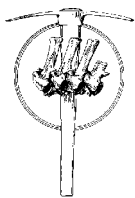


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**- Table of Contents -**

New Members	2
Address Changes	5
News From Members	42
Calendar of Events	81
Publications	83
Positions Available	84
Obituaries	84

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#### **- News from Members**

##### **BOLIVIA**

*Museo Nacional de Historia Natural, La Paz (pal@mnhn.rds.org.bo)*

This past May, Federico Anya and Bruce J. Shockey organized the international congress, Evolucion Neotropical del Cenozoico. The meeting was well attended, with folks from Argentina, the U.S., Japan, Brazil, Peru, and Uruguay. About 50 platform talks were given and we held roundtable discussions regarding paleoecological research. This panel concluded that areas of greatest potential benefit for South American studies include: (1) developing a continental geochronology, (2) promoting research in paleoclimatology, (3) functional morphology, and (4) developing a centralized data bank for these studies.

Thure Cerling (University of Utah), chair of the continental chronology subcommittee, suggested that we begin banking ashes as we do our fieldwork. The chemical signatures of these ashes may aid the geochronology studies, even if the ashes are not of a quality useful for radiometric dating. Bruce MacFadden (University of Florida) and Jaime Argollo (UMSA, La Paz) organized the paleoclimate subcommittee and Virginia Naples (University of Northern Illinois) and Sergio Vizcaino (La Plata) emphasized the value of functional morphological studies in South America, particularly since so many of the extinct mammals lack modern analogs. Rick Madden (Duke) chaired the information subcommittee. Roberto Fajardo (SUNY Stony Brook) and Julia Clarke (Yale) will be developing an internet site to assist South American workers locate funding sources for these studies.

At our banquet, several distinguished colleagues were recognized for their outstanding works. These include Bruce J. MacFadden, Rich Kay, Rick Madden, and Masanaru Takai who were recognized for their contributions to Bolivian paleontology. Rosendo Pascual was honored for his contributions to South American paleontology. Francisco Xavier Cerda and Jorge Sanchez were awarded for their support of the Museo Nacional de Historia Natural of Bolivia and Cevero Churiri received special recognition for his outstanding fieldwork in Bolivia.

Many of the congress participants went on field excursions to the Miocene beds of Achiri and/or the Oligocene beds of Salla. We are grateful to the local campesinos who helped with these excursions and added much color and companionship.

The national government of Bolivia is in the process of recognizing Salla and Tiupampa as specially protected areas, Reservas Naturales Paleontologicas. Also, the Bolivian government has declared that the Museo Nacional de Historia Natural is the sole authorizing agent for granting permits for paleontological investigations (National or international) in Bolivia. The MNHN is responsible for regulating the exploration, collection, loaning, exchange, and transport of paleontological specimens, in whatever condition they may be found.

In June, Praxedus Mallcu began her fieldwork for her thesis. She is studying the Pleistocene fauna of Kila Kila. Federico Anaya and Bruce J. Shockey traveled to the University of Florida where they worked with Bruce MacFadden in planning a traveling exhibit regarding the Great American Interchange. Shockey stayed in the U.S. since his grants for work in Bolivia expired. He is (and we are) grateful to the sponsors of his two-year stay at the MNHN-Bol - NSF (International Research Fellowship) and the Institute of International Education (Fulbright). Shockey entered a tenure-track position in biology at the New Jersey City University where he will continue his studies of South American ungulates. His work regarding motor adaptation in the litoptern of Salla appeared in the June *JVP*. His review of the La Venta volume had been published in the *Journal of Biogeography* last January.

Other news from Bolivia includes the recent visit from the director of the National Museum of Natural History of Stockholm. She signed a formal agreement with the

Ministerio de Cultura which will promote Swedish-Bolivian studies in geology, paleontology, and ecology. (Bruce Shockey)

## CANADA

### *Fundy Geological Museum, Parrsboro, Nova Scotia*

The preparation of prosauropod dinosaur specimens from the McCoy Brook Formation (Early Jurassic) continues to be a major focus in the lab at the Fundy Geological Museum, but this summer we are also involved in the preparation of several important finds from the Carboniferous deposits at Joggins, Nova Scotia. A tree cast containing tetrapod material was discovered last summer by local collector Brian Hebert, and the preparation of this specimen is ongoing. Dr. Andrew Milner (Birbeck College, University of London) was joined this past month by Dr. Angela Milner (Department of Palaeontology, Natural History Museum, London) to examine the progress made on the preparation of the tree cast material and offer advice for future work. Other members of the research team involved in study of this new tetrapod-bearing tree cast are Dr. John Calder (Nova Scotia Department of Natural Resources), Andrew Scott (Royal Holloway, University of London), Brian Hebert (St. Mary's University), and Tim Fedak (Fossil Preparator, Fundy Geological Museum). (Tim Fedak)

### *Royal Ontario Museum*

We welcome postdoc Axel Hungerbuhler and his wife Simone Klutzny, recently from Bristol. He will continue his work on phytosaurs. We also welcome Thomas Carr, who will be doing his doctoral work (on tyrannosaurs, what else!) at the University of Toronto under Chris McGowan. And at least temporarily, we welcome back Ryosuke Motani, who will be working with Chris on Part 8 of the *Handbuch der Paläoherpetologie* (Ichthyopterygia).

With a crew of six, Williston Lake, British Columbia, fieldwork progressed apace. Led by Ian Morrison, Upper Triassic marine vertebrates were collected once again, and this time some earlier Triassic as well as Jurassic areas also were sampled. (Kevin Seymour)

### *Heritage Branch, Department of Tourism, Yukon Government*

Field work at Dawson City included both the usual visits to placer miners and work with geologists Duane Froese (University of Calgary) and John Westgate (University of Toronto) on an early Pleistocene section at the Midnight Dome. Snake River (Early Devonian fish, with Steve Cumbaa and Rick Day, Canadian Museum of Nature; and Hans-Peter Schultze, Humboldt-Universität, Berlin); Ross River (dinosaur tracks, with Kevin May, University of Alaska Fairbanks); and Amphitheatre Mountain (?Eocene-Oligocene) followed later in the summer. (John Storer)

## FRANCE

*Muséum national d'Histoire Naturelle, Paris*

Philippe Janvier is still doing his duty as head of the department, with very little time for research. He was planning to get a PhD on the linguistics of administrative files but discovered that it had already been done many times. So, he returns to the dead fish, such as Silurian vertebrates (placoderms, acanthodians and ?sarcopterygians) from central Vietnam. His planned fieldwork on the Late Devonian vertebrate localities of Colombia is delayed by the fact that guerilleros have taken over the area where he planned to work. Although he was hesitating between becoming a hostage and doing administrative work, he finally chose the latter solution (to wait for the outcome of the peace talks). More generally, he is also interested in the question of “basal” gnathostome phylogeny.

Après deux ans de silence, Brigitte Lange-Badré donnera désormais de ses nouvelles avec ses collègues du laboratoire de Paléontologie du MNHN puisqu'elle fait partie de la même unité de recherche (UMR 8569, dir. Ph. Janvier). Malgré la suppression du laboratoire de Paléontologie des vertébrés à Université Paris 6, elle y enseigne toujours, et son adresse postale est inchangée. Elle s'intéresse toujours aux pistes de dinosaures dans le Jurassique du Lot où de récentes découvertes lui ont permis d'établir leur présence dans la région, dès le Lias. Elle a bon espoir de voir se réaliser prochainement son projet de Musée des empreintes et des pistes près de Cahors.

Elle n'a pas pour autant renoncé aux mammifères créodontes et carnivores du Paléogène du Quercy qui feront bientôt l'objet de nouvelles publications. Avec sa collègue Y. Dauphin (Université Paris Sud), elle continue de scruter le contenu minéral et organique des os de ces mammifères afin de mieux comprendre certains phénomènes diagénétiques.

Nathalie Bardet is focusing most of her work on Late Cretaceous marine reptiles from the phosphatic deposits of the southern Tethyan margin. Collaborative programs have been agreed on with Syria and Morocco and several papers are currently in progress on these topics. Marine vertebrates from the Late Cretaceous of Syria have been studied in collaboration with H. Cappetta (Montpellier), X. Pereda Suberbiola (Bilbao, Paris) and her Syrian colleagues M. Mouty, and A. K. Al Maleh (Damascus) and a paper has been submitted for publication. During three consecutive stays in Syria, Nathalie has greatly appreciated the legendary Arabic hospitality and kindness and the cultural richness of this country. Nathalie has also been involved this year in several works dealing with plesiosaurs. Together with P. Godefroit (Brussels) and J. Sciau (Millau), a new elasmosaurid genus from the Lower Jurassic of southern France was described and this work is now in press in *Palaeontology*. An oral paper was presented last June during the Fourth European Workshop on Vertebrate Palaeontology at Albarracin (Teruel, Spain). Together with E. Mulder (Denekamp), J. Jagt (Maastricht), and P. Godefroit, a review of Maastrichtian elasmosaurids worldwide has been made. The first results were presented by E. Mulder during the same congress and a paper has been submitted recently. Finally, reviews of plesiosaurs from both the Late Jurassic of Cuba and the Late Cretaceous of Argentina and the Antarctic Peninsula are in progress in collaboration with her friend Z. Gasparini (La Plata) and other collaborators. Emmanuel Gheerbrant is still working on the mammals from the phosphates of the Ouled Abdoun Basin, Morocco. In collaboration

with J. Sudre and H. Cappetta we are currently describing new ungulates and intriguing true condylarths which shed first light on the early African ungulatomorphs and we add new data on the stratigraphy of the fossiliferous level, suggesting a slightly younger age (Paleocene/Eocene boundary) than initially stated with the report of *Phosphatherium*. Our fieldwork and our collaboration with the O.C.P. (Khouribga) and the Ministre de l'Energie et des Mines (Rabat) have been also fruitful with the recovery of new important material of other vertebrate groups, especially of selachians, osteichthyans, crocodylians and mosasaurs which will be published by H. Cappetta, L. Cavin, S. Hua, and N. Bardet. Our work in collaboration with M. Godinot on the exciting MP7 (Sparnacian) vertebrate locality of Creil-Le Quesnoy (Paris Basin) is going on with new field research and systematic studies. A preliminary paper presenting flora and fauna of this site and their sedimentological and stratigraphical context is in press in the *Comptes Rendus de l'Académie des Sciences*. The recovered extraordinarily rich and diversified biotic assemblage will yield new significant light on the continental ecosystems from the beginning of the Eocene. Our research in collaboration with V. Codrea (University of Cluj) on the vertebrate localities of Jibou and Rona from the Paleocene-Eocene transition of Transylvania (Romania), has been reported by the first paper to *Eclogae geologicae Helveticae*. The new sites have yielded the oldest mammals from the Tertiary of Eastern Europe, adding new knowledge of the evolution and paleobiogeography of early Cenozoic mammals (multituberculates and eutherians) in Europe. These mammals indicate affinities with Western European faunas. More data on the mammals, still poorly documented, are, however, needed to solve several important questions, such as the exact age of the sites and the systematic position of several taxa. This year will see also, at last (manuscript completed in the end of 1994!), the publication of the detailed study of the late Cretaceous mammals from the Spanish Basque Country in a special monographic volume of *Est. Mus. Cienc. Nat. de Alava* devoted to the locality. I am also working on a synthesis of the main features of the paleobiogeographical history of African Paleogene Eutherians.

France Lapparent has participated this year to the preliminary study of the exceptional locality of Le Quesnoy (Oise), basal Eocene, which yielded numerous animals and plants, in particular in amber. With Stéphane Hua and Sophie Hervet, her student, France recognized five taxa of turtles and four taxa of crocodiles including new species of typical early Eocene forms, including the indication of the presence of a rare "chelydroid" undefined turtle. France also studied preliminarily the turtles from the early Paleogene of Rona (Romania), found by the group of E. Gheerbrant in collaboration with Dr. V. Codrea, Cluj University; a new dortokid genus is present, a form of a primitive pleurodiran turtle family previously known only in the Cretaceous of France and the Iberian Peninsula! With Xabier Murelaga, team of Prof. H. Astibia, University of Basque Country, Bilbao, she carries on studying crocodiles and turtles from the Cretaceous and Tertiary of the Iberian Peninsula. They include new taxa, in particular in Las Bardenas (MN3). Their contribution to the monograph of Lanio site is at last published. Xabier is finishing his thesis on the fauna (all vertebrates) of Las Bardenas sites (Navarra). France is still studying the turtles of the Cretaceous of Argentina with Marcelo de la Fuente (La Plata). In particular, a publication with some new data on *Notoemys* will be soon published. In the 10th biennial conference of the Palaeontological Society of Southern

Africa, (Windhoek, Namibia, September 1998), France produced a synthetic work on the history of African turtles, from Early Jurassic to the present. She hopes that it will be published with a catalog of the African chelonians. The meeting gave her the opportunity to see the Namibian material of turtles in Windhoek and to find new *Pelomedusa* material in Langental, early Miocene. The work about the oldest chelids from Australia, Eocene of Redbank Plains, with Dr. R. Molnar (Brisbane), is nearly achieved. Many other papers on turtles and crocodiles from France and other countries are in press and under study. In particular, a publication on the some African Cretaceous crocodiles that she studied in 1965 in her first thesis is in preparation!

Christian de Muizon has completed the last version of his monograph on the condylarths from the early Paleocene of Tiupampa (Bolivia), in collaboration with Rich Cifelli. The manuscript is now in press at *Géodiversitas* and will be published in the first issue of 2000. This work includes a detailed character analysis of the condylarths dental characters and a parsimony analysis of the North and South American mioclaenids. One of the major results of the study is the establishment of a new monophyletic ungulate order which includes the North and South American mioclaenids, the didolodontids, and the litopterns. For the first time a close relationship based on a detailed phylogenetic analysis is evidenced between North and South American ungulates.

Christian spend one month at Tiupampa (early Paleocene of Bolivia), in collaboration with Richard Cifelli. As usual, the field season was very productive and several new marsupial partial skulls and skeletons were discovered, as well as a condylarth upper jaw belonging to a new genus. A partial skull of a new didelphoid marsupial is under study by Rich and Christian. Apparently, this interesting new genus has closer affinities with the pre-Maastrichtian North American taxa, than with the Maastrichtian forms, indicating a relatively early arrival of the marsupials in South America (probably pre-Maastrichtian).

Christian has also been busy in studying the new specimens of *Odobenocetops*, the walrus convergent delphinoid from the Pliocene of Peru. Three new skulls include a new species of this astonishing cetacean. A preliminary note on *O. leptodon* has just been published (in collaboration with D. P. Domning and M. Parrish) in *Comptes Rendus de l'Académie des Sciences*, and an extensive monograph is almost completed. The new species of *Odobenocetops* had a 135-cm-long, needlelike right tusk, which was held almost parallel to the axis of the body when swimming. As in *O. peruvianus* (the type species of the genus), the left tusk was very small (about 25 cm) and was erupted. The large palate and the inferred strong upper lip corroborate the bottom suction feeding hypothesized in the case of *O. peruvianus*. Several other skull features of this new species indicate different adaptations from those of *O. peruvianus*. Among the new specimens is a skull of *O. peruvianus*, the two tusks of which are similar in size and resemble the small left tusk of the other specimens. This individual is regarded as a female and indicates an obvious sexual dimorphism in the *Odobenocetopsidae*.

Xabier Pereda Suberbiola carries on his research on Cretaceous dinosaurs (and now pterosaurs!) and Tertiary reptiles of the Iberian Peninsula. With David Weishampel (Baltimore), Lourdes Casanovas, and Pepe Santaf (Sabadell), he has worked on South

Pyrenean hadrosaurids; a revision of the lambeosaurine *Pararhabdodon* is now available in *Geological Magazine* (1999, vol. 136/2), and a description of a recently found hadrosaurid in Europe will be published in *Geologie en Mijnbouw* (Proceedings of the Maastricht Workshop on Vertebrate Paleontology). In the same issue, Xabier collaborates with Julio Company (Valencia) and J. Ignacio Ruiz "Ome" (Zaragoza) in the description of a large azhdarchid pterosaur from the uppermost Cretaceous of Valencia. Together with his Basque colleagues Humberto Astibia and Txabi Murelaga, Xabier has been involved in the description of two new turtles from the Miocene of Navarre (Murelaga et al., *Compte Rendus Acad. Sci. Paris, Sc. Terre*, 1999, vol. 328) and an interesting vertebrate fauna from the Upper Eocene of Alava (to be published in *Geobios*). Moreover, a microstructural study of the dinosaur and other Upper Cretaceous reptile fossil bones is now out in *Cretaceous Research* (Elorza et al., 1999, vol. 20/2). Research in progress includes several papers on dinosaurs, mainly Xabier's favorite group, the ankylosaurs.

Martin Pickford and Brigitte Senut have been involved in paleontological fieldwork in Miocene deposits of Namibia, South Africa, and Uganda as coleader of several international research teams. Exciting new fossils keep turning up in all these countries and several publications have appeared or are in preparation describing new taxa of creodonts, carnivores, rodents, proboscideans, and ruminants, among others. Africa appears to have been the continent in which bovids first evolved. Our team found the earliest members of this family of ruminants, including its horn cores, in Namibian Early Miocene strata. The first monograph on the Geology and Palaeobiology of Southwestern Africa, consecrated to its geology, is in press. Future volumes in the series will deal with the faunas and floras of this poorly known corner of the continent. Pickford's papers in press include one dealing with fossilized spider webs found in the Namib Aeolianites (fossil dunes), showing that "trapdoor" spiders were occupying desert niches during the middle Miocene. Brigitte Senut completed an overview (in press) of the biostratigraphy of Cainozoic of Namibia based on ratite eggshells.

The Uganda Palaeontology Expedition was back in Karamoja and the team found many interesting primate fossils as well as an articulated rhinocerotid skeleton at Napak, the first known from the country. Micromammals were recovered in abundance at Moroto II, the site made famous by the discovery of *Morotopithecus bishopi*, and these fossils should help to resolve questions about the age of the deposits. Teeth of the species *Proconsul major* were found at the *Morotopithecus* site, which raises questions about the owners of the postcranial bones hitherto assigned to the latter genus. New postcranial bones from Napak, including a scapula and a femur, may throw light on the problem.

