

TRIBULUS

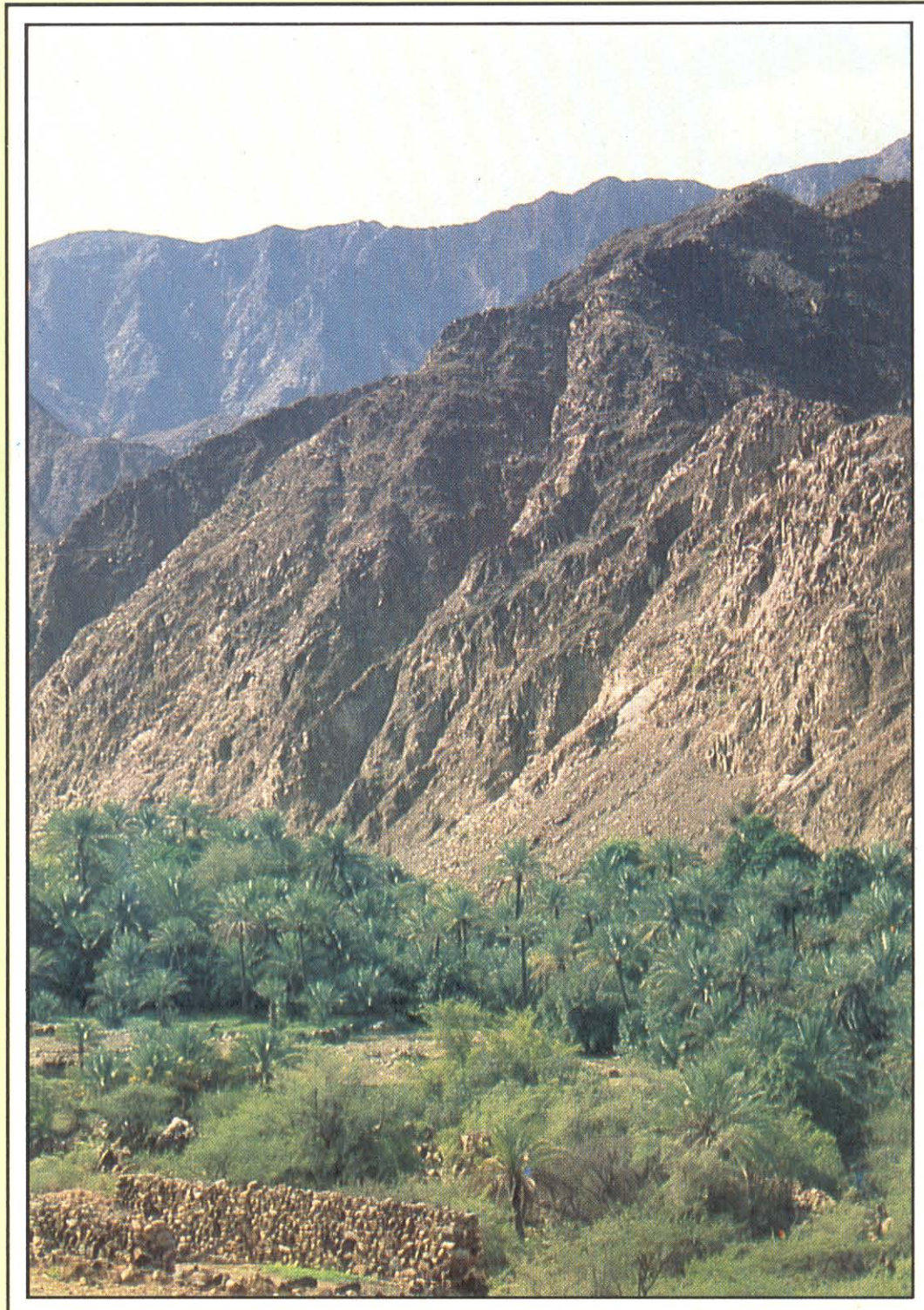


Bulletin of the Emirates Natural History Group

Vol. 2.1

APRIL 1992

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NOTES FOR CONTRIBUTORS

TRIBULUS is the new name given to the Bulletin of the Emirates Natural History Group. The group was founded in 1976, and over the next fourteen years, 42 issues of the Bulletin were published. The revised format of TRIBULUS permits the inclusion of black and white and colour photographs, not previously possible.

TRIBULUS is published twice a year, in April and October. The aim of the publication, as for the Bulletin, is to create and maintain in standard form a collection of recordings, articles and analysis on topics of regional history and natural history, with the emphasis focussing on the United Arab Emirates and adjacent areas. Articles are welcomed from Group members and others, and guidelines are set out below. The information carried is as accurate as the Editorial Committee can determine, but opinions expressed are those of the authors alone.

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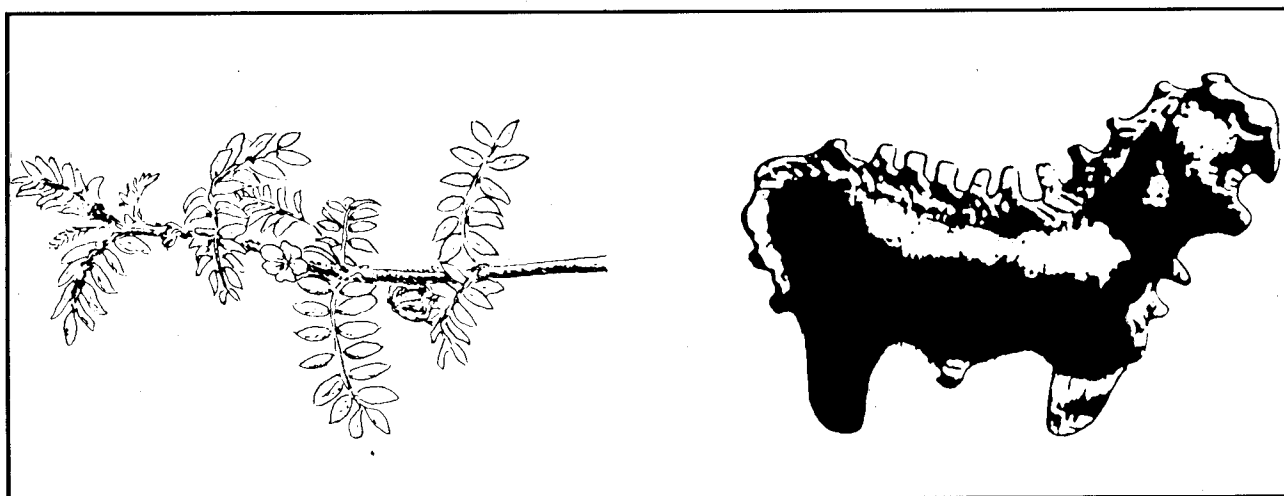
Editorial Board:

H.E. Sheikh Nahyan bin Mubarak al Nahyan, Patron

A.R. Western, Chief Editor,

J.N.B. Brown,

P. Hellyer.



The plant motif above is of the genus *Tribulus*, of which there are six species in the UAE. They all have pinnate leaves, yellow flowers with free petals and distinctive five-segmented fruits. They are found throughout the country, except in coastal sabkha.

The animal motif above is of a tiny golden bull, excavated from the early Second Millennium grave at Qattarah, Al Ain. The original is on display in Al Ain Museum, and measures above 5 cm by 4 cm.

Manuscripts should be typed, on one side only, and double-spaced, and may be submitted in either English or Arabic. A short abstract should precede the article, with the address(es) of the author(s) at the end. For Arabic contributions, a short summary in English, of not more than 200 words, should also be supplied.

Photographs may be submitted and should be either glossy black-and-white prints or colour slides, which should be clearly captioned. Line drawings and maps should be in black ink on strong white or translucent paper.

References should give the author's name, with the year of publication in brackets, and with the list of articles, showing title and publisher, in date order.

Scientific names should follow customary nomenclature in Latin, while the English and, if appropriate, available Arabic names should also be supplied.

TRIBULUS

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(Colour Illustrations will be found between Pages 18 and 19, and are included with support from the Union National Bank).

Cover Illustrations:

English : A view of the Wadi Hail, Fujairah (P. Hellyer)

Arabic : The edge of desert and mountain, Idhn, Ras al Khaimah (A.R. Western)

The Editorial Board of TRIBULUS and the Committee of the Emirates Natural History Group acknowledge, with thanks, the support of the Group's Corporate members, a full list of whom can be found on Page 29, without whom publication in this format would be impossible.

We also acknowledge the support and encouragement of our Patron, H.E. Sheikh Nahyan bin Mubarak al Nahyan, the U.A.E. Minister of Higher Education.

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Editorial

News earlier this year of the discovery in Oman of what may be the ancient city of Ubar reminds me of John MacRae's article in E.N.H.G. Bulletin No. 10 (March 1980). There he relates the account of a pilot named Raymond O'Shea, based at Sharjah in 1944-45, who claimed to have found the ruined city of Qara, or Qarah, some 28 kilometres south of the Liwa. O'Shea's journey by jeep and camel via Buraimi, Tawi Numayriyah and the Liwa can now clearly be seen to be a figment of his imagination as he piles on inconsistency after inconsistency. The site of his Qara has never been reported since 1945, despite being in his own words being a mere ten miles east of a populated oasis of the same name. His description of certain hills and settlements, too, do not match their known equivalents. It seems that O'Shea is just one of that large number of people over the centuries who have been entranced by an El Dorado of Arabia, and that fact and fable have merged inextricably.

It is interesting that the discovery of Ubar at the village of Shis'r, several hundred kilometres from O'Shea's 'find', is in the Qara Hill range of Oman's Dhofar region. The 1991-92 expedition was the result of modern scientific research dating back to 1984 when the space shuttle Challenger took a number of high-definition photographs of Southern Arabia. This technique had already been exploited by mineral-mapping concerns and for tracing ancient water courses beneath Arabia and the Sahara, but this is the first time it was used to look for ancient tracks and trade routes. A combination of literary legend and careful examination of likely tracks homed in on an area on the edge of the Empty Quarter some 150 kilometres north of Salalah. Could this be the ancient road reported by the explorer Bertram Thomas in 1931 on his epic camel journey across the southern Arabian sands? His own guides assured him that this was indeed the road to Ubar, swallowed up in the dunes. Thomas did reach Shis'r water hole, where he described the ruins of a "rude fort" which he estimated to be about a century old at most. He certainly did not equate the site with the fabled city described by Al-Hamdani, the sixth century A.D. historian, as built to imitate paradise.

And there the matter lay until Sir Ranulph Fiennes' recent expedition also found that all roads led to Shis'r. Excavations in January and February this year revealed a far more extensive settlement than Thomas could have thought possible some sixty years ago. The chief archaeologist at the site, Dr. Juris Zarins, estimates that the settlement could have been occupied continuously for three thousand years, from around 2,800 B.C.,

judging from pottery evidence. More research is obviously needed to prove that the site is indeed Ubar, but there is no doubt that it was connected with the frankincense trade, and that trade was flourishing across Arabia from its source in Dhofar 2-3,000 years ago.

Another tantalising piece of evidence comes from the fact that the settlement seems to have fallen into a shallow underground cavern around 400 A.D., at which time it was abandoned and left to the shifting sands. This particular event is also referred to in the Arabian Nights stories and also in the Koran, which relates that the city of Irem (Ubar) in southern Arabia was punished by Allah for the sinful and unrepentant lives of its citizens. Radar readings of the geological formations at Shis'r confirm the collapse of the site some 1600 years ago.

The results of proper archaeological excavations are keenly awaited.

The sands of Arabia still cover a vast amount of archaeological and palaeontological material. Local Bedouin who cross the edge of the Empty Quarter on their way to hunt in Yemen have shown us pictures of permanent water holes where they report the existence of quantities of scattered inscribed pottery of unknown provenance, while the Group's own archaeologists over the years have found ample evidence of stone tools of at least proto-Neolithic age.

On the palaeontological side, Peter Whybrow reports in this issue on his recent work in the Western Region, while Carolyn Lehman reviews some of the UAE's fossil marine fauna, the echinoids and Peter Hellyer reviews work at one of the UAE's key archaeological sites, at Tell Abraq.

In keeping with the objective of TRIBULUS of providing reports on a broad range of topics, Dr. Reza Khan writes on the birds of the Al Ain Zoo, the largest in the Middle East, while the Asclepiadaceae (Milkweeds), one of the country's plant families, is examined. Other material includes a preliminary list of the UAE's butterflies, prepared by Bish Brown, and a report on the occurrence of botulism among some of our birds.

The Notes and Queries section has been expanded considerably, while for the first time, a book review is included. The Editorial Board will continue to welcome such short items, and invites correspondence on any of the articles, or on other topics related to the UAE's history and natural history.

ROB WESTERN

Fossil sea-urchin tests found in the U.A.E. and adjacent areas

PART 1: The 'Regulars'

Some Descriptive Notes and Identification Aids

Compiled by Carolyn Lehmann

Exposed formations of fossil-bearing sediments containing marine deposits from the late Cretaceous Period are found in the U.A.E. and Oman. This paper, in two parts, attempts to describe and illustrate some of the fossilized echinoid tests occurring therein. Although other species are present, some are rare and only those which have been collected by Group members are included here. The accompanying photographs of each species were chosen to illustrate particular characteristics. Preliminary field identification was done by Dr. Andrew B. Smith, Department of Palaeontology, British Museum (Natural History); taxonomic studies continue at present. Glossary appended.

