

SOCIETY OF AVIAN
PALEONTOLOGY AND EVOLUTION

INFORMATION LETTER

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**SAPE MEETING IN WASHINGTON, D. C.,
2 to 8 June 1996**

At the Frankfurt meeting of SAPE in 1992 it was decided that the next meeting of SAPE would be at the Smithsonian Institution, Washington, D.C., from 2 to 8 June 1996. The Calvert Marine Museum in Solomons, Maryland, will be a joint host of the meeting. Plan to attend.

The scientific program will be open, just as in the past, but to whatever extent possible, we would like to organize as many papers as possible into major themes. PLEASE LET US HAVE YOUR IDEAS FOR SUITABLE TOPICS. The following are suggestions only, and may not be part of the final program at all. We want to hear from you.

Mesozoic birds. A perennial favorite. What are the new discoveries ? What do they tell us regarding the origins of birds (dinosaurs vs. thecodonts, etc.) ? What bearing, if any, do Mesozoic birds have on the origin and divergence of modern orders of neognathous birds ?

Phyletic lineages through time. What does the fossil record tell us regarding changes through times in lineage of species, genera, families: How should we handle the problem of nomenclature and systematics of a single lineage that shows changes through time ?

Extinction. How do we identify lineages that have become extinct and left no descendents. What is the timing and cause of extinction in avian lineages ? How well do these correlate with extinction events in mammals or other organisms?

Biogeography and faunal changes. What changes do we see in entire avifaunas over time ? Are these changes more or less synchronous globally, or do certain elements of certain faunas persist longer in

some areas than in others ? How does the fossil record influence our perception of modern avian distributions ?

We intend to do everything possible to keep the scientific program interesting and manageable. We wish to avoid adding another day or sessions and also will avoid concurrent sessions at all costs. Poster papers are especially encouraged.

Participants will have known the timing of this meeting for four years in advance. Therefore to reduce any delay in appearance of the proceedings of the meeting, in 1996, we will ask that authors who intend to submit a paper for publication bring copies of their finished manuscript and illustrations to the meeting. The deadline for submission of manuscripts for the 1996 SAPE proceedings will be the last of the meeting.

We want this meeting to be as outstandingly successful and enjoyable as the previous three SAPE meetings. Let us know your desires - no detail is too small, from name tags (names will be large enough that you won't have to squint to read them), to food, accomodation, etc. What activities or attractions will your spouses be most interested in while in Washington ? Let us know.

Storrs OLSON and Helen JAMES, Division of Birds (NHB Stop 116), Smithsonian Institution, Washington, D.C. 20560. Phone 202-357-2031. Fax 202-633-8084 (Effective after 1 January 1995).

News from the members

ARGENTINA

Claudia TAMBUSI is mainly continuing her work on the Cenozoic birds from Argentina. She has just finished a paper on the avian fossil remains from the Atlantic coast of Buenos Aires Province for the book "Evolucion climatica y biologica de los ultimos 5 ma y su correlacion entre el Hemisferio Norte (SW Europa) y Hemisferi Sur 'Argentina" edited by M. T. Alberdi, E. Tonni and F. Bonadonna. Other recent work is about a new species of *Chloephaga* (Anseriformes) from the Pliocene ("Irenense") of Buenos Aires Province, and a new genus and species of a very large condor (Vulturidae) from the Late Pliocene ("Chapadmalalense") of Buenos Aires too.

Jorge NORIEGA and Claudia have finished a general review of the southern South America (Uruguay, Chile and Argentina) record of fossil birds which will be published in the Revista Geologica de Chile. Another recent work is based on the discovery of a Ratite bird (Struthio-sized) from the Eocene of Seymour Island (Antarctica) which constitutes the first record of this bird on this continent. Jorge and Claudia are working too on additional remains of *Cayaoa bruneti* Tonni (Anseriformes), a peculiar steamer-duck, and on a very complete skeleton of a penguin, both from the Middle Miocene of Patagonia.

Florencia SAVANTI is working on the taphonomy of bird remains from archaeological deposits on the northeastern coast of Tierra del Fuego.

AUSTRALIA

Ralph E. MOLNAR has previously reported, in 1992, two distal avian tibiotarsi from the Albian Griman Creek Fm. in northern New South Wales. Whilst description of these specimens is straightforward, comparison is difficult because of the lack of Mesozoic comparative material. Therefore he would like to ask if there are casts of distal tibiotarsi of any Mesozoic birds available, or if anyone

with detailed sketches of Mesozoic avian tiobiotarsi could please contact him (email address: b.molnar@mail box.uq.oz.au).

Ralph also would like to ask if anyone knows much about the so-called "Korean *Archaeopteryx*". He has some photos, forwarded by a correspondent in Japan, that were published in the Japanese magazine the Korean Pictorial. Issue n° 2 for 1994 carried a large color photo of the specimen, which consists of an articulated forelimb. The text from this (and another issue) carried some information about it. It was found in Shinniju City, in Byon-an County, North Korea, in rocks said to be 150 million years old. The specimen is at the Kin-nissei University Natural Sciences Museum. It is said to include skull, cervicals, wing bones and feather impressions - although in the photos he could only make out the wing bones. There are also striations that might be feather impressions, but these are not clear in the photos. He could not identify the skull or cervicals, although according to the text the skull is quite poorly preserved.

From the photo Ralph was able to deduce a little further information, but he stresses that this is based on his interpretation of a slightly out-of-focus photo and should thus be regarded with some scepticism. The phalangeal formula seems to be 2:3:3 rather than 2:3:4 as in *Archaeopteryx*. Also he thinks that metacarpals II and III are shorter relative to the radius, and the phalanges of digit III shorter with respect to mcIII than in *Archaeopteryx*. Unfortunately the block is cracked through digit II so he could not be certain of the lengths of those phalanges from the photo. There is no carpometacarpus. The limb is flexed as in Berlin *Archaeopteryx*, but with an acute angle between manus and antebrachium, rather than as nearly perpendicular as in the Berlin specimen.

As the next Mesozoic Terrestrial Ecosystem symposium is to be held in Beijing next year, he would like to suggest that the SAPE members might suggest to their Chinese colleagues that it would be desirable to endeavour to have the specimen sent to Beijing to be displayed at the Symposium.

BRAZIL

Herculano ALVARENGA is still studying the Phorusrhacid birds. In a recent paper (1993) he erected a new genus, *Paraphysornis*, for his gigantic Phorusrhacid from the Taubate Basin, in Southeastern Brazil. In this paper a commentary on the three genera of the subfamily Brontornithinae was done. New casts of the whole restored skeleton of *Paraphysornis brasiliensis* are being prepared for future exchanges.

A very interesting Galliform, also from the Oligo-Miocene of the Taubate Basin, the oldest record for the order in South America, was studied by him. The remains include the bones from the wing and scapular girdle. This small Galliform is very close to the extinct Quercymegapodiidae and Recent Megapodiidae families. The paper is on print (see references).

Herculano is still working on his comparative bird skeletons collection. Some excursions were done to get new specimens and also some exchanges with other collections. At the present time, his collection includes almost one thousand bird species.

ALVARENGA H. (1993) - Fossil birds of Brazil. In Helmut Sick : *Birds in Brazil*, Princeton Univ. press, p. 62-64.

ALVARENGA H. (1993) - *Paraphysornis* Novo Genero para *Physornis brasiliensis* Alvarenga, 1982 (Aves: Phorusrhacidae). *An. Acad. bras. Ci.*, vol. 65, n° 4, p. 403-406.

ALVARENGA H. (1994) - Sobre um Primitivo Galliformes (Aves) do Tertiario Medio da Bacia de Taubaté, Estado de Sao Paulo, Brasil. *An. Acad. bras. Ci.*, vol. 66 (in press).

BULGARIA

Zlatozar BOEV has collected new fossil birds from the following localities:

Muselievo, Middle Pliocene, MN 15
Varshets, Middle Villafranchian, MN 17
Slivnitsa, Middle Villafranchian, MN 18
Mirizlivka Cave, Paleolithic
Tsareva Tsurkva Cave, Upper Pleistocene
Yagodinska Cave, ca. 6000 B.P.
Bagatchina, 6000 to 3000 B.P.
Golyamata Kauna Cave, Eneolithic
Tyovnata Douпка Cave, Holocene
Dolnoslav, 4000 to 3000 B.P.
Ratiara, 2nd to 4th century A.D.
Zelenigradska Cave and Mislovishka Cave, 2nd to 4th century A.D.

Bird bones collected by other specialists and determined by Zlatozar come from the following localities:

Temnata Douпка Cave (40 000 to 30 000 B.P.)
Toplya Cave, Metcha Douпка Cave, and Kozarska Cave (Upper Pleistocene)
Toptchii (Early Holocene)
Tcherdzhenitsa Cave (Eneolithic)
Slatina (ca. 8 000 B.P.)
Gulubovo (Eneolithic to Middle Bronze Age)
Yajlata, Gornik Cave, Orekhite Locality, Giva Luka Cave, Strelite Cave, and Brashlyanska Cave (Holocene)
Hissarluka (9th to 12th century A.D.)
Iskritsa (11th to 12th century A.D.)
Shoumen Castel (14th-15th century A.D.)

The comparative collection of bird skeletons has been completed and includes 1339 specimens belonging to 305 recent species.

BOEV Z.N. (1993) - Archaeo-ornithology and the synanthropisation of birds (A case study for Bulgaria). *Archaeofauna*, Madrid, 2, p. 145-153.

BOEV Z.N. (1993) - Neolithic birds from the prehistoric settlement at Kazanluk. *Hist. natur. bulgar.*, 4, p. 57-67 (in Bulg. Engl. summ.).

BOEV Z.N. (1993) - Osteological collections and their significance for the ornithological researches. *Hist. natur. bulgar.*, 4, p. 2-9 (in Bulg. Engl. summ.).

BOEV Z.N. and RIBAROV G. (1993) - Birds from the ancient town of Kabyle (1st millennium B.C. - 6th century A.D.), near Kabyle (Burgas district). *Hist. natur. bulgar.*, 4, p. 68-77 (in Bulg. Engl. summ.).

CHINA

The most exciting news that could be expected from HOU LIANHAI and ZHOU ZHONGHE in 1994 is that they have got several **Late Jurassic birds** in China. Up to now the material includes one with a nearly complete skull and forelimb; another with a pelvis and a feathered hindlimb; besides, additional two incomplete hindlimbs as well as several feathers were recovered. These materials were firstly found by the farmers from the fresh water deposits of the Yixian Formation in Liaoning Province. They were associated with abundant vertebrate fossils from fishes, amphibians, and reptiles to mammals. Besides, more than one hundred species of insects have been found from the same site.

In 1994, except the field work, HOU published a paper on a Paleocene bird. HOU has also just finished another paper in which he described a bird from the Early Cretaceous of the Ordos Basin in Inner Mongolia. Previously, DONG (1993) put this unnamed bird in the subclass Enantiornithes, but HOU holds a different opinion.

In addition to the several field excursions related to the collection of Late Jurassic birds, ZHOU also spent two weeks in the most productive Early Cretaceous bird site, where he got two perfectly preserved complete specimens. They are believed to be perfectly similar to *Cathayornis* from the same site. In 1994 ZHOU also finished a paper on a new enantiornithine bird from Liaoning, China. It will hopefully be published in 1995.

In June 1994, HOU and ZHOU were happy to receive a short visit by Luis CHIAPPE and Mark NORELL from the AMNH. They gave an interesting talk on *Mononykus* and other new discoveries in Mongolia.

HOU L. (1994) - A new Paleocene bird from Anhui, China. *Vertebrata palasiatica*, 32 (1), p. 60-65.

CUBA

Although Noel GONZALEZ-GOTERA was mainly engaged in activities in the field of Biotechnology and Biomedical Research in the last years, he has kept, anyway, his field and laboratory research on Cuban fossil vertebrates (and particularly in Avian Paleontology). For the next winter, he is planning to start field works in cave Pleistocenic deposits in Western Cuba, both in explored localities and new ones, and he hopes to send more information about this field research during the first quarter of 1995.

CZECH REPUBLIC

Jiri MLIKOVSKY moved from his former office to a new one, in the Department of Paleontology of the Charles University. This moving took half a year during which he was not able to work properly because all his collections, literature, and computer were packed and placed in a very small room. This caused great delays in writing letters, working with fossil material, and doing the necessary work on the catalogue of the Tertiary avian localities of Europe (TALE). He apologizes to all whom it may concern. Now that horrible period is over, almost everything is unpacked and he is trying to improve all the delays.

The catalogue TALE is now almost prepared and, he hopes, will be published in the first half of 1995. In the coming months he will send page-proofs to all contributing authors.

His work on fossil birds was rather limited, but he was able to finish basic work on the Middle Miocene birds of Devinska Nova Ves (Slovakia), late Miocene birds of Pikermi (Greece), and on various Quaternary localities of Austria and Baikal region in Siberia.

FRANCE

Jacques CHENEVAL is ending the revision of the avifauna from the Miocene deposits of Sansan (South West of France). This work, which took much more time than expected, will be published in the first volume (Geology and all fauna except Mammals) of the new "Monography of Sansan", for which all the manuscripts must be ready for the end of this year.

After this absorbing task, Jacques plans to start the study of the birds from the Pisco Formation (Mio-Pliocene of Peru). The first step of this work will be the study of the penguin species. The material of penguin is very abundant, with a complete skeleton in very good preservation, a few partial skeletons,

and some hundreds of long bones.

Jacques CUISIN s'est occupé cette année surtout des problèmes de la Corse qui ont abouti à la communication "Biostratigraphy of Amphibians, Reptiles, Birds and small Mammals and the role of Man in the Holocene faunal turnover". Cette communication a été présentée par lui au 7^o colloque de l'ICAZ qui s'est tenu à Constance en Septembre 1994, et devrait être publiée dans les actes du colloque.

Son travail sur le squelette post-crânien des Passeriformes n'a pas beaucoup avancé, faute de temps, mais il espère en terminer cette année la première partie.

Christine LEFEVRE did more paper work than bone work this year. Nevertheless, the re-arrangement of the bird skeletal collection of the Laboratoire d'Anatomie comparée of the Paris Museum of Natural History is completed. A preliminary list of specimens should be ready soon for those interested, but a verification of some groups is necessary. Christine would be happy to welcome anyone desirous of working on the collection and helping to complete this verification according to his specialty.

The inventory of the Milne-Edwards collection of modern specimens is progressing slowly.

Christine research's activity is still oriented on islands. She completed the manuscript on the study of bird remains collected during the Cape Horn Archipelago prospection in 1991 (to be published in the *Anales del Instituto de la Patagonia*). She has started the study of the Aleutian material (a first report on the bird remains is published in *Archaeofauna*). A new campaign took place last summer on Shemya Island.

Since the last SAPE Newsletter, Cécile MOURER-CHAUVIRE spent two months at the Smithsonian, in Washington, in October and November 1993, and would like to express her warmest thanks to Storrs OLSON and Helen JAMES for their hospitality.

Since this time Cécile has been mainly working on the material from La Réunion. A paper by Graham COWLES was published in *Geobios* to describe one new genus and three new species of recently extinct birds of La Réunion: a shellgoose (*Mascarenachen kervazoi*), a night-heron (*Nycticorax borbonensis*), and a falcon (*Falco duboisi*). The publication of this material, expected since a long time, made it possible for the team working in La Réunion, to publish its own new findings. A first study has been devoted to a new genus of Scops Owl, *Mascarenotus*, including the different species of the Mascarene Islands. The Commerson's Scops Owl has been placed into synonymy with the two other strigiforms described from Mauritius, *Strix newtoni* and *S. sauzieri*, and a new species, *Mascarenotus grucheti*, has been described from La Réunion.

Cécile attended the XXI I.O.C. in Vienna where she organized a Round Table Discussion on the History and Evolution of the European Avifauna. The papers presented during this Round Table Discussion will be submitted to *Acta Zoologica Cracoviensis* under the responsibility of Z. BOCHENSKI.

Pendant deux ans Philippe VILETTE a bénéficié d'un détachement auprès du CNRS, à l'Institut de Paléontologie Humaine, à Paris. Il a plus particulièrement étudié les oiseaux du Pléistocène moyen final de la grotte du Lazaret (Nice, Alpes-Maritimes, France). Abondante, cette paléoavifaune comporte 83 espèces, dont *Fratercula arctica* et *Uria aalge* ou *lomvia*, rarement signalées. Il a également effectué l'étude des oiseaux du Pléistocène supérieur des Ramandils (Port-la-Nouvelle, Aude, France), de ceux des gisements holocènes de la Baume de Ronze (Ornac, Ardèche, France) et de la grotte de Bélesta (Pyénées-Orientales, France). Actuellement Philippe travaille sur les restes aviaires de la grotte de l'Abeurador (Hérault, France) dont les niveaux archéologiques ont livré une grande quantité d'oiseaux, sans doute consommés par les hommes du Mésolithique.

COWLES G.S. (1994) - A new genus, three new species and two new records of extinct holocene birds from Réunion Island, Indian Ocean. *Geobios*, 27 (1), p. 87-93.

GUERIN C., CURVELLO M.A., FAURE M., HUGUENEY M. and MOURER-CHAUVIRE C. (1993) -

- La faune pléistocène du Piauí (Nordeste du Brésil): implications paléoécologiques et biochronologiques. *Quaternaria nova*, III, p. 303-341.
- LEFEVRE C. (1993) - Exploitation par l'homme de l'avifaune marine en milieu insulaire. Exemples de la Patagonie australe, des îles Aléoutiennes et de l'Atlantique nord. In Exploitation des animaux sauvages à travers le temps, *Actes des XIII^e Rencontres internationales d'Archéologie et d'Histoire d'Antibes et IV^e Colloque international de l'Homme et l'Animal*, APDCA édit., p. 115-123.
- LEFEVRE C. and PASQUET E. (1994) - Les modifications post-mortem chez les oiseaux : l'exemple de l'avifaune holocène de Patagonie australe. *Outillage peu élaboré en os et bois de Cervidés : taphonomie / bone modification (Artefacts 9)*, p. 217-229.
- LEFEVRE C. and SIEGEL-CAUSEY D. (1993) - First report on bird remains from Buldir Island, Aleutian Islands, Alaska. Proceedings of the First meeting of the ICAZ Bird Working Group (Madrid, October 1992), *Archaeofauna*, 2, p. 83-96.
- LEFEVRE C. and THIBAUD J.-C. (1994) - Les oiseaux in J.-D. Vigne : *Des hommes et des animaux sur une petite île méditerranéenne : archéologie de l'île Lavezzi (XIII^e-XX^e siècles, Bonifacio, Corse)*. Monographie du C.R.A., CNRS édit., n° 13, p. 173-184.
- MOURER-CHAUVIRE C. (1993) - Les Gangas (Aves, Columbiformes, Pteroclididae) du Paléogène et du Miocène inférieur de France. *Palaeovertebrata*, 22 (2-3), p. 73-98.
- MOURER-CHAUVIRE C. (1993) - The Pleistocene avifaunas of Europe. *Archaeofauna*, 2, p. 53-66.
- MOURER-CHAUVIRE C. (1994) L'Amérique du Sud, continent isolé ? Encadré dans l'article de L. Marshall : Des oiseaux carnivores en Amérique du Sud. *Pour la Science*, 198, p. 80.
- MOURER-CHAUVIRE C. (1994) - A large Owl from the Palaeocene of France. *Paleontology*, 37 (2), p. 339-348.
- MOURER-CHAUVIRE C., BOUR R., MOUTOU F. and RIBES S. (1994) - *Mascarenotus* nov. gen. (Aves, Strigiformes), genre endémique éteint des Mascareignes et *M. grucheti* n. sp., espèce éteinte de La Réunion. *C. R. Acad. Sci. Paris*, t. 318, sér. II, p. 1699-1706.
- VIGNE J.-D., LEFEVRE C. and THIBAUD J.-C. (1993) - Prospections archéozoologiques sur l'île de Gargalo (réserve naturelle de Scandola). *Travaux scientifique du Parc naturel régional et des réserves naturelles de Corse*, 41, p. 1-18.
- VILLETTE P. (1992) - L'avifaune. In F. Claustre, J. Zammit, Y. Blaize et coll. : *La Caune de Bélesta, une tombe collective il y a 6000 ans*. CNRS/EHESS Toulouse, Chateau de Bélesta édit., p. 219-221.
- VILLETTE P. (sous presse) - La paléoavifaune pléistocène moyen du Lazaret à Nice (Alpes-Maritimes, France). *Bull. Mus. Anthrop. préhist. Monaco*.

GERMANY

D.S. PETERS has already received almost all the proofs of the papers that were submitted for publication in the Proceedings of the Third SAPE Symposium. Some papers apparently get lost on their postal way, but after these unexpected difficulties he hopes that there will be no more problems with the volume. In 1993 and 1994 he has had almost no time for research work, but some papers were published (see the references list).

B. STEPHAN published two papers which concern *Archaeopteryx* and the use of wing claws. The results are that among Recent birds, there are many species which have claws on the fingers; they do not use them. Including *Archaeopteryx* there are two positions of these claws, i. e. "Recent bird position" and "*Archaeopteryx* position". In Recent birds position, in spreaded wings, the tip of the claws is oriented backwards, into the wing (in the same direction as in the secondaries). In *Archaeopteryx* position, in partly closed wings, the tip of the claws is oriented ahead (turned above 180°), for example in the Berlin and Eichstätt specimens. The Solnhofen specimen shows both positions: the left hand is orientated as in Recent birds (wing is faltered) and the right one is in *Archaeopteryx* position. The left

wing of the specimen of Solnhofen Aktienverein is in position of Recent birds. Both positions need an interpretation:

a) When birds spread their wings, the arm rotates forward about 90° (pronation). As a result, the tip of the claws is oriented backwards.

b) The *Archaeopteryx* position is the result of two processes. First the wings are folded up partly, whereby the arm is rotated backwards (supination) about 90°. Secondly there was a postmortem torsion of the fingers.

The orientation of fingerclaws, the feathering of the fingers (primaries on the long finger, alula on the thumb), and the flexing of the wrist, make it impossible the use of claws for climbing etc. As function remains the primary function of claws: protection of the tip of the fingers.

PETERS D.S. (1993) - El Museo de Ciencias Naturales, lugar de Investigacion y Transmision de Conocimientos. In Embajada de la Republica Federal de Alemania & Institucion Cultural Argentina - Germana (Eds.) - *Actas del Simposio Influencias Cientificas Alemanas en la Argentina*, p. 145-148.

PETERS D.S. (1993) - Konstruktionszwänge bei Skelettentwicklung am Beispiel der Tetrapoden-Gliedmassen. *Praxis der Naturwissenschaften, Biologie*, 42 (8), p. 38-42.

PETERS D.S. (1994) - *Messelastur gratulator* n. gen. n. sp., ein Griefvogel aus der Grube Messel (Aves: Accipitridae). *Courier Forschungsinstitut Senckenberg*, 170, p. 3-9.

PETERS D.S. and STORCH G. (1993) - South American relationships of Messel birds and mammals. *Kaupia*, 3, p. 263-269.

STEPHAN B. (1992) - Vorkommen aus Ausbildung der Fingerkrallen bei rezenten Vögeln. *Journ. Ornith.*, 133, p. 251-277.

STEPHAN B. (1994) - Die Orientierung der Fingerkrallen der Vögel. *Journ. Ornith.*, 135, p. 1-16.

WELLNHOFER P. (1994) - New data on the origin and early evolution of birds. *C.R. Acad. Sci. Paris*, t. 319, sér. II, p. 299-308.

GREAT BRITAIN

Anne EASTHAM send the following information:

The majority of the avian archaeozoological studies undertaken here over the past year has been work of the conventional type, using methods of comparative osteology. Sites have included a late glacial cave site in Spain, Cova Matutano in Castellon, a Neolithic Tell site in Iraq, Abu Salabikh, and work on hand includes two further late glacial sites: one in France, in the Gave d'Oleron, Arancou, and the other Inchnadamph, Highland, Scotland. All of these have interest in terms of bird ecology and the totality of environmental studies for each of the periods and localities of the sites.

Work on material from the Neolithic village of Skara Brae, Orkney, has evolved a new perspective in avian study. It is part of more extensive project of excavation in 1972-3 and 1977 undertaken to provide a better context for the material exposed by Gordon Childe in 1928-30 and to recover evidence for the economic basis of the settlement. The work has been jointly funded and instituted by the National Museum of Scotland and Historic Scotland. The context of the problem was this: the early settlers at Skara Brae were farmers, in that they both reared animals and cultivated crops yet they also exploited the wild fauna, animal, avian, fish and invertebrates from the land, the sea and the fresh water lochs in the vicinity of the settlement. The C14 dating of the site gives an occupation timespan between 3380 BC. and 1975 BC. [Birmingham 637,791,788 and 433].

Like their contemporaries in the Highlands and islands of Scotland, the inhabitants of Skara Brae hunted many species of seabirds as they nested along the cliffs, waders as they gathered in groups along the shore of the Bay of Skail or nested in the marshland and fields around and the Waterfowl gathered on

the Loch of Skail or wintering in the bay. Amongst the bone remains recovered during excavations there were 41 species of birds most of them edible. A number of these were seasonal or passage migrants. Amongst these were many of the water and wildfowl, 9 species in all, some of whom are only seasonal residents or on passage, while others remain to breed. Not strictly migratory, the large group of seabirds, including the Fulmar, Gannet and Shearwater, Cormorant and Shag, a number of different species of Gull, the Puffin and several Auks, which only settle on land to breed. Another group of birds, well represented, was the eleven species of Wader, all characteristically feeders within the tidal zones or amongst the dunes, marshland and machair between the loch and the sea. The site also attracted its share of predators and scavengers: bones of Buzzard and Falcons and a probable Barn owl, as well as a range of corvids confirm it, and some remains of Blackbird, Redwing and Skylark give further indication as to the habitat locations around the settlement.

The real interest of the site began, like so many things, with an egg. More precisely, with 2,000 fragments of eggshell it was clear that these were not produced by the Domestic fowl, which was introduced much later in pre-Roman times, so what kind of eggs did the Neolithic Orcadians go to work on?

There is a considerable bibliography of work done on the ultrastructure of avian eggshell. Some of the pioneer work in Britain was carried out by Dr C. Tyler at Reading during the 1960's and by Drs S. G. Tullett and R. G. Board and their team at Bath during the 1970's and 1980's and over the same period by Taylor, Rahn, Ar and Paganelli and others in the U.S. The main objective of most of the studies was to demonstrate the way in which eggshell structures of different species are an adaptation to environment. Their work opened up the field of eggshell identification to the archaeozoologist and as a result some determinations have been achieved at the English Heritage laboratory by Carole Keepax and by Julie Sidell at the Institute of Archaeology in London. These have been based on cone and pore counts from scanning electron microscope (SEM) micrographs of the inner surface of the shell. Clearly the use of an electron microscope is essential but the subsequent method of identification previously employed seemed to be too criteria based and too prone to subjective error to be entirely satisfactory.

In collaboration with Dr Iolo ap Gwynn at the Institute of Biological Science, University of Wales, Aberystwyth, it was decided in this case to test an image analysis based on the use of computer neural network software, in which, once the neural network program had been trained using a database of patterns, based on SEM micrographs for each species, it was hoped that it would be able to recognise and identify as similar any unknown data it was offered.

A number of specimens of eggshell was obtained belonging to selected groups which breed on Orkney at the present day, taking care to include a variety of phenotypes and geographical variation for each of 25 species. Micrographs were made of the inner surface of prepared fragments of shell, using a JEOL 840 Scanning Electron Microscope at 10 kV accelerating voltage and a standard working distance. These were then scanned in to the computer, using a ScanJet IIP scanner, the whole process of recognition and identification depended on the programme. The basic programme from Finland, called a Learning Vector Quantization or Kohonen network was applied. By taking 10 strips of 300 x 20 pixels from each 300 x 200 micrograph, a considerable amount of training material - 2500 images in all - was made available for training the network program. Each image was pre-processed, using locally written software in QBASIC, to convert it to a set of 44 different parameters based on pixel density and distribution on both horizontal and vertical axes.

First the recent eggshell was used as a training programme and then scrambled and tested before being applied to the fossil eggshell which had previously had the same preparation.

By giving the programme a number of attempts at each strip on the fossil material it has been possible to produce positive results with a percentage weighting. So far 13 out of the 25 species in the training programme have been identified in the fossil sample, which, for reasons of cost, has up until now been fewer than 100 out of the total number of fragments recovered in excavation. Most of the

species represented by eggshell were also found amongst the bone remains. Those which are present only as shell are common in the islands at the present day and are known from contemporary sites elsewhere. There is one major regret in that so far none of the museums approached has been prepared to allow a fragment of Great auk, *Alca impennis* to be used in this program. There was a quantity of bone from this species recovered and it was exploited even more intensively at the nearby site of Knap of Rowe, but as yet it does not form a part of the database on which we have been working. If any correspondent knows of a possible source of a small fragment of Great auk eggshell, a piece of less than 5 mm diameter would be sufficient, it would be gratefully received.

This work has a number of outcomes. The successful use of this method to identify eggshell patterns to species could be applicable to the classification of many types of microscopic biological images. It has certainly given a further approach to avian eggshell as an archaeozoological study and has initiated a database of reference material which can be added to progressively.

The work has also raised further questions. During the course of classifying the Skara Brae eggshell, to make it easier to organise sampling and identify specimens, each was measured for thickness. A very large percentage of the archaeological shell measured between 0.6 mm and 0.8 mm, while few species accessed into the recent series have a shell thickness greater than 0.3 mm and only the Gannet, *Sula bassana* and the Guillemot, *Uria aalge* have a shell thickness greater than 0.4 - 0.5 mm. It might be rewarding to follow up both the history and ecology of this change. Any museums with antique egg collections could make a valuable contribution if they were willing to offer assistance in this research.

Storrs OLSON and Michael DANIELS send the following information:

The London Clay at Walton-on-the-Naze continues to produce excellent material of early Eocene birds, so that the Daniel's collection, accumulated over 20 years, is now approaching 600 individual birds, many of which consist of associated skeletons in varying stages of completeness. Storrs Olson has taken advantage of a year's residence in England to renew his acquaintance with the collection, which has grown much larger since his last visit in 1985, and he and Michael have initiated collaborative studies to attempt to bring the Naze avifauna more of the attention it deserves.

On Storrs' first visit last April, the weather was all that England is famed for. Rain, wind, hail, and frigid gobbets of wet snow alternated to make searching the mud flats of London Clay as trying as possible, yet a fine bird skeleton was excavated despite the foul conditions. On this and two ensuing visits to Holland-on-Sea, Storrs and Michael were able to make some exciting observations about the Naze avifauna. Among the best represented taxa are at least two genera of tiny birds the size of wrens and warblers. These have many decidedly passerine-like features, including a rather generalized insectivorous bill, a bladelike hypocleidium of the furcula (in one genus), and rather passerine-like carpometacarpus, femur, and tibia. The distal end of the humerus is purely passerine in configuration, whereas the proximal end is more like that of a coly. The coracoid is completely unlike that of passerines and is more like that of most small land birds in the early Eocene in resembling cuckoos or trogons. The long, slender, rather passerine-like tarsometatarsus is, however, clearly zygodactyl. Thanks to the loan of appropriate material from Lyon and Munich, Storrs and Michael speculated on the affinities of these birds, including discussing the possibility of Ballmann's genus *Zygodactylus* being in some way connected.

As many SAPE newsletter readers will know, there have been all too many species of birds named from the London Clay, from very worn fragments of bone that were collected as "float" among gravel in such places as the Isle of Sheppey and Bognor Regis. Through the cooperation of officials at the British Museum, Storrs and Michael have begun comparing the holotypes of these species with associated skeletons from the Naze, with predictable and rather depressing results. The supposed passerine

Primoscens minutus Harrison and Walker is the smallest of the above mentioned Zygodactylidae. One of the supposed cuckoos from the London Clay is actually a swift (!) and another cuckoo appears to be an oilbird (Steatornithidae) that could possibly antedate Olson's *Prefica*. A supposed dove and a supposed tiny hawk are each referable to the Archaeotrogonidae, and in turn, associated skeletons from the Naze show that the Archaeotrogonidae are definitely referable to the Caprimulgiformes. A supposed tiny quail-like bird based on the distal end of a tarsometatarsus that actually does look extremely like that of a galliform, has been identified with an associated Naze specimen that otherwise seems to be closest to the Falconidae. The phylogenetic implication of this species have not yet been fathomed. If nothing else, however, it shows once again that one cannot diagnose Eocene birds from one end of a bone.

Another of the commoner species that Michael identified among the specimens from Walton-on-the-Naze is *Primobucco olsoni*, originally described from the Green River Formation of Wyoming, which he took to be a cuckoo rather than a buconid. When he and Storrs scrutinized the material further, they found that the head and feet are indeed those of a cuckoo, but most of the rest of the skeleton looks just like an owl. This brings out another important point, which is that there is a great deal of similarity, even at the species level, between the avifauna of the London Clay and that from contemporaneous deposits in Wyoming. There is much, much more that can be said about the London Clay avifauna from the Naze that will appear in future issues of the SAPE Newsbulletin.

Michael DANIELS send some more information about the locality of Walton-on-the-Naze :

In a year in which I continued to successfully acquire Naze birds, much time was taken up campaigning against human threats to the site mounted from various quarters, some of which would radically change the identity of the locality to the utter detriment of the scientific interest.

Already there are plans to inflict on this stretch of cliffs the sort of quick-fix anti-erosion schemes that seem popular at present time, the dumping of imported rocks at strategic points supposedly designed to prop up the collapsing coastline. Erosion does not assist the discovery of Naze fossils, merely creates disorder within the cliffs and covers the shore with fallen detritus, obscuring the avian rich London Clay exposures, yet the authorities and local pressure groups are content to cite the demands of the scientific fraternity, 'fossil collectors', as responsible for thwarting anti-erosion plans aimed at securing the promontory for the good of the wider community. However, objectives once achieved could eventually lead to the development of the large expanse of prime land thus the thinking might be, get the taxpayer to finance cliff stabilization, after that all things could be commercially viable. The Naze is a public open space owned by the local authority, yet try as I might, I cannot obtain unequivocal assurances as to the future of this presently accessible amenity.

During recent visits of Storrs it has been possible to work through part of the collection (a lot still to go) to see what we could identify. We have already indicated where we have been successful and the accompanying list shows considerable adjustment and additions since that produced for the 1990 Information Letter.

More material has found at least speculative referral, even so a large proportion of items still remain enigmatic. Amongst the se there are birds represented by an appreciable part of the skeleton, yet defying specific assignment. A particular good example of such is specimen WN.88188. A bird composed of very good pectoral and wing remains. Features of the bones are reminiscent of Procellariiformes, Laridae, Caprimulgids and a small Ibis (Threskiornithidae). Thus the important question has to be asked what price one, fifty million year old. damaged end of bone?

Really, when one observes how many ancient birds have been placed in modern categories, decisions made on the evidence provided by such scraps of bone, then sees the whole dubious finding used as a basis for serious cladistic or other progressional arguments not good science.

Whatever may be the true identity of these ancient birds, their existence graphically illustrates the diversity and complexity of this remarkable London Clay avifauna. Continual re-evaluation of the fossils, examining new acquisitions, brings realization of the sheer magnitude of the task of assessment. There seems to be every indication that there was even greater multiplicity of types in the lower Eocene than exists today and one needs to remember that all this Naze material emerges from a stretch of coastal intertidal exposures a little over a kilometre in extent. This horizon is repeated far inland and when accessible, produces birds of equal diversity. At all the various sites the bird-rich silty marine strata would probably not exceed three metres in thickness, maybe less.

Finally, in general reference to the following list, once again it must be stressed that referral to any modern category owes as much to convenience as it does to indicating the possibility of viable affinity. Doubtlessly many birds, perhaps the majority of what have been discovered, should really be consigned to new distinct groups, whole new orders perhaps. Fifty-three million years to present is a long time; adequate to have completely blurred imagination of how an animal from a remote period may have developed to produce a modern counterpart. Nevertheless, trying to find out is wholly fascinating.

Help from other members has been much appreciated.

Michael Daniels,
118 Dulwich Road, Holland-on-Sea, Clacton-on-Sea, Essex, UK.
7th September 1994.

1	2	3	4	5	6
Diver	Gaviidae	UC	1	1	
Petrel	Procellariidae	LO	3	-	
Tropic Bird	Phaethonidae	LE	-	2	
	Pelecaniformes	LE	-	1	
Screamer	Anhimidae	LE	6	1	
Waterfowl	Anatidae	LE	8	3	
Hawk	Accipitridae	UE	-	1	
Falcon	Falconidae	LE	2	3	
Vulture	Vulturidae	UE	-	1	
Caracara	Cariamidae	L.Plio	-	1	
Falcon/Gamebird		LE	3	1	
Gamebird	Galliformes	UE	4	5	
Moundbuilder	Megapodiidae	UE	2	-	
Gamebird/Rail/Wader mosaic			1	4	
Rail	Gruiformes	U.Pal	-	8	
Finfoot	Heliornithidae	R	1	2	
	Phorusrhacidae	LO	1	-	
Rail/Wader			5	1	

Wader	Charadriiformes	LE	6	10	
Pratincole/Plover	Glareolidae/Charadriidae	LM	1	-	
Oystercatcher	Haematopodidae	Plio	-	2	
Thick-knee	Burhinidae	LM	1	1	
Gull	Laridae	LO	-	1	
Auk	Alcidae	UO	1	3	
Pigeon/Sandgrouse	Columbiformes	UO	-	2	
Parrot	Psittaciformes	LE	10	4	
Cuckoo	Cuculiformes	LO	-	5	
Cuckoo/Owl mosaic	<i>'Primobucco olsoni'</i>	LE	13	5	
Owl	Strigidae	Pal	15	6	
Nightjar etc.	Caprimulgiformes	UE	-	11	
Oilbird	Steatornithidae	LE	1	-	
	Archaeotrogonidae	LE	2	4	
Swift	Apodidae	UE	1	6	
Tree swift	Hemiprocnidae	LE	11	9	
	Aegialornithidae	LE	1	-	
Hummingbird	Trochilidae	Pleis	-	1	Very speculative, based on fragmentary lower leg remains
Trogon	Trogonidae	LO	1	1	
Mousebird	Coliiformes	UE	1	1	
	<i>'Eobucco brodkorbi'</i>	LE	2	2	
	Sandcoleiformes	LE	1	1	
	Coraciiformes	LE	7	17	
Roller	Coraciidae	ME	1	1	
Motmot	Momotidae	LO	6	3	
Wood hoopoe	Upupidae	UO	9	6	
	<i>'Primobucco mcgrewi'</i>	LE	9	3	
Barbet/Woodpecker	Piciformes	LM	2	3	
Perching bird	Passeriformes	LM	10	16	
Perching bird/Coly mosaic	Type 1 Type 2	LE	13	4	Many passer-like features, but with zygodactyl feet.

Ordinal category uncertain:

Palaeognath	Lithornithiformes	LE	26	15	
Ibis	Threskiornithidae	ME	3	2	
New World Vulture	Cathartidae	UE	-	1	

Hoatzin etc. mosaic	Foratidae	LE	-	2	
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NOTE:

Column 3 = Earliest reliable record. Codre = Epoch designation letter preceded by U=Upper, M=Middle, L=Lower.

Column 4 = Number of birds possessing reasonably convincing features reminiscent of the category

Column 5 = Number birds having probable to speculative affinity. See remarks in accompanying report.

Michael Daniels 7.9.1994.

John STEWART started a Ph.D. the title of which is "Size and Quaternary birds" and the aim is to investigate the taxonomic status of Quaternary bird fossils using a number of key taxa in the Palaeartic. These taxa are ones which have received attention in the past due to differently sized birds which have been variously interpreted as new species, new subspecies, or as differently sized populations of modern specie. The taxa are: *Lagopus*, Corvidae, *Grus*, *Turdus*, *Sturnus*, *Apus*, *Scolopax rusticola*, *Pinguinus impennis*, *Phalacrocorax*.

The examination of modern comparative material from geographically distant areas on a North-South transect accross Europe is being conducted with a view of better understanding Quaternary birds. To this end he has so far visited Spain (Fran HERNANDEZ and Antonio SANCHEZ) and Belgium as well as a number of institutions in Britain.

HUNGARY

Denes JANOSSY is working among others on subfossil bird remains received from the Director of the Archaeological Institute of Hungary, S. Bökönyi.

The Middle-Eastern matter originates from the South of the Eastern side of the Jordan-Valley-Graben, South from the Dead Sea (Wasi el Araba, Jordan). The name of the locality is Beidha, its age is Pre-Pottery-Neolithic. Considering that subfossil bird remains are very insufficiently known from the Middle East, the list of the determined material, and bone numbers, is as follows:

Egretta garzetta Linné (1), *Casarca ferruginea* Pallas (1), *Aquila* cf. *heliaca* Savigny (2), *Aquila* cf. *chrysaetos* Linné (1), *Milvus migrans* Boddaert (13), ? *Elanus caeruleus* Desfontaines (1), *Circaetus gallicus* Gmelin (1), *Accipiter nisus* Linné (1), *Gypaetus barbatus* Linné (1), *Alectoris graeca* Meisner (16), *Otis tarda* Linné (3), *Chlamydotis undulata* Jacquin (1), *Crex crex* Linné (1), *Columba* cf. *livia* Gmelin (8), *Corvus* cf. *hipidurus* Hartert (2).

Nearly all members of the list are nesting today in this territory, or they are migrating through it. Only the great bustard's wintering territories are much more in the north, to about 34° latitude line (Damascus-Tikrit). The size of an osteologically typical bustard bone falls in the middle between the female of the Great Bustard and the Little Bustard (*Tetrax tetrax*), and agrees in its dimensions and proportions with the Houbara (*Chlamydotis undulata*). Two terminal phalanges (claw bones) of large raptors agree with that ones of the Imperial Eagle (*Aquila heliaca*) and fewer with that of the Steppe Eagle (*Aquila rapax*). Remarkable is the relatively numerous material of kites (*Milvus migrans* and not *M. milvus*). The role of the phenomenon is not clear (bird of refuse dumps as today ?). A fragment of a tarsometatarsus, with *Milvus*-like osteological features, but shorter and broader than the kites (length would be ca. 40 mm), may originate from the Black-winged Kite (*Elanus caeruleus*), known as an occasional vagrant in the Levant territory today. The determination is uncertain in absence of

comparative material. The Rock-partridge (*Alectoris graeca*) was surely the food of prehistoric man. The nomenclature of the different semi-species is very disputed (*A. kakelik*, *A. saxatilis*, *A. graeca*, *A. chukar* - only *A. melanocephala* seems to be very distinct in plumage). In any case in Recent literature for the Dead Sea Depression and Sinai, different subspecies of "*A. graeca*" are given. Last but not least, two bones originating from large Corvids, falling in size between *Corvus frugilegus* and *C. corax*, are characteristic for *C. rhipidurus*, today very widespread in the territory.

The ornithofauna of the Neolithic in Beidha expands our knowledge about the bird assemblage in the south of the Levant viz. the Middle East of this period considerably.

NEW ZEALAND

T. H. WORTHY has continued the survey of Quaternary fossil sites in the South Island during the last year with much fieldwork in the South Canterbury region of South Island. 40 new sites were found - primarily predator (Laughing Owl) accumulated fissure deposits. 62 species of bird, tuatara, geckoes, skinks, 2 species of bats, and fish bones are represented in these deposits, which provide a rich insight on the small vertebrate fauna of the region. He also has started work on the task of identifying the Amsterdam Island collection of bones made by Joseph MARTINEZ in 1983-84.

A study of the *Dinornis* species group of moas has finished this year with the conclusion that there were only three species in this genus, in which species differ primarily in size and skull morphology. Isolated leg bones, which predominate in collections, may not be identifiable other than to the smaller or larger species pairs.

As the Museum of New Zealand Te Papa Tongarewa (formerly National Museum of New Zealand) prepares for moving onto a new site in 1998, preparation of displays threatens to overshadow all other museum functions. A review of the future and scope of research in the museum has recently been completed which came out strongly in favour of the museum conducting research within all disciplines, and recommended filling of vacant positions and the establishment of several new ones. Hopefully the Board will take on and action at least some of the recommendations. The position of Curator of Subfossil Birds is currently vacant following Phil MILLENER's departure in late 1993. However, despite this section is still functioning a little, and work has started on computerizing the catalogue of subfossil birds thanks to Sandy BARTLE.

COOPER A., ATKINSON I.A.E., LEE W.G., and WORTHY T.H. (1993) - Evolution of the moa and their effect on the New Zealand flora. *Trends in Ecology and Evolution*, 8 (12), p. 433-442.

HOLDAWAY R.N. (1994) - An Exploratory Phylogenetic Analysis of the Genera of the Accipitridae, with Notes on the Biogeography of the Family, p. 601-650. In Meyburg B.U. and Chancellor R.D. (Eds.) - *Raptor Conservation Today*, WWGBP/ The Pica Press.

HOLDAWAY R.N. and WORTHY T.H. - A new fossil species of shearwater (*Puffinus*) from the Late Quaternary of the South Island, New Zealand, and notes on the biogeography and evolution of *Puffinus gavia* superspecies. *Emu* (in press).

VICKERS-RICH P., TRUSLER P., ROWLEY M.J., COOPER A., CHAMBERS G.K., BOCK W.J., MILLENER P.R., WORTHY T.H., and YALDWYN J.C. - Studies on the morphology, myology, collagen and DNA of a mummified Upland Moa *Megalapteryx didinus* (Aves: Dinornithiformes) from the South Island of New Zealand. *Mus. New Zealand Publ.* (in press).

WORTHY T.H. (1994) Reappraisal of *Dinornis* (Aves: Dinornithiformes) species - a morphometric analysis. *New Zeal. Journ. Zool.*, 21, p. 113-134.

WORTHY T.H. - Late Quaternary changes in the moa fauna on the West Coast of the South Island, New Zealand. Conference on Australasian Vertebrate Evolution, Palaeontology and Systematics, Adelaide, April 1993. *Records of the South Austral. Mus.* (in press).

WORTHY T.H. - Description of some post-cranial bones of *Malacorhynchus scarletti*, a large extinct Pink-eared duck from New Zealand. *Emu* (in press).

WORTHY T.H. and HOLDAWAY R.N. - Scraps from an owl's table - predator activity as a significant taphonomic process newly recognised from New Zealand fossil deposits. *Alcheringa* (in press).

POLAND

Zygmunt BOCHENSKI prepared the "History of Herons of the Western Palaearctic"; the paper was presented during the Round Table : "History and Evolution of the European Avifauna" at the XXI IOC in Vienna and will be published most probably in 1995. Together with Teresa TOMEK he finished a paper "Late Pleistocene and Holocene bird remains from 5 caves in Eastern Austria". The material described is very rich (84 taxa) and interesting. The comparison of fossil bones of *Lagopus mutus* with recent bones of this species living in the Alps indicates the same evolutionary tendencies as in *Lagopus lagopus* described earlier by Zygmunt. The paper is to be published this winter in *Acta zool. cracov.*

Zbigniew M. BOCHENSKI finished his doctor thesis "The comparative osteology of grebes (Aves: Podicipediformes) and its systematics implications". The paper contains descriptions of the skeletons of 16 species of grebes, metrical data and some systematic implications. It will be published in winter in *Acta zool. cracov.* Together with Teresa TOMEK he worked also on the Late Pleistocene to Holocene bird bone material from the locality of "Oblazowa 1". They finished also a paper on the fragmentation of bird bones in pellets of the Long-eared Owl (the second paper of the taphonomic series) and submitted it to *Acta zool. cracov.* After doctor exams in October, Zbigniew is going to spend ten months at the Zürich University working on some taphonomic problems.

Teresa TOMEK, besides the researches done together with Zygmunt and Zbigniew (mentioned above) identifies the rich Late Pleistocene material from Krucza Cave near Krakow. 67 bird taxa have been identified by now. Teresa completes also her paper on the Recent bird fauna of North Korea - the first part of it containing non-Passerines is going to be finished in 1995.

The comparative collection of Recent bird skeletons has been still developing by the way of collecting and exchange of specimens. It contains now about 920 bird species represented by complete skeletons and coming from all continents.

BOCHENSKI Zb., TOMEK T., BOEV Z. and MITEV I. (1993) - Patterns of bird bones fragmentation in the Tawny Owl (*Strix aluco* L., 1758) and the Eagle Owl (*Bubo bubo* L., 1758) and their taphonomic implications. *Acta zool. cracov.*, 36 (2), p. 313-328.

BOCHENSKI Z. (1993) - Catalogue of fossil and subfossil birds of Poland. *Acta zool. cracov.*, 36 (2), p. 329-460.

NADACHOWSKI A., HARRISON D.L., SZYNDLAR Z., TOMEK T., and WOLSAN M. (1993) - Late Pleistocene vertebrate fauna from Oblazowa 2 (Carpathians, Poland): palaeoecological reconstruction. *Acta zool. cracov.*, 38 (2), p. 281-290.

RUSSIA

Moscow

The activity of F. Ya. DZERZHINSKY was connected last year with the study of comparative and functional morphology of the jaw apparatus of Gruiformes which allow us to assess their morphological uniformity, and to discover some significant aspects of their trophic adaptations. This work was performed by him in collaboration with his pupil, postgraduate student of the Faculty, Urana S. KUULAR. She is preparing her doctor's thesis with this respective title.

They have endeavoured to use the understanding of adaptations mentioned in application to questions of ecology and phylogenetics of this group. Their approach means consideration of all three components of so-called skeleto-muscular system - the skull, its ligaments and jaw muscles. Then they have analysed this complex by means of F. Ya. Dzershinsky's former biomechanical methods.

They have at their disposal heads of Gruidae (10 species), Rallidae (7 species), Aramididae (1 species), Eurypygidae, Cariamididae (1 species), Psophiidae (1 species), Rhinocetidae, Mesitornithidae (1 species), Otididae (3 species), and Turnicidae (1 species) - altogether 27 species from 10 families (almost all existing families except Heliornithidae).

Rhinocetus and *Psophia* seem to be relatively the most primitive representatives of this group. *Balearica* seems to be the most primitive of cranes. *Turnix*, as well as *Cariama*, appeared to them to be clearly separated from the other members of this order and so should be removed from it.

The similarity between *Eurypyga* and the Ardeidae appears to them to be of pure convergent nature, if that would "made" from the crane but these - from the stork.

Now they are busy with the preparation of papers, as yet only in Russian. To complete successfully this study they need to obtain two more species which were not available, one representative of Heliornithidae, and a relatively primitive rallid species of *Himantornis*.

The group of avian paleontologists was incorporated into the Laboratory of Ornithology in the Paleontological Institute of the Russian Academy of Sciences in 1992. The laboratory has a large collection of fossil birds (730 specimens from the Cretaceous to the Pliocene, and several thousand Pleistocene bones), a comparative collection of skeletons of recent birds (1280 species, 5000 skeletons), and fossil and recent eggshells. This rich collection is maintained and studied by only three scientists (E. KUROCHKIN, K. MIKHAILOV and A. KARKHU) without any technical assistance, therefore work on the maceration, catalogues etc. takes up a lot of their time.

E. KUROCHKIN was in the United States from November 1992 to May 1993, with funds from the Frank Chapman Memorial Fund of the American Museum of Natural History where work was mainly carried out on the comparison and description of the Early and Late Cretaceous birds from Mongolia (Enantiornithines, Hesperornithids, paleognaths, and carinate Graculavids, Procellariiforms and Pelecaniforms). He hopes that some papers with descriptions of these new Cretaceous birds will soon be published in English. At present the avian paleontologists have turned their interest back to Russia after Mongolia, and collected some new Cretaceous birds from Central Russia.

After finishing the project on the Tertiary Apodiformes, A. KARKHU started a study of the Paleogene birds of Mongolia and Kazakhstan. He spent June 1993 in Central Kazakhstan to collect new material, and July and August 1994 in Eastern Kazakhstan. He is participating in a joint Kazakh-American Project on the Paleogene of Kazakhstan. He found some new material of the Early Miocene *Urmiornis*, and after some revision of all Ergilornithidae, he decided that *Urmiornis* and *Amphipelargus* are valid genera.

Konstantin MIKHAILOV has been working in 1994 with David UNWIN in the Geological Department of the Bristol University, supported by a Royal Society postdoctoral Fellowship. This grant was promoted by a Joint Research Initiative between the Bristol Vertebrate Paleontology Group and the Paleontological Institute of the Russian Academy of Sciences.

In June 1994 Konstantin visited Karl HIRSCH, met his fossil-egg staff in Boulder and Denver, Colorado, and was shown interesting bird' eggs from the Oligocene of the Western Interior. Thanks to the kind generosity of K. HIRSCH and Emily BRAY, Konstantin was able to visit many Jurassic and Cretaceous egg-localities in Colorado and Montana.

During his work in Bristol, Konstantin has been preparing a monograph (in English): "Fossil and Recent Eggshells of amniotic vertebrates: Fine structure, comparative morphology and classification" which he hopes to publish in Special Papers in Paleontology. He has also been preparing for publication a series of papers on the results of a comparative eggshell structure investigation in different families of birds. This work, based on SEM studies conducted over the last 6 years, has a number of higher taxonomic and phylogenetic implications. The first papers are on the unique eggshell structure of Accipitrid birds (including *Pandion*), and differences in eggshell structure between *Scops*, *Balaeniceps*, Pelecaniform and Ciconiiform birds.

St. Petersburg

In summer 1994 Gennady BARYSHNIKOV was invited as specialist of mammals to the expedition to Denisova Cave, Altai mountains, South Siberia. It is situated at 650 m and contains Mousterian and Late Paleolithic deposits. He paid a special attention for collecting bird remains and managed to find some hundreds bones, primarily consisting in Passeriformes and small Galliformes. The collection will be studied by Olga POTAPOVA.

Olga POTAPOVA is working on a paper on Willow Grouse and Ptarmigan from the European part of Russia, for the volume to be published by Illinois State Museum in 1995. Under her study are birds from the Grotto Bolshoi Glukhoi from the Middle Urals, grouse from Ust-Poluisk settlement in the north-western Siberia, and marine assemblage of birds from Mayak-2 site in Kola Peninsula. The latter site yielded bones of the Great Auk (*Pinguinus impennis*) being the easternmost point of the species range in the north, and the first record of subfossil bird bones in Russia.

Andrey V. PANTELEYEV also works in the Department of Ornithology of the Zoological Institute. He studies fossil birds from Asia and is particularly interested in Passeriformes.

AVERIANOV A. O., PANTELEYEV A. V., POTAPOVA O. R., NESSOV L. A. (1991) - Bony-toothed birds (Aves: Pelecaniformes: Odontopterygia) from the Upper Paleocene and Eocene of the west edge of Ancient Asia. *Proc. Zool. Inst.*, 239, p. 3-12 (in Russian).

KARKHU A.A. (1992) - Birds of the neolithic site of Jazikovo I. Multilayer sites of Upper Volga. Institute of Archaeology. *Nauka*, Moscow, p. 129-135 (in Russian).

KUROCHKIN E.N. (1991) - *Protoavis*, *Ambiortus*, and other palaeornithological rarities. *Priroda*, 12, p. 43-53 (in Russian).

KUROCHKIN E.N. (1992) - Paleontological history of the cranes and their closest relatives. *Anima Magazine of Natural History*, 232 (1), p. 54-58 (in Japanese).

KUROCHKIN E.N. (1992) - The flight of *Archaeopteryx*. *Priroda*, 6, p. 47 (in Russian).

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SOUTH AFRICA

Pippa HAARHOFF attended the 8th Biennial Conference of the Paleontological Society of South Africa, which was held in Grahamstown from the 4th to the 10th September 1994. She presented a paper titled: "An update of the Early Pliocene birds of Langebaanweg (Cape Province) with particular reference to the raptors and owls". This was basically a review of the work done on the avifauna by G. G. Simpson, P. V. Rich, S.L. Olson, Tim Crowe and P. Haarhoff since the first paper was published by G. G. Simpson in 1971.

The 9th Biennial PSSA Conference will be held in Stellenbosch in 1996, probably in September.

Anusuya CHINSAMY has extended in the past year, her research on bone histology of modern birds and nonavian dinosaurs to look more closely at bones of Cretaceous birds. A histological account and the significance of the microstructure of *Patagopteryx* and Enantionithine bones has recently been published in *Nature*. These birds were found to exhibit growth rings in their bones. This characteristic makes them physiologically distinct from extant birds which sustain a rapid rate of bone formation,

without any pauses or interruptions. A longer version of the "telegraphic" Nature paper will shortly be published.

Recently Larry MARTIN very kindly provided Anusuya with some *Hesperornis* material, and will also give her some *Cimolopteryx* and *Ichthyornis* specimens. Sankar CHATTERJEE has also provided some of his Cretaceous loon material for histological study. Her studies of these birds will hopefully provide a better understanding of the bone microstructure of early birds and direct indications about their growth rates and possible physiology. These studies will be complemented with her ongoing studies of nonavian dinosaurs and extant bird species.

As of the 1 November 1994 Anusuya CHINSAMY will be taking on a position at the South African Museum as a research scientist (see changes of addresses).

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SPAIN

Juan Carlos RANDO, from the University of La Laguna, in Tenerife, is working on bird bones from volcanic caves of Tenerife, and from different archaeological sites of Canary Islands. These works reveal new data on zoogeography for extinct and recent species. At the same time, they make it possible to give an approximation for the date of extinction of several species, and calculate the impact caused by the human populations of the Canary Islands on the communities of insular vertebrates.

This summer Fran HERNANDEZ went to Stockholm, to work with Per ERICSON, and also spent some days in the Zoological Museum of Copenhagen to have a look to the collection. In September he intended to go to Munich to see the bird collection of the late Prof. BOESSNECK, and to attend the ICAZ meeting in Konstanz. In October, together with Arturo MORALES, they intended to go to Syria to start to build up an osteological collection.

In the meantime, Fran would like to finish his thesis next year. He is concentrating only on the Holocene material, because most of the Pleistocene material was identified in the beginning of the century, it seems that there was a lot of misidentifications, and he has no time to check all the material

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SWEDEN

Tommy TYRBERG is continuing his studies on Pleistocene avifaunas and is currently working on two papers, one about Late Pleistocene Seabirds, and one about the Late Pleistocene /Early Holocene avian colonization of Scandinavia. Together with Fran HERNANDEZ he has also written a short paper on the first fossil record of Great Skua, *Catharacta skua*, from Cueva de Nerja in Spain, which has been submitted.

When the monograph on Swedish subfossil birds, which he has been working on for several years together with Per ERICSON is finished, which will hopefully be soon, he is planning to turn the large database of Pleistocene avifaunas from the Palearctic that he has collected over the years into publishable form. It currently comprises c. 1340 sites, but he knows it to be incomplete for some areas and he is therefore seeking additional information from workers active in this field. He would like to take this opportunity to thank the many members of the SAPE who have responded to his seemingly unending request for reprints.

UNITED STATES

Gainesville

This Fall term, Bob CHANDLER is teaching a course at the University of Florida called Systematics and Biogeography of birds.

Research continues on the Santa Fe River with great success. The first partial humerus of *Titanis walleri* has been found and published. Also parts of almost all the limb bones have now been found for *Titanis*. In February, Bob visited the Field Museum of Natural History, Chicago, to study phorusrhacids with good results. Bob has received supplemental funding from the International Division of National Science Foundation to go to Argentina to study phorusrhacids in museums in Buenos Aires, La Plata, and Tucuman, and to do field work. He has also been asked to study some Eocene fossil birds from the Omomys Quarry, Bridger Formation, Wyoming, and Florissant, Colorado.

For the last two years, Bob has been an Associate Editor for the Birds of North America, a project supported by the Academy of Natural Sciences, Philadelphia, and the American Ornithologists' Union. He edits or writes the Fossil History accounts for each species.

Steve EMSLIE has spent the past year at the Florida Museum of Natural History where he has been completing research on a late Pliocene death assemblage of cormorants and other seabirds. This research has resulted in the publication of one paper in *Science* with Gary MORGAN (1994, vol. 264, p. 684-685), while another paper describing the species from this site currently is in press with the *Journal of Vertebrate Paleontology*. A third paper on the taphonomy of the site is in preparation.

Steve also has continued his research at King George Island, Antarctic Peninsula, where last year he completed a study on predation at penguin colonies by avian predators with Nina KARNOVSKY and Wayne TRIVELPIECE. This research was presented as a poster recently at the Scientific Committee on Antarctic Research (SCAR) meeting in Venice, Italy. After this meeting, Steve and Nina enjoyed the warm hospitality of Cécile Mourer-Chauviré and Jacques Cheneval at the Université Claude Bernard Lyon 1. Steve spent one day here comparing fossil penguins that he collected from Northern Chile last year with fossils from Peru that Jacques reported on in an earlier SAPE newsletter. The Chilean fossils date to the late Miocene/early Pliocene and represent a single species of penguin very similar, and perhaps ancestral, to the living Humboldt Penguin (*Spheniscus humboldti*). A small species of cormorant (*Phalacrocorax* sp.) also is represented by a smaller number of fossils from this deposit. Steve hopes to continue investigations at the Chilean locality in the future. After completing the work in Lyon, he continued to Paris where he was given a tour of the collections and facilities at the Natural History Museum by Dr. Christine Lefèvre. Steve passes on his many thanks to Cécile, Jacques and Christine for the warm welcomes he received during his visits.

Steve also has recently been awarded a new NSF grant to study avian extinctions in the Plio-Pleistocene of Florida, in relation to climatic change and sea-level fluctuations. This study will employ GIS software to model sea-level positions with the excellent record of fossil birds from this state. He also will be completing description and publication of several important fossil avifaunas from Florida including those from Inglis 1A, Haile 16A, Haile 7C, and the Cutler Hammock. In August, Steve will be moving to Western State College, Department of Sciences, Gunnison CO 81320, where he has accepted the Thornton Visiting Scholar position to teach and complete research with undergraduate students for one year. He will continue his work in Florida through this position and can be reached at the above address after August 1994 (see changes of addresses).

Lincoln

Although Douglas SIEGEL-CAUSEY's research is focused primarily on Recent birds, Christine LEFEVRE (Muséum d'Histoire naturelle de Paris) and he have been working on mid-late Holocene deposits in the western Aleutian Islands. Since coming to Nebraska, he has started work on avian fossils recovered from numerous sites in Nebraska associated with the Arikaree Formation (Lower Miocene). The diversity and abundance of fossil specimens are extensive and in very good condition. The depositional habitats appear to be fluvial and lacustrine in a semi-arid continental interior environment. Mammalian fossils indicate the presence of typical sandy ephemeral or intermittent braided streams and interchannel plains. Preservation has been enhanced by extensive eolian transport of fine pyroclastic detritus which blanketed the region during the time span of about 15 my. In other words, the bones fall out of the matrix and there is a lot of material.

Los Angeles

At the Natural History Museum of Los Angeles County there has been considerable instability and upheaval because of a prolonged governmental budget crisis. The Museum, an institution funded

primarily by the government of Los Angeles County, has endured two sizable budget cuts, one in January of 1993, and the other in August, 1993. As a result the Museum has lost 87 of the 157 county positions it had on 1 January 1993. As far as vertebrate paleontology at the Museum is concerned, the following has occurred as a result of the two budget cuts: 1) A restructuring of the administration resulted in the creation of a Research and Collections Branch and the long-standing Divisions (Earth Science, Life Science, and History) were abolished. 2) The Vertebrate Paleontology Section and the Rancho La Brea Section were combined into one administrative unit, with Ken CAMPBELL as its head. 3) The former Chief Curator of the Earth Sciences Division, five curators, two curatorial assistants, and three preparators were laid off from their County positions. Two curators, one curatorial assistant, and one preparator were rehired as Museum Foundation employees. Two collections managers retain their county positions. The bottom line is that we have lost half of our staff in the last nine months, which has made for some very difficult times indeed for LACM.

With Ken CAMPBELL continuing at LACM it appears that avian paleontology will also continue. Some interesting, and very exciting, bird fossils have come to light recently. At Rancho La Brea, all of the boxes of miscellaneous materials of the old collections have finally been processed; i.e. cleaned and sorted. This has meant that Ken can now proceed with the organization and identification of the entire older RLB bird collection without having to start over again every few months. This effort immediately led to the recognition of a new species of crane. Two smaller, new collections have also each produced a new taxon for the fauna. One is a lapwing and the other is a giant eagle. All of these taxa are currently being described. There is no doubt in Ken's mind that many additional new taxa will be recognized in the Rancho La Brea fauna as work progresses.

The most exciting find of the year in California has been a partial humerus of what appears to be yet another group of giant flying birds. The humerus is closest in characters to the teratorns, but it is also remarkably different in quite striking ways from those of the two genera of the family whose humeri are known. A very rough estimate of its wingspan would be about 5+ meters. Ken hopes to have a description of this bird completed shortly.

Ken is continuing with his Amazonian research, but unfortunately they did not obtain NSF funding for the continuation of their faunal survey work in the Amazon Basin. They will continue to seek funding, however, and hope for better results next time. Ken does not know what effect his new administrative duties as head of the VP-RLB Section will have on his research programs but it will probably be significant. To those who wish loans or requests for information from LACM -- please bear with them as they adjust to new realities.

Fritz HERTEL completed his dissertation on ecomorphology of past and present vultures and raptors. Most of this work focused on the skull in relation to feeding behavior but now he is working on functional differences in the postcranial anatomy.

New York

From 31 October to 9 December 1993, during the austral spring and early summer, Allison V. ANDORS and François VUILLEUMIER surveyed breeding birds along a sinuous, 6500 km transect in Argentina and Chilean Patagonia that extended westward from the Atlantic coast to the Andes and southward from the Peninsula Valdes, Chubut (Lat. 42°30' S.) through Santa Cruz to the Canal Beagle, Tierra del Fuego (Lat. 55 ° S.). Approximately 153 avian species were observed, of which breeding was confirmed and documented in some 40.

A recently published study by VUILLEUMIER and ANDORS (1993) examined the extent of avian biological relationships between Africa and South America, including possible zoogeographic affinities between their fossil avifaunas. The avian fossil records of Africa (64 families, Middle Eocene-Quaternary) and South America (73 families, Lower Cretaceous-Quaternary) largely postdate the final

separation of those continents in the Cretaceous. One extinct (Pelagornithidae) and 35 extant families have a fossil record on both continents, and most are waterbirds with high potential for overwater dispersal. The fossil avifaunas from Africa and South America contain relatively few endemic paleo- and neofamilies.

In evaluating putative Afro-American vicariant patterns, these authors concluded that several divergences, involving the ostrich-rhea, cuckoo, barbet, and trogon clades, either occurred too late to have been affected by long-term plate movements (barbet, trogon) or occurred in conjunction with protracted Northern Hemisphere dispersal (ostrich-rhea, cuckoo). In general, African avifaunas have had a long (late Mesozoic and Cenozoic) history of exchange with those of Eurasia, whereas South American avifaunas have been characterized by prolonged isolation and relatively recent (Late Cenozoic) interchange with those of North America. Most of the avifaunal resemblance between Africa and South America seems to be of Cenozoic origin and to be adequately explained by dispersal.

Luis CHIAPPE has spent the last two summers participating in the joint American Museum of Natural History - Mongolian Academy of Sciences expeditions to the Gobi Desert. These expeditions were very successful, finding a large number of specimens of Cretaceous birds and dinosaurs closely related to them, in addition to an extremely productive new site (Ukhaa Tolgod) in the Nemegt Basin. Luis has been also working in the field in central and northwestern Argentina, where new specimens of enantiornithine birds were found along with the remains of freshwater pterosaurs. During the time that he did not spend in the field, Luis has been working in different projects that include the study of the anatomy and relationships of the bizarre *Mononykus* (together with Perle A., M. Norell and J. Clark), the bone histology of *Patagopteryx* and Enantiornithes and its physiological implications (together with A. Chinsamy and P. Dodson), and the description of different enantiornithine birds. Among the latter is a detailed study of the Spanish *Concornis lacustris* (co-authored with J. Sanz, A. Buscalioni and J. Bonaparte), and new species from Montana (together with D. Varricchio) and Alabama (with P. Ericson and J. Lamb). Last May, Luis attended a symposium on Gondwanan Dinosaurs in Patagonia (Argentina) where he presented papers on the phylogenetic relationships of *Mononykus*, and a review of the Mesozoic birds from Gondwana. In addition to these projects, he has devoted a great deal of time to a new technical book on Mesozoic birds: "Mesozoic birds: above the head of dinosaurs", which he will edit along with Larry WITMER (see last page of this Information letter).

Luis will stay at the AMNH at least until the end of 1995. His future projects in avian paleontology include several chapters for "Mesozoic birds", a section on birds for the Encyclopedia of Dinosaurs (Currie and Padian, eds.), the description of new specimens from the Gobi, and more field work in the Cretaceous of Argentina and Mongolia.

Pittsburgh

Bradley C. LIVEZEY is finishing up a chapter on "Heterochrony and the evolution of the avian flightlessness" for a book edited by K.J. McNamara (Evolutionary change and heterochrony; to be published by Wiley). He is also in the middle of a phylogenetic analysis of the Gruiformes, primarily as necessary background for a comprehensive review of the evolution of flightlessness in the Rallidae (including the subfossil species). He is also completing species-level analysis of modern representatives of the remaining tribes of Anseriformes, including the Dendrocygninae, Anserinae, Tadorninae, Aythyini, Oxyurini, and Mergini. Where possible, he will include well-represented fossil species in the analyses.

Washington

Storrs OLSON and Helen JAMES moved with their family to Oxford, England, for the entire year 1994. Helen is enrolled at Oxford University and working on a doctoral dissertation on the osteology and phylogeny of the Hawaiian finches (Drepanidini) that will incorporate all the new fossil species recently described by Helen and Storrs.

Storrs has been spending much of his time in England on a manuscript for semi-popular book with Helen on their Hawaiian fossil discoveries. They now have firm offers to publish this book from Academic, Oxford, and Yale presses, and must soon make a decision between them. They took the family to Kent where they spent a delightful weekend with amateur fossil collector Andrew OXFORD, who has a very interesting skeleton of a large bird with a duck-like bill from the Early Eocene London Clay, that Storrs thinks may be close to *Anatalavis* from the Paleocene (formerly Cretaceous) of New Jersey. Storrs has also been collaborating with Michael DANIELS on Michael's unparalleled collection of Early Eocene birds from the London Clay (see Micheal DANIELS' report).

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FOSSIL BIRDS ON STAMPS

American Topical Association Handbook 106 plus Supplements 1 and 2, "Birds in the World of Philately", lists more than 2000 species of birds on stamps. Some of these have been depicted several dozen times by various countries.

Fossil birds are poorly represented in this philatelic aviary but 12 genera now appear on stamps

issued by 20 countries. Numbers in parens are Scott catalogue numbers.

Aquila, Pleistocene. Cuba, 1982 (2544).

Archaeopteryx, Jurassic. Central Africa, 1993 (1019d); Congo People's Republic, 1993; Dhufur, 1975 (local, non-Scott); German Democratic Republic, 1973 (1448 - skeleton of *Archaeopteryx lithographica*); Guyana, 1993 (2662a and 2664c); Laos, 1994; Lesotho, 1992 (914 and 915); Mali, 1984 (506 and 509, #509 overprinted in 1992 and numbered 593); Niaufo'ou (Tin Can Island, Tonga), 1989 (120 - skeleton and reconstruction); Poland, 1966 (1400); Romania, 1993 (3849); St. Vincent, 1994; Sierra Leone, 1992 (1498e); United States, 1970 (1390 - Jurassic landscape).

Archaeotrogon, Eocene/Oligocene. Guyana, 1990 (902b).

Diatryma, Paleocene/Eocene. Dhufur, 1975 (local non-Scott); Manama, 1971; Oman, 1975 (local, non-Scott); Yemen Arab Republic, 1990.

Dinornis, Pleistocene. Afghanistan, 1988 (1285); Laos, 1994; Montserrat, 1992 (794 - souvenir sheet, Sir Richard Owen holding a fossil moa limb bone).

Dronte (? Dodo). Laos, 1994

Hesperornis, Cretaceous. Laos, 1994; Sierra Leone, 1992 (1498m and souvenir sheet #1499).

Ornimegalonyx, Pleistocene. Cuba, 1982 (2542).

Palaelodus, Oligocene/Miocene. Guyana, 1990 (902a).

Phororhacos, Miocene. Guyana, 1990 (902h); Laos, 1988 and 1994; Yemen Arab Republic, 1990.

Protoavis, Triassic. Guyana, 1993 (2662d); St. Vincent, 1994.

Teratornis, Pleistocene. Laos, 1994.

Unidentified vulture. Guyana, 1990 (902c).

Wallace L. ASHBY
Port Republic, MD, U.S.A.

ANNOUNCEMENT

Mesozoic Birds: Above the heads of Dinosaurs

University of California Press

Luis Chiappe and Lawrence Witmer (Editors)

As we all know, the last 15 years have produced numerous new Mesozoic birds which information have dramatically changed our conception of the early history of birds. It is our great pleasure to announce that much of this new evidence will be available in a technical book. "*Mesozoic birds: above the heads of dinosaurs*" has been approved for publication by the University of California Press. This

volume will contain chapters dealing with different aspects of the biology of Mesozoic birds, including their origin, anatomy, systematics, and biomechanics. In this way, this project will characterize the many new discoveries, update the previous knowledge, raise a discussion about several controversial taxa, and ultimately provide the structure for further research on the early evolution of birds. Colleagues from all over the world have joined this project. Without their enthusiastic participation, a comprehensive work such as this would not be possible. To all of them, thank you.

**International Council for Archaeozoology
BIRD BONE WORKING GROUP
SECOND MEETING**

Southampton, England, 25th to 28th September 1995

The bird Bone Working Group was established in 1992. A successful inaugural meeting was held in Madrid that year and the 22 papers from the meeting were published in 1993 in Volume 2 of *Archaeofauna*, Madrid.

The second meeting will be held at the University of Southampton. There will be lectures and posters on all aspects of bird remains in archaeology: the exploitation of wild and domestic birds, changes in bird distributions in the prehistoric period, and problems of identification and bone survival. The proceedings will be published, probably in a special issue of the *International Journal of Osteoarcheology*.

The programme will also include a one-day field trip to Dorset to visit a 600-year old swannery and other sites of ornithological and archaeological interest, a business meeting and a conference dinner.

For information write to Dale SERJEANTSON, Faunal Remains Unit, Department of Archaeology, University of Southampton, Southampton SO17 1BJ, U.K., Tel. (0) 703 676719, Fax. (0) 703 593032.

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This information letter has been compiled by Cécile Mourer-Chauviré, Secretary of the SAPE. A contribution of ten US dollars, or the equivalent in other currencies, for assisting in defraying xerocopies and mailing expenses, will be highly appreciated (banknotes in major currencies preferred).

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