In South Africa, the coastal diamond mines of Namaqualand continue to yield Miocene material, which tends to be rolled and broken on account of its accumulation in the surf zone. Nevertheless, a few pieces have survived the vigorous churning and provide precious evidence regarding the ages of the deposits. Hitherto thought to be Plio-Pleistocene, many of the deposits are turning out to be Miocene in age.



Martin Pickford and Brigitte Senut were invited to an international workshop, "Arboreal locomotor adaptations in Primates and its relevance to human evolution," organized by Profs. M. Okada (Tsukuba) and H. Preuschoft (Bochum) at Kyoto. Then, Martin Pickford spent two weeks in China studying the Neogene Suidae and Brigitte Senut remained for six weeks in Japan teaching at Kyoto University in the department of Prof. H. Ishida and lecturing in several universities (Tokyo, Shimane, Osaka, Tsukuba) on origins of bipedalism, Neogene paleoenvironments in East and Southern Africa, fossils hominoids, and phylogeny of hominoids. In July after the field season in Namibia, they flew back to Japan to attend an international symposium on "Evolution of Middle and Late Miocene hominoids in Africa" organized by Prof. H. Ishida in Kyoto, where Martin presented a paper on the paleoenvironments and hominoid evolution during the Neogene and Brigitte gave a paper on the shoulder of the new ape from the Middle Miocene of Nachola (Kenya) in collaboration with Dr. M. Nakatsukasa and Prof. Ishida.

Last fall Cécile Poplin (cpoplin@mnhn.fr) had the pleasure of receiving Richard Lund (Adelphi University, New York) as an invited professor by the Museum national d'Histoire naturelle. During three months they went on working intensively on the paleoniscoid material from Bear Gulch (Mississippian, Montana, USA), presenting for publication a new paper on two new deep-bodied fish, preparing another on two new fusiform fish, and elaborating a matrix of about 75 characters with 20 taxa in order to explore the phylogeny of platysomids. Their paper about the paleoecological fish distribution in the Bear Gulch basin is now published (*Geobios*, 1999). Cécile has also been very busy with the Collection Sotty II of Stephanian nodules from Montceau-les-Mines (Massif Central, France); this European basin is symmetrical to that of Mazon Creek (USA). She is in charge of the scientific management of this collection deposited in the Natural History Museum of Autun and which is now entirely cataloged and available for further studies. Another point of focus is the Autunian material from Buxières-les-Mines collected by an amateur association (Rhinopolis). Her paper about *Progyrolepis* (published in *Geodiversitas*, 1999) yields new evidence of faunal affinities between Bohemia and Massif Central during early Permian. Future research on these paleoniscoids should be done with S. Stamberg (Czech Republic).

Jean-Claude Rage continues his research on mid-Cretaceous squamates. He spent much time studying a new snake with legs (in fact, with posterior legs) from the Cenomanian of Middle East. This snake (obtained by F. Escuillié) is not *Pachyrhachis problematicus*. An astonishing feature of this new specimen is that the legs are comparatively close to the caudal tip of the animal. He is working on a rich and diverse fauna (including amphibians and squamates) from the Kem Kem beds (mid-Cretaceous of Morocco) collected by the Serenorquotes crew in 1995. A paper on the oldest snake assemblage (Cenomanian of Sudan), with C. Werner, will soon be published in *Palaeontologia Africana*. Other works included studies of the only snake known from the Canary Islands, i.e., a Miocene boid vertebra (with F. Barahona and F. García-Talavera), paleobatrachid frogs from the early Miocene of France (with S. Hossini), a herpetofauna from the level MP 22 (early Oligocene) of Quercy, a level that corresponds to a marked faunal renewal in Western Europe (with B. Sigé et al.).

Denise Sigogneau-Russell has had the pleasure of at last seeing her peramuran paper published in *Geodiversitas* (1999); in spite of its "original sin" of being in French, she holds it close to her heart because it carries her views on this so-called pretribosphenid line. The Moroccan triconodont paper did not have this happy fate, being still in the provisional form in which she presented it at Oulu, Finland, at the 11th International Symposium on Dental Morphology (September 1998); the latter was excellently organized and Finland a happy discovery. The kuehneotheriid paper (Saint-Nicolas-de-Port) with P. Godefroit has been submitted for publication. Early this year she attended the very enjoyable and illuminating Purbeck Symposium in Dorchester, Dorset, England, at which she presented the current state of mammalian lore in this formation; the oncoming volume will not be out before 2001, but a short paper (with P. Ensom) on two new Purbeck symmetrodonts is completed. Following Prof. Z. Kielan-Jaworowska's suggestion, she spent quite some time (and so did Zofia) on a paper on the affinities of *Haramiyavia*; but the project has since been handed over to Prof. P. Butler. Recently D. S-R has started to produce a preliminary account of the Kirtlington mammalian fauna (mid-Jurassic of England), a work which should go in parallel with the above-mentioned triconodont paper. Of minor value but no less importance, time was devoted in promoting Mesozoic mammals for common consumers - Symbols">Ca magazine article, an exhibition, and a local Web site. Don Russell has been of considerable help and support in sorting, molding, occasionally repairing, and checking observations of the microscopic material which is his wife's daily bread. Last summer, Don also participated in the "fouille de sauvetage" at Creil (Early Eocene) headed by his paleontological heir, Marc Godinot. In the spring, we were very happy to welcome Prof. R. Pascual, and discuss some of his weird Late Cretaceous creatures.

Philippe Taquet, informé en 1998 de la découverte par le maire d'un petit village de Normandie de dents d'un dinosaure carnivore dans la pierre de Caen (bathonien), a organisé avec une équipe du laboratoire de paléontologie du Muséum une fouille pour tenter de récolter davantage de matériel. Ces efforts ont été couronnés de succès puisque le toit crânien, le dentaire et de nombreuses autres pièces du crâne et du squelette ont putre récoltés. Ronan Allain, doctorant au laboratoire est chargé d'étudier ce matériel très intéressant puisque trouvé dans le même niveau qui livra en 1835 à Jacques Amand Eudes Deslongchamps les ossements du deuxième Théropode de l'histoire de la paléontologie, *Poekilopleuron bucklandii*. L'étude de ce matériel devrait permettre de mieux connaître la faune de Théropodes du Jurassique moyen et de comparer ce nouveau spécimen avec *Megalosaurus bucklandi* de Stonesfield d'une part et *Poekilopleuron* de Caen d'autre part.

Puis P. Taquet s'est rendu en Octobre aux Etats-Unis pour participer au meeting de la SVP '98 Salt Lake City dont la date coïncidait avec la publication de l'excellente traduction en américain de Kevin Padian de son ouvrage "l'Empreinte des Dinosaures," devenu chez Cambridge University Press "Dinosaur impressions: Postcards from a Paleontologist." Le séjour américain s'est prolongé par une étape à Berkeley pour examiner les collections de Dinosaures et pour donner une conférence devant les collègues du laboratoire de Paléontologie.

En Novembre, P. Taquet s'est rendu au Laos pour une nouvelle mission de terrain et pour préparer l'ouverture à Savannakhet d'un Musée des Dinosaures où sont exposés les ossements récoltés lors des missions précédentes. Au retour de cette mission a été inaugurée à Paris une exposition intitulée "Ossements," qui propose au public le résultat d'une première phase de la rénovation des galeries d'Anatomie comparée et de Paléontologie du Muséum à l'occasion de leur 100<sup>ème</sup> anniversaire. Ces galeries seront progressivement rénovées tout en préservant leur cadre et leur mobilier. Ont été traitées pour cette exposition, l'origine des oiseaux, l'histoire des chevaux, des proboscidiens et des primates. Cette restitution des galeries dans leur esthétique du XIX<sup>ème</sup> siècle remporte un vif succès auprès du public;

Avec la visite de Dale Russell à Paris, P. Taquet a pu poursuivre la description du matériel récolté au Niger et au Maroc il y a plusieurs années. Une note décrivant des Spinosauridés africains avec la création d'un nouveau taxon, *Cristatusaurus*, l'apparenti a été publiée aux *Comptes rendus de l'Académie des Sciences*; une autre nommant l'Iguanodontidé trapu du Crétacé inférieur du Niger, *Lurdusaurus arenatus*, a été publiée aux *Annales de Paléontologie*; une note sur le grand Sauropode du Jurassique moyen du Haut Atlas marocain est sous presse.

Enfin, P. Taquet s'est rendu à Lyme Regis (Dorset) pour participer aux cérémonies rendant hommage à Mary Anning, la première femme paléontologue; une recherche dans les collections et les archives du Muséum a montré que Cuvier avait su acquérir de Mary Anning, grâce à son ami Constant Prevost ou grâce à des achats à Londres, lors de la vente aux enchères de la collection du Bullock Museum, de magnifiques spécimens de Reptiles marins; le crane d'Ichthyosaure décrit par Sir Everard Home sous le nom de *Proteosaurus*, et le deuxième squelette de Plésiosaure récolté à Lyme Regis.

Christine Argot (argot@mnhn.fr) is currently preparing her doctoral dissertation with Christian de Muizon on a morphofunctional analysis of the postcranial skeleton of the borhyaenoids, extinct predaceous South American marsupials. These highly carnivorous mammals evolved during the Tertiary, from a small semiarborescent form, *Mayulestes ferox* (Early Paleocene of Bolivia) to a big saber-tooth felid type, *Thylacosmilus atrox* (Late Pliocene of Argentina). This study involves comparisons with living mammals which developed similar locomotor types. It begun with the detailed study of *Mayulestes ferox*, comparing the skeleton of this fossil to those of living South American didelphids. The comparisons use myological and biomechanical data, supplemented by ecological and behavioral information from literature, in order to reconstruct the potential locomotor mode of this fossil. Later, *Mayulestes* will be used as a starting point for the study of the evolution of the locomotion of all other genera, in which skeletal postcranial element are known.

Fabien Knoll (knoll@mnhn.fr) after having led paleoneurological studies in the late Laboratoire de Paléontologie of the Université Paris VI (*Bull. Soc. géol. France*, 170(1):103-109), integrated the team of the Muséum at the end of 1998. His thesis (official supervisor: B. Battail) includes the study of original dinosaur material from southern Africa. Among this, there are two remarkable fabrosaurid skulls (the best known

*Lesothosaurus* skull and a somewhat larger one which may be referred to the “large fabrosaurid” of the literature). A possible almost complete skeleton of what appears to be a diminutive prosauropod from the same area is also under study (and preparation!). Fabien presented his first results (paper submitted) in the IV European Workshop on Vertebrate Palaeontology (Spain, June 1999). In which, he has taken stock of the - rather debated! - Family Fabrosauridae. A study of the masticatory apparatus of the two well-known fabrosaurid genera is also in progress as well as a detailed description of a Bathonian dinosaur braincase in collaboration with Peter Galton.

Sébastien Steyer continues his PhD on evolution of stegocephals. His new approach of comparison between ontogeny and phylogeny (presented in London, Major Events in Early Vertebrate Evolution Congress) might be applied to all living and fossil taxa which show discrete growth stages. A manuscript has been submitted to the *Zoological Journal of the Linnean Society*. In order to develop this new approach, J. Sébastien has first planned the “STEG’OS” project with M. Laurin, A. de Ricqlès, and J. Castanet, the aim of which is to test the impact of both the environment (“histological paleoecology”) and development (skeletochronology) on stegocephal bone tissues. Main tetrapods studied are capitosaurids from the Triassic of Madagascar, metoposaurs from the Triassic of Morocco, and eryopoids from the Carboniferous-Permian of Europe. First results will be presented in Copenhagen (Secondary Adaptation to Life in Water Congress). Second, in order to test this new ontogeny/phylogeny approach, another project has been planned through an international cooperation, the aim of which is to compare development of several living salamanders.

Papers of J. Sébastien accepted for publication are: Are European Paleozoic amphibians good stratigraphic markers? (Steyer, *Bull. Soc. géol. Fr.*), Redescription of *Actinodon frossardi* from the Permian of Autun (France) (Werneburg and Steyer, *Geobios*), and New data on Permian flora and fauna of Buxières-les-Mines (Allier, France) (Steyer et al., *Bull. Soc. géol. Fr.*). (Christian de Muizon)

## GERMANY

*Institute of Paleontology, University of Bonn*

Wighart v. Koenigswald suffers a bit from his load of administrative work, since it was his turn to take over the position of the dean of the school of sciences of our university. Fortunately, this additional burden is limited to two years. Nevertheless he tries to continue with his various research projects. Concerning his enamel investigations, he enjoyed the cooperation with Francisco Goin from La Plata, Argentina, who visited Bonn for half a year on a grant of the Alexander v. Humboldt Foundation. Jointly they finished a survey of enamel differentiation in South American marsupials which will be published in *Palaeontographica*. They also studied many isolated teeth of the gondwanathere genus *Sudamerica* from the Paleocene of Patagonia. They have identified the various tooth positions of the four molariform teeth in the lower and upper jaw. The large variability of the hypsodont molariform teeth turned out to be due to different wear stages. Wighart and Francisco could not resist sacrificing one tooth for enamel investigation. This paper will

appear in *Acta Palaeontologica Polonica* soon. Together with W.-D. Heinrich from Berlin, Wighart continued the analysis of Pleistocene mammalian faunas. Based on 65 faunas they established a biostratigraphic framework for the Middle Pleistocene of Central Europe. The new approach is based primarily on the first and last occurrences of taxa, and a correlation with the various glaciations is only tentative.

The vertebrates from the Hambach open cast mine are Thomas Mörs' main research project. The first paper, co-authored by the mining company's geologists Bertram Wutzler and Fritz von der Hocht, deals with the geology, fauna, biostratigraphy, and paleoecology of this important, northwesternmost outpost of terrestrial Miocene faunas in Europe. It will appear in the *Paläontologische Zeitschrift* when it is read. Together with Reinhard Ziegler from the Staatliches Museum für Naturkunde in Stuttgart, Thomas has studied the rich and unusual insectivore association. In comparison with other localities in Central Europe, it shows a low amount of erinaceids and a high proportion of talpids. The Hambach fauna is also important because of many *Lanthanotherium* and *Plesiosorex* remains. A remarkable find at Hambach is a single molar of the extremely rare Miocene artiodactyl *Orygotherium*, which is under study together with Gertrud Rössner from the Institut für Paläontologie und historische Geologie in Munich. Two papers by Thomas have dealt with the research history and *Trionyx* remains from this famous Oligocene fossiliferous site Rott near Bonn. Since last November he has started a two-year paleontological surveillance project not far from Rott related to a tunnel construction project for the German high-speed train system ICE. Together with Wighart, Thomas has submitted a paper on enamel microstructure of the enigmatic Miocene rodent *Anchitheriomys* (of course from Hambach!) to the *Paläontologische Zeitschrift*. It presents new and convincing arguments in the old discussion whether the rare European genus *Anchitheriomys* is a beaver or an old world porcupine. Additionally, this project has shown that enamel microstructure is a useful tool for systematics in castorids.

A recently completed diploma thesis by Elke Hierholzer (under Thomas's supervision) deals with Miocene and Pliocene cyprinid pharyngeal teeth from the Hambach mine and their systematic and paleoenvironmental significance. Another of Thomas' diploma students, Nicole Klein, is about to submit her thesis on chelonian remains from the Miocene of Hambach. The five taxa identified supply additional paleoenvironmental data.

Finishing her PhD thesis (to be published in *Palaeontographica*) on the incisor enamel microstructure of myomorph rodents took most of Daniela Kalthoff's time and effort. Dany has studied approximately 130, mainly Eurasian genera with more than 200 species. From a systematic and phylogenetic point of view, the great variety of apomorphic schmelzmusters offers for the first time the opportunity to characterize the suborder Myomorpha as well as many subfamilies by their enamel microstructure, enamel surface ornamentation, and/or incisor cross section. Prior to the SVP meeting in Denver, she intends to visit several colleagues (and collections) to obtain specimens for her next project: the incisor enamel microstructure of North and South American sciurognathous rodents. Another new project will be the description of tsaganomyids and cylindrodontids from Mongolia. The rich material was collected from successive

horizons by Gudrun Hoeck of the Natural History Museum in Vienna. In the Pleistocene department, Dany's small work on the small mammals of the Allerud-age Kettig site appeared in the *Paläontologische Zeitschrift*.

Thekla Pfeiffer continued her work on skeletal morphology of artiodactyls and the phylogenetical reconstruction of fossil and recent deer. Her PhD thesis, dealing with the systematic position of the *Dama*-lineage of the plesiometacarpal Pleistocene and Holocene deer was recently published in *Courier Forsch. Senckenberg*, 211. She also described the fossil deer population from Neumark-Nord (Sachsen-Anhalt) as a new subspecies, *Dama dama geiselana* (*Eiszeitalter und Gegenwart*, 48). Sexual dimorphism, ontogeny, and variability of the fossil populations of *D. dama geiselana* and *Cervus elaphus* from Neumark-Nord were studied on more than 80 skeletons (*Berliner Pal. Abh., Reihe E*, 30, in press). Thekla recently did a project on *Capreolus suessenbornensis* Kahlke 1960, the large roe deer of Middle Pleistocene age. She analyzed this species metrically and morphologically, concluding that it, unlike the living European *Capreolus*, exhibits the proportions of fast running cervids with a straight back (*Mainzer Naturwiss. Archiv*, 36).

The larger artiodactyles are also attracting Thekla's interest: new finds of *Alces latifrons* from the gravel pits of the northern Upper Rhine Valley (Hesse, Rhineland-Palatinate) indicate an extension of the stratigraphic range of *A. latifrons* into the last interglacial period. (*N. Jb. Geol. Paläont. Abh.*, 211/3). The morphological distinction of limb bones from *A. latifrons* and *Megaloceros giganteus* (*Kaupia*, in press) makes it possible to identify these species based on incomplete postcranial bones. Thekla described a quite complete skeleton of *M. giganteus* from northern Germany and analyzed its functional adaptations in rut-fighting behavior (*Berichte des Vereins Natur und Heimat und des Naturhistorischen Museums zu Lübeck*, 25, in press). Last but not least Thekla worked on the systematic relationships among the Pleistocene and Holocene Bovini, focusing on cranial morphological characters. (*Archäologie und Biologie des Auerochsen*, Mettmann, in press).

Last spring Ingo Raufuss finished his diploma thesis (some results are to be published in *Geologie en Mijnbouw*) about the taxonomy as well as geographical and stratigraphical occurrences of the muskox, *Ovibos moschatus*, in the European Pleistocene. The theoretical paleoecology of Quaternary mammalian faunas from Central Europe is the topic of Ingo's PhD thesis. Specifically he is trying to compare the Weichselian and recent distribution of 120 selected mammal taxa. In this project the European QUaternary MAMmal Database is being combined with several GIS programs.

Regarding EUQUAM, Ingo and Wighart are working on Version 2.0 of the EUQUAM Database, moving it from Paradox for Windows to Oracle running under Unix. Our goal is to provide WWW queries for the database within the next year. A short description of the database and the EUQUAM entry forms are provided at URL: <http://www.geologie.uni-bonn.de/user/raufuss/EUQUAMpg.html>. We would be very grateful for additional data which you now can send to us via this site.

Now for some more finishers: Andrea Goernemann has just finished her diploma thesis on a specimen of the Chinese early bird *Confuciusornis*. This specimen has a great overall similarity to *C. sanctus* but the sternum shows more resemblance to the new species *C. dui* Hou et al. 1999. Some features of the skull of the Bonn specimen still need to be compared to other *Confuciusornis* specimens. And in June 1999 Dieter Schreiber finished his diploma thesis on a rhino population from the Middle Pleistocene of Mauer (type locality of *Homo heidelbergensis*). On the whole he assigned the material to *Stephanorhinus hundsheimensis*. But Dieter was able to identify a second species, *S. kirchbergensis*, based on some postcranial bones.

In June 1998, Cornelia Kurz finished her diploma thesis on the osteology of a small didelphid specimen from the Eocene of Messel. Surveying the entire Messel didelphid material, she was able to distinguish arboreal from more terrestrial forms based on foot and tail characters (*Kaupia*, in press). Having gotten addicted to marsupials, this summer Conny started a PhD project about the systematics and ecology of the Messel didelphids. She will work on the paleobiogeographic history of the group and analyze the available skulls and postcrania.

Andreas Maier is writing his PhD thesis as part of a degree in veterinary medicine. He is working on the famous pregnant mares (all four of them) of the small Messel *Propalaeotherium*. Interestingly, all fetuses are in a late stage of pregnancy, and their milk dentition and first molars are mineralized already. In the long bones, not only the diaphyses but some of the epiphyses are well ossified. In comparison with extant taxa and assuming a body weight of about 25-35 kg, Andreas estimates a gestation period of 150-210 days.

Pop culture is taking its toll in Germany. We, too, have a girl group now, keeping the department swinging: the "Fabulous Diploma Girls": Inken, Carmen, Nicole, and Christa all were settling at the same time on a VP diploma thesis. Nicole was mentioned already. Christa Lindenau is working on the chiropterans of the Middle Pleistocene Yarımburgaz Cave (Turkey), while Carmen Houben is involved in the Eemian mammal and reptile fauna of Lehringen, Lower Saxony, Germany. Inken Müller-Töwe, on the other hand, is furthering the demise of "Fabulous Diploma Girls" by announcing that her thesis will be finished soon. She collected evidence about the hatching process of dinosaurs and the fossilization of dinosaur eggs by a large numbers of CT images.

Sauropod dinosaur biology has been at the center of much Martin Sander's research activity. He is finally able to use the paleohistologic concepts and techniques that he learned during a stay at Armand de Ricqlès's lab nearly ten years ago. With a small refinement in sampling technique (drilling of small cores), he was able to sample the long bones of the Tendaguru sauropods in the collections of the Museum für Naturkunde of the Humboldt University Berlin, thanks to the wonderful cooperation of Wolf-Dieter Heinrich and Hans-Peter Schultze. The results are quite exciting and unexpected: not only can the genera of sauropods be distinguished by their bone histology, but all four seem to show the same pattern of very rapid growth and sexual maturation well before maximum size is reached. In addition, the diplodocid customarily assigned to *Barosaurus*

possibly exhibits sexual dimorphism in bone microstructure. These results need some testing which is why Martin has applied for funding and has asked for permission (as some of you know, thanks for granting it!) to sample the Morrison Formation sauropods.

Also tying in with sauropod biology are the projects with PhD student Christian Peitz and diploma student Inken Müller-Töwe. The latter was mentioned already the first results of the former were published by Martin and Christian together with French and Spanish colleagues in *Comptes Rendus de l'Academie des Sciences*, Paris, last year. In this paper, we make the point that the Basturs site in Catalunya is not good evidence for nesting at the beach, as claimed earlier, but that it provides very good evidence for prolonged site fidelity in the sauropod species occupying the nesting ground.

Martin's work on Triassic ichthyosaurs has also continued with a paper on the enigmatic *Omphalosaurus* (*Paläontologische Zeitschrift*) and a review article on ichthyosaurs in general (soon to be submitted). In addition, preparation has just begun on a very nice skull of the poorly known *Phalarodon* from the Middle Triassic of Nevada. Martin is still its co-editor on VP for *Paläontologische Zeitschrift*. His announcement two years ago in this Bulletin that *Pal. Z.* lacked a backlog quickly created one. Nevertheless, he is very happy about the many good manuscripts and would like to thank the numerous diligent reviewers for their considerable efforts.

Martin has supervised not only the Bonn students but also a diploma thesis at Erlangen University: Walter Joyce worked on a beautiful turtle skeleton from a lithographic limestone deposit east of the famed Solnhofen quarries. He did a very good job showing that the specimen belongs to *Solnhofia*, hitherto only known from skulls, and that *Solnhofia* is a valid taxon despite the numerous headless carapaces from the region described in the last century. We were not able to convince Walter to move to Bonn, though; Yale's attractions were stronger! (Martin Sander and Daniela C. Kalthoff)

#### *Lippische Landesmuseum, Detmold*

Since 1990 in limestone quarries from the Upper Muschelkalk of the Weserbergland (northwestern Germany) several records of well-preserved bony fishes were made: *Colobodus maximus* Quenstedt, *Dolloptevus brunsvicensis* Stolley, and *Gyrolepis* cf. *albertii* Agassiz. Description and analysis of the material were published by Markus Plesker in 1995 (*Lippische Mitteilungen aus Geschichte und Landeskunde*, 64). Last autumn the first discovery in that region of a nearly complete *Nothosaurus* calvarium gave rise for working, supplied by analysis of postcranial elements, kept in older collections of the Lippische Landesmuseum. Results will be published by Cajus Diedrich in the *Paläontologische Zeitschrift*, completed with stratigraphical aspects by Markus Plesker. Cajus and Markus are students at the Institute of Geology and Paleontology of the University Münster in Westfalia.

#### SOUTH AFRICA



*Bernard Price Institute for Palaeontology (BPI), University of the Witwatersrand, Johannesburg*

Ross Damiani joined the BPI in June as a postdoctoral fellow to study the taxonomy and biostratigraphy of South African temnospondyls. Ross has visited around the country, studying museum collections and discovering new and exciting specimens in dusty museum cabinets. The most exciting “discovery” is a large skull referable to *Stenotosaurus*, a taxon known previously only from Laurasia. Ross, John Hancox (Wits Geology), and Johann Neveling (Council for Geoscience, Pretoria) spent a week in July collecting dipnoans, temnospondyls, therapsids, archosaurs, and other goodies from *Cynognathus* Assemblage Zone in Eastern Cape Province. Ross is working on several papers on mastodonsauroids, and on temnospondyls from the *Lystrosaurus* and *Cynognathus* zones. His systematic revision of the Mastodonsauroidea (formerly Capitosauroidea), a part of his gargantuan PhD dissertation (La Trobe University, Melbourne), has been accepted by *Zoological Journal of the Linnean Society*.

During his sabbatical this year, Bruce Rubidge has undertaken several field excursions to the mid-Permian Ecce-Beaufort contact around the Karoo Basin, where some of the most basal therapsids have been discovered. The Ecce-Beaufort contact is notorious for its paucity of fossils, nonetheless several most worthwhile specimens were recovered, providing evidence that the contact becomes younger northwards in the basin. A publication on these findings, co-authored with Sean Modesto, Christian Sidor (University of Chicago), and Johann Welman (National Museum, Bloemfontein), will appear shortly in *South African Journal of Science*. The project has yielded several new anomodonts and dinocephalians, and with every field excursion the biostratigraphic picture for the lower Beaufort becomes more complicated. In addition to the fieldwork, Bruce has completed several papers: one with Octavian Catuneanu (Rhodes University, Grahamstown) and John Hancox on sequence analysis of the Ecce-Beaufort contact in the southern Karoo, another with Mike Raath and Jochen Lepper (Geological Survey of Lower Saxony, Hannover) describing a new and diverse dinocephalian fauna from Zimbabwe, and a third with Johann Neveling and John Hancox on the distribution of the temnospondyl *Kestrosaurus* and its implications for the biostratigraphic subdivision of the upper Beaufort.

Former Capetonian Alain Renault is now near the completion on his PhD on the cranial morphology and taxonomy of the Triassic dicynodont *Kannemeyeria*. In addition to making use of the extensive collections in the BPI, he also works on several newly collected specimens. His recent field trips yielded a nearly complete skeleton of *Kannemeyeria*, which has some interesting functional implications. Alain presented some of his ideas on kannemeyeriid paleobiology at the Seventh Symposium on Mesozoic Terrestrial Ecosystems in Buenos Aires in September. He submitted several papers incorporating these ideas in recent months.

Chris Gow completed a couple of manuscripts on diapsids and parareptiles. In addition to filling in as department head while Bruce was on sabbatical, he has been busy editing the forthcoming volume of *Palaeontologia africana*. Chris is very excited about his most

recent “discovery” □ the skull of a captorhinid reptile that James Kitching collected from Zambia over three decades ago. He looks forward to retirement at the end of this year and will move to the coast (but he can still be contacted through the BPI).

Sean Modesto has been busy during the second year of his postdoctoral appointment at the BPI. He and Bruce were awarded a grant from the National Geographic Society for the work on the Ecca-Beaufort contact in Northern and Eastern Cape provinces. Last February they spent two weeks south of Carnarvon (in Kitch’s famous “To Be Examined” area of the Karoo Basin) and were joined by Christian Sidor for the full haul, and part of the time by Alain Renaut, Johann Neveling, and Johann Welman. Numerous specimens of dinocephalians, anomodonts, and theriodonts were recovered, including two partial skeletons of the turtlelike parareptile *Eunotosaurus africanus*. An important discovery is the skull of a varanopseid eupelycosaur, the first specimen of a nontherapsid (“pelycosaurian”) synapsid to be recovered from Gondwanan sediments in over eight decades. In recent months Sean has been concentrating on that specimen and on the small reptile that was collected last year from Leeukloof near Beaufort West. (Sean Modesto)

## THE NETHERLANDS

### *Natuurhistorisch Museum Maastricht, Maastricht*

Over a year ago, in August 1998, amateur paleontologist Rudi Dortangs discovered skeletal remains of a mosasaur at the ENCI-Maastricht BV quarry, which incorporates the type section of the Maastrichtian Stage. Subsequent digs during the winter of 1998 and the spring of this year have revealed this to be a fairly well-preserved, but scattered, adult specimen of *Mosasaurus hoffmanni*, the largest of all mosasaurs known to date. Staff members of the Natuurhistorisch Museum Maastricht have just recovered the skull, which is more or less complete, with gaping jaws and elements of the sclerotic rings associated. The posterior portion of the skull is still embedded in matrix; whether or not the specimen preserves the quadrates remains to be determined. The skeleton is situated directly above and partially within flint level 18 of the Lanaye Member (Gulpen Formation), and is of early Late Maastrichtian age. This is some 35 m (i.e., between 600,000 and 800,000 years older) below the spot which yielded the type specimen of *M. hoffmanni*, now at the Muséum national d’Histoire naturelle at Paris (France). A series of 11 or 12 dorsal articulated vertebrae, the scapula-coracoid, numerous fragmentary ribs, and a few isolated teeth are currently at the museum’s laboratory where they will be prepared within the coming 9-12 months. The block containing the skull will possibly become part of the permanent exhibits, not being easily transportable in view of its sheer weight, but also because of the fact that most of the bones are embedded in flint nodules and cannot be prepared.

The main interest of this find lies in the fact that it allows us to assess taphonomic processes of late Maastrichtian mosasaurs in more detail. For instance, in the area where most of the ribs and dorsal vertebrae are scattered widely, a number of teeth of the shark *Squalicorax pristodontus* have been collected, all of comparable size and color,

suggesting them to be of the same individual. Associated are the much smaller teeth of another shark, *Plicatoscyllium minutum*.

In April, Bill Gallagher (New Jersey State Museum, Trenton, New Jersey), Marcin Machalski (Polska Akademia Nauk, Warsaw) and Coralia-Maria Jianu (Muzeul Civilizatiei Dacice si Romane, Deva, Romania) joined us at the dig, as did a group of geology students from the Vrije Universiteit Amsterdam. As soon as the material is prepared, it will be put on display in a thematic exhibition; Anne Schulp is currently thinking how best to present this unique find.

Eric Mulder (Museum Natura Docet, Denekamp) visited us on various occasions during the past few months. He is currently working on turtle material housed in the museum collections (mainly *Allopleuron hoffmani*), and together with Nathalie Bardet (Muséum national d'Histoire naturelle, Paris), Pascal Godefroit (Institut royal des Sciences naturelles de Belgique, Brussels), and John Jagt, who has just finished work on a paper on plesiosaur remains from the Maastrichtian type area.

In 1849, Belgian geologist André Dumont defined the Maastrichtian Stage (his système maestrichtien) at the St. Pietersberg, south of Maastricht. Obviously, this calls for a celebration. The first part of a thematic exhibition, "Dinosaurs, Ammonites and Asteroids - Life and Death in the Maastrichtian," which opened at the museum in July, is attracting a lot of media coverage and loads of visitors. It features pygmy dinosaurs from the Maastrichtian of the Hateg basin (Romania), and dinosaur and crocodile remains from the Sultanate of Oman, among other things. Mid-November this will make way for the marine part, featuring mosasaurs, plesiosaurs, and lots of invertebrates, as well as focusing on K/T boundary perturbations. Early next year, this whole lot will travel to Romania. One of the highlights is the first model of the Transylvanian dwarf dinosaur *Rhabdodon*, which Dutch preparator Aard Walen produced, in close cooperation with Coralia, Dave Weishampel (Johns Hopkins University, Baltimore, Maryland) and Jean Le Loeuff (Musée des Dinosauriens, Espéraza).

Preparations for the Maastrichtian celebratory conference are well underway; between 60 and 70 participants have returned the first registration form. Subjects covered in poster presentations and talks include Mongolian dinosaurs as well as many invertebrate groups, in addition to biostratigraphy. There are plans for a proceedings volume, to appear in the second half of 2001, containing papers on all aspects of Maastrichtian paleontology and stratigraphy. Three days of sessions (18-20 November) are followed by a field trip to the Maastrichtian type section (which currently exposes the Lower/Upper Maastrichtian boundary for the first time) and the famous Geulhemmerberg K/T boundary section on 21 November. For more information on this meeting, please contact us at [mail@nhmmaastricht.nl](mailto:mail@nhmmaastricht.nl).

The proceedings of last year's Third European Workshop on Vertebrate Palaeontology, held at Maastricht (6-9 May 1998) are at the printers now, and will come out in January 2000, as a special issue of the journal *Geologie en Mijnbouw*. This volume includes a paper on dinosaur remains from the type Maastrichtian. (John Jagt and Anne Schulp)

## UNITED KINGDOM

### *University of Portsmouth and the Museum of Isle of Wight Geology*

Life at Portsmouth continues to be hectic. There is too much work, not enough time, and way too many interesting animals. Last December, we hosted the highly successful and enjoyable 42nd Palaeontological Association Annual Meeting that was attended by more than 200 guests and featured over 50 talks and 26 posters. Vertebrate studies were well represented with talks on such diverse topics as conodont relationships, the morphology of *Jamoytius*, feeding mechanisms of agnathans, the braincase of *Ichthyostega*, foot pathology and forelimb function in the theropod *Deinonychus*, microvertebrate taphonomy in Poland, neornithine bird evolution, etc. Dave Martill and Paul Davis spoke about their parasite-bearing Crato Formation feather (recently published in *Nature*).

We enjoyed visits from Clive Trueman, Luis Rey, and Sam Davis. Sam's work with Dave on the goniorhynchiform fish *Dastilbe* has produced a paper in press. Together with Andrew Swift (Leicester), Dave has also finished editing the Pal. Assn. volume *Field Guide to Fossils of the Rhaetian*. This will be published later (as of writing) in 1999 and includes contributions from Glenn Storrs on tetrapods, Chris Duffin on fishes, and Dave himself on taphonomy. In fieldwork, Dave is planning another expedition to Brazil. David Loydell recently amazed us all by bringing in a chunk of Vectis Formation bonebed that is bristling with microvertebrate remains. More recent finds from the Isle of Wight are discussed below.

Dave Martill recently worked at Karlsruhe with Dino Frey and Steve Salisbury on a new, enigmatic genus of small crocodile and has also made contributions to as-yet-unpublished work on a new coelurosaurian theropod, yet another soft-tissue pterosaur, and a new genus of ctenochasmatid. Dave and Dino recently published a descriptive paper on a spectacular, complete *Pterodactylus* specimen - preserved with "hair," throat pouch, toe webbing, and so on. Dave has also published recent contributions on (with Dino) pterosaur joint ossification, (with Guillermo Chong and Ruben Pardo) a new species of pycnodont from the Jurassic of Chile, and (with Dino, Ruben Caceras, and Guillermo Chong) a second Oxford Clay fish from Chile, a new species of the gigantic planktivore *Leedsichthys*.

Lorna Steel continues her work on pterosaur head crests, and is currently focusing on histology. She was recently the senior author in a *Geological Curator* paper that discussed the construction of 'Arry, our *Arambourgia* replica. Another 'Arry replica is soon to be shipped abroad: this time to the University of Jordan at Amman. This has been sponsored by the Jordan Phosphate Mines Company Ltd. with support by Dr. Hani Khoury.

Flying vertebrates of the feathered kind also continue to play an important role in our various projects. Paul Davis has been proving elusive, but did show his face at the SICB (Symposium on Integrative and Comparative Biology) conference held in Denver in January 1999. Julian Hume has begun joint work with Carlo Violani (Turin) on

*Fregilupus*, the extinct Mascarene starling. As part of his work on the Mascarene fauna, Julian is to visit Mauritius in summer 1999. Julian is also writing up new data on the extinct Kosrae Island starling. Based on his examination of specimens held at the Russian Academy of Science, he has discovered that juveniles underwent a hitherto unrecorded plumage phase. This could indicate that this species should be removed from the genus *Aplonis*. Finally, Julian is also set to publish work on the controversial Reunion solitaire: the only known illustrations, as it has been discovered, were made long after this bird had become extinct and were not based on the live bird (which we now know to have been an ibis anyway).

Stig Walsh is finishing his work with Julian on the avifauna of a Mio-Pliocene marine bone bed, the subject of his PhD project. Yielding a pseudodontorn, a large penguin, a pelican, cormorant, and albatross, the site is the first marine avian assemblage from the north-central coast of Chile, and represents important geographical and temporal range extensions for all of these birds. Seals are also abundant at the site and are reminiscent of taxa described from the Peruvian Pisco deposits. At the time of writing Stig is spending time in Paris with Christian de Muizon - hopefully he will return with an improved understanding of the Chilean taxa's affinities.

Darren Naish is still struggling to publish what he can from his Wealden theropod thesis and is gearing up for his next major project: the osteology and affinities of a new South American penguin. Following some interesting discoveries in the antiquarian literature, Darren is polishing up an MS that discusses tree-climbing abilities in theropods. Work with Gareth Dyke (Bristol) on the affinities of some small European theropods is underway, as is a determined effort to unravel the *Calamospondylus-Aristosuchus* situation. *Darren continues to work with Steve Hutt on some new Isle of Wight theropod material.*

*We welcome a new vert paleo PhD worker to the department, Owen Jones. Owen is studying trophic webs in the Kimmeridge Clay and joins us following work on the ecology of the isolated Scottish islands. His firm footing in marine ecology is proven by his impending publication on the effect of acoustic harassment on porpoise distribution.*

*Steve Hutt (Museum of Isle of Wight Geology) is just finishing his Neovenator dissertation and looks forward to beginning a major project on all Isle of Wight dinosaurs. Much thought and time is also going into the preparation of the attractive new dinosaur displays for the island's new dinosaur museum, recently given the official go ahead. This tourist magnet should be a European Mecca for dinosaur enthusiasts and paleontologists when complete. Meanwhile, Steve is also busy prepping both a new specimen of the Oligocene croc *Diplocynodon* and another new turtle from the Eocene.* (Darren Naish)

## UNITED STATES OF AMERICA

### Northeast Region

*Carnegie Museum of Natural History, Pittsburgh, Pennsylvania*

We haven't contributed anything to the *SVP News Bulletin* for quite awhile (at least since before John Wible became our mammalogist, and he's been here for a year now. A belated welcome aboard, John!) We proudly boast two new exhibits - a life-sized model of *Diplodocus carnegii* now greets visitors outside the museum and *Quetzalcoatlus* soars over Dinosaur Hall. Both are pretty impressive!

In connection with a paper for the Fahlbusch retirement volume, Mary Dawson has recently been thinking about the Miocene. A review of lagomorphs is continuing, and has led Mary back to the interesting rabbit from the Devon Island Miocene fauna, and to - she hopes - a completion of the faunal study of that locality. Fieldwork in southern China in the fall of 1998 yielded some interesting new Eocene rodents and lagomorphs; studies of these, plus some other projects on the Chinese Eocene, are progressing. Mary's Kishenehn work continues to add new elements to the vertebrate faunas. In the summer of 1998, a turtle that is new to the fauna was recovered (with great difficulty) from one of the localities along the Middle Fork of the Flathead River, and a park ranger found a very nice horse jaw at one of the North Fork localities. Hal Pierce's study of the invertebrates from the North Fork is nearing completion and will soon reveal a wealth of information on both the invertebrate faunas and inferred climates. Early this summer Mary decided to test the elasticity of bone. The experiment was not entirely successful, but Mary only missed a couple of weeks' work following hip replacement surgery. (Unfortunately her "experiment" precluded the possibility of any fieldwork this past summer.)

Dave Berman and Amy Henrici, assisted by Robert Reisz's students Corwin Sullivan and Tammy Sutherland, completed another successful field season at the Lower Permian Bromaker Quarry near Gotha, Germany. This year's big discovery was the greater portion of a sail of *Dimetrodon*. Dave and Amy recently submitted a manuscript to *JVP* describing a pair of superbly preserved skeletons of *Seymouria sanjuanensis* from the Bromaker Quarry. With Dave Eberth of the Tyrrell Museum, Berman has also submitted a paper to *Palaio* describing the geological setting of the Bromaker Quarry. As emphasized in this study, the Bromaker fossil assemblage and paleoenvironments comprise a unique Early Permian paleoecological system, which can be regarded as a truly terrestrial, upland ecosystem. The Bromaker may represent an initial stage in the evolution of Olson's Caseid Chronofauna. Dave's paper on the origin and early evolution of the amniote occiput will be submitted soon to the *Journal of Paleontology*.

Over the past year most of Amy's time has been devoted to the preparation of specimens from the Bromaker Quarry, especially to the preparation of an exquisite, virtually complete skeleton of a new diadectid. She continues her research on fossil frogs and recently submitted a paper to the *Annals of Carnegie Museum* redescribing the Early Eocene anuran *Eopelobates guthriei* from the Wind River Formation of Wyoming. Amy hosted Ana Baez of the Universidad de Buenos Aires, Argentina, for ten days in late May/early June, and together they worked on the description of a new species of the frog *Xenopus* from the Lower Miocene Yemen Volcanic Series, Republic of Yemen. They hope to submit their results to the *Journal of Paleontology* by the end of the year.

In May Luo Zhexi visited the Geological Survey of India (Calcutta and Hyderabad) and the Geological Studies Unit of the Indian Statistical Institute (Calcutta). He was delighted to meet several Indian colleagues and to see some of the collections of Indian Mesozoic fossil vertebrates. Luo is grateful for the hospitality shown him by hosts Drs. P. M. Datta, D. P. Das, P. Yadagiri, D. C. Das Sarma, S. Bandyopadhyay, D. P. Sengupta, and Professor T. Roy Chowdhury.

Luo spent 35 days in June and July looking for fossil vertebrates in the Lower Cretaceous of the Mazongshan area of Gansu Province, northwestern China, with a collaborative team that included Tang Zhilu and Tang Feng (IVPP), Justin Georgi (CMNH), Hailu You and Jason Downs (Penn), Mike Shapiro (Harvard), and several very diligent IVPP staff. The extensive exposures in the Mesozoic basins of Gansu yielded a partial skeleton of a new small theropod, several partial skeletons of *Psittacosaurus* and *Archaeoceratops* (plus hundreds of cranial and postcranial elements of these ceratopsians), and two triconodont mammals, including a very large partial skull of a new gobiconodontid. Despite the fact that instant noodles and boiled eggs were about the only items on the lunch menu, the team managed to have a great time on this expedition to the southern Gobi.

Chris Beard, with Gus Winterfeld (Idaho State University) and Alan Tabrum, enjoyed another successful field season in the upper part of the Fort Union Formation in the Washakie Basin/Rock Springs Uplift area of southwestern Wyoming. Other team members included Iona Weyers of CMNH (who put together an entertaining and informative Web site), Vin Morgan, Pitt undergrads Tonya Penkrot and Kari Prassack, and high-school student Nick Reise. This season the team discovered two new late Tiffanian localities that promise to yield good microfaunas, in addition to the *Lambertocyon*, *Ectocion*, and *Phenacodus* that comprise the bulk of most surface collections. The goal of this project is to compile a good record of vertebrate faunas in this region across the Tiffanian-Clarkforkian boundary, an interval that has not yet been well documented in the Bighorn Basin farther to the north. Peter Wilf, formerly of the Smithsonian and now at the University of Michigan, is studying coeval floras from the same region. The late Tiffanian to basal Wasatchian witnessed at least three iterative immigration events that seem to have been mediated by climatic warming. The ultimate goal of the research program in southwestern Wyoming is to document how terrestrial ecosystems change through time in response to climatic warming. Possible applications to current issues in climate change studies should be obvious. At the time of this writing, Chris is still in the process of unpacking and curating this season's haul. Recent and forthcoming publications include: (1) description and functional analysis of the postcranial skeleton of *Shoshonius cooperi*, an omomyid primate from the Wind River Formation of central Wyoming (with Marian Dagosto and Dan Gebo; *Annals of Carnegie Museum*); (2) an analysis of the role of intercontinental dispersal in transforming Holarctic mammalian faunas near the Paleocene-Eocene boundary (with Mary Dawson; *Bulletin de la Société Géologique de France*); and (3) description of the first postcranial element to be obtained of the late middle Eocene adapiform primate *Hoanghonius stehlini*, from the Heti Formation, Yuanqu Basin, China (with Dan Gebo, Marian Dagosto, and Wang Jingwen; *Journal of Human Evolution*).

Alan Tabrum, accompanied by Bill Leistner and Ilona Weyers, devoted two weeks in August to fieldwork in the Tertiary of his beloved southwestern Montana. Although the principal purpose of this year's visit was to set up a field trip (with co-leader Ralph Nichols) for the 2001 SVP meeting in Bozeman, there was still plenty of time for collecting between rain storms. They did especially well at Pipestone Springs, obtaining the first topotypic upper dentition of *Aulolithomys bounites* as well as the first uppers of *Hesperocyon* (two specimens!) to be collected from this classic locality. The major find of the field season was, however, the rostral portion of a marsupial skull with attached lower jaw from the early Arikareean Mill Point locality.

John Wible is happily approaching his one-year anniversary in the Section of Mammals at Carnegie Museum. He continues his collaborations with Mike Novacek, Malcolm McKenna, and Inés Horovitz (AMNH) and Guillermo Rougier (University of Louisville) on Cretaceous mammals from Mongolia. New projects initiated since John's move are with Zhexi Luo on Jurassic mammals from the Morrison Formation of Fruita, Colorado, and with Tim Gaudin (University of Tennessee at Chattanooga) on armadillo phylogeny.

Visitors to the Section of Vertebrate Paleontology since the first of the year include Jennifer Clack, Chris Brochu, Samuel Davis, Margaret Diamond, Eric Sargis, Suzanne Strait, Hartmut Haubold, Matthew Wedel, Masanaru Takai, Richard Laub, Edward Schaefer, Mary Silcox, Christina Seiffert, Paul Sereno, Brent Breithaupt, John Becker, Joanna Wright, Jordan Hand, and Michael Kohl, as well as regulars Rich Kissel, Bill Korth, Dick Lund, Jack McIntosh, Bob Sullivan, and Stuart Sumida. (Alan Tabrum)

## Southeast Region

### *Paleontologist at Large, Birmingham, Alabama*

From March to early May, Caitlin Kiernan (with the much-appreciated aid of Jennifer Caudle) continued fieldwork in both the Mooreville Chalk and Demopolis Chalk formations (Campanian, Late Cretaceous) of Greene and Sumter counties, in Alabama. Utilizing aerial photographs, a large number of new localities were discovered, and excavation continues on a very well-preserved toxocheylid turtle. Caitlin spent a couple of days this spring looking at mosasaurs and turtles in the collections of Auburn University (thanks to Dr. Craig Guyer) and, in June, she was able to examine and photograph specimens of *Clidastes propython* and *C. liodontus* at the American Museum of Natural History (many thanks to Drs. Eugene Gaffney and Charlotte Holton for all their assistance). Her work continues on the type description of the "new" Mooreville *Clidastes* (its presence was noted as early as 1975, but a formal description has yet to be published). (Caitlin R. Kiernan)

### *LSU Museum of Natural Science*

Judith Schiebout and Suyin Ting continue work on the Fort Polk Miocene, with new animals and new sites continuing to turn up. We are delighted that excavation has revealed around five tons of conglomerate at the Stonehenge Site, which has yielded



some of our most exciting small specimens. The fossil-bearing rock at this site had appeared to be expended. Dr. Schiebout has been selected to serve as a faculty mentor in the LSU Chancellor's Scholars Engaged in Undergraduate Research Program, and will involve a student participant in research on the Miocene of Fort Polk. Dr. Ting has received support from the National Geographic Society for a project entitled "Biostratigraphic, Chemostratigraphic, and Magnetostratigraphic Study across the Paleocene/Eocene Boundary in Hengyang Basin, China" and is planning fieldwork.

Julia Sankey has accepted the Haslem postdoctoral appointment at the South Dakota School of Mines and Technology, and Alton (Butch) Dooley accepted a position at the Virginia Museum of Natural History.

Ray Wilhite is planning to produce a working model of the alligator appendicular skeleton before next summer. He is getting his thesis data on ontogenetic variation in sauropod limbs ready for publication and preparing proposals for funding for a trip back east to scan more sauropod limb elements. Ray is also curating the donated McPherson Pleistocene collection. Mike Williams had a chance to confer with mosasaur experts when he accompanied Ray on his "grand tour" of western museums in summer.

After completing his Master's at the University of Rhode Island, Paul White has started his work toward a Ph.D. here at LSU. He is considering a project either in Big Bend or western Louisiana, one including sedimentology/stratigraphy and/or taphonomy.

Joshua Smith worked for the Utah Geological Survey from June through November of 1998 as a field assistant for the paleosurvey in the Grand Staircase-Escalante National Monument. From February to April, he was an intern in Zion National Park working on a park-wide paleosurvey for the National Park Service. He is presently finishing his undergraduate degree at the University of Southwestern Louisiana and is hoping to continue studying vertebrate paleontology as a graduate student in the spring of 2000. (Judith Schiebout)

#### *Clemson University, Bob Campbell Geology Museum*

Construction of the Bob Campbell Geology Museum (bcgm) was completed last August. After moving the entire collection of rocks, minerals, and fossils from the geology department to the new building, the Museum opened in October. The director, Dr. Carolyn Rebbert, joins the bcgm from the American Museum of Natural History. She has been busy organizing the museum's affairs, while at the same time managing tours for local school groups. In May 1999 the new curator Dave Cicimurri arrived from the South Dakota School of Mines and Technology. He has been organizing the collection and correcting specimen labels. Recently the museum acquired a curatorial program from Re:discovery and Dave is excited to implement it at the bcgm. The museum staff has had the opportunity to prospect a Cambrian trilobite locality in the Slate Belt, but they are really looking forward to tapping into the state's extensive Coastal Plain deposits (late Cretaceous-Pleistocene). The staff hope to keep their colleagues informed about museum happenings throughout the coming years. (Dave Cicimurri)

Bruce MacFadden reports that the Spring Pony Express field sessions at Thomas Farm were exceedingly productive and this year yielded about 50 skulls and/or jaws, including exceptionally well-preserved skulls of *Alligator* and a large carnivore. In May Bruce participated in the paleontology congress in La Paz, Bolivia, which included a field trip to the late Oligocene Salla beds. In June Bruce led a Pony Express field trip to western Nebraska and, along with Bruce Shockey, hosted our Bolivian colleague Federico Anaya, who was here working with us under the auspices of an American Association of Museums partnership grant. A paper on latitudinal gradients in fossil *Equus* recently appeared in *Global Ecology and Biogeography Letters*. Bruce has sent off a manuscript using carbon isotopes to date early Pleistocene glacial stages from Tarija, Bolivia, and is nearing completion of another on Thomas Farm *Anchitherium*. Along with Gary Morgan, Bruce has started a study of beautiful Arikareean oreodont skeletons (one of which is currently on exhibit) from a locality in northern Florida. Bruce also continues work on carbon isotopes of Neogene herbivores to understand ancient community structure. On the exhibits front, Bruce spent much of the spring preparing an exhibit "Skeletons in Our Closet" for its opening in May and is currently working on the planning for a traveling exhibit entitled "The Great American Interchange." During July the Hall of Florida Fossils committee met with Ralph Applebaum and Associates to finalize the conceptual design for our new 5,000 ft<sup>2</sup> permanent exhibit hall.

Bruce Shockey adds that while at the congress in Bolivia, Bruce MacFadden received an award - an elegant engraved silver plate - in gratitude for his many years of support for the paleontology program in Bolivia. We here at UF would like to point out that Bruce Shockey has also received an award, of sorts - a real job! Bruce has started his first year in the Department of Biology at New Jersey City University in Jersey City. Congratulations to both Brucissimo and Brucito!

Russ McCarty adds this update from the prep lab. The prep lab has just molded and cast the skull and mandibles of a complete articulated *Palaeolama* skeleton. The original skull and mandibles, along with the postcranials, were recently donated to the museum by Steve Jacobson, an amateur collector from Tampa, Florida. The skull and mandibles have been placed in the flmnh collection of vertebrate fossils for future scientific study and comparison. The finished casts of the skull and mandibles will be placed on the original skeleton. The mounted *Palaeolama* skeleton is to be displayed in the future Hall of Vertebrate Paleontology located at Powell Hall, in the Florida Museum of Natural History's new exhibit gallery here on the UF campus. *Palaeolama*, while contemporary with *Hemiauchenia* at some early Pleistocene sites in Florida, such as Leisey Shell Pit, is less commonly found. Until the Jacobson specimen was donated to the museum, the paucity of usable skeletal elements belonging to *Palaeolama* in the museum's collections precluded the possibility of a mounted specimen. This is just one of the many new skeletal reconstructions that will be on display in the exciting new fossil hall being designed and constructed under the supervision of Dr. Gina Gould.

Bob Feranec defended his Master's thesis this summer, and has moved on to pursue a Ph.D. at Berkeley under the tutelage of Tony Barnosky. A paper stemming from his isotope research and coauthored with Bruce MacFadden is in preparation. Best of luck to Bob. Watch for future installments of the Feranec story in the ucmp space. Oh, and Bob, though we really do miss you (really), we have filled your desk already. The VP Program welcomes Diana Hallman, fresh from the Quaternary Studies Program at NAU. Diana will continue the great Florida tradition of isotope studies, working with Dave Webb on those pesky proboscideans (seems a fella can't put in a new development or strip mall without having to dispose of a few of those tusk thingies). Diana's husband Peter, another paleominded person now at UF, has made the questionable decision to join the priesthood in the Church of Humankind, in order to recover and protect The Holy Relics. We wish Peter luck in pursuit of the Ph.D. from the Department of Anthropology in the field of archaeology.

In addition to Diana, coming to us from Zoology, three new faces in the prep lab have come to us from the Department of Geology. The VP Department would like to welcome Helen Evans, Joann Labs, and Daniel Snyder, and encourage them to imbibe deeply of Florida paleontology. Enjoy!

Matt Mihlbachler is in the process of finishing up his Master's thesis on the paleobiology of Miocene rhinos and will graduate at the end of the spring semester. He visited both the amnh and Smithsonian this summer, accumulating piles of data along the way. However, Matt's micromammal work, advertised in these pages many months ago, has yet to materialize. (It's an inside joke, folks. I beseech your indulgence.)

Brian Beatty has finished a senior thesis on *Prosynthetoceras*, and continues work on a study of the faunas found in the Gainesville creeks. The creek study, funded by a \$3,000 Undergraduate Scholars Program grant to Brian, will include a population study of the sirenian *Metaxytherium*. Brian hopes to continue studying sirenians with Daryl Domning at Howard University next fall.

Having spent enough time in these hallowed halls to warrant for himself either tenure or a catalog number, Jay O'Sullivan has completed the first chapter of his dissertation. It is a description of a new species of *Archaeohippus*, a dwarf horse of the early Miocene. He will present a poster on the subject at the Denver meetings. Jay is also avidly anticipating resubmitting (third time's the charm, they say) his dissertation improvement grant proposal to the NSF. With the funds he will obtain (the power of positive thinking, and all that), he will perform the isotope analysis necessary to address developmental timing in *Archaeohippus*. Thus will be answered the age-old question, "Was it neoteny, or progenesis, dwarfed the beast?" (Jay O'Sullivan)

*Georgia Southern University*

Leann Hubiak graduated after successfully completing and defending her Master's thesis on early Miocene chondrichthyans from Porters Landing, Georgia. Before leaving she promised to publish her results...eventually.

Richard Hulbert spent a profitable two weeks at the amnh in May, acquiring data for projects on Neogene *Tapirus* and the evolution of equid hypsodonty. Over the summer, the final draft of his book on the fossil vertebrates of Florida was turned into the University of Florida Press for review, while the remaining time was spent working on the illustrations for the book and two papers on *Tapirus*. (Richard Hulbert)

## Southwest Region

### *Dallas Museum of Natural History*

We are extremely happy to welcome Louis Jacobs to the Museum as our new interim director. We have now finished our display of White River vertebrates which stresses the importance of amateur contributions to paleontology, as most of the specimens were donated (and much of the preparation was completed) by our volunteers. Geb is continuing to supervise our ongoing preparation and excavation of two juvenile *Alamosaurus* from Big Bend National Park and just returned from the field. Tony Fiorillo's manuscript on fluvial reworking of fossils was included in the Advances in Vertebrate Paleontology and Geochronology volume from Tokyo's National Science Museum, and several others are under construction, including a chapter on taphonomy for the latest Dinosauria volume. This summer Tony and Roland Gangloff continued prospecting Upper Cretaceous sites along the Colville River on the North Slope, returning with the first pachycephalosaur material from Alaska. At the moment he is wrapping up the last season of a three-year project collecting Devonian fish from the Beartooth Butte Formation of Wyoming and Montana, and investigating several late Cretaceous dinosaur sites in the Lance Formation of Wyoming. (Geb Bennett)

### *Lamar University, Department of Geology*

Jeff Pittman and Jim Westgate have been working on sites from all three eras. They added new sites at Twin Buttes Reservoir to the list of late Permian track localities now under study near San Angelo. Spring break was spent collecting microvertebrate tracks at the Castle Peak early Permian locality near Abilene and scouting for new exposures.

In May, Jeff, Jim, and Dana Cope (College of Charleston) conducted a preliminary site survey of a new late Cretaceous coastal community for the Instituto Nacional de Antropología e Historia in Chihuahua, Mexico. Based on surface analysis, the fauna includes hadrosaurs, carnosaur, chelonians, teleosts, sharks, and oyster reefs. They plan to follow up on the federal permitting process in the fall and hopefully will be excavating by spring.

Because the vertebrate quarry is nearly exhausted, Jim is now focusing on the plant community at the middle Eocene Casa Blanca locality at Lake Casa Blanca International State Park in Laredo, Texas. David Dilcher (FLMNH) and Carole Gee (University of Bonn) are spearheading the macroflora analysis. Jim joined a class of 22 German paleontology students led by Martin Sander this September in a day of excavating plant-bearing beds in the lake spillway. A semitechnical volume on the Casa Blanca

community called *After the Dinosaurs: A Texas Tropical Paradise Found* was published by Texas Parks and Wildlife Press in September. (Jim Westgate)

*Museum of Northern Arizona, Flagstaff*

Last November David Gillette, formerly State Paleontologist of Utah at the Utah Geological Survey, came on board to fill the newly established position of the Colbert Curator of Paleontology. In May, Barry Albright began as the Associate Curator of Geology and Paleontology, filling the position left vacant when Mike Morales moved to Emporia, Kansas. Last year Northern Arizona University students Eben Rose and Bill Parker began excavating a well-preserved aetosaur skeleton (*Desmotosuchus*) from the Chinle Formation on the Navajo Reservation. With Dave Gillette, they expanded the excavation last winter, and upon Barry's arrival renewed the excavation with vigor. The skeleton will be Bill Parker's Master's thesis project at NAU. Additional fieldwork included the excavation of a partial plesiosaur from the Tropic Shale in southern Utah. Barry and Eben also joined geology research associate Grace Irby, who led a four-day field excursion to study a new dinosaur track site in the Cretaceous Toreva Formation, also on the Navajo Reservation. With very little time not spent in the field, both Dave and Barry were also able to complete permit applications for continued work in the region, as well as publications on various aspects of their respective research agendas that should be in press soon.

By the time this issue is distributed, *Vertebrate Paleontology in Utah*, edited by Dave Gillette, will be in print. It contains 52 papers on a wide variety of subjects, all on Utah vertebrate paleontology. The publisher is the Utah Geological Survey in Salt Lake City, and the volume will be available for sale at a price under \$20.

Ned Colbert is recovering nicely from a couple of mishaps earlier this year, and has resumed research and correspondence. Among other projects, he presently is working on a technical paper summarizing Ghost Ranch geology and paleontology that spans five decades of research.

Janet Whitmore Gillette is contract supervisor in collections management at MNA. Jennifer Glennon works in the same MNA department with Janet. Both are anxious to resume fieldwork and laboratory activities now that the MNA paleontology program is rejuvenated. (Dave Gillette and Barry Albright)

*New Mexico Museum of Natural History and Science, Albuquerque*

Tom Williamson continues working on Late Cretaceous and Paleogene vertebrates of northwestern New Mexico. Last summer, he supervised the excavation of two dinosaur specimens from the Bisti/De-na-zin Wilderness Area (B/DNZ) managed by the Bureau of Land Management. This was the first time paleontological excavation was permitted on any federally designated wilderness area. The two specimens include a partial skull and skeleton of a large tyrannosaurid and a partial skull and skeleton of a *Pentaceratops* from the Upper Cretaceous Kirtland Formation (both discovered by Paul Sealey). The

excavation and collection of the two specimens became a truly multi-agency effort as the specimens were collected by the New Mexico Museum of Natural History and Science (including help from the New Mexico Friends of Paleontology) with assistance from the BLM. Both specimens were airlifted from the B/DNZ by helicopter courtesy of the Air Wing of the New Mexico Army National Guard and transported to Albuquerque via an 18-wheeler courtesy of the Bureau of Indian Affairs. The tyrannosaurid includes significant cranial material and is estimated to be at least 40% complete. It probably represents the most complete tyrannosaurid to be collected in New Mexico.

Other significant discoveries made from the San Juan Basin over the last two summers include three partial skulls of pachycephalosaurids, including the first found in New Mexico. One of these consists of a nearly complete dome and includes some of the marginal roofing bones and much of the braincase. This specimen will be highlighted in a poster to be presented at the 1999 SVP meeting in Denver. Another pachycephalosaur specimen recently discovered includes a partial dentary with teeth recently prepared by Museum volunteer Warren Slade. Tom has also been working on retrieving microfaunas from several sites within the Upper Cretaceous Fruitland and Kirtland formations, San Juan Basin, New Mexico.

Tom is currently working on revising the San Juan Basin tyrannosaurids with Thomas Carr (University of Toronto). Tom and Thomas recently received a grant from the Jurassic Foundation towards this project and spent several weeks examining comparative tyrannosaurid material at the Tyrrell Museum of Palaeontology, the Museum of the Rockies, South Dakota School of Mines, and the Black Hills Institute. They will soon also travel to the American Museum of Natural History and the Canadian Museum of Nature, Ottawa, to examine their tyrannosaurid material as well. Tom and Thomas will reveal some of their preliminary results of this revision including an analysis of the phylogenetic position of a juvenile specimen of a new species of *Daspletosaurus* at the 1999 SVP meeting.

Tom Williamson and Robert Sullivan (State Museum of Pennsylvania, Harrisburg) recently published "A new skull of *Parasaurolophus* (Dinosauria: Hadrosauridae) from the Kirtland Formation of New Mexico and a revision of the genus" (Sullivan and Williamson) as *NMMNH Bulletin* 15.

Gary Morgan continues his studies of New Mexico Blaccan faunas. Within the past two years he and several coauthors (Spencer Lucas, Paul Sealey, John Estep, and Andy Heckert) published two diverse Blaccan faunas from southern New Mexico, the Buckhorn local fauna from the Mangas Basin and the Tonuco Mountain local fauna from the Jornada Basin. A paper reviewing ten Blaccan faunas and two Irvingtonian faunas from the Albuquerque Basin will be published later this year in *New Mexico Museum of Natural History Bulletin*. Fieldwork during the first eight months of 1999 yielded Blaccan vertebrates from three areas of the state. Gary, Spencer Lucas, Pete Reser, and Jerry Harris collected excellent samples of *Nannippus*, glyptodonts, and land tortoises, as well as many other taxa, from the Pearson Mesa local fauna in the Duncan Basin in southwestern New Mexico along the Arizona border. Yuki Tomida published the small

mammal faunas from the Duncan Basin, but the large mammals have not been studied. Gary, Paul Sealey, and Warren Slade collected a partial glyptodont shell and discovered a new microvertebrate locality from several late Blancan sites near Chamberino and La Union in the Mesilla Basin in southern New Mexico. Gary and Paul Sealey continued to collect Blancan vertebrates from a series of sites on the west side of Elephant Butte Lake near Truth or Consequences in the Rio Grande valley.

In late November 1998, Gary spent several enjoyable days at the Florida Museum of Natural History, participating in the PaleoFest '98 activities and finishing a paper on fossil bats from the West Indies for a volume on the biogeography of the West Indies edited by Charles Woods. Gary returned to the FLMNH in June 1999 for a productive week of research. He and Laurie Wilkins, a mammalogist at the FLMNH, finished a paper describing new fossils of the giant Pleistocene rodent *Clidomys* from Jamaica. He also borrowed a large sample of bat fossils from the early Miocene Thomas Farm site in northern Florida, which he will study with Nick Czaplewski of the Oklahoma Museum of Natural History as part of their long-term project on the Oligocene and Miocene bats of Florida.

Jerry Harris is presenting a poster at the 1999 SVP meeting in Denver on a preliminary analysis of sphenodontian teeth from Chinle Group. Jerry recognizes four tooth morphotypes (other than *Clevosaurus*). Final analysis of these teeth is awaiting comparison with European material. Jerry is in the process of studying and writing up a peculiar, probably drepanosaurid or megalancosaurid pectoral girdle from the Whittaker *Coelophysis* Quarry, Ruth Hall Museum Block (with Alex Downs). This manuscript will hopefully be submitted for publication by the time this *Bulletin* is released. Jerry is also examining vertebrate biostratigraphic techniques others have used to justify the age of the Yixian Formation (Liaoning, China) as Upper Jurassic (with Josh Smith [University of Pennsylvania] and others). Hopefully, this manuscript will also be submitted for publication by the time this *Bulletin* is released! In addition, Jerry continues to work on Late Triassic vertebrate material from the Chinle Group. He recently prepared disarticulated but uncrushed theropod skull material and some vertebrae from the Snyder Quarry near Ghost Ranch (see below) - it's the oldest Chinle theropod skull material. Preliminary analysis (with Andy Heckert) shows some differences from *Coelophysis*, but whether they are due to the crushed nature of the *Coelophysis* material is unclear at present. He is also preparing phytosaur skulls from the Redonda Formation and from Snyder Quarry.

This spring and summer Andrew Heckert (PhD candidate at the University of New Mexico) led NMMNH personnel and the New Mexico Friends of Paleontology to a variety of Upper Triassic bonebeds in Texas, New Mexico, and Arizona. The Texas bonebed, discovered by Bob Kahle of Midland, appears to be similar to the famous *Trilophosaurus* quarries worked by the WPA in 1940, and yields numerous fossils of that enigmatic reptile. Mark Snyder of Del Mar, California, discovered an incredible bonebed near Ghost Ranch that was worked extensively this May. The Snyder quarry produced a rich fauna, including invertebrates, fish, phytosaurs, dinosaurs, and aetosaurs, and is the focus of Andrew's talk at the upcoming SVP bonebeds symposium. Material from the

quarry is being prepared by volunteers Tracey O'Kelly, Larry Rinehart, and Scott Sucher. A third bonebed was discovered by Stan Krzyzanowski of Tucson, and yields a fauna of small terrestrial tetrapods. While field efforts continue, the 34 jackets collected from these sites this year promise to keep Andrew and NMMNH preparators and volunteers busy for some time to come. (Tom Williamson)

*Northern Arizona University, Department of Geology*

David Elliott and Jim Mead would like to assure everyone that they are knee deep in *JVP* manuscripts and have little to no time for anything else right now, including contributing more detailed news for this issue.

*University of Texas at Austin, Department of Geological Sciences, and Texas Memorial Museum, Vertebrate Paleontology Laboratory*

This month the Vertebrate Paleontology Lab of the Texas Memorial Museum saw the completion of a life-sized skeletal reconstruction of the giant pterosaur *Quetzalcoatlus northropi*. Wann Langston spent a year and a half restoring missing parts of the giant skeleton from a smaller Texas species, and struggling with the many difficult questions relating to the posture of the beast in flight. The results are magnificent! Oscar Alcober and Raul Gordillo built the model, which now hangs from the ceiling of the TMM. A big bash with 600 local dignitaries was held at the TMM to open the new exhibit. Dr. Doug Lawson, who found the specimen while a Texas graduate student, helped to welcome the new skeleton to its new home.

Ernie Lundelius and Robert Rainey both visited Australia earlier in the year. Ernie's trip was to catch up on fieldwork and research, while Bob went south for fieldwork and to help our Australian colleagues mold some delicate new fossils. Ernie took part in a session on micromammals at the XV INQUA congress in Durban, South Africa, in August. In addition he is now getting around to working on some projects that were put aside in the past such as the study of a late Pleistocene fauna from a cave in central Texas and a general review of the caves and their contained faunas from the Edwards Plateau. Jack Wilson continues to help out at the VP Lab between his cruises to exotic and cooler parts of the world - at least someone around here is keeping a cool head.

In May, Tim Rowe, Ron Tykoski, Ted Macrini, Dave Dufeu, Jonathan Franzosa, and Chris Strganac spent a month in the field on the Navajo Indian Reservation, continuing their work on the vertebrates of the Jurassic Kayenta Formation. The remainder of a *Syntarsus* skeleton found last year was collected, and the *Dilophosaurus* quarry also continued to produce new material. The classic Cold Springs microvertebrate quarry was reopened and yielded vertebrae and various other elements of a small theropod. Ron and Tim have nearly finished a description of a new croc from the Kayenta, the first of several new species to be described from this work. Tim has kept busy responding to the considerable interest in UT's High-resolution X-ray CT Scanning Facility, and working with graduate students on their datasets. We continue to see some of the world's finest



specimens move through our machine and are testing new means to distribute CT data on significant specimens to the SVP membership.

Chris Bell and graduate students Lyn Murray and Dennis Ruez trekked farther west this summer to visit the Anza-Borrego Desert State Park and the Hagerman Fossil Beds National Monument. The courtesy of George Jefferson and Greg McDonald ensured productive and fun visits to these famous localities.

Matt Colbert finished his PhD on “Patterns of Evolution and Variation in the Tapiroidea (Mammalia: Perissodactyla),” and joined the CT facility as a research associate this summer. Pamela Owen is “denned up” at the Vertebrate Paleontology Lab writing her dissertation on the evolution of American badgers. She plans to graduate in May. Pamela is also working on Tim Rowe’s Digital Libraries project as a research assistant at the CT lab. This summer Ted worked in the collections at the VPL and finished a chapter of his thesis, labeling the cranial anatomy of the CT scans of *Monodelphis domestica*. Ted is on fellowship from the Department of Geological Sciences for the fall semester and will continue work on his thesis. Jonathan will continue work on his dissertation that will address the pneumatic system of archosaurs. (Dennis R. Ruez)

#### *University of Texas*

John Kappelman and Tim Ryan (Department of Anthropology), Mulugeta Feseha (Department of Geological Sciences), along with Tab Rasmussen (Department of Anthropology, Washington University), spent the month of May working in the newly discovered Oligocene outcrops of northwestern Ethiopia. This project is supported by NSF and the National Geographic Society. The group discovered nearly three dozen fossil localities with a very interesting mix of mammals and lots of fossil leaves, seeds, and trees. Bill Sanders (University of Michigan) is helping to describe the fauna.

John Kappelman and Mary Maas (Department of Anthropology), Nizamettin Kazanci and Baki Varol (Department of Geological Engineering, University of Ankara), and Sevket Sen (Laboratoire de Paléontologie du Museum, CNRS, Paris) worked together during July in the “Kartal” Formation of Central Turkey. Their efforts resulted in the discovery of additional fossil localities and volcanic rocks that should help to better define this important Eocene fauna (*JVP*, 16:592-595). The project is funded by the National Geographic Society. While prospecting for fossils on a far-distant outcrop, the group was surprised to hear the familiar ring of a telephone - the cell phone call was from the President of Romania! The President (a geologist) was on a state visit to Turkey, had heard that Sevket was working in Turkey, and managed to track him down on the outcrop! The call was to invite Sevket to a private lunch and a State dinner in Ankara. Talk about having friends in high places!

Tim Ryan, a doctoral student, recently received funding from NSF for his dissertation improvement grant, “Quantitative Analysis of Three-dimensional Trabecular Bone Structure of Strepsirrhine Femur,” that will use the UT micro CT for imaging. Work on the e-Skeleton project that is funded by NSF continues. See

<http://uts.cc.utexas.edu/~vskel/> and be sure to check the VRML section. We would like to welcome Murat Maga, an entering M.A. student from Ankara, Turkey, to the graduate program in paleoanthropology.

## Rocky Mountain Region

### *Brigham Young University*

David Smith and Paul Bybee are continuing work on *Allosaurus* braincase anatomy and functional morphology. A new large braincase from the Dry Mesa Quarry in western Colorado is expected to be CT-scanned in Chicago, with the help of Art Anderson, to provide a description of the internal anatomy of the specimen. As of this writing, they are still working with Dan Chure and Art on getting a high-resolution scan done of the Dinosaur National Monument skull of *Allosaurus*. A reconsideration is also taking place regarding the systematic position of the *Allosaurus* in the BYU collections from the Hinckle site in eastern Utah. This is in light of new information gained from the Dry Mesa specimen.

David Smith has completed a paper on population variation in the skulls of the Ghost Ranch sample of small theropods. Among other things, he concludes that the quarry represents a single taxon that is distinct from *Syntarsus*. David also participated this summer in a project headed by Sue Ann Bilbey and Evan Hall to recover a small sauropod from the Salt Wash Member of the Morrison Formation near Jensen, Utah.

Paul Bybee's work on *Allosaurus* histology is proceeding as new information and interpretations are emerging.

Fieldwork at two sites was accomplished this summer. The early Cretaceous Dalton Well site produced some additional sauropod elements during a month-long period in late spring. The work there is a cooperative project by Ken Stadtman at BYU, Rod Scheetz at the Museum of Western Colorado in Grand Junction, and Brooks Britt, formerly of that institution and now at the Ogden, Utah, Eccle's Dinosaur Park. Other good elements were uncovered that will be collected during the month of September. The three mentioned above, along with Jack McIntosh, hope to soon finish up a paper describing the sauropods from this site. There was also work by Ken Stadtman and a BYU crew at the Morrison Formation Dry Mesa Quarry on U.S. Forest Service land in western Colorado during late July and early August. The intention is to finish collecting a bone deposit that has produced specimens for many years back to the base of a very high backwall and then perhaps open an adjoining area that has potential for specimens.

Preparation of Dalton Well and Dry Mesa material is progressing very well and there are many newly available specimens in the BYU research collection. (Ken Stadtman)

### *University of Wyoming*

The NSF-funded improvements to the Collection of Fossil Vertebrates continues apace. Mike Cassiliano, John Burris, and John Foster have finished (finally!) the Paleocene specimens and are now well into the Wasatchian specimens. The Twin Buttes Tiffanian (Ti1) localities from the Shotgun Member of the Fort Union Formation proved to be very interesting once many vials and boxes of unsorted concentrate were picked. Many Torrejonian genera occur in the Twin Buttes collection. Most surprisingly, a lower right p4 of the rodent(!) *Acritoparamys* was also found. Mike plans to publish this find as soon as he can.

Mike would like to ask all of the VP community who have specimens on loan from Tom Bown's dissertation collection to return them, if you have finished studying them. This very important collection has become rather dispersed over the years and we need to account for all of the specimens as part of the collection improvement.

Thanks to some correspondence from George Jefferson at Anza-Borrego Desert State Park in California, Mike has been informed of some very recent changes to the identifications of some of the Vallecito Creek fauna. As a result, he will be submitting a correction to his 1999 biostratigraphy paper to the *JVP*. Additionally, Mike will be submitting his manuscript on the stratigraphic nomenclature of the Palm Spring Formation to the San Diego Society of Natural History Proceedings for review.

Thanks to funds provided by Dr. Laurie Bryant of the BLM in Cheyenne, we were able to hire Doris Weller (wife of Ph.D. grad student Michael Webb) to catalog and shelve the reprint collection donated by the late Dr. Jack Calloway. This collection of more than 2,300 reprints adds greatly to our vertebrate paleontology library, bringing the total to over 33,000 articles. Jack's reprints on marine reptiles are especially appreciated because they add a new dimension to our library and research capabilities. Doris continues to help us by cataloging and filing our topographic map collection of fossil localities in Wyoming.

John Foster got out in the field in August for a short time with the South Dakota School of Mines crew in the northwestern Black Hills and after a couple years of surface monitoring and some tests in the screening room here it looks like there may be a washable micro site up there in the Morrison Formation. He hopes to screenwash some more of that this winter.

John Burris continues to work off the NSF collections improvement grant in the vertebrate fossil collections at UW. He is in the process of organizing and cataloging specimens from the Wasatchian collected mostly in Wyoming.

Penny Higgins is nearly finished with her dissertation, which is to be presented in this year's Romer Prize session. Her results are interesting, and will shed new light on the definition of boundaries between adjacent NALMAs, especially on the boundary between the Torrejonian and Tiffanian NALMAs.

Kelli Trujillo finished her Master's degree this past spring, and is now beginning work on her Ph.D. She will work on problems concerning the contact between the Morrison and Cloverly Formations and the location of the Jurassic-Cretaceous boundary in southeastern Wyoming. In her spare time she plays way too much bluegrass mandolin.

Brent Breithaupt (UW Geological Museum) continues to head the Vertebrate Ichnology Research Team's (VIRT) work at the Red Gulch Dinosaur Tracksite in northern Wyoming. This summer's VIRT members include Beth Southwell with student assistants Thomas Adams, Kelly Garrett, Julie Watson, Jana Sizemore, and Beth Berhardt; and volunteer assistants Jo Wright, Pat Monaco, Dick Peirce, Sue Bednarczyk, Kenny Gadow, Myrella Triona, Debbie Smith, and Laurie Bryant. Mapping efforts by VIRT over the past two years documented over 630 small- and medium-sized theropod dinosaur tracks and collected over 19,000 attributes for these tracks. This level of abundance indicates that well over 1,000 tracks may be preserved in the Sundance Formation within the 40 acres of the Red Gulch Dinosaur Tracksite (RGDT), making it the most extensive dinosaur tracksite in Wyoming. VIRT plans on working on the vertebrate ichnology of this fascinating area of Wyoming for many years to come. In addition, VIRT worked with Jana Sizemore (a senior at Butler University) and her senior thesis advisor Jim Farlow to analyze various tracks and trackways in the RGDT area. Jana, Jim, and team members from VIRT will be sharing information related to their studies dealing with track morphology and trackway features obtained from field research within the RGDT area. During this year's field season Neffra Mathews, Thomas Adams, and Pat Monaco discovered shark teeth in some of the anthills in the RGDT area. VIRT is working with Mike Brett-Surman to microscopically analyze samples for additional vertebrate body fossils. The Vertebrate Ichnology Research Team's activities, with assistance from the Spatial Support Team (headed by Neffra Matthews and Ty Naus) at the RGDT consist of cleaning, mapping, measuring, describing, surveying, and photographing the tracks. State of the art technology is being utilized in the documentation of this site, making it one of the most extensively documented dinosaur tracksites in the world. Analysis of this data is being used to provide exciting insights into the preservational history of the tracks and the depositional environments of the RGDT, as well as information on individual and group dinosaur behavior and dynamics, faunal diversity, community structure, and habitat. Thanks to the BLM for their wonderful assistance with this project. (Brent Breithaupt)

#### *Wyoming State Archaeologist's Office*

Danny Walker reports work is progressing on initial analysis of the Late Holocene fauna from Wolf Den Cave, in the northern Bighorn Mountains of Wyoming. The fauna was recovered from a karst sinkhole about one mile southeast of Natural Trap Cave. Radiocarbon dates place the fauna within the last 1,200 years, with up to one meter of stratified deposition within the cave during that time frame. The fauna is dominated by leporids, many of which appear to have been at least semi-articulated skeletons, and other smaller mammals. Larger animals (bison and wolves) are also present within the fauna. This fauna appears to be a critical collection for examination of the mammalian fauna of Wyoming during this time period. Danny also reports he is beginning work on a sequence

of small-mammal flotation samples from a 2.3-m profile from the Hell Gap archaeological site in eastern Wyoming, dating from 11,000 to 5,000 years. (Danny N. Walker)

## West Coast Region

### *Anza-Borrego Desert State Park* □ Stout Research Center

Although our effective field season has ground to a halt, 110°+ temperatures did not stop Lyn Murray and others of U.T. Austin, from two days work in the classic Fish Creek/Vallecito Creek Basin stratigraphic section. Lyn was busy collecting paleomagnetic and volcanic ash samples. Chris Bell, Dennis Ruez, and a group of Park paleontology volunteers provided needed assistance and ample geology arm waving. Chris, Dennis and Lyn spent the remaining days of their visit to Borrego Springs going through the vertebrate collection in the pleasant air-conditioned environment of our new Research Center.

Also braving the heat were Derek Ryter and Allen Stutheit from U. Oregon, Eugene. Derek is working on tectonics and basin formation and stratigraphy as part of his dissertation. He and Allen ran a two-mile-long seismic line across Clark Lake playa. The line crossed the northern and possibly other minor branches of the San Jacinto fault system.

Coleen Brogenski of U.C. Davis, spent several days in the collection selecting bits of *Equus* teeth for isotopic analyses. She hopes to detect isotopic changes through time that reflect West Coast Plio-Pleistocene climates and vegetation for her Master's thesis.

Paul Remeika presented a co-authored paper with G. Jefferson on Paleontologic Resource Management at Anza-Borrego Desert State Park □, at the recent NPS Fifth Fossil Conference in Rapid City. Also, George McDaniel presented a co-authored paper with Jefferson on *Mammuthus meridionalis* at the Second International Conference on Mammoth Research in Rotterdam. (George T. Jefferson)

### *California State University, San Bernardino*

Stuart Sumida has returned from his sabbatical this fall after learning a lot about the entertainment business from his half-time sabbatical supporters, Walt Disney Imagineering and Consumer Products. Among his final projects for Imagineering was a critique of Disney's Animal Kingdom "Dinoland U.S.A." theme park. Aside from numerous notations of minor misidentifications and the like, his most vocal recommendation was the continuing support of the preparation lab where Bruce Schumacher and Casey Halliday reside.

On the research and teaching side, Stuart returns to teaching comparative vertebrate biology, as well as the human anatomy and physiology sequence this year. His return to the lab also saw the submission of the manuscript on the beautiful *Seymouria* specimens

excavated from the Bromacker locality in eastern Germany with Dave Berman and Amy Henrici at the Carnegie Museum. Dave and Amy took the lead on that project, while Dave Eberth from the Royal Tyrell took the lead on the manuscript on the sedimentology and paleoecology of the locality. Speaking of Dave at the Tyrell, Stuart visited with him for a few days toward the end of summer to look at a series of ceratopsian bone beds and consider Dave's suggestion that he become involved in the functional studies of the ongoing project. In the meantime, Stuart is working on a brief section for the MacMillan Encyclopedia of Life Sciences on "Transitions between Major Vertebrate Groups." Last, but certainly not least, Morgan Kaufmann Publishers have contracted with Stuart and Beth Rega of the Claremont Colleges to write a volume entitled "Animation and Anatomy, the Art and Science of the Moving Image." Both Beth and Stuart are looking forward to the challenge of writing a book that will cut across multiple disciplines.

Among the CSUSB students, James Walliser successfully defended his Master's thesis on the postcranium of the enigmatic diadectomorph *Tseajaja*. But, although he successfully defended the thesis, he has yet to successfully defend himself from Stuart's demands to bang it into shape for publication. James also successfully passed his black-belt exam in jiu jitsu, so he'll no doubt be able to defend himself quite nicely. James is now moving on to work on his Ph.D. at UC Riverside. Gavan Albright plans to defend his thesis proposal this autumn and get to work on illustrations of the small captorhinid reptile *Captorhinikos parvus*. Among the undergraduates, Heather Deogracia-Baughman graduated with her BS in scientific illustration after helping James with a number of his thesis figures.

Along with four other CSU students, James spent another summer in Chicago working on the joint CSU/Field Museum *T. rex* project. Joining James for his second summer as well, John Tometich led the effort to get the ribs prepared and reconstructed for articulation on "Sue." Also deeply involved in the costal effort were Ian Browne (also from CSUSB, and now moving on to do an MS at UC Riverside), and Maggie Hart from Cal Poly Pomona. James helped with the ribs, but was also involved with prep and reconstruction of the gastralia. Being been dubbed "gastralia king" was met with somewhat mixed emotions. Also in Chicago was Brad Beck from CSU Northridge. He worked on Website construction for the FMNH and spent a lot of time working with Chris Brochu as he got the figures together for the ultimate description of Sue. All in all, the five of them did CSU proud. The CSU Web presence for the joint project has developed only slowly, but will soon be running in both English and Spanish thanks to the help of Therese Whitney and Kathleen Devlin. Look for us at <http://aloha.csusb.edu/trex>.

Finally, the vertebrate paleontology lab at CSUSB welcomes Clare McVeigh into the fold. She finished her M.Sc. at Sheffield in the UK, and just defended her Ph.D. at McMaster University in Canada. A specialist in dentitions and paleopathology, she'll be working on various projects in the lab, and taking up a large role in the teaching of the human anatomy and physiology courses. (Stuart Sumida)

*Natural History Museum of Los Angeles County*

Dave Whistler is involved in a number of collaborative studies dealing with Southern California fossils. He and Dave Webb are putting the final touches on their study of the new, goatlike camel from the Blancan Tecopa beds south of Death Valley. Bill Clemens and Dave will be describing a sample of Hemingfordian dieldelphids recovered from the Sespe Formation of Orange County. Dave and Jim Mead are describing the herpetological faunas of the Dove Spring Formation. Hugh Wagner and Dave are describing a late Hemphillian microvertebrate assemblage from the Elsinore Trough that contains *Repomys* and *Bensenomys*, among other things. Most of these fossil assemblages are a result of the ongoing paleomitigation efforts that are still very active in Southern California, thanks particularly to Bruce Lander at Paleo Environmental Associates, Inc., and to Marilyn Morgan and Diana Weir at RMW Associates.

In addition to his continuing work with Mexican and Japanese colleagues on the fossil marine mammals, Larry Barnes has worked with the Sharktooth Hill Foundation on preservation, recovery, and display of specimens from the Sharktooth Hill bonebed. Larry submitted a large manuscript on the evolutionary history of Mexican marine mammals for the proceedings (edited by Marisol Montellano and Joaquin Arroyo-Cabrales) of a symposium that was part of the Acapulco International Theriological Congress.

J. D. Stewart is looking for the imminent publication of the proceedings of the 1997 symposium on Mesozoic Fishes. A detailed redescription of *Saurodon pygmaeus* and a reexamination of ichthyodectiform systematics will appear there. Rod Raschke, Sung-Woo Cho, and JD have been examining collections from 75 localities in the Capistrano Formation (Mio-Pliocene) to test theories of *Isurus hastalis* and *Carcharodon carcharias* relationships. The largest fish curatorial task at hand is the incorporation of a large collection of fossils from the Puente Formation (Late Miocene).

Sam McLeod has continued to work on replacing deteriorating labels on specimens, drawers, boxes, and jackets that are stored in the basement and at two warehouses. For the umpteenth year in a row Sam had to make a major move of stuff - this time relocating his own office.

Luis Chiappe joined the staff of the LACM in February as Associate Curator. Luis' research projects continue to be the same. On the one hand, the phylogenetic analysis of the rapidly growing diversity of Mesozoic birds, the origin of birds and of their flight. On the other hand, the study of the extraordinary sauropod nesting site of Auca Mahuevo, in northwestern Patagonia. Luis conducted several weeks of fieldwork at Auca Mahuevo between March and April. In addition to gathering many new observations on the distribution of the eggs and egg clusters (documented in a paper submitted to *Nature*), the expedition discovered a nearly complete, 20-ft-long skeleton of an abelisaurid theropod. The specimen is currently being prepared at the Carmen Funes Museum in Patagonia and, together with Rodolfo Coria and Lowell Dingus, Luis is working on its preliminary description. In July, Luis visited several institutions in China in connection with his research on early avian evolution. Luis is joining Ji Shu'an and Ji Qiang in the study of two new specimens of basal birds from the Chaomidianzi Formation (lower Yixian

Formation of others) in Liaoning. Luis is also curating a traveling exhibit on the treasures of Auca Mahuevo to be opened in the year 2000.

During the summer, Howell Thomas (after a hiatus of six years) was rehired as Paleontological Preparator in our preparation laboratory. We welcome him back. Louise Kearin was also hired to make molds and casts, and prepare fossils obtained from Southern California construction mitigation programs. The search for a senior preparator is underway at the time of this writing.

Gary Takeuchi has been assisting the VP program under support provided by EIR salvage operations. Gary has also been working as the excavator for this summer's public excavation of Rancho La Brea Pit 91. Harvey Fischer, recently retired from the post of Curator of Reptiles at the Los Angeles Zoo, has been diligently working on recuration of our vast Pleistocene mammal collection from San Josecito Cave, Mexico. We thank Laureano Clavero, Matthew Van Dam, and Alex Van Dam, volunteers working in the lab this summer on restoration of several skulls and jaws of Sharktooth Hill baleen whales. (Sam McLeod)

#### *Occidental College, Los Angeles*

Don Prothero and five of his students just returned from a successful Penrose Conference in Olympia, Washington, on "The Marine Eocene-Oligocene Transition." Although most of the focus was on marine rocks and invertebrate fossils, several vertebrate paleontologists (Ewan Fordyce, Earl Manning) talked about Eocene-Oligocene whales and sharks, and the magnetic stratigraphy of vertebrate-bearing marine beds (e.g., the Pysht Formation in Washington) was also presented. Now Don is on sabbatical until January, trying to put together the SEPM symposium volume on "Magnetic Stratigraphy of the Pacific Coast Cenozoic," as well as the long-overdue hoofed-mammal trade book, and new editions of his sedimentary geology and historical geology textbooks, as well as a physical geology textbook. Samples of several other vertebrate-bearing marine units (e.g., the Astoria, Montesano, and Empire formations) will be run at Caltech this fall. Don's lead article in September *GSA Today*, "Does climatic change drive mammalian evolution?," has just appeared, as did reviews of the Churcher festschrift (*Historical Biology*, 13:99) and western Eurasian Neogene volume (*Palaios*, 14:192). Most of the summer was consumed organizing the SVP program for the Denver meeting, putting the abstracts volume together in QuarkXpress, and then e-mailing every single author, one at a time, about their presentation time - that, and taking the unrelenting gripes that are the Program Chair's lot in life. (Don Prothero)

#### *San Diego State University*

It's been quite a while since we sent in news but we've not been idle. Two graduate students are leaving. Steve Diem finished and defended his thesis on the faunal analysis and biostratigraphy of the Dragon Road fauna, Williams Fork Formation, Upper Cretaceous, northwestern Colorado. The fauna is clearly intermediate between Judithian and Lancian faunas. He is preparing two papers from his thesis, one on the most northern



occurrence of *Pentaceratops* and one on the fauna as a whole. Steve has a job with a geological engineering firm in Los Angeles. Peter Adam is finishing up his Master's thesis on the evolution of locomotion and feeding in pinnipedimorphs. He will be greatly missed as he leaves this fall for UCLA to work on a Ph.D. with Blaire Van Valkenburgh.

We welcome two new students this fall, Eric Ekdale who will work with David Archibald, and Amanda Rychel who will work with Annalisa Berta. Our part of the department (Evolutionary Biology) has been in a hiring frenzy the past few years with a herpetologist hired three years ago, an ornithologist two years ago, and a terrestrial arthropods person and a population biologist this past year. This year we hope to advertise for an evolutionary developmental biologist and an animal physiologist.

David Archibald continues his NSF- and NGS-supported field studies in the Kyzylkum Desert of Uzbekistan working on early Late Cretaceous vertebrate faunas. This past year was his third visit. The crew included three Russians (Alexander Averianov, Igor Danilov, Anton Resvyi), three Brits (David Ward, Chris King, Noel Morris), and two Uzbeks (Oleg Tsaruk and Anwar Khodjaev). This year the crew will be even larger. They hope to screen and sort over 20 metric tons compared to the 11 tons last year. The rich vertebrate sites found by the late Lev Nesson are definitely Coniacian (~85 my) or older based on overlying marine faunas. These are the vertebrate sites that have the early ungulatomorph "zhelestids" reported by Nesson, Archibald, and Kielan-Jaworowsaka in 1998 in the Bulletin of Carnegie Museum of Natural History no. 34, "Dawn of the Age of Mammals in Asia." David mailed out offprints of this paper in his recent mailings, but apparently it was not placed in all packages. If you did not receive one in this mailing, but would like one let David know. He has a few extras. Several other projects he continues work on are the primitive therian dental pattern (with Alexander Averianov, St. Petersburg) and assessing the timing of the origin of extant eutherian orders (with Doug Deutschman, an SDSU ecological modeler).

Annalisa Berta is pleased to announce the publication (in September) of her book with co-author James Sumich. "Marine Mammals: Evolutionary Biology" published by Academic Press. With that "all-consuming" project finally finished she looks forward to resuming study of Emlong fossil pinnipeds. Annalisa and Tom Deméré recently submitted a manuscript that describes considerable new material (crania, dentitions, and posterania) of the archaic walrus *Proneotherium* from the Astoria Formation of coastal Oregon. Annalisa has nearly completed three chapters in another Academic Press book, The Encyclopedia of Marine Mammals, and she is working on a chapter for a book, Secondary Adaptations of Tetrapods to Life in the Water (edited by Jean-Michel Mazin and Vivian de Buffrénil). Annalisa and Peter will be presenting papers at the Marine Mammal Conference in Maui in November in a symposium they organized "Why Phylogenies Matter: Their Use in Marine Mammal Research." (J. David Archibald and Annalisa Berta)

- Calendar of Events □

FIRST SYMPOSIUM ON EUROPEAN DINOSAURS (DÜSSELDORF, GERMANY, MARCH 15-18, 2000)

From the Cabo Espichel on the western coast of Portugal to the peninsula of Crimea - from high latitudes of Spitzbergen down to southern Italy - remains of the "horrible lizards" have been found for over 200 years! Named in England, dinosaurs quickly became a major topic in the world in the second half of the last century. For about the last 20 years there has been a renaissance of European dinosaurs. Not only European paleontologists but also researchers from other continents are more and more interested in these fossil animals. From the Upper Triassic to the Uppermost Cretaceous, Europe has provided insight into the evolution of dinosaurs. New species came tro light in the last two decades - armored titanosaurids, long-snouted, fish-eating theropods or dwarded duckbills, to mention only a few of the latest discoveries. Records of European dinosaurs not only contain fossil bones but foot prints and tracks, coprolites and gastroliths, stomach contents, eggs and embryos, too - even soft tissue remains! The aim of the Symposium is to give an overview after roughly 200 years of European dinosaur research and a prospectus at the beginning of a new century. For further information, please contact: Sven Sachs, Norfer Str. 9, 40221 Düsseldorf, Germany, tel/fax: 0211 154456, [dinosven@compuserve.com](mailto:dinosven@compuserve.com); Raymund Windolf, Grundstr. 10, 27374 Visselhövede, Germany, tel: 05195 933855, fax: 05195 93354; Dr. Michael J. Benton, University of Bristol, Department of Geology, Queens Road, Bristol BS8 1RJ, United Kingdom, tel: 0117 928 8202, fax: 0117 925 3385, [mike.benton@bristol.ac.uk](mailto:mike.benton@bristol.ac.uk); Dr. David Weishampel, Johns Hopkins University, Department of Cell Biology and Anatomy, School of Medicine, Baltimore MD 21205, USA, tel: 410-955-7145, fax: 410-955-4129, [dweisham@welchlink.welch.jhu.edu](mailto:dweisham@welchlink.welch.jhu.edu).

WORKSHOP ON GEOLOGY OF THE PRANHITA-GODAVARI VALLEY:  
CURRENT STATUS AND FUTURE DIRECTIONS

The Geological Studies Unit of the Indian Statistical Institute is organizing a two-day workshop on "Geology of the Pranhita-Godavari Valley: Current Status and Future Directions" on 16-17 November 1999 with oral presentations, poster display, and panel discussions.

The Pranhita-Godavari (PG) Valley is a spectacular repository of Purana and Gondwana vertebrate fossils yielding the bones of *Barapasaurus tagorei*, the only mounted dinosaur in the country. The thick pile of sedimentary succession of the basin is the window for the cratonic history spanning over 1200 million years, starting from the Mesoproterozoic through the Permian to the end of the Mesozoic. The PG Valley also exhibits a more-or-less uninterrupted faunal record from the Late Permian to the Jurassic.

Since the pioneering work by William King in the later part of the 19th century, PG Valley has been the center of activity of many earth scientists from several premier organizations of this country and abroad. The Valley has been the major focus of activity of the Geological Studies Unit, Indian Statistical Institute, since its inception. In the last four decades there have been significant advances in the study of paleontology,

stratigraphy, sedimentology structure, and tectonics. However, a multidisciplinary approach of integrated basin analysis is yet to emerge. Much needs to be done to understand basin-forming deep-crustal processes, evolution of the sedimentary systems, changing paleoclimates, gaps in the faunal scenario, and global sea-level changes.

The proposed workshop is an attempt to look deeper into the present state of our knowledge of this basin. It is also aimed to collate all the available information, highlight the significance of available data, point out the gaps in our knowledge, and hammer out the strategies to be adopted for future research.

Some of the topics of deliberations will be (1) Stratigraphy of the Purana and Gondwana successions, (2) Climatic signatures, provenance, paleotransport, and paleogeography of sedimentary systems, and (3) Vertebrate faunal assemblage from the PG Valley and its bearing on the geohistory of the basin.

Registration will be on site at the Indian Statistical Institute, Calcutta, on 16 November 1999 with a fee of Rs 200/-(INR). For further information and correspondence, contact Saswati Bandyopadhyay, Geological Studies Unit, Indian Statistical Institute, 203 B. T. Road, Calcutta 700 035, India. Fax: (91) (33) 577 6680. Tel: (91) (33) 577 8085-9, 577 2088 Extn. 3150, 3160. E-mail: saswati@isical.ac.in.

- Publications □

#### THE ARMORED DINOSAURS OF MONGOLIA TRANSLATION AVAILABLE

The official translation of Dr. Tatyana Tumanova's monograph on the Mongolian ankylosaurs is now available. Originally published in "The Joint Soviet-Mongolian Paleontological Expedition Transactions" (vol. 32, published in 1987), the translation is 80 pages, and has 17 figures and 8 plates. Cost for the bound copy is only \$30 US, payable with personal check, money order, or bank draft. All proceeds go to supporting Dr. Tumanova's membership in the Society of Vertebrate Paleontology. Make checks out to Kenneth Carpenter and mail to him at Department of Earth and Space Sciences, Denver Museum of Natural History, 2001 Colorado Blvd., Denver CO 80305. (Kenneth Carpenter)

#### NEW PUBLICATION FROM THE GEOLOGICAL ASSOCIATION OF CANADA

Paleo Scene, *Geoscience Canada* Reprint Series no. 7, Godfrey S. Nowlan (Editor), deals with the diverse applications of paleontology in earth sciences and presents an overview of the paleontological scene. It is a valuable compendium of papers that will be useful for those needing to know more about paleontological principles and applications. The soft-covered, spiral bound, 308-page book contains a series of articles on paleontology that originally appeared in the scientific journal *Geoscience Canada*. The articles were written for the nonspecialist with an emphasis on useful illustrations and practical examples. It is eminently suitable as a supporting text for paleontology courses and has been produced in an inexpensive format to make it readily accessible to students of earth sciences. It is

available for \$29 CAN for members of the Geological Association of Canada (Canadian addresses), \$29 US for GAC members elsewhere, \$58 CAN for nonmembers in Canada, \$58 for nonmembers elsewhere, from: Geological Association of Canada, Publications Department G222, Department of Earth Sciences, Memorial University of Newfoundland, St. John's NF A1B 3X5, Canada; phone (709) 737-7660; fax (709) 737-2532, e-mail: [gac@sparky2.esd.mun.ca](mailto:gac@sparky2.esd.mun.ca); URL: <http://www.esd.mun.ca/~gac=20>

- Positions Available □

#### ASSISTANT PROFESSOR IN VERTEBRATE PALEONTOLOGY

The Department of Geoscience at the University of Iowa invites applications for a full-time tenure-track Assistant Professorship in vertebrate paleontology, preferably one specializing in the Late Cenozoic. The appointment will begin in August 2000. We seek an outstanding researcher and teacher whose approach is both quantitative and specimen-based, and who will work with other faculty to improve our strong graduate program in paleontology and quaternary geology. In addition to developing an active, externally funded program of research, the successful candidate will be expected to teach three courses per academic year. These will include: (1) an upper-level undergraduate/graduate course in vertebrate paleontology, (2) a general education course related to fossil vertebrates, and (3) a graduate seminar in paleontology. He/she will also be expected to contribute both to our Paleontology Repository as well as to new departmental initiatives in the environmental sciences and climate change. Applicants should have a Ph.D. in hand by August 16, 2000. Women and minorities are especially encouraged to apply. Applicants should send a complete résumé (including a bibliography and statement of teaching and research interests) and have at least three letters of recommendation sent to: Search Committee Chair (Vertebrate Paleontology), Department of Geoscience, University of Iowa, Iowa City IA 52242-1379 (Phone: 319/335-1818; fax: 319/335-1821). Screening of candidates begins December 1, 1999, and will continue until the position is filled. The University of Iowa is an affirmative action-equal opportunity employer.

- Obituaries □

#### THE LIFE AND TIMES OF DONALD E. SAVAGE, 1917-1999

Donald E. Savage passed away on April 5, 1999, a victim of pancreatic cancer. An obituary was published in the June *SVP News Bulletin*. During the summer, many of Don's friends answered a call for recollections of his contributions to their lives and to vertebrate paleontology; the response was overwhelming. The following selection of these accounts (necessarily abridged and edited) paints a picture of the thoughtful, energetic, humorous, generous, fair, and kind person we remember.

Early Years, Prior to Berkeley

Donald Elvin Savage was born in the panhandle of Texas, at Floydada, in 1917. He grew up in Canyon, deep in the heart of Texas, where his father taught at West Texas State College. Don lived near Palo Duro Canyon, where he probably collected his first vertebrate fossils. In 1937 Don graduated from West Texas State College and went on to enter the graduate program at the University of Oklahoma. There, under the tutelage of Professor J. Willis Stovall, he studied the Hemphillian Optima fauna and completed a Master's degree in 1939. During these years in Norman, Don met Wann Langston, who vividly remembers the events of the summer of 1938. "Professor Stovall sent Don (21 years old), William Noel McAnulty (27 years old), and Wann (17 years old) on a fossil collecting trip into the wild and woolly Big Bend area of Texas where another OU student, W. S. "Bill" Strain, had previously found dinosaurs. Savage had more paleontological experience than his cohorts so was placed in charge of the expedition, which was openly resented by the older and more worldly McAnulty. After two months in the field the plucky paleontologists returned to Norman with several tons of specimens, including Wann's first dinosaur."

"Later that summer, Professor Stovall sent Don and Wann back into the Big Bend to Presidio County to investigate reports of fossil bones in the Vieja country. After several days of prospecting on horseback they made the first collection of Chadronian vertebrates from deposits that were studied later by Bryan Patterson and Jim Quinn (Field Museum) and by Jack Wilson (University of Texas)." (Wann described some of their experiences in the Field Guidebook to the Big Bend area, edited by Jack Wilson, for the 1989 SVP meeting at Austin, Texas.)

Professor Stovall took Savage and Langston on many other expeditions, collecting Paleocene, Eocene, Oligocene, and Cretaceous fossils at various locations in North America. Wann remembers one occasion on the Cashon Ranch of southern Montana, where they were working in the Cloverly Formation. "Because of the shortage of water the collectors had gone for at least a week without a bath. One afternoon a huge black cloud rolled over them and Savage decided he would have a shower. He stripped "naked" and, with soap in hand, proceeded to lather up as the first drops of rain fell, all to the amusement of Stovall and Langston. Suddenly the raindrops changed into large hailstones and Savage streaked for the truck, clothed largely by soap lather. Stovall and Langston were not eager to share the cab of the truck with a sudsy comrade so they locked the doors and shut the windows. Some "hugely ungentlemanly words" were shouted by the soapy Savage, not at all in keeping with his sheltered Christian upbringing."

Soon after the beginning of the Second World War, Don enlisted in the U.S. Air Force and served until 1946. Shortly after he enlisted, Don married Betty Brandon of Muleshoe, Texas. Together, they raised five beautiful children (Suzanne, Sheryl, Brandon, Michael, and Stephanie). While in the Air Force, Don met John Lance, the beginning of a long and amiable friendship. After he was discharged from military duty Don returned to academia. Perhaps it was John who suggested that he consider studying with R. A. Stirton at Berkeley. Many years later Don told Chuck Repenning that on his arrival at

Berkeley he announced to Stirt (in approximately these words): “Dr. Stirton, I have come to Berkeley because I want you to teach me all you know about horses.”

### Early Years at Berkeley

Don Savage entered Graduate School at UC Berkeley in 1946 and served as an instructor in the Department of Paleontology until 1949, when he finished his doctorate. He then joined the faculty as an Assistant Professor. His dissertation, published in 1951, was a study of the Irvington fauna from the Bell Gravel deposit near Irvington, California, and became one of a long series of significant contributions in the fields of vertebrate paleontology and stratigraphy. Don recognized that the Irvington fauna was younger than the Blancan faunas of Texas and older than the Pleistocene fauna from Rancho La Brea in Los Angeles. He went on to characterize the Irvingtonian and Rancholabrean land mammal ages as intervals between the Blancan and Holocene.

Not long after completing his dissertation, Don undertook several studies in southern California, some in collaboration with Ted Downs, a former classmate at Berkeley. Parts of these studies appeared in the California Division of Mines compendium, “Geology of Southern California,” published in 1954. Another study, “Nonmarine lower Pliocene sediments in California,” published in 1955, contained the proposal of a biochronological subdivision of the Clarendonian land mammal age. He defined the early Clarendonian (Cerrotejonian substage) based on local faunas in the Tejon Hills of Kern County, southern California. The late Clarendonian (Montediablan substage) was based on the Black Hawk Ranch local fauna found on the southern slopes of Mount Diablo in Contra Costa County, more than 100 miles north in the Bay Area of California.

Another of Don’s early studies in California stemmed from discoveries in the Cuyama badlands, north of Santa Barbara; paleontologists from Cal Tech had worked the area in the 1930s and 1940s. Interdigitations of marine and nonmarine sediments exposed in the badlands were of particular interest both to Don and stratigraphers in the USGS. As a result, the Survey assigned Jack Vedder and Charles Repenning the project of mapping the Tertiary sediments in the Caliente Range. In 1957, Gideon James, one of Don’s graduate students, began a biostratigraphic study of the nonmarine deposits in the Cuyama badlands. Gid’s study (published in 1963) demonstrated superposition of local faunas representing four land mammal ages (Hemingfordian, Barstovian, Clarendonian, and Hemphillian). One of the weak points in Don’s earlier work on the subdivision of the Clarendonian had been the lack of field data clearly documenting the superposition of local faunas of the Cerrotejonian and Montediablan substages. In the Cuyama badlands, Gid discovered local faunas that clearly showed this relationship. Later, a biostratigraphic study of the Dove Spring Formation in the Mojave Desert by Dave Whistler, another of Don’s graduate students of the 1960s, provided additional substantiation (Whistler and Burbank, 1992) of the superposition of these substages in yet another basin of southern California.

During Don’s early years at Berkeley, his research interests expanded both stratigraphically and geographically. In 1950 he was member of an expedition to the

valley of the Magdalena River in Colombia where in 1944 Stirt had begun field research on the Miocene faunas of the La Venta area. Also, Don played a major role in studies of the Eocene of Colorado and the Late Cretaceous of Wyoming. Malcolm McKenna recalls, "Don Savage was very kind to me even when I was fresh out of high school and showed up unannounced in Berkeley to see if I could study paleontology there. Don took an interest and even put up a friend and me for the night, amongst his brood of five. We were impressed, and we went to Berkeley as a result. I wound up as a teaching assistant in his highly disorganized but always fascinating courses, and I was able to do my thesis out of state in northwestern Colorado, largely because of Don. Later on, Don had a hell of a good time with us out at Lance Creek, washing stuff from the Lance Formation, mostly because of the mud fights, I suspect. The mud fights began at Four Mile (1953-55), where we were washing in Willow Creek. The main battles were between John Attridge, representing the British, and Butch Hallinan, representing the Irish. Don came out to see what we were doing and participated in submerging both the Brits and the Irish."

"In 1956 Don and I decided to try Four Mile collecting techniques (modified from Hibbie's) in the Cretaceous of eastern Wyoming, so we got Harold Cook to show us Altman Blowout. The crew included Les Kent, Dick Estes, John Attridge, Fay McNalley (*Cuttysarkus mcnalleyi*), Wes Gordon, Don Russell, and Dale Russell. Don and I collected there also in 1957, joined by Bill Clemens. Collecting continued in 1958 with mop-up activities in 1959. There were lots of happy mud flights, and we even had our sorting table in the creek, so we could fall off our chairs into the water to cool off. I think that is when he really got fired up about the early Cenozoic in the Rockies and then about the French Eocene. I guess one of the key things about Don Savage is that he could avoid the professional garbage and just be an enthusiastic kid again, digging bones, casting them, or getting up too damned early in the AM to beat you to the outcrops."

The project Don and Malcolm started in the Lance Formation grew and flourished. Richard Estes and Bill Clemens spent several summers deeply submerged in the "water sports" at the washing site on Lance Creek and came away with magnificent collections on which to base their doctoral dissertations. Bill Clemens remembers, "On many occasions Don offered wise, often wry, commentary as I tried to make sense of a wealth of mammalian specimens picked from the screen washing concentrate. Lance mammals had been known primarily from small collections made by John Bell Hatcher late in the last century. Mostly on isolated teeth O. C. Marsh had created a menagerie of new genera and species. For the lack of new data, many survived in G. G. Simpson's masterful catalog of North American Mesozoic mammals. Now a large collection, including many jaws, was an open invitation to a young graduate student to enthusiastically "correct" the errors of the past. Here Don's skills as a scientist and a teacher were outstanding. 'Can you really say THAT?', 'Baloney!!', and other more 'pithy' comments effectively shot down or appropriately tempered a number of my first impressions."

Don's French connection began in 1949 when he became Don Russell's adviser for a Master's degree in paleontology at Berkeley. Don Russell moved on to obtain his Ph.D. in France, and Don Savage took advantage of his presence to make Paris a base for further

foreign research. Don Russell recollects, “The early Eocene of the Paris Basin was barely scratched, and we were sure that modern field methods would greatly increase our knowledge of this particularly interesting period. Savage arrived, with his family, in 1960 and began a long-term partnership with a study of the collections and prospecting in the Champagne region. We discovered the locality of Mutigny and intensively exploited that of Avenay and those of the Sables à Térédines et Unios. Our aspirations realized, we published a series of papers on our results. At the end of his French endeavors, at the invitation of Elwyn Simons, Don S. and I spent a month working in the Fayum in 1962. After that, ostensibly looking for fossils, we bicycled over the Greek island of Chios on the way home.”

While working in France, Don Savage made contact with a number of colleagues and their students. Jean-Louis Hartenberger remembers, “I accomplished my first paleontological expedition with Savage and Russell in the Paris Basin, digging early Eocene deposits at Mutigny and screen washing the sediment. I also had the privilege to chauffeur him in the field at Languedoc, with Dr. Lavocat. I learned from Savage some folk songs (The eyes of Texas are upon you □) and much about American culture. When we were in the Reims area I remember that he and the rest of us had to frequently taste the local Champagne, and in fact this was not very good for continuing the work, and he was not fond of that, but always had his special smile on his face, discussing the wine with the old wine growers of Ay (Monsieur and Madame Lecoq).”

Back in California during the late 1950s and early 1960s, Jack Evernden and Garniss Curtis of the Department of Geology and John Reynolds of the Department of Physics were developing the potassium-argon method of age determination. Don and his students, particularly Gid James, worked with them to obtain radiometric age determinations from volcanic rocks containing or associated with vertebrate fossil localities in North America. This work culminated in “Potassium-Argon Dates and the Cenozoic Mammalian Chronology of North America,” published in 1964 by Evernden, Savage, Curtis, and James. That paper, for the first time, placed the North American land mammal ages (and the Cenozoic epochs) in a calibrated geochronologic framework.

#### Later Years at Berkeley

The decades of the 60s and the 70s were times of change, sometimes tumultuous, at the University of California. In 1966, after the unexpected death of R. A. Stirton, Don took over direction of the Department and Museum of Paleontology, positions he held until the middle of the next decade. Under his leadership, there was remarkable growth of the research programs in the Museum of Paleontology. Its curatorial procedures were modernized through development of computer-based catalogs.

During this period, Don again turned his attention to the later Cenozoic. Heinz Tobien, who spent a year at Berkeley as a visiting professor, enticed him to begin research on the Villafranchian faunas of Europe. Don and Garniss Curtis, working in collaboration with Augusto Azzaroli of Florence, Italy, spent three summers (1965-67) working in Italy and France. They amassed isotopic and paleontological data that resulted in correlation of



European Villafranchian faunas with the newly calibrated North American Blancan faunas.

Typically, Don included his graduate students in his research projects, and the Villafranchian study was no different. Ev Lindsay, who took his first trip to Europe with Don, remembers, “It began in Basel with the rendezvous of the UC contingent (Don, Ev, and Jean Durham) with Professor Azzaroli and his student Annalisa Berzi. After studying fossils from Masoero, a site in the Villafranchian type area, we mounted the project’s Land Rover (named “Frecchia d’Or” by Annalisa) and drove over the Alps to Asti, Italy. The next morning we visited the village of Villafranca d’Asti where Azzaroli showed us the Fornace RDB Quarry while Annalisa collected a proboscidean molar. We then had lunch at a village restaurant but before leaving town decided to look at some new exposures on the hillside to the north. At that time (1966) the Italian government was building an autostrada between Torino and Alesandria, opening a number of new quarries along the route that passes next to Villafranca d’Asti. We found fossils at a quarry north of Villafranca d’Asti, which changed our summer field plans. During the following weeks we bought lumber, made screen boxes, collected and dried dirt for screen washing, and invited numerous colleagues (Michaux, Capetta, Russell, DeGiuli, Bob Savage, and others) to join us sampling the Arondelli fauna. I was very impressed by the manner in which our European colleagues accepted Savage, and how Don openly welcomed them to share in his fun. As a student I always felt that Savage treated me like a member of his own family. Later, I realized that Don Savage treated all of his children, students, colleagues, and friends with the same warmth, openness, and fairness. He called it ‘Texas hospitality;’ I call it Savage gentility.”

Dave Whistler, another graduate student during the 1960s, remembers, “the regular early morning (e.g., 6 am) chats he so graciously offered. Other memories are of being beaten on the handball court [a talent Don no doubt sharpened during mud fights in Willow and Lance creeks], and his whirlwind field tours.” Dave’s contemporary, John Rensberger, recalls, “Don made his graduate students feel comfortable, even while playing handball and beating them badly. I don’t remember any of the graduate students of my era ever beating Don in that game, although we all tried pretty hard to do so. But he somehow made us enjoy the experience and we kept coming back for more.”

“One of my early impressions that I’ve never forgotten was Savage lecturing in Stirt’s mammal course when Stirt was on leave. Unlike Stirt, Savage didn’t pass out notes with the lectures, but gave each lecture without referring to notes at all, and this sustained contact kept everyone’s attention throughout. Once Savage had to “catch up” by giving two almost hour-long lectures back to back without a break. I remember wearing my pencil point down and having to write with large strokes with the blunt end, and almost running out of paper.”

“Stirt once told me that it was hard to figure out what Don was thinking. This was definitely true, and I believe it was because Don genuinely liked his colleagues, and so avoided hurting feelings and taking sides in controversies. I think this was one of the

personality traits that made Don so well liked by the graduate students, including those who were supervised by other faculty.”

Other recollections of the ‘60s were provided by Jay Lillegraven. “In that awful time of People’s Park, student strikes, and helicopter gassings of Sproul Plaza (1968-69), I spent a postdoctoral year at Cal, trying to learn more about the evolution of marsupial reproduction. Don Savage soon became my informal mentor, friend, and an almost daily opponent on UC’s handball courts. Out of the literally hundreds of games we played that year, Don was victorious in all but one, a brief moment of unbridled joy that I will always savor. In retelling stories of that year, Don always said that Lillegraven had in truth won several games; although yet another example of his typical generosity, Don’s facts in this case were wrong. We also made several field trips together, including a week in Southern California at the Eocene section of Carlsbad, where Don had been capitalizing on enormously fossiliferous pockets in construction zones for new housing. That experience secured my interest in Eocene vertebrates of San Diego County, which I later pursued from a new faculty job at San Diego State University.”

“Following a formal invitation, Don joined the SDSU paleo group during the 1971-72 academic year, in which he served the geology and zoology departments as Distinguished Visiting Professor. He gave a weekly lecture on principles of ‘paleostratigraphy’ in the geology program and ran a seminar series in zoology on ancient primate diversity, both being subjects long dear to his heart. That same year, Don, Jay, and then-SDSU Master’s student Mike Novacek pioneered many new early Uintan localities within the city of San Diego, as well as discovering and exploiting an extraordinary insectivore site at the north end of Camp Pendleton Marine Corps Base. Characteristic of his ways, Don was a master at charming the crusty old ‘Gyrines’-turned-bureaucrats of the U.S. Marine Corps, thus allowing the paleontologists unfettered access to absolutely anywhere they wanted to go on the Base.”

During the 1970s when Don was Chair of the Department of Paleontology at Berkeley, he initiated summer field trips to various fossil localities in North America that had been studied in paleontology classes during the academic year. One year (1970), the Berkeley paleontology summer field party “hit” the Bitter Creek area in the Washakie Basin of southern Wyoming with great success. After the main group of participants on the field trip returned to Berkeley, Don, along with Howard Hutchison, Barbara Waters, and Neil Hudner, returned to Bitter Creek for more collecting. They continued work at Bitter Creek for the next seven summers. In collaboration with Henry Roehler of the USGS, who was mapping the Washakie Basin, they compiled a detailed biostratigraphic subdivision of Wasatchian land mammal age. Thirty-four superposed stratigraphic intervals with fossils (“zonules”) were recognized in a 3,000-ft-thick sequence of the Wasatch and Green River formations. Don’s proposal of the Wasatchian Stage, based on this record, was published in 1977 in “Aspects of Vertebrate Paleontological Stratigraphy and Geochronology.” That paper included an exhaustive review of practices and principles of vertebrate paleontologic stratigraphy and his philosophy of terrestrial biostratigraphy. Savage believed that a prime goal of vertebrate paleontologists should be to document all of the terrestrial vertebrate record according to the existing stratigraphic

codes, resulting in land mammal ages becoming land mammal stages (i.e., time-rock units).

Don continued to play an active role in graduate education. Another student, Larry Barnes, remembers: “Several things impressed me about Don Savage. Foremost was his patience with students and his availability. Regarding his humor, prior to taking my Ph.D. orals, I had spent several evenings ‘boning’ up on general science facts. Savage admonished me to relax and the morning of my exam he advised me to go to the prep lab and work on fossils to relax. Later, he came to bring me to the ‘inquisition’ room. As we approached the closed door, he put his arm around my shoulder and said, ‘Remember, just relax.’ Then, just as he opened the door for me, he jokingly pinched me on the backside, simultaneously whispering in my ear, ‘And, above all, don’t be flippant!’ This action and comment caught me off guard so that I entered the room, facing my Orals Committee, with what must have been a rather silly expression on my face. And, I was relaxed.”

In 1973 Don convened and chaired a symposium, “Vertebrate Paleontology as a Discipline in Geochronology,” for the Geological Society of America meeting at Dallas, Texas. A summary report on each epoch was prepared by a committee and presented at the symposium by the committee chair. The intent was to publish that symposium’s proceedings as a GSA volume, but revisions of the committee reports became unwieldy and time-consuming. Momentum declined, some committees resigned, others could not reach agreement, and the volume was never published.

Ernie Lundelius, chair of the Pleistocene Committee for the GSA Symposium, recalls: “I was not very close to Don although I have known him for a long time. I suppose I worked most closely with Don at the beginning of the geochronology project when it was just a GSA symposium. He was always helpful and friendly when I contacted him about something. At one point he put up a bunch of us at his house and we tried to repay him by helping him pull up some old linoleum in his kitchen. I have always wondered how much help we were, considering our disorganized efforts. I will miss his low-key response to things. We could use more of that today.”

Happily, the results of the ill-fated GSA symposium, their subsequent revisions, and new data were not truly lost. Information concerning North American faunas formed the basis of “Cenozoic Mammals of North America,” a detailed compilation brought together in 1987 under the leadership of Mike Woodburne. A second project was spawned by the GSA symposium. Don Russell recounted: “Don Savage was attracted to global views of paleofaunas and convinced me that I should participate in a compendium of paleontologic, stratigraphic, and geographic data, and bibliography, concerning fossil mammals. This was published in 1983 as “Mammalian Paleofaunas of the World.”

“Practically immediately afterward, eschewing retirement, Don S. envisaged building on our synthesizing efforts to produce a monumental work entitled “Cenozoic Vertebrate Ages and Faunas of the World.” In scope this was gigantic. Realistically, the decision was made to first do only the Paleogene. We divided the world and my lot was Europe,

Asia, and Africa. Don S. assumed the rest. But fish, reptiles, and birds being beyond our competence, we enlisted our much-admired friend and colleague Richard Estes. Upon his most untimely and regretted death, Howard Hutchison took up the burden and the volume slowly advanced to the indexing stage. This was spring of 1999, and the prime mover sadly disappeared. Whether or not it ever sees publication, the pleasure of working with Don S. over a period of decades was one of the finest aspects of my career. A man of encyclopedic knowledge, coupled with gentleness and a wonderful sense of humor, he thoroughly enriched my life.”

In the late 1970s Don took an active role in fostering cooperative research projects on the Asian Eocene. He worked closely with colleagues at the Institute of Vertebrate Paleontology and Paleoanthropology (Beijing) on Eocene faunas of southern China. In 1978 he and Russell Ciochon, then a graduate student at Berkeley, undertook fieldwork in Burma (now Myanmar). The first field trip took them to the Pondaung Hills, where Barnum Brown had collected in the 1920s. Their fieldwork resulted in the discovery of fossils of a variety of mammals, including a tantalizing fossil of a primate that suggested Southeast Asia was an early theater of higher primate diversification. In Burma, Don met Than Myint, whom he married in 1985. Than brought a second extended family and, as a spectacular master of international cuisine, provided warm hospitality to visitors at their homes in California and Escalante, Utah.

Don Savage retired in 1987, 50 years after he graduated from West Texas State College. We all enjoyed working with him and cherish our memories of this talented, fun-loving vertebrate paleontologist. Don’s paleontological contributions range from extensive, thoroughly documented collections to wide-ranging synthetic studies that enrich our understanding of the patterns of terrestrial faunal evolution during the Cenozoic; all will continue to have a profound impact on our field. (Some of Don Savage’s many friends)

#### DAVID A. THOMAS

David A. Thomas, sculptor, paleontologist, and musician, died suddenly on June 17, 1999, at his home in Albuquerque, at the age of 71. Dave was born in 1928 in Pocatello, Idaho, where he and his brother Frank grew up. Following military service in the U.S. Marine Corps as a tank driver in China, Dave earned his bachelor’s degree in English at the University of New Mexico. Dave’s first career was in journalism, but he pursued his triple passions of paleontology, music, and sculpting for the rest of his life. Dave used his artistic talents in paleontology during the last 25 years of his career by sculpting life-sized dinosaurs and extinct mammals, and occasionally worked as a museum preparator. His full-sized bronze statues of *Albertosaurus* and *Pentaceratops* at the New Mexico Museum of Natural History and Science have thrilled museum visitors since its opening in 1986. Dave produced other dinosaur statues for Ghost Ranch, Museum of the Rockies, Utah Field House State Park in Vernal, College of Eastern Utah Prehistoric Museum in Price, museums in Taiwan and Japan, and a life-sized statue of the extinct pampatherine armadillo, *Holmesina*, for the Houston Museum of Science.

Dave's interest in dinosaur behavior took a unique twist when he set the parallel rhythms of the famous theropod and sauropod trackways at Glenrose, Texas, to a musical score. Dave delighted kids and grownups alike with his spontaneous violin performances and whimsical tales. Like characters in Rudyard Kipling's *Just So Stories*, Dave's curiosity and delight were his hallmarks. Survivors include Joan Thomas, his wife of 49 years, his brother, Frank Thomas, two children, and two grandchildren. (David D. Gillette)