PERIOD: PHYLUM : Echinodermata SITES : Jebel Buhaays
Late Cretaceous CLASS : Echinoides J. Huwayyah (Fossil Valley)
Maastrichtian approx. 77-65 million years ago J. Rawdah

Subclass: Regularia

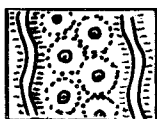
'Regular' sea urchin skeletons are circular in outline, spherically shaped with varying degrees of distortion, i.e. flattened, domed, conical etc. and have a 5-fold (pentameral) radial symmetry. Evolutionarily older than 'irregulars,' the anus always lies within the apical disc and the anus and mouth are centred opposite each other, the mouth being on the bottom (ventral/oral surface) and the anus on top (dorsal/aboral surface). Except for the order Cidaroida, the peristome is notched by gill slits.

Order : CIDAROIDA

Family : Cidaridae

'Cidaris' cf. scabra (GAUTHIER)

Small, spherical test only slightly flattened top and bottom. Periproct and peristome relatively large. Narrow, somewhat sinuous (wavy) ambulacra have rows of many distinct and furrowed pore-pairs outlining two rows of extremely minute tubercles. One pore-pair per tubercle and only one primary tubercle per plate.* This simple ambulacral plate structure with no compounding is characteristic of cidarids. Interambulacra carry two offset rows of prominent, well developed primary tubercles which are perforate but not crenulate; largest at centre of test, becoming smaller both orally and aborally. Each tubercular plate is ringed by a raised edge of tiny tubercles.



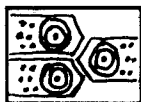
* Note: Magnification is often required to count pore-pairs.

Order : PEDINOIDA

Family : Orthopsidae

'Orthopsis millaris (D'ARCHIAC)

Rather large test of depressed, discoidal shape. Small to tiny tubercles (no large ones) on both ambulacra and interambulacra give a fine surface



تحتوي بعض الصخور المكشوفة الموجودة في دولة الإمارات العربية المتحدة وسلطنة عمان على بعض الحفريات التي تعود الى العصر الطباشيري.. يستعرض هذا المقال بعض الشوكيات التي اكتشفها أعضاء الجمعية في دولة الإمارات.. مرفق في الصفحات الوسطى بعض الصور حول هذا الموضوع..



appearance overall. Apical disc of small plates surrounds circular periproct. Ambulacra have two rows of primary tubercles with 3 pairs of pores per tubercle, while wide interambulacra have four rows of primaries; numerous scattered secondaries. Tubercles perforate but not crenulate.

Order : CALYCINA

Family : Saleniidae

Salenia cossiae (COTTEAU & GAUTHIER)

Somewhat flattened top and bottom with a 'knobby' outline. Large, prominent, elevated apical disc contains an 'extra' plate (suranal plate) which displaces the small round periproct to an off-centre position. Very narrow ambulacral areas have two offset rows of many fine, even tubercles, appearing raised down the centre between a row of tiny pore-pairs on either edge; 2 pore-pairs per tubercle.* Wide interambulacra contain two offset rows of large imperforate, crenulate, primary tubercles and scattered secondaries.

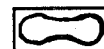


Order : PHYMOSOMATOIDA

Family : Phymosomatidae

Phymosoma sp.

Slightly sunken towards centre on both top and bottom (biconcave), giving a tire-shaped appearance. Apical disc always missing, leaving large pentagonal opening. Dorsal ambulacra down to midline have double rows of offset pores with 5 pairs of pores curving around each primary tubercle. Below mid-line, i.e. ventrally, this changes to a single row of pore-pairs. Ambulacra and interambulacra contain two offset rows of primary tubercles, crenulate but imperforate; interams have smaller ones either side. Both also have scattering of tiny tubercles concentrated in centre area.



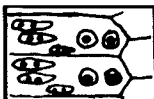
Order : STOMECHINOIDA

Family : Stomechinidae

Noetlingaster sp.

Large, somewhat conical test of high, inflated

appearance, ventrally flattened. Small, compact apical disc visually insignificant. Ambulacra have pore-pairs arranged in sets of 3, with every third pair inset, smaller, and less distinct. Small, equal-sized, primary tubercles, imperforate; interambulacral tubercles aligned 7-13 abreast on each plate. Relatively small peristome.

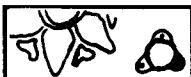


Order : ARBACIOIDA

Family : Gonipygidae

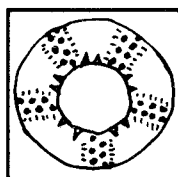
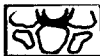
***Gonipygus superbus* (COTTEAU & GAUTHIER)**

Flattened ventrally, smoothly domed. Attractive, elevated apical disc consists of a small ocular plate above each ambulacrum and a pointed genital plate centred toward each inter-ambulacrum. Periproct has 3 perianal tubercles which, in weathered specimens, sometimes cause the round opening to appear triangular. Centre section of ambulacra has 4 offset rows of tubercles, those in centre 2 rows quite small; outlined by a row of pore-pairs. Relatively wide, distinct pores of dorsal surface become narrow and faint ventrally. Wide interambulacra contain 2 rows of large primary tubercles and many scattered secondary ones, particularly in the centre. Tubercles neither perforate nor crenulate.



Gonipygus sp.

Slightly flatter and smaller but otherwise quite similar to *G. superbus*, including pores, ambulacra, tubercles, interambulacra and peristome. Distinguished by rounded, rather than pointed, genital plates. Also, these plates have tiny tubercles along inner edge, ringing the periproct. On oral surface, circular peristome notched by 10 gill slits.



Note: Specimens of another gonipygid and an arbacioid whose genus and species are new to science are presently being studied by Dr. Smith.

GLOSSARY:

Aboral	– surface opposite the mouth; upper or dorsal surface; in regular urchins, anus is located here.
Ambulacrum	– pore-bearing segment
Anterior	– front or forward portion
Apical disc	– structure at apex of aboral surface
Bourellets	– raised projections surrounding peristome
Crenulate	– minute grooves radiating outward from central raised area of tubercle
Cretaceous	– latest period of Mesozoic Era,
Period	following the Jurassic; 135 to 65 million years ago.
Dorsal	– upper or top surface; same as aboral
Echinoderm	– member of phylum containing the starfish, brittlestars, featherstars, sea-cucumbers and sea-urchins.
Echinoid	– sea-urchin
Fasciole	– narrow band (often appears naked

without magnification) of very fine, dense tubercles forming various linear patterns on test surface.

Furrow	– narrow channel connecting pore-pairs
Genital plate	– apical disc plate that carries the gonopore; located at apex of interambulacrum
Gill slits	– openings around edge of peristome for external gills
Gonopore	– small opening in genital plate through which eggs are released; connected internally to gonads.
Imperforate	– not perforated; describes central articulation knob on tubercles
Interambulacrum	– area of test between the ambulacra
Maastrichtian	– last Age of Cretaceous Period, approx. 77-65 million years ago; named for district in The Netherlands where rocks of this age are well developed
Madreporite	– highly perforated genital plate modified into special sieve for water intake
Naked zone	– smooth area where no tubercles are present
Ocular plate	– small plate of apical disc, aligned with each ambulacrum
Oral (adoral)	– surface of test on which mouth is located; lower or ventral surface
Perforate	– with dimple or tiny indentation; descriptive for articulation knob at centre of tubercle.
Perianal	– around the anus
Periproct	– opening for anus; in regular urchins, located within apical disc
Peristome	– opening for mouth
Petal	– area of enlarged pore-pairs on aboral surface bearing specialised respiratory tube-feet
Phyllode	– leaf-shaped pattern of special pores in ambulacral areas surrounding peristome
Pores	– openings where rows of hollow tube feet operated by a water-vascular system protruded through the skeleton; usually paired
Posterior	– back or rear portion; in irregular urchins, direction in which anus migrated away from apex
Primary tubercle	– the large central tubercle on each plate
Sulcus	– groove
Suranal	– over or above anus; specialised plate in apical disc of some regular echinoids
Test	– chalky shell-like skeleton of a sea-urchin
Tubercle	– rounded projection or outgrowth on body surface; knob-like mounting for spine; attachment point of spine

Ventral — lower or bottom surface; same as oral

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Acknowledgement: Without the invaluable assistance, information, and field work provided by Dr. Andrew B. Smith, Department of Palaeontology, British Museum (Natural History), this paper would not have been possible. Photographs and drawings by Dieter Lehmann. (See Centre Pages).

Carolyn Lehmann, P.O. Box 11416, Dubai, U.A.E.

* * *

The Birds of Al Ain Zoo and Aquarium

by Mohammad Ali Reza Khan

Introduction

The Al Ain Zoo and Aquarium, Abu Dhabi Emirate, is home to over 100 species of both locally resident and migratory birds. Three slightly different ecological zones of the Zoo are visited by different assemblages of birds.

From a distance, the Al Ain Zoo and Aquarium, (Figure 1) occupying a 4.5 sq. km. area on the outskirts of Al Ain town (24° - 25°N and 55° - 56°E), (ABBA Square VB 25) looks like a forested village on the edge of the desert, sheltered by a mountain. Within the Al Ain Oasis itself and farming villages around, the vegetation is dominated by a monoculture of dates, fruits and other cash crops. An altogether different impression is created in the Zoo, with its mixture of local and exotic species of flora.

I worked and lived in the Zoo from May 1984 until May 1989, a period which presented excellent opportunities to observe birds and other forms of wild life. Only three other families, half a dozen keepers, plus the animals in enclosures and cages, had permanent residence within the compound. Another fifty or so families of Zoo employees lived just outside the Zoo boundary.

There is no comprehensive record of the birds of Al Ain or the Eastern Region of Abu Dhabi Emirate, apart from casual references by Harrison (1956), Jaradi (1988), Warr (1988) and Richardson (1990). In this paper I have attempted to present a list of those birds which I observed over a seven year period in the 1980's. This is not an exhaustive list and I expect many more birds to be observed and recorded in the future.

The avifauna of the Zoo seemed to me an interesting one as I watched waders, waterfowl and birds of both desert and garden together in one compound. As will be seen later, a little difference in vegetation composition, the availability of a regular supply of water and human activities determine which bird species occur in which parts of the Zoo.

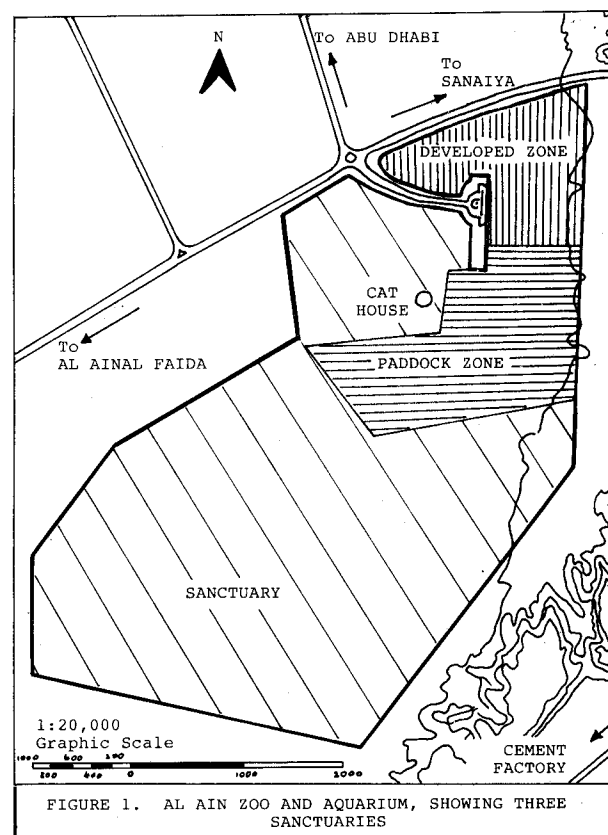
Method

Out of eight hours of my daily working time for six days a week (apart from a 45 day annual leave during July-August) I spent half my time curating the birds and primates of the Zoo and supervising the maintenance work

تضم حديقة الحيوان في العين أكثر من مائة نوع من الطيور بما في ذلك بعض الأنواع المهاجرة. وتضم مجموعة الطيور أنواعاً تعود الى ثلاث من البيئات المختلفة.

● ● ●

of these two sections. Since I either walked or cycled, I had superb opportunities almost daily to watch and record birds. I used two pairs of binoculars (10 x 50 and 7 x 35) and an SLR camera with standard and 270mm telephoto lenses for photography.



Messrs. Otto J. Bulart, founder director of the Zoo, who

worked there until February 1988, Ghassan Ramadan Al Jaradi (former bird curator), and Heinz Eller, curator of mammals, all provided me with valuable information on the occurrence of birds prior to my joining the Zoo in December 1983. For this I am most thankful. Heinz always took me around the distant parts of the Zoo in his 4WD jeep.

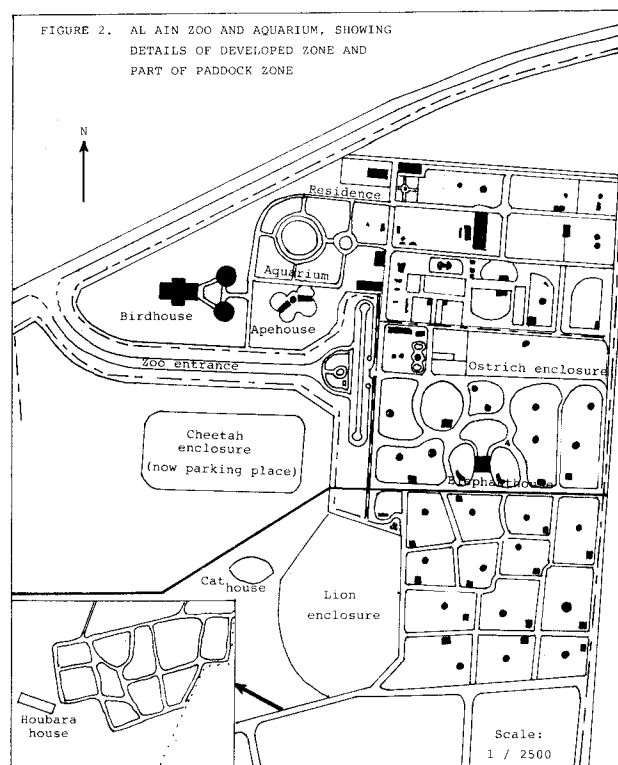
A list of the birds and the distribution of species in three arbitrary zones of the Zoo is presented. Observation and discussion follows.

Study Area

For over two decades the Zoo was considered an outer limit of Al Ain town, situated on the gravelly foothills to the north west of Jebel Hafit mountain, an offshoot of the Hajar Mountain range, straddling the border between the UAE and the Sultanate of Oman. By 1991, however, the Zoo was fast becoming engulfed by rapidly-expanding human settlement.

The Zoo is spread over 450 hectares of sloping land, partly covered by reddish aeolian sands. It was established in 1968 and first opened to visitors in 1971 (Otto J. Bulart, pers. comm.) It is bounded on the east and south-east by low, bare, rocky limestone hills; the Siniya to Ain Al Faidah road passes along the north side; the west and south-west is contiguous with the flat, gravelly plains used extensively for grazing cattle and camels.

By 1980 or so some 50 hectares had become well-developed with naturally-growing indigenous plants and artificially planted local and exotic trees, hedges, lawns and thickets, plus animal exhibits with pools and ponds. This area may be considered as the "developed zone" (DZ) (Fig. 2).



At about the same time another 100 hectares bordering the DZ were transformed into well-spaced and well-constructed enclosures for those desert animals requiring very little shade. This area may be considered the "paddock zone" (PZ).

The rest of the Zoo remained virtually unutilised until

1988 when this vast chunk of land was cut off from the PZ by a fence to graze privately-owned camels and cattle. Prior to 1988 this area used to be called a "sanctuary" (SAN), (Heinz Eller, pers. comm.).

The entire area of the Zoo thus presented three slightly different micro-habitats for the birds, viz. DZ, PZ and SAN. These three zones may be compared with the man-made or developed, semi-natural and natural habitats.

Developed Zone

The humble beginnings of the Zoo were in this area. All offices, service centres, most buildings housing animals, the reptile house, aviaries, the ape house, and bird house complexes are here. Most of the Zoo's pools and ponds are also here. This zone has over 90% of the planted vegetation, in addition to species colonising naturally. The trees are dominated by *Prosopis juliflora*, *Acacia tortilis*, *Eucalyptus* sp., *Tamarix* sp., *Ficus* spp., *Albizia lebbeck*, *Zizyphus spina-christi* and *Phoenix dactylifera*. The shrubby plants and hedges include *Clerodendron inerme*, *Vitex nigunda*, *Bougainvillea* sp., *Tecoma stans*, *Nerium oleander*, *Delonix regia*, *Melia azederach*, *Hibiscus rosa-sinensis*, *Zizyphus jujuba* and bottlebrush. There are good quality grassy lawns near the administration office block, bird and ape houses and the aquarium complex. These lawns are often dotted with acacia and fig trees. All animal enclosures in this zone have been planted heavily with acacia, mesquite and eucalyptus trees. The activities of the Zoo workers and more than 80% of the visitors are restricted to this DZ.

The important bird areas of the DZ are the ape and bird houses, the aquarium and office complex, which are surrounded by lawns, hedges and bushes; also the flamingo, duck and tiger pools, the ponds in the stork and crane enclosures, the emu and ostrich cages, the eagle aviary, the hippo and elephant pools and rhino wallowing area.

Paddock Zone

The PZ lies between the road in front of the elephant house and the northern boundary of the SAN. Building construction has been kept to a minimum in this zone. The cat house complex, a lone hay shed and three aviaries for the houbara and other bustards, dikcops, sandgrouse and stone curlew are the only permanent structures. The PZ accommodates most large paddocks and enclosures for the gazelles, oryx, blackbuck, waterbuck, eland antelope, nilgai, gnu, nyala, bontebuck, ibex, wild sheep, goat and addax. There are no grassy lawns or pools in this area. Drinking water is supplied to a small asbestos-covered hay shed with its galvanised trough. Most visitors do not go beyond the cat house and the lion enclosure.

The vegetation is dominated by natural tree species such as *Acacia tortilis*, *Prosopis cinerea*, *Zizyphus spina-christi*, *Melia azederach*, *Salvadora persica*, etc. There is a profusion of shrubs including *Zygophyllum* sp., *Suaeda* sp., *Haloxylon salicornia*, *Rhazya stricta*, *Zilla spinosa*, *Fagonia* spp., etc. and grasses of *Cenchrus*, *Cymbopogon*, *Cynodon* and *Stipagrostis* spp. The growth and continuance of this natural vegetation is enhanced by a drip-irrigation system which supplies water to virtually all the planted species of trees and shrubs in the Zoo.

In each of the animal paddocks and enclosures there is a small fenced-off area or areas, measuring from 100m² to 220 m² to allow natural regeneration of the vegetation. Zoo animals are barred from these areas, which thus present excellent micro-habitats for birds and other animals.

The preferred bird areas in the PZ are the cat house with its eight pools shaded by palm trees, the lion enclosure and the bustard aviaries, as well as their surroundings.

Sanctuary

Up to 1988 two-thirds of the Zoo area with all its natural vegetation remained a sanctuary for many birds and wildlife species. This area was within the 18 km long boundary fence of the Zoo, devoid of any development activities and at the same time out of bounds for the Zoo as well as for private grazing. There is no structure in the whole area except one huge dome-shaped aviary which has remained unused since its completion in 1985 and is a favourite haunt of pigeons, doves, buzzards and eagles.

The plants consist almost entirely of indigenous species that are typical of local gravelly foothills and wadi beds, partly covered by wind-blown sand. All standing trees appear to be *Acacia tortilis*, usually less than 5 m in height. There are a few clumps of the woody shrub *Calotropis procera*, plus an abundance of smaller shrubs, herbs, and grasses. No visitors use this area and even Zoo employees have no business here, except when transporting carcasses to be dumped into two old wells. The SAN is the most undisturbed part of the Zoo, and is devoid of any water supply.

The SAN is the only part of the Zoo complex where Spiny-tailed Agama, Desert Monitor, Toad-headed Agama, Blue-headed Agama, Sand-fish Lizard, Sand Boa, Saw-scaled and Sand Viper, Arabian Rear-fang, Diadem Snake and other reptiles have been recorded. A few Red foxes, Gerbils and jerboas dominate the mammalian fauna. Some unidentified micro-chiropterans were seen flying over this part of the Zoo.

The DZ is almost entirely devoid of any natural mammal or reptile species, although the House Gecko and some lacertids were quite common. Once in a while I noticed Sand Fish, Rear-fang and Saw scaled Vipers in this area. Very rarely, the Red Fox ventured in too. The PZ was occasionally visited by vipers and agamids but the Spiny-tailed Agama and Desert Monitor avoided the area. A few non-poisonous snakes and small agamids were not uncommon in the PZ.

Observations and Discussion

A total of 98 bird species are recorded here (Table 1). In addition, I saw another 9 species which are presumed escapees, either from the Zoo itself or from private collections, and which are omitted from all calculations.

Out of this total, 35.71% (35 species) were found in all three zones. 29.6% (29) were seen in both the DZ and the PZ, 26.53% (26) in the DZ only, 3.06% (3) each in

the PZ and the PZ-cum-SAN zones. Only 2.04% (2) were seen in the SAN only, and never outside it.

The general trend shows that 90 out of 98 species were sighted in the DZ. Of course, this includes species which also visited the other two zones. Only 8 species did not visit the DZ. In all, 70 species visited the PZ, of which only 3 were exclusive to this area. 40 species were recorded from the SAN, but only 2 were exclusive to it.

It is now apparent that the preferred habitat for birds at the Zoo is the DZ, followed by the PZ and the SAN, as far as species abundance is concerned. This is presumably because of the availability of cover, perching and roosting sites, food and water, and the reduced chances of predation. The least preferred habitat seemed to be the SAN, which is really no different from the neighbouring harsh desert belt with little shade, no artificial water supply and no man-made cover. Those bird species with a preference for standing water and dependent partly or wholly on food supplied by the Zoo never visited the SAN.

The most preferred bird areas appeared to be the cages, aviaries and enclosures with pools, ponds and good tree cover. The second favourite was the compounds with grassy lawns, thick hedges adjoining footpaths, and alley-ways and fences. Both the cat house and houbara aviary complex are unique in providing food, shelter and breeding sites for some species.

Conclusion

As a desert Zoo, Al Ain presents a superb resort for many naturally-occurring birds of the UAE. Over the years several species bred on Zoo premises and now present an eye-catching view. If the present authorities maintain the old tradition of growing more and more trees, hedges and shrubs, in addition to preserving those already established, then the Zoo may continue to be a first rate birding area as well as a breeding ground for more species in the years ahead. The presence of trees and hedges, a regular water supply, and shelter, appear to be the major preconditions for the availability of birds.

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The Birds recorded in Al Ain Zoo and their distribution in three zones of the Zoo

VOOUS NO.	SPECIES	Developed Zone	Paddock Zone	Sanctuary Zone
0104	<i>Nycticorax nycticorax</i> Night Heron	C*	-	-
0108	<i>Ardeola ralloides</i> Squacco heron	O*	-	-
0111	<i>Bubulcus ibis</i> Cattle Egret	O	R* (Cathouse CH only)	-
0118	<i>Egretta gularis</i> Western Reef Heron	O*	-	-
0122	<i>Ardea cinerea</i> Grey Heron	C	UC*	-
0124	<i>Ardea purpurea</i> Purple Heron	R	-	-
0184	<i>Anas crecca</i> Teal	R	O (CH)	-
0191	<i>Anas querquedula</i> Garganey	C	UC (CH)	-
0238	<i>Milvus migrans</i> Black Kite	O	O	O
			(Once flew over the zoo)	
0247	<i>Neophron percnopterus</i> Egyptian Vulture	C	VC*	UC
		(only overhead)		
0254	<i>Torgos tracheleotus</i> Lappet-faced Vulture	R (overhead)	UC	R
0260	<i>Circus aeruginosus</i> Marsh Harrier	-	O (Overhead)	-
0288	<i>Buteo rufinus</i> Long-legged Buzzard	UC	R	-
			(only Houbara House HH)	
0293	<i>Aquila clanga</i> Spotted Eagle	R	R	-
0294	<i>Aquila nipalensis</i> Steppe Eagle	R	R	-
0296	<i>Aquila chrysaetos</i> Golden Eagle	R (Overhead)	R (Overhead)	-
0304	<i>Falco tinnunculus</i> Kestrel	C	R	R
0320	<i>Falco peregrinus</i> Peregrine Falcon	-	R	R (OH)
0365	<i>Francoelinus pondicerianus</i> Grey Francolin	R	C	-
0429	<i>Fulica atra</i> Coot	R	-	-
0469	<i>Charadrius dubius</i> Little Ringed Plover	UC	R (CH)	-
0477	<i>Charadrius alexandrinus</i> Kentish Plover	R	-	-
0484	<i>Pluvialis fulva</i> Pacific Golden Plover	R	-	-
0501	<i>Calidris minuta</i> Little Stint	UC	UC (CH)	-
0502	<i>Calidris temminckii</i> Temminck's Stint	R	-	-
0517	<i>Philomachus pugnax</i> Ruff	R	-	-
0519	<i>Gallinago gallinago</i> Common Snipe	UC	R(CH)	-
0548	<i>Tringa nebularia</i> Greenshank	R	R(CH)	-
0553	<i>Tringa ochropus</i> Green Sandpiper	R	R (CH)	-
0554	<i>Tringa glareola</i> Wood Sandpiper	R	-	-
0556	<i>Actitis hypoleucos</i> Common Sandpiper	UC R (CH)	-	-
0582	<i>Larus ridibundus</i> Black-headed Gull	O (OH)	-	-
0665	<i>Columba livia</i> Rock Dove (feral)	VC	C	R
0684	<i>Streptopelia decaocto</i> Collared Dove	C	VC(HH)	UC
0689	<i>Streptopelia orientalis</i> Eastern Turtle Dove	5 birds seen on 16 Nov. 1984 by J.S. Ash & N.E. Baker (Warr 1988).		
0690	<i>Streptopelia senegalensis</i> Palm Dove	VC	C	UC
0712	<i>Psittacula krameri</i> Rose-ringed Parakeet	C	-	-
0724	<i>Cuculus canorus</i> Cuckoo	O	-	-
0735	<i>Tyto alba</i> Barn Owl	R	-	-
0738	<i>Otus brucei</i> Striated (Bruce's) Scops Owl	R	-	-
0744	<i>Bubo bubo</i> Eagle Owl	-	-	O
0778	<i>Caprimulgus europaeus</i> European Nightjar	R	UC	R
0795	<i>Apus apus</i> Common Swift	O	O	-
0796	<i>Apus pallidus</i> Pallid Swift	C	UC	O (OH)
0838	<i>Merops orientalis</i> Little Green Bee-eater	C	UC	O
0840	<i>Merops apiaster</i> European Bee-eater	C	C	R (OH)
0843	<i>Coracias benghalensis</i> Indian Roller	C	O	-
0846	<i>Upupa epops</i> Hoopoe	C	R	-
0848	<i>Jynx torquilla</i> Wryneck	UC	O	O
0953	<i>Eremopterix nigriceps</i> Black-crowned Finch Lark	-	R	C
0972	<i>Galerida cristata</i> Crested Lark	C	R	R
0990	<i>Hirundo obsoleta</i> Pale Crag Martin	C (Apehouse AH)	R	R
0992	<i>Hirundo rustica</i> Swallow	C	UC	R
0995	<i>Hirundo daurica</i> Red-rumped Swallow	R	-	-
1001	<i>Delichon urbica</i> House Martin	O (AH)	-	-
1002	<i>Anthus novaesaeelandiae</i> Richard's Pipit	R	-	-

		DZ	PZ	SZ
1005	<i>Anthus campestris</i> Tawny Pipit	UC	—	—
1009	<i>Anthus trivialis</i> Tree Pipit	C	—	—
1017	<i>Motacilla flava</i> Yellow Wagtail	R	—	—
1019	<i>Motacilla cinerea</i> Grey Wagtail	UC	R (CH)	—
1020	<i>Motacilla alba</i> White Wagtail	VC	UC	—
1036	<i>Pycnonotus xanthopygos</i> Yellow-vented Bulbul	UC	R	—
1037	<i>Pycnonotus cafer</i> Red-vented Bulbul	R	—	—
1095	<i>Cercotrichas galactotes</i> Rufous Bush Chat	C	R	UC
1106	<i>Luscinia svecica</i> Bluethroat	R	R (HH)	R
1121	<i>Phoenicurus ochruros</i> Black Redstart	C	R	R
1122	<i>Phoenicurus phoenicurus</i> Redstart	R	—	—
1137	<i>Saxicola rubetra</i> Whinchat	UC	R	R
1139	<i>Saxicola torquata</i> Stonechat	UC	R	R
1147	<i>Oenanthe pleschanka</i> Pied Wheatear	R	R	R
1149	<i>Oenanthe deserti</i> Desert Wheatear	R	UC	C
1156	<i>Oenanthe alboniger</i> Hume's Wheatear	—	—	R
1162	<i>Monticola saxatilis</i> Rock Thrush	R	—	—
1166	<i>Monticola solitarius</i> Blue Rock Thrush	UC	R	—
1227	<i>Prinia gracilis</i> Graceful Warbler	VC	R	—
1250	<i>Acrocephalus palustris</i> Marsh Warbler	VC (in May)	R	R
1252	<i>Acrocephalus stentorius</i> Clamorous Reed Warbler	UC	R	—
1255	<i>Hippolais pallida</i> Olivaceous Warbler	UC	R	O
1270	<i>Sylvia nana</i> Desert Warbler	—	O (HH)	R
1274	<i>Sylvia curruca</i> Lesser Whitethroat	UC	C	C
1311	<i>Phylloscopus collybita</i> Chiffchaff	VC	UC	UC
1312	<i>Phylloscopus trochilus</i> Willow Warbler	C	UC	R
1335	<i>Muscicapa striata</i> Spotted Flycatcher	C	R	R
1343	<i>Ficedula parva</i> Red-breasted Flycatcher	R	—	—
1347	<i>Ficedula semitorquata</i> Semi-collared Flycatcher	O	—	—
1379	<i>Turdoides squamiceps</i> Arabian Babbler	R	C (HH)	R
(one flock of ca. 10 birds moving within the zoo)				
1493	<i>Nectarinia asiatica</i> Purple Sunbird	VC	UC	—
1514	<i>Lanius isabellinus</i> Isabelline Shrike	C	C	UC
1520	<i>Lanius excubitor</i> Great Grey shrike	UC	C	UC
1524	<i>Lanius nubicus</i> Masked Shrike	O	—	—
1571	<i>Corvus ruficollis</i> Brown-necked Raven	O (OH)	UC	UC
1587	<i>Acridotheres tristis</i> Common Mynah	C	R	—
1591	<i>Passer domesticus</i> House Sparrow	VC	C	O
1602	<i>Petronia xanthocollis</i> Yellow-throated Sparrow	R	R	—
1618	<i>Euodice malabarica</i> Indian Silverbill	C	UC	—
1863	<i>Emberiza striolata</i> House Bunting	O	UC	C
1873	<i>Emberiza rustica</i> Rustic Bunting	—	O	—
1881	<i>Emberiza melanocephala</i> Black-headed Bunting	—	O	—

Species escaped from zoo or captivity and residing in the zoo

—	<i>Threskiornis aethiopicus</i> Sacred Ibis	VC	C	O (OH)
0134	<i>Ciconia ciconia</i> White Stork	R	R	—
—	<i>Leptoptilos crumeniferous</i> Marabou Stork	UC	R	—
0186	<i>Anas platyrhynchos</i> Mallard	R	O (CH)	—
0170	<i>Alopochen aegyptiacus</i> Egyptian Goose	R	—	—
—	<i>Melopsittacus undulatus</i> Budgerigar	O	—	—
—	<i>Agapornis roseicollis</i> Peach-faced Lovebird	—	—	—
—	<i>Spreo superbus</i> Superb Starling	—	O (1 male)	—
—	<i>Amandava amandava</i> Red Avadavat	O	—	—

*VC - Very Common — likely to be seen in every visit in good number when present. Resident species to be seen regularly and migrants in season only.

C - Common — as in VC but numbers may not be so many.

UC - Uncommon — Not to be seen in all visits.

R - Rare — Seen rarely.

O - Only one or two sightings over a 5-year period.

Richardson (1990) has sufficiently described the breeding, migratory and other status of the birds of the United Arab Emirates which may be applied to the birds of the Al Ain Zoo.

Number are in the order of Voous (1977) and follow those used by Eurring and ABBA (The Atlas of Breeding Birds of Arabia).

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Butterflies of the United Arab Emirates

by J.N.B. Brown

Some of the most beautiful creatures of the insect world are the butterflies. Their frail appearance belies the fact that many of them migrate hundreds of miles in search of suitable habitats where their food plants grow. One such species is the *Painted Lady* (*Vanessa cardui*), thousands of which were seen in 1968, probably originating in Egypt and moving across central Arabia in a north-easterly direction as far as southern Iran.

Around thirty species of butterflies have been identified so far by the Emirates Natural History Group in the United Arab Emirates. They feed by taking nectar from flowers. They do not eat the leaves of the plants. They like the sun, but fewer are generally seen in the hot months of midsummer, because their natural food plants may not be in flower. Good months to see butterflies are September to December and March to June.

Butterflies have a four stage life-cycle, starting with an egg laid on a suitable food plant. Different species of butterfly lay their eggs on particular plant species, and the larva (caterpillar) rarely eats another type of plant. The egg then hatches into a larva, which proceeds to eat the leaves of the plant. Unfortunately, depending upon which food plant is selected, the larva is sometimes regarded as a pest. In the case of the large *Citrus Swallowtail* (*Papilio demoleus*) larva, which feeds on the leaves of lemon, lime or orange trees, they are continuously sprayed with insecticides to control the damage they do. Larva also have many natural enemies such as parasitic and potter wasps, which use them as food for their own young larva.

Many butterflies have benefited from President Sheikh Zayed's re-afforestation programme. Small blue butterflies feed on the flowers of the many *Acacia* and *Prosopis* trees. There has been a tremendous increase in the numbers of *Blue Spotted* and *Small Salmon Arab* butterflies, whose larva food plant is the *Toothbrush Bush* (*Salvadora persica*), which is widely used in plantations.

A interim list of the butterflies so far recorded in the UAE and the Musandam Peninsula enclave of the Sultanate of Oman follows:

PAPILIONIDAE

Papilioninae

- Papilio machaon muetingi* SEYER 1976 (Swallowtail)
- Papilio demoleus demoleus* LINNE 1764 (Citrus Swallowtail)

PIERIDAE

Pierinae

- Artogeia krueperi devta* DE NICEVILLE 1883 (Small White)
- Pontia glauconome glauconome* KLUG 1829 (Desert White)
- Elphinstonia charltonia amseli* GROSS & EBERT 1975 (Desert Black Tip)
- Anaphaeis aurota aurota* FABRICIUS 1793 (Caper White)

تم جمع حوالي ثلاثين نوعاً من الفراشات في دولة الإمارات العربية المتحدة.. ومرفق في هذه الصفحة قائمة أولية بتلك الأنواع.



Colotis calais amatus FABRICIUS 1775 (Small Salmon Arab)

Colotis phisadia phisadia GODART 1819 (Blue Spotted Arab)

Colotis liagore KLUG 1829 (Desert Orange Tip)

Colotis fausta fausta OLIVIER 1804 (Salmon Arab)

Coliadinae

Catopsilia florella FABRICIUS 1775 (African Migrant)

Eurema hecabe senegalensis BOISDUVAL 1836 (Grass Yellow)

DANAIDAE

Danainae

Danaus chrysippus chrysippus LINNE 1758 (Plain Tiger)

NYMPHALIDAE

Nymphalinae

Vanessa cardui LINNE 1758 (Painted Lady)

Precis orithya here LANG 1884 (Blue Pansy)

Hypolimnias misippus LINNE 1764 (Diadem)

SATYRIDAE

Hipparchia parisatis KOLLAR 1850 (White Edged Rock Brown)

Ypthima asterope asterope KLUG 1832 (Common Three-ring)

LYCAENIDAE

Theclinae

Myrina silenus ssp. (Fig. Blue)

Aphnaeinae

Apharitis myrmecophila DUMONT 1922 (Desert Leopard)

Lampides boeticus LINNE 1767 (Pea Blue)

Tarucus rosaceus AUSTAUT 1885 (Mediterranean Tiger)

Tarucus balkanicus FREYER 1844 (Balkan Tiger)

Zizeeria karsandra karsandra MOORE 1896 (Grass Blue)

Azanus ubaldus CRAMER 1782 (Desert Acacia Blue)

Azanus jesus GUERIN 1847 (African Acacia Blue)

Chilades parrhasius FABRICIUS 1775 (Small Cupid)

Agrodiaetus loewii ssp. (Loew's Blue)

Freyeria trochylus trochylus FREYER 1844 (Grass Jewel)

HESPERIIDAE

Pyrginae

Gomalia elma elma TRIMEN 1862 (African Mallow Skipper)

Spialia doris doris WALKER 1870 (Desert Grizzled Skipper)

Spialia colotes semiconfluens DE JONG 1978 (Grizzled Skipper)

Spialia zebra bifida HIGGINS 1924 (Zebra Grizzled Skipper)

J.N.B. Brown, Holly Cottage, Watersplash Lane, Cheapside, Ascot, SL5 7QP, U.K.

Hesperiinae

Pelopidas mathias FABRICIUS 1798 (Lesser Millet Skipper)

Gegenes pumilio ssp. (Pygmy Skipper)

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* * *

The Asclepiadaceae (Milkweed) family in the U.A.E.

by A.R. Western

The **Asclepiadaceae** is a large family of tropical and sub-tropical origin with virtually no representatives in the Mediterranean region. Many species originate in South America and South Africa and it is reasonable to assume that migration to the U.A.E. came from the latter via present-day Yemen and the Sultanate of Oman. Several of the U.A.E. species are found in adjoining mountain regions but the record is incomplete. Batanouny (1981) refers to only two species in Qatar, while Dickson and Macksad (1973) also mention just two from Kuwait. All the U.A.E. species so far recorded are also noted from Saudi Arabia by Collenette (1985) but only four of them are recorded in the former Yemen Arab Republic (North Yemen) by Al-Hubaishi and Muller-Hohenstein (1984).

The family consists mostly of perennial shrubs, woody climbers and herbs, usually with milky sap, hence the common name of Milkweed. Leaves are mostly opposite, occasionally greatly reduced or absent, and the flowers usually in cymes, whereby the central or topmost flower of a group opens out first. The corolla consists of five fused petals, and the fruit is generally a pair of smooth follicles, erect or divergent, sometimes rounded and inflated. The seeds bear a tuft of silky white hairs for wind dispersal.

The family is closely related to the Apocynaceae (the commonest representatives in the U.A.E. being *Nerium oleander* L. and *Rhazya stricta* Decne.) but differs especially with reference to the pollen-transfer system.

The **Asclepiadaceae** is represented by 7 species in the U.A.E. in 2 sub-families:

A CYANCHOIDEAE

1. *Calotropis procera* (Aiton) W.T. Aiton
2. *Caralluma cf. arabica* N.E. Brown
3. *Glossonema varians* (Stocks) J.D. Hook
4. *Leptadenia pyrotechnica* (Forssk.) Decne.
5. *Pentatropis nivalis* (J.F. Gmel.) D.V. Field & J.R. I. Wood
6. *Pergularia tomentosa* L.

العقلاء أو حشيشة اللبن هو الاسم الشائع لفصيلة من النباتات الموجودة في العالم العربي.. ويستعرض هذا المقال سبعة أنواع من تلك الفصيلة تم اكتشافها في دولة الامارات حتى الآن.

● ● ●

B PERIPLOCOIDEAE

7. *Periploca aphylla* Decne.

SIMPLE KEY TO U.A.E. ASCLEPIADACEAE

SHRUBS

Leafy tree to 4 m., frequently shorter, much-branched with pale, flaking bark. Leaves large, fleshy and rounded, often covered with a whitish 'dust.' Flowers in terminal and axillary cymes on long stalks; corolla lobes white with purple tips, 1 cm. across. Fruit follicles paired and inflated, pod-like to 12 cm., green maturing yellow.

Calotropis procera

Erect and much-branched, to 2.5 m., with numerous slender green branches, each pointed, almost leafless. Flowers in small axillary cymes of tiny yellow 'stars' dotted along branches but not at tops. Follicles paired on same stalk, pointed, to 14 cm., green maturing to light brown, usually hanging vertically in parallel.

Leptadenia pyrotechnica

Erect, with few sparsely-stemmed slender, whip-like branches, dark green, often blotchy with dark spots and stains. Virtually leafless. Flowers in axillary and terminal groups, mostly without stalks; corona purple with white hairs and purple thread-like growths, globular, to 1 cm. across. Fruit follicles divergent pairs, sharply pointed, to

10 cm., green maturing brown.

Periploca aphylla

WOODY CLIMBERS

Twining herb to 6 m., yellowish-green with dark green or brown wiry stems twisted on themselves. Never free-standing. Leaves rounded or elliptic, with a noticeable pointed tip, sometimes brownish, on short stalks, to 3 cm. Flowers in small axillary clusters on short, darker stalks; corolla yellowish-white or green, the lobes forming a spreading cone, to 3 cm. Follicles single or paired, ovoid with a long tapering tip, to 6 cm, green maturing buff or darker.

Pentatropis nivalis

Twining herb, sometimes free-standing, overall grey-green, to 2 m. Leaves almost circular or heart-shaped, often folded along midrib, easily broken off, to 2.5 cm. diameter, on short stalks. Flowers in small axillary cymes greenish, whitish or reddish. Follicles in erect pairs, ovoid and pointed, the whole covered with soft tubercles, to 6 cm., green.

Pergularia tomentosa

HERBS

Small, many-leaved and much-branched plant to 25cm. Stems pale greenish-white, mostly ascending and fairly straight. Leaves on very short stiff stems, rounded with crisped margins, darker than stems, to 3.5 cm diameter. Flowers tiny, in few axillary cymes, white or pale rose with creamy corona, much smaller than leaves. Follicles often single, ovate with slender, tapering tip, to 6 cm. with several tubercles (fewer than *Pergularia*), greenish-white, soft, maturing harder (much paler in colour than *Pergularia*).

Glossonema varians

Succulent, cactus-like plant with numerous erect, knobby green and grey stems, occasionally branching, to 25 (-35) cm; stems more or less 4-angled. Flowers sprouting on stem tips in globular purple, sometimes black, clusters, with a strongly foetid smell. Follicles in erect pairs on short stalks, like antelope horns, cylindrical and tapering, orange or pale red maturing straw-coloured, to 10 cm.

Caralluma cf. arabica

Calotropis procera (Aiton) W.T. Aiton

Arabic : Usher

From "calo," Greek 'beautiful' and "tropis," meaning 'keel,' possibly referring to the shape of the petals. "Procera" means 'tall, slender.'

This is the only *Calotropis* species found in this part of Arabia and is distinctive in being tree-like, yet so different in appearance from the native *Acacia* and *Prosopis* species. According to Miller the plant is becoming increasingly widespread in Oman, "a sure sign of increasing pressure by man on the environment." This seems to be the picture in the UAE too, for *Calotropis* does do well on marginal and disturbed lowland areas where other vegetation is either grazed by goats and camels, or finds it difficult to establish itself in poor, often saline, soils. Forage animals ignore *Calotropis* leaves and will only occasionally eat the flowers. The species is widespread at low altitudes in the Northern Emirates and less commonly around Al

Ain, apart from which it is rare in Abu Dhabi Emirate. It thrives in shallow sand and gravelly regions and is also found alongside the main Ajman — Ras al Khaimah highway, albeit in stunted and poor condition (probably due to high levels of coastal salinity). Nowhere is the species dominant, but inland of Umm al Qaiwain towards Falaj al Moalla it is the only large shrub in places. On the Dhaid Plain there are numerous groupings, though *Acacia* stands are more obvious. Much of its habitat around Al Ain has been destroyed by recent development but isolated patches occur around the zoo, along Wadi Al Ain and in nearby plantations. Odd trees turn up in abandoned sites in the coastal cities. Along the East coast it is fairly common north of Khor Fakkan and around Dibba, where it colonises waste ground readily. A few specimens turn up in the lower reaches of Wadi Ham. In spring when the species is in full flower the trees may be inundated with hundreds of Plain Tiger butterflies *Danaus chrysippus* which feed and lay eggs on other species of *Asclepiadaceae* too. A few Painted Ladies *Vanessa cardui* may also be seen, though their preferred foodplant is *Malva* and thistle species.

Calotropis procera no longer has any economic use within the UAE. In times past, the ash of its burnt wood was used to make gunpowder. This was a similar process to that described by Miller for Dhofar, where the ash was mixed with crushed charcoal, dampened and impregnated into strips of cloth by beating. After drying in the sun the strips were put directly into the gun barrels of flintlocks and used with sulphur and wadding to refill cartridge cases.

As in all UAE *Asclepiadaceae*, the latex is copious and poisonous. It was formerly used in Northern Oman to treat bruises and to relieve scorpion stings.

Caralluma cf. arabica N.E. Brown

Arabic : Ghalty

From "Car Allum," the local Indian name.

This is very similar in appearance to *C. petraea* Lavr. but our *Caralluma* is the only species so far found within the UAE and its present determination is provisional. *C. petraea* is recorded in Collenette as being widespread in the mountains of Southern Arabia, and by Al-Hubaishi and Müller-Hohenstein as "a characteristic succulent of the eastern semi-desert region" of (formerly North) Yemen. J.P. Mandaville has a drawing of what is almost certainly *Caralluma cf. arabica* in his 'Wild Flowers of Northern Oman' (1978); he does not fully identify a species found at Ra's al Hara in the Musandam during a botanical reconnaissance in February 1979. In fact there are over 30 species of *Caralluma* in southwest Arabia, but moving northeast through Oman this number finally dwindles to one.

Caralluma cf. arabia is widespread throughout the mountains of the UAE, including the relatively isolated Jebel Hafit, but is never very numerous and in some areas is noticeably scarce. It is rarely found below about 100 m and is common along the Fujairah coastline as well as in the mountain belt between Masafi and Dibba. It is rarer further west, on the limestone massif running south from Ras al Khaimah and Khatt towards Masafi, via Tayyibah and Ghayl. It is locally abundant at higher elevations of the Wadi Khabb Shamsi in the Musandam where the largest specimens, clumps to 1 m diameter,

have been recorded. Unless in flower or fruit, the plant is easily overlooked as its knobbly, grey-green and blotchy stems blend in with the stony background. However, the flowering plant is recognisable by its strongly foetid smell apparent from some distance away, and orb-like clusters of dark reddish-brown flowers, maturing almost to black. The smell attracts number of flies which appear to be the major pollinating agent. After the seeds have been dispersed, the follicles split lengthwise into numerous straw-coloured strands.

As with other **Asclepiadaceae** the milky latex was in the past used for a variety of medicinal remedies. The leaves of the young plants are edible.

Glossonema varians (Stocks) J.D. Hook

(Syn. **G. edule** N.E. Brown)

Arabic : Kurraysh

From the Greek "glossa" (= 'tongue') and "nema" (= 'thread')

G. varians is the only one of five **Glossonema** species to be found in the UAE and neighbouring Oman. Collenette also records **G. boveanum** Decne. in sand just east of Jiddah in Saudi Arabia. Both Migahid and Batanouny also record **G. nubicum** Decne., again in western Saudi Arabia around Jiddah and further north along the coastal hills.

Without fruit it tends to be inconspicuous as the leaves are often grazed back and the whole plant is frequently stunted and grey, sometimes appearing quite dead unless observed closely. However, if damaged, it exudes the tell-tale milky sap of all the **Asclepiadaceae**. In fruit the plant is easily recognisable by the relatively large waxy white or cream follicles covered with softly spinescent tubercles. These fruits hang down around and amidst the plant, sometimes drooping onto the ground. When young, the fruits are edible and tasty.

A species of low to medium elevation mountain habitats, **G. edule** is found only in scattered localities in Fujairah, Ras al Khaimah and along the west flank of Jebel Hafit. Nowhere is it abundant, 1 - 3 plants being typical of any one site, beside wadis, on or just above gravel fans or on lower hillsides. It is rare along the East coast, where it has only been recorded by the Group once, just north of Khor Fakkan at about 150 m.

Leptadenia pyrotechnica (Forssk.) Decne.

Arabic : Markh

From the Greek "pyro" ('fire'), "tekhne" ('art')

"Lepto" ('slender'), "densi" ('crowded')

Along with **Calligonum comosum** this woody plant is dominant among open desert shrubs in size. Its expansive mass of densely erect, spreading branches, though virtually leafless, provides welcome shade at most times of the day. The outer branches are whip-like and naturally-pointed but usually broken off or severely twisted because of camel grazing. The ends of these twigs, without their thin, waxy green covering, are grey and white, usually separated into hair-like strands. The centre of the shrub is usually dense enough to be safe from peripheral grazing. In times past the thin, pliant stems were used in the manufacture of fibres, and the edible buds were once highly appreciated. At flowering time, between March and May/June, the masses of tiny yellow flowers clustered along the twigs are an attractive sight in habitats which are otherwise generally

monotonous in their lack of colour.

L. pyrotechnica is widely distributed throughout the UAE except the mountains. It prefers open, sandy habitats and thrives especially on the aeolian sands of the central and western deserts. It also grows well on packed calcareous sands inland from the Gulf coast and once established a single shrub will continue to expand for years. The best specimens are probably in the desert west of Al Ain and on packed dunes between Manama and Khatt. It is less common along the East coast.

Pentatropis nivalis (J.F. Gmel.) F.V. Field and J.R.I. Wood

Arabic : Skelwan

From the Greek "penta" (= 'five'), and "tropis", meaning 'keel,' i.e. the five petals, each curved in the shape of a sailing ship's timber keel.

Of the six **Pentatropis** species, only **P. nivalis** is recorded from Arabia, but it is widespread throughout southern Arabia and into Oman and the UAE. It is very common in coastal plantations of Fujairah, climbing over and through perimeter fences and adjoining shrubs and trees. In the mountains it frequently hosts on **Acacia** trees, where it may be confused with **Cocculus pendulus** (Menispermaceae) which, however, is more likely to be found hanging down the dry limestone walls of gorges in the Musandam (the berries are red or orange). This species is also likely to be found covering broad-leaved trees such as **Ficus salicifolia**. Its leaves are much darker than those of **P. nivalis** and form a canopy above the host tree.

This plant was first collected by Pietr Forsskal, a Swede, during the Danish scientific expedition to Yemen in 1761-67. Most of the expedition members died there (Forsskal of malaria at Yerim) and only Carsten Niebuhr returned to Copenhagen, but botanically the journey was a great success and the famous Linnaeus named a genus **Forsskaolea** after his fellow Swede.* Forsskal originally named our species **Pentatropis nivea** in his notes, but many years later the original specimen was confusedly named **Asclepias nivalis** by the French botanist Descaisne. Clearly two specimens were confused but Descaisne's name remained until 1983 when the species was corrected to its present name.

* The genus **Forsskaolea** is represented in the UAE by **F. tenacissima** (Urticaceae) a nettle-like plant fairly common in the mountains.

Pergularia tomentosa L.

Arabic : Ghalqah

"tomentosa" refers to the whitish grey furry coating of the leaves and stems.

Pergularia is represented in Arabia by two species. **P. daemia** is widespread in the mountains of Yemen and southern Arabia but has not been recorded in the UAE or neighbouring Northern Oman. It occurs as far east as Malaysia and west into tropical Africa. It is greener than our **P. tomentosa** and the fruits are covered with bristles rather than soft tubercles. Its status as a climber is based on its habit in the low mountain areas of Fujairah and Ras al Khaimah, where it twines into vegetation up to 2 m. Like **P. nivalis** it is common around East coast plantations. On open, rocky, alluvial fans on the west side of the Hajar range, however, it is a self-supporting woody shrub up to 1 m. in height, with

thin ascending branches, usually curling over at the top. In such cases the foliage is densest near the base and the leaves fewest on the outer branches. Specimens are also found on calcareous sand inland from the Gulf coast, where they survive because they are largely ignored by camels and goats. It seems that only the youngest plants are grazed, and this implies that in the past some specimens must have been protected to survive to the present day.

According to Miller, Plain Tiger butterflies are able to tolerate the milky latex of this species. They accumulate the plant's toxins in their own bodies and are avoided by birds.

A mountain name for the plant, according to Mandaville, is "shajarat al julood," meaning 'hides bush,' which refers to its use in removing hair from hides prior to tanning. The stems and shoots of *P. tomentosa* were crushed to a paste and spread over the furry side of a hide, which was then rolled up and buried for a predetermined period, depending on the type of hide. Once dug up, the fur was scraped off with a sharp stone or knife. (Miller)

***Periploca aphylla* Decne.**

Arabic : Swass

Local Northern Omani dialect – 'handabub'

From Greek "peri" (= 'round') and "plecein" (= 'twine') "aphylla" means 'leafless'

Of the 10 species distributed from Eastern Saudi Arabia across to North and tropical Africa, only *P. aphylla* is recorded in the UAE. *P. viscidiformis* is also found in southern Oman, and Collenette discovered a new species, affiliated to *P. laevigata*, high up in the juniper zone of the mountainous Saudi-Yemen border region. In the UAE *P. aphylla* is widespread throughout the mountain zone, especially along wadi systems at higher elevations, but is not found outside this zone.

The **Asclepiadaceae** in general are pollinated by insects. The foetid smell of *Periploca* flowers, situated orb-like along and at the tips of the near leafless stems are attractive to flies. The pollen transfer process is highly specialised in this family and *Periploca* is no exception. The pollen is granular and deposited by the anthers onto tiny spoon-like structures known as translators, sticky at the ends. These adhere to the heads of visiting carrion flies, which then carry them to a nearby flower where the whole pollen mass and translator may be deposited onto the surface of the stigma. In other **Asclepiadaceae** species the translators usually attach to the legs of visiting insects.

Unlike some **Asclepiadaceae** species, *P. aphylla* is commonly grazed by goats, which break off the younger stems and leave them half-broken and scarred, the ends well chewed. It is very rare in the UAE to find a specimen completely untouched in this way. Like *L. pyrotechnica* the flower buds are edible. According to Miller the plant was once used in southern Oman to clear leeches from pools. A branch would be placed in the pool and when a large number of leeches had collected on it, it was taken out and left in the sun to kill the leeches. The water flow into the pool was then diverted temporarily while the pool was emptied and cleaned out.

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New finds at Tell Abraq

by Peter Hellyer

The third season of excavations at the ancient site of Tell Abraq in Umm al Qaiwain in January and February 1992 yielded important new information about the site's tower structure, according to Professor Daniel Potts, of the University of Sydney, in Australia.

The Tell Abraq site is centred on a mound that rises from the surrounding plain to a peak of around ten metres above sea level, in the form of a typical 'Tell' or artificial mound, similar to those found in Mesopotamia. Apart from a smaller tell at Khatt, in Ras al Khaimah, that at Tell Abraq is the only one known in the Emirates, and, says Potts, is the most important site of its period in the whole of the Southern Gulf.

The surrounding area seems to have been occupied as early as around 3,800 BC with substantial shell-mounds nearby along the ancient coastlines, some of which may be of this early date, although no pottery of the early Ubaid period has yet been discovered. The peak of occupation at Tell Abraq seems to have begun around the middle of the Third Millenium BC, or 2,500 BC.

This period coincided with the building of the tombs and settlement at Umm an Nar, near Abu Dhabi, and those of the Umm an Nar civilisation at Hili, near Al Ain, better known for their stone towers. The centrepiece of the Tell Abraq site is just such a tower, still standing massively within the mound, and probably rising to a height of at least 7.5 metres above the surrounding plain. The walls of the tower were first discovered during the first season on the site three years ago, but this season, further excavations have clarified a number of points.

First of all, it now appears that the tower wall was rebuilt or strengthened at some stage in the Second Millenium BC, (2,000 BC to 1,000 BC), with bench-like structures being built to buttress it.

The tower itself has a diameter of around 40 metres, making it by far the largest Umm an Nar type tower to be found anywhere in the Emirates or Oman. Most others that have been found so far, such as at Bidiya, in Fujairah, or at Hili 8 in Al Ain, have diameters ranging between sixteen and twenty five metres. The only other historic building of a comparable size is the great round fort at Nizwa in Oman, which was not built until around the seventeenth century over four thousand years later.

The Tell Abraq site is the only one in the Southern Gulf to show continuous settlement from around 2,500 BC until the middle of the First Millenium BC, about 500 BC, making it of crucial importance in understanding the evolution of life in the area throughout that period.

"Many of the types of pottery sherds we have found are not known from elsewhere in the region," says Potts, "and because they are being found in the excavation, it means we are able to prepare a sequence of the pottery types used throughout the period."

Among items to have been turned up, both in 1992 and in the two earlier seasons, are sherds of painted pottery from Baluchistan and the Indus Valley, which can be dated to around 2,200 BC. Many of these have been found in the remains of a large fireplace, still being cleared, which has also yielded two stone weights from

تعد هضبة تل أبرق بامارة أم القيوين احدى أهم المواقع الأثرية في دولة الإمارات العربية المتحدة حيث يضم الموقع القلعة الشهيرة التي تم تشييدها قبل حوالي ٤٥٠٠ سنة.. يتناول هذا المقال نتائج أعمال التنقيب التي جرت هذا العام.



the Indus Valley, in present day Pakistan, dated to around 2,200 BC, a complete soft-stone vessel with two compartments, and an unusually-shaped copper-bronze spatula.

Also of importance are sherds of Barbar pottery from Bahrain, dated to the period from 2,000 BC to 1,700 BC.

"These are from a time when the records on cuneiform tablets in Mesopotamia no longer mention the name Magan as a source for copper," says Potts. "Magan was the name given to the copper-producing area of the Hajar Mountains, but at this time the name disappears from the texts, although the city of Ur, in Mesopotamia was still importing copper from Dilmun, (Bahrain). These Barbar sherds prove that even if there was no mention of Magan in the texts, the trading link between Bahrain and the UAE still continued."

Another find from near the base of the mound was four goat skeletons, all of which seem to have been slaughtered and then flung into a pit at the base of the tower wall, perhaps, speculate Potts and his colleagues, as part of a sacrificial ritual when the wall itself was rebuilt and strengthened in the middle of the Second Millenium, around 1,500 BC.

During the 1992 season, a lot of effort went into expanding the excavation of the interior of the tower, which again yielded a lot of important structural information.

"This is the first time that the interior features of a tower like this have ever been uncovered," says Potts. "Other towers, like those at Hili and Bidiya, have had only their foundations preserved, but here we have a virtually complete tower."

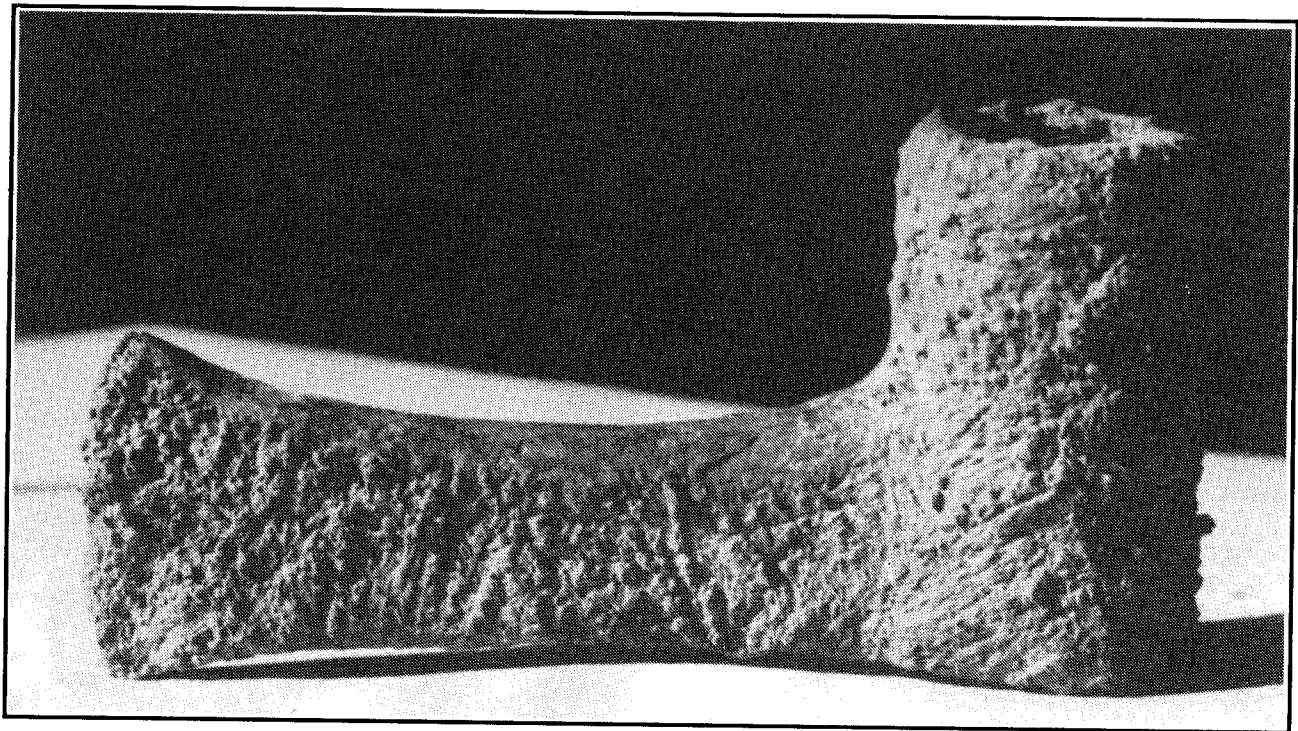
Indeed, the top of it has also been preserved, and is covered over by an Iron Age platform, probably built during the latter years of occupation of the site, between 1000 BC and 500 BC.

The platform, built of dried mud-brick, was partially cleared in previous seasons, but this year, Potts and his team have cleared much more, showing that it covers virtually all the top of the mound.

One particularly interesting feature is a stone-lined well. It runs from the top of the mound, and, speculates Potts, it was probably the original central well for the tower, and had its walls raised as the mound itself grew over the centuries.



A view of the mound at Tell Abraq. Top, the derrick over the well. Centre, the two phases of the early Bronze Age wall. (P. Hellyer)



A bronze axe-head from the Tell Abraq site. (P. Hellyer)

Also inset into the platform and the surrounding area are at least a dozen small graves dating from about 100 AD. All were robbed or damaged in antiquity, but enough remains for them to be identified as being of the type known from the nearby settlement of Ad Door, which flourished at that period. There is also some evidence of settlement around the base of the mound at the same time.

The earliest evidence of man at the Tell Abraq site is provided by a fine flint knife, which is exactly like other knives known from Egypt in the period before the Pharaohs, around 3,800 BC.

Then, says Potts, from around 2,500 BC to 500 BC, the site seems to have been permanently occupied. A gap of around five or six hundred years followed, during the Hellenistic period best represented by the important sites at Mileiha and Madam in Sharjah, before the Ad Door-type tombs were constructed around 100 AD.

"This continuous occupation makes the Tell Abraq site of unique importance," says Potts. "Not only does it give us the opportunity to study the construction and adaptation of the great Umm an Nar-style tower, but it also allows us to study the development of man in the area over at least two thousand years."

Professor Potts, who began work at Tell Abraq in 1989, while he was working at Denmark's University of Copenhagen, was accompanied this year by a team including archaeologists from the Universities of Sydney, in Australia, Aarhus in Denmark and Gottingen in Germany.

The team was supplemented by German specialists, who studied an ancient shell-mound on the edge of

Umm al Qaiwain town, which has been dated from Ubaid potsherds and flint finds to the Fifth Millennium BC, between 5,000 BC and 4,000 BC.

The excavation received support and sponsorship from General Motors, who loaned two vehicles to the archaeologists, and provided financial backing, and from other local firms and institutions, including Emirates Photomarketing, M.A.H.Y. Khoory, Cosmoplast, and the Emirates Natural History Group.

Potts also pays tribute to the support received from the Government of Umm al Qaiwain, including Supreme Council Member and Ruler Sheikh Rashid bin Ahmed al Mu'alla, Crown Prince Sheikh Saud bin Rashid, and the Director of the Emiri Diwan, Sheikh Khaled bin Rashid.

"Sheikh Rashid and his sons have been very supportive of our work," he says. "Tell Abraq is one of the most important pre-Islamic archaeological sites in Arabia, and their support for our work here has been invaluable."

Professor Potts has now published the results of his first two seasons on the site:

"A prehistoric mound in the Emirate of Umm al Qaiwain, UAE: Excavations at Tell Abraq in 1989," and "Further excavations at Tell Abraq — the 1990 season," published in 1990 and 1991 respectively by Munksgaard of Copenhagen.

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Botulism in waterfowl in the U.A.E.

by U. Wernery and J. Haydn-Evans

Introduction

Botulism is an intoxication in man caused by ingestion of partially cooked food in which contaminating Clostridium botulinum spores have germinated and elaborated toxins.

From 1970 to 1975, there were 68 out-breaks, including 152 cases of food-born botulism, in the U.S.A. The principal vehicle is improperly canned fruits and vegetables, usually home-processed. Botulism does not only occur in man but also in animals.

Epidemiology

Clostridium botulinum produces several toxins and on the basis of these, types A-G have been identified. **C. botulinum** is a rod-shaped bacterium which possesses flagella and terminal spores, which are heat-resistant. Pressure sterilisation is necessary to ensure their destruction. Effective sterilisation is routine in the canning industry. It is believed that **C. botulinum** toxins are the most potent toxins in nature, eg. 1 mg of type A toxin contains an estimated 30 million LD₅₀ mouse doses. Even a few thousandths of a gram is fatal to man, making it a threat to mankind as a biological weapon.

All seven toxins are pharmacologically related, but the susceptibility of different species of mammals and birds to particular toxins varies (see Table 1).

C. botulinum is commonly found in soil and in mud, where it can survive for several years. Worldwide, the type of botulism developing in animals generally reflects the predominant type in local soils.

In 1990 the world's worst recorded out-break of bovine botulism occurred in two feedlots in Queensland, Australia, when more than 5,500 steers were lost. Severe losses in waterfowl are reported too. In 1983 almost 40,000 birds, especially Teal (*Anas crecca*) died from botulism, west of Hamburg in Germany.

Similar out-breaks are reported in waterfowl in the Spanish wetlands. The factors necessary for an out-break of botulism in waterfowl include the presence of decomposing organic material, an average temperature of over 23 degrees centigrade for bacterial toxin production and the ingestion of organic material infected with toxins. The persistence of **C. botulinum** spores in the environment results in a never-ending risk of an out-break of the disease. However, outbreaks of botulism in waterfowl seem to be correlated with environmental pollution, like lead poisoning of organophosphor intoxication.

Pathogenesis

Botulinum toxin exerts its effect by causing a presynaptic blockage at motor endplates. There it inhibits the release of acetylcholine resulting in paralysis. This effect is important for the identification of the toxin in laboratory mice. The toxin has no effect on the Central Nervous System.

Botulism in the U.A.E.

Every year at the beginning of the hot season, the

يتم العثور كل عام على أعداد من الطيور الميتة في خور دبي والمواقع المشابهة، وذلك نتيجة للتسمم البحري.. يوضح هذا الموضوع أسباب الوفاة.



Central Veterinary Research Laboratory in Dubai is confronted with fresh reports of deaths in seagulls, ducks, herons and flamingos. Dead and sick birds are mainly found at the end of the Dubai Creek and the wetlands beside the old Sharjah road, (the Ramtha Tip), where they have died in their hundreds. These outbreaks were blamed on the pollution of oil and other effluents (see eg. Gulf News 16th March, 1989), but are actually caused by botulism.

Sick birds lose their fear of predators and are unable to move due to paralysis. Death finally occurs due to dehydration and starvation, which is caused by paralysis of the throat muscles.

There are no microscopic lesions in the birds during necropsy. Empty crops and stomachs of birds suffering from botulism are common findings of this disease.

For the diagnosis of **C. botulinum** infection, sick birds must be examined. A blood sample is taken from diseased birds and the serum injected into laboratory mice. Within three days they show typical symptoms of paralysis, especially in the stomach muscles, which produce a "wasp waist" appearance. The mice die from suffocation due to paralysis of the respiratory muscles.

On one occasion several **Great Black-headed Gulls** (*Larus ichthyaetus*) which had died from botulism were also examined for the presence of organophosphors. All birds had high levels of organophosphors in their fat, which might have played an important role as a predisposing factor for the outbreak of botulism.

Prophylaxis and treatment

Where signs of disease develop rapidly in animals, it is likely that large amounts of toxin have been consumed and the prognosis is regarded as being poor. In these cases the botulinum toxin is already attached to the nerve endings, making an anti-serum treatment ineffective. However, mildly affected animals should be given purgatives to remove toxins from the intestinal tract as soon as possible. General supportive therapy is important to improve the condition of sick animals.

Tetraethylamine, guanidine hydrochloride and 4-aminopyridine, which enhance transmitter release at neuromuscular junctions, could also be of value. Antibiotics such as Penicillin, Tetracycline, and Aminoglycosides, which could cause neuromuscular blockage, are contra-indicated.

Care should be taken when dealing with material that is



Great Black-headed gull (Larus ichthyaetus) with Botulism, paralysis of the wings (See Page 18).



Laboratory mouse with "wasp waist" appearance, a result of Botulism. (See Page 18)

(Pictures by O. Wernery)



The chick and egg of a Long-legged Buzzard, photographed on January 2nd 1992. (See Page 21)



*The Long-legged Buzzard nest in a Calligonum comosum bush. Note the dead Cape Hare (*Capus lepenensis*) at the rear of the nest.*

(Pictures by Charles Laubach)

FOSSIL SEA-URCHIN TESTS

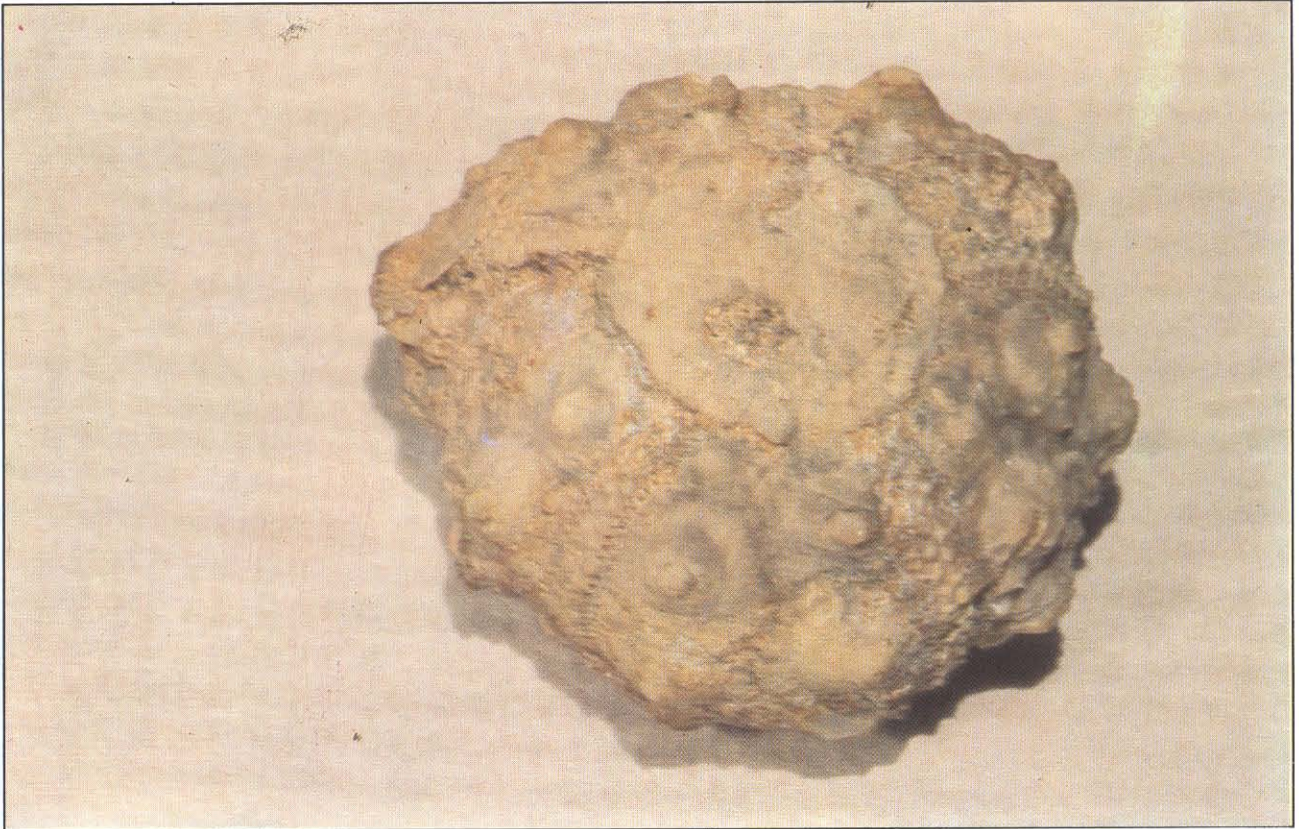


'Cidaris' cf. scabra



Orthopsis miliaris

FOSSIL SEA-URCHIN TESTS

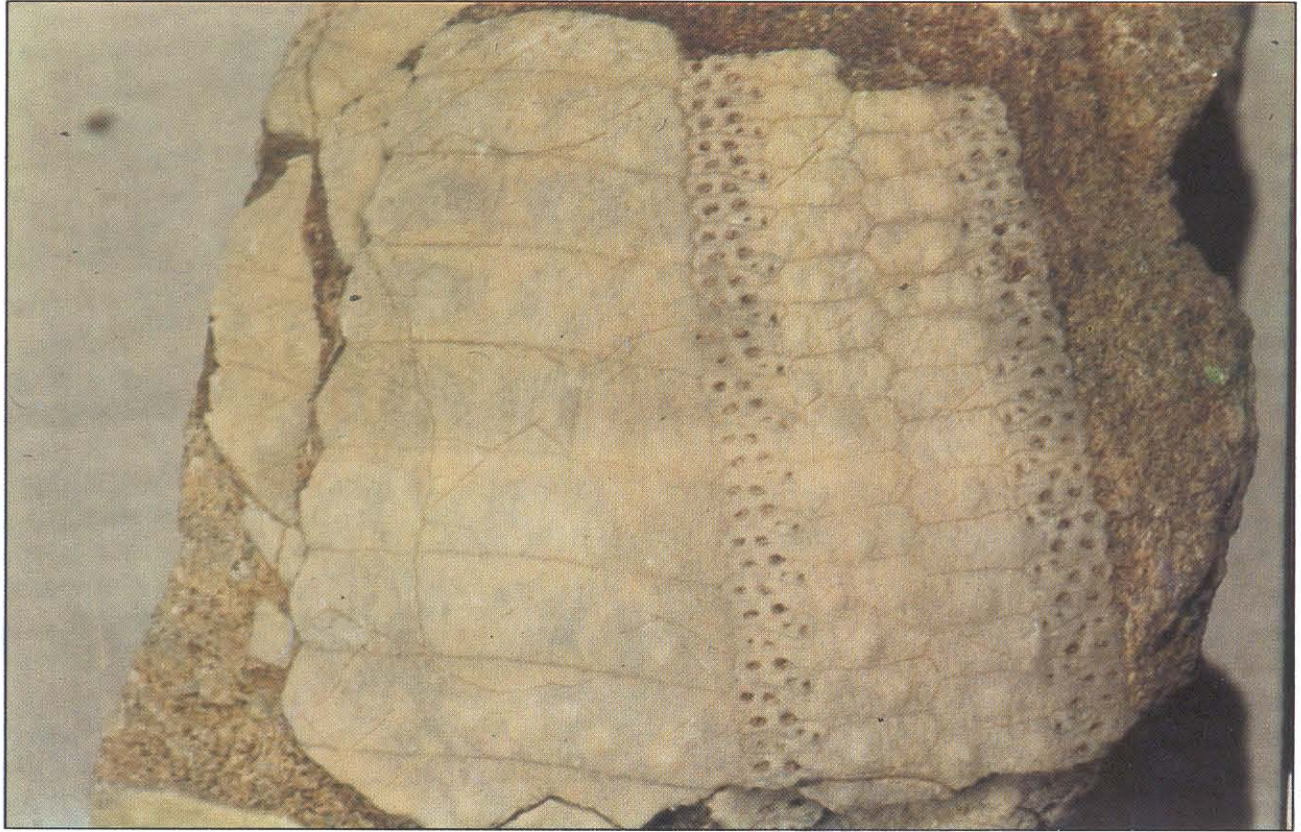


Salenia cossiae

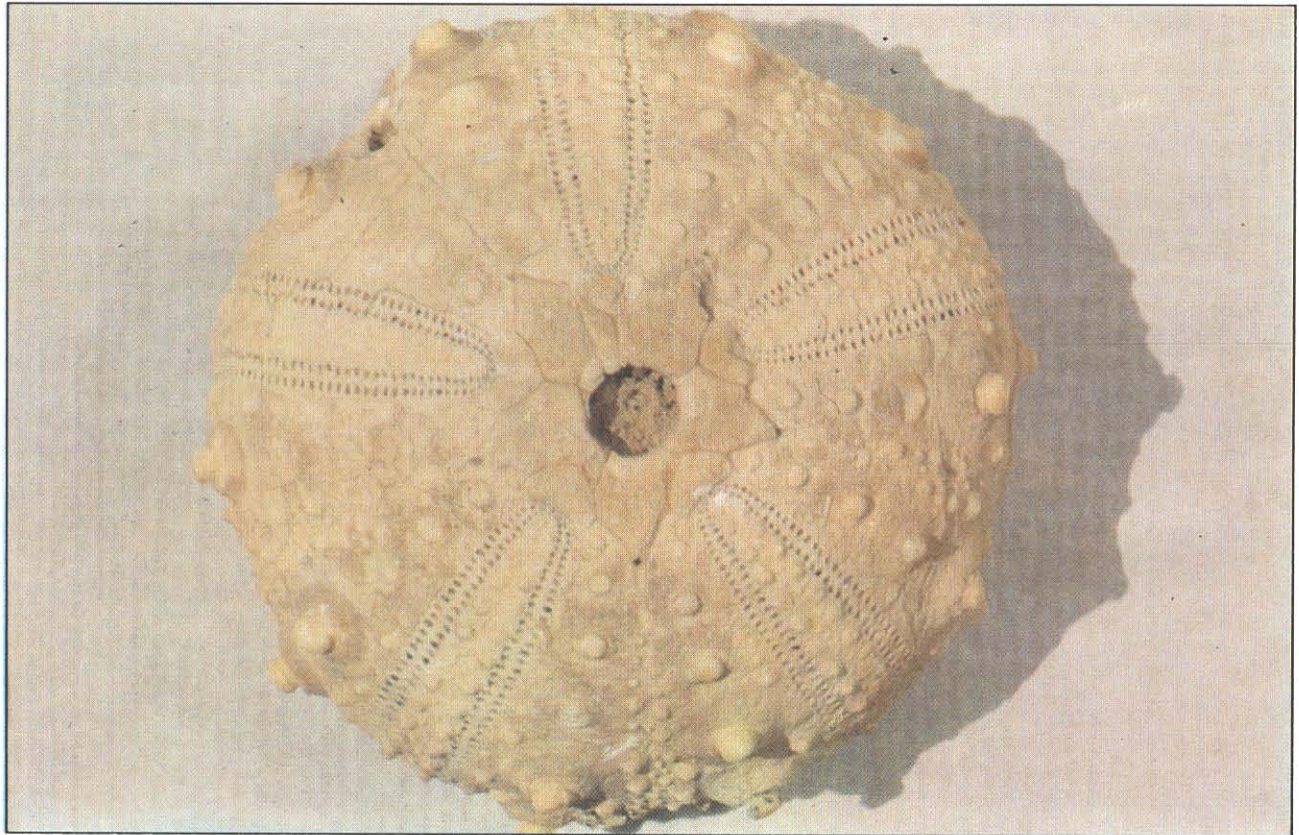


Phymosoma sp.

FOSSIL SEA-URCHIN TESTS



Noetlingaster sp.



Goniopygus superbus

FOSSIL SEA-URCHIN TESTS



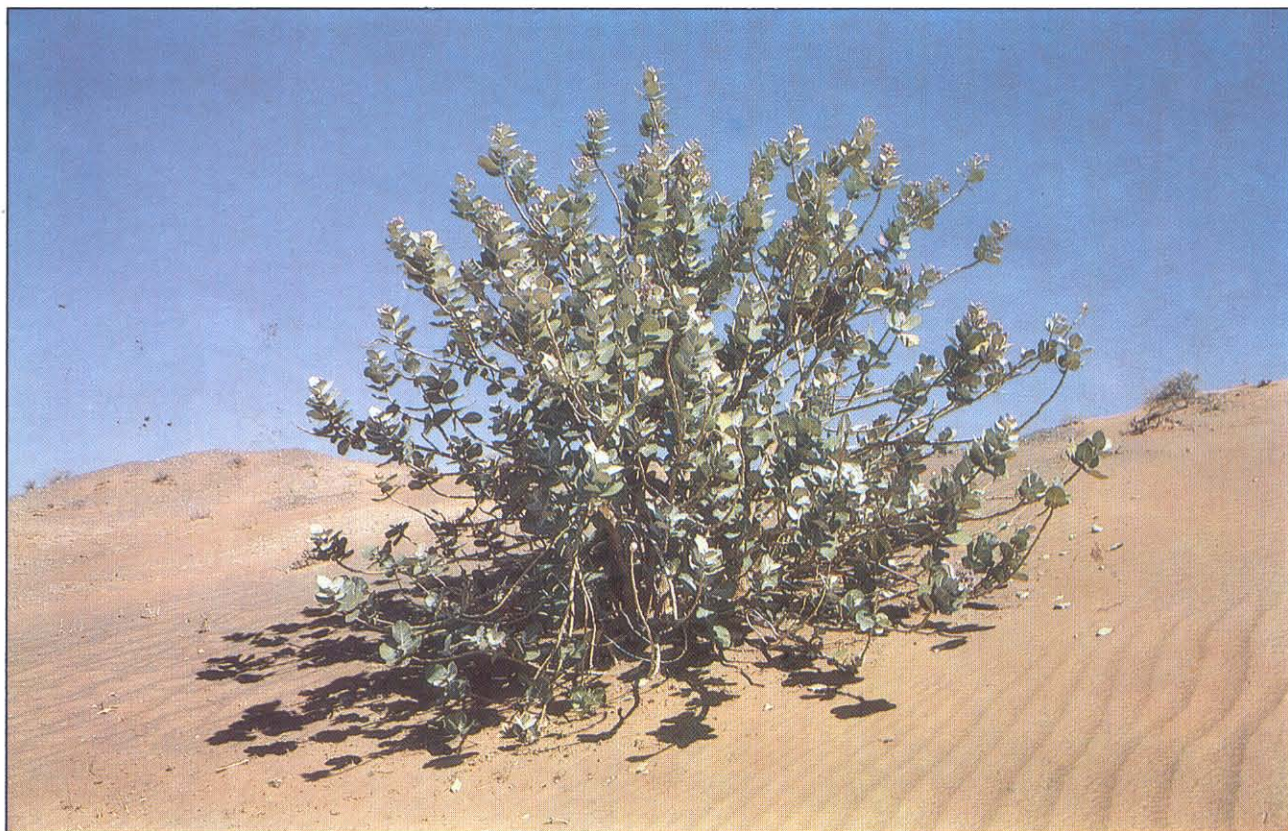
Goniopygus sp.



Goniopygus sp.
(Peristome with gill slits)

Pictures by D. Lehmann (See Page 3)

U.A.E. ASCLEPIADACEAE



Calotropis procera



Pergularia tomentosa

U.A.E. ASCLEPIADACEAE



Caralluma sp.



Glossonema varians

Pictures by A.R. Western (See Page 11)

suspected of being infected, as the toxin could be inadvertently acquired by humans through skin wounds, conjunctiva of the eyes and by licking fingers, giving rise to profound intoxication and death. Dead animals affected by botulism should immediately be incinerated.

Sick birds cannot be treated and must be destroyed.

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Table 1: The toxins of Clostridium botulinum and their distribution

Type	Toxin	Distribution	Intoxication source	Particularly susceptible
A	A	West USA, USSR (Ukraine)	Plant foods, meat, fish and wounds?	Man, fowl, mink
B	B	Central and East USA,	Meat and meat products (usually from pigs), wounds	Man, cattle, horse, fowl
C	C _a C ₁ C ₂ D	North & South America, South Africa, Australia, Europe, Arabian Gulf	Lucilia larvae, plants, Putrefying mud	Aquatic birds
	C _a C ₂	Australia, South Africa, Europe	Spoiled food, carcasses	Cattle, horse, mink
D	D C ₁ C ₂	South Africa, USSR	Carcasses	Cattle
E	E	North Europe, USSR, Canada, Alaska, Japan	Fish and fish products	Man
F	F	Scotland, USA, Denmark, USSR	Liver paste, fish	Man
G	G	Argentina	—	—

NOTES AND QUERIES

Palaeontological & Geological studies in the Western & Eastern Regions of Abu Dhabi

The 1991/92 field season was undoubtedly the most productive to date with nine scientists forming two teams. Drs. Andrew Smith, Noel Morris and Andy Gale (all from the Natural History Museum, London) studied the Cretaceous marine sediments in the Eastern Region and their initial appraisal of the fossil collection indicates that it rivals the best in the world from this period of geological time. Andrew Smith is busy writing his report and next year he hopes to have a monograph ready for publication. Several new species of echinoids have already been identified and a unique section of a fossilised coral reef found.

In the Western Region, Dr. Robin Cocks, Head of Palaeontology at the Natural History Museum, visited the fossil sites and later, in Abu Dhabi, he thanked ADCO — especially its General Manager, David Woodward — for their support of the project. Dr. Vera Eisenmann, Institut de Paléontologie, Museum National d'Histoire Naturelle, Paris, joined the team to obtain first hand knowledge of the rocks and collect fossil horse remains. Vera is an acknowledged world expert on horses and from the better examples of teeth discovered this season she will decide if the Baynunah horses are a new species.

Dr. Peter Friend, Department of Earth Sciences, University of Cambridge, was invited to carry out a sedimentological survey of the Baynunah Formation. A section described as the stratotype by Whybrow in 1989 occurs at Jebel Barakah. Further studies of the sediments will be undertaken as a PhD project by a Cambridge-based student, partly funded by the British Government. Dr. Friend's preliminary study suggests that the Baynunah sediments were deposited in a deltaic complex formed near the mouth of a river system. There are rocks, however, of undoubted aeolian origin (at the very base of the rock sequence at modern sea level) which raises the possibility that the climate of the late Miocene may have been, for a short time, quite arid, and

that the unique Abu Dhabi fossil fauna and flora reflects local (meaning the 'Lower Gulf') conditions near the river rather than a humid climate over all of Arabia. Very similar, in fact, to part of eastern Africa today.

Dr. Ernie Hailwood, Southampton University, used the sedimentological interpretation to obtain more rock samples for palaeomagnetic analyses. This technique, used for the first time in Arabia, will provide 'marker' information about the age of the sediments and therefore refine or refute the age of between six and eight million years currently suggested by the fossils. In addition, Dr. Hailwood's study will provide evidence of the rotation of the Arabian geological plate, important for the opening of the Red Sea during the Miocene. Dr. Andrew Hill, from Yale University, USA, used his exceptional experience to hunt for more fossils and he was rewarded this year with the nearly complete lower jaw of a baby hippo. He also spent time at one site with Dr. Walid Yasin al Tikriti of the Department of Antiquities and Tourism in Al Ain, and Gillian Comerford of the Natural History Museum. Together they excavated an almost complete elephant lower jaw that, with its tusks, measures about 1.5 metres long. Another elephant lower jaw — undoubtedly from another species, probably a *Deinotherium* — was found by the Inter Emirates Natural History Group visit to Jebel Barakah. Towards the end of the season, Peter Whybrow identified two teeth from Sir Bani Yas as belonging to a hippo. When other bones were reconstructed to form a skull it became obvious that it was not a hippo but a sirenian — a dugong or manatee. Whybrow still maintains that the skull may be of Pleistocene age, about 30,000 years old, but only radiocarbon dating will prove this.

Peter Whybrow,
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Ammonite found and identified

On March 15th last year, a partially-exposed, coiled ammonite fossil was found at Jebel Buhas by Dr. Marijke Jongbloed. This was the cause of some excitement because very few have been reported from the UAE and, with a diameter of approximately 20cm., it was an impressive specimen. The timing of this discovery proved auspicious as an expert, from the Department of Palaeontology at the British Museum (Natural History), was coming in April to study fossil deposits in the UAE.

On April 23rd 1991, Valerie Chalmers, Marijke Jongbloed and Carolyn Lehmann accompanied Dr. Andrew B. Smith to Jebel Buhas and watched as he hammered the bedded ammonite out of its rock enclosure. It broke along several visible fissures and as

each piece was freed, Dr. Smith marked the breaks to facilitate reassembly. He considered it important enough to take to the British Museum (Natural History) for identification and has sent back a report.

The ammonite was identified by Dr. Mike Howarth as a *Pachydiscus* (*Pachydiscus*) cf *Jacquoti* (*Seunes*), an Upper Maastrichtian species known from France, North Africa and Madagascar. It pieced together moderately well, though the middle is not preserved, i.e. it was not present in the original specimen. In December it went on display at the British Museum (Natural History) in a temporary exhibit featuring the vertebrate fossils of Abu Dhabi and including Cretaceous invertebrate materials.

CAROLYN LEHMANN

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Long-legged Buzzard Nest

The nest of a large raptor, complete with parent, one newly hatched chick and one egg, was discovered during a walk in the high dunes of West Liwa on January 2, 1992. The site was a steeply sloping dune valley facing north, about 150 feet above the level of the surrounding flats and 50 to 100 feet below the top of the tallest dunes, in Abba Square TA 22.

The nest was made of sticks and was shaped like a broad, shallow oval basket, approximately 3 feet by 4 feet across. It was set atop the forking branches of a small bush of *Calligonum comosum*, approximately 3 feet above the sloping ground. The upper surface of the nest was relatively flat but contained a pocket at the uphill end where a chick and an egg were nestled. At the other end of the nest was the carcass of a **Cape Hare** (*Capus lepensis*).

The single adult that had been present in the nest took flight and disappeared from sight when the small party of observers first appeared over the dunes from above, and indeed it was the bird's flight which first attracted the attention of the observers to the area of the nest. Wingspan was estimated at 2 to 2-1/2 feet and the bird was basically dark in colour without distinctive markings. Limited observation and the party's limited expertise did not permit a positive identification, although field guides were consulted in camp. (It was later identified as a **Long-legged Buzzard** (*Buteo rufinus*).

A local individual visiting the camp was questioned in the course of extended general conversation, and, from the description, he identified the bird by the name "shamaliyah." He said adult birds paired for breeding and rearing, and that the female tends the nest and the male hunts for food. He said the eggs might hatch at different times, but normally within one or two days of each other. He also said that the chick and eggs were in no danger from foxes, which were more likely to be prey for the parents. The young, he said, do not fly from the nest until they are about two months old, by which time they are nearly as large as their parents.

From a distance, the single off-white egg in the nest (approximately 3 inches long) was clearly visible. Less prominent was a newborn chick covered in grey-white down, framing a black face and beak. The chick could be heard peeping at a distance of twenty yards or more. The chick was too young to sit or stand, but would occasionally raise its head and body, open its mouth and turn its head. The observers were concerned not to alarm the chick or to allow the chick or egg to suffer from the absence of the adult bird or otherwise, and so departed after brief observation through binoculars,

without approaching the nest more closely than about fifteen yards at that time.

The small valley surrounding the nest was spotted with waste of three sorts that were unquestionably the products of the raptor(s) in question, since they are not found elsewhere in the dunes. (1) liquid white excreta which appears to spread during descent and which includes a clearer fraction that runs after impact, (2) small, relatively dry, elongated white pellets (1 to 1-1/2 inches long by 1/2 inch wide) consisting of a flexible but relatively coherent outer casing and a more friable interior, and (3) football shaped hair pellets ranging in size from about 1-1/2 inches to 3 inches, and including bits of bone (or in one instance a single long bone fragment almost twice as long as the pellet itself. The latter represents indigestible material regurgitated by the birds.

The day of the initial observation had been a particularly windy day in the dunes and for this reason the observers had not carried their cameras along. However, when the next day proved to be calm, it was decided to return to the nest for photographs. This time the nest was first observed from below, by binoculars, from a distance of about a quarter of a mile. No adult was visible in the nest, but on ascending via an indirect route an adult raptor was encountered perched atop a nearby dune crest, from which it flew when the observers approached by car to within about fifty yards.

This afforded a more prolonged view of the bird but still not sufficient for field identification. It is not known whether it was this same bird or its mate (or another) which was seen flying at a distance when the nest was finally reached, but no more than one adult bird was ever seen at one time. The bird had left its tracks on the small ridge where it had perched and these were examined.

The nest and chick and their environment were observed at closer range during the second visit. Numerous photographs were taken by Charles Laubach, of which copies were deposited with the Bird Recorder.

(This is the first recent confirmed record of the species breeding in the UAE, although there have been previous reports from the Qarn Nazwa area. Gallagher and Woodcock, in The Birds of Oman, suggest nesting in February, but this pair must have laid in December. An important record of an uncommon migrant and resident breeder — Eds.)

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Whaleshark — *Rhincodon typus* Smith 1929

The whaleshark is the largest known fish. It swims with its large mouth wide open and is known as a filter-feeder. This means it feeds by taking in large amounts of water and filtering out the plankton it contains. Plankton are microscopic stages of fish, other marine creatures and plants. The warm waters of the Arabian Gulf encourages the development of plankton, so inducing a few of these animals to enter to feed.

In recent years a number of whalesharks have been seen or caught in the Arabian Gulf or along the East Coast. A large, harmless shark, it can reach a length of around 15 metres and weigh many tons. It is a prize catch, because its liver contains a large quantity of oil that can be used to preserve the wood of dhow hulls.

The female whaleshark lays single eggs, each encapsulated in separate cases, sometimes known as mermaids' purses. The egg-case may be up to 30 cms long. We do not have any records of these egg-cases being found in United Arab Emirates waters.

The most recent record of a whaleshark was on December 31st 1991, when a seven metre fish, estimated to weigh up to four tonnes, was killed in a collision with a naval vessel a few kilometres offshore, and was brought into Abu Dhabