow. I told him that I was from the local university and wondered if it would be all right if I hunted for fossils on his land. He took some time to look me over and then drawled, "All right, I suppose—just don't shoot towards the house."

—Maurice Williams

from "Readers Digest", Sept. 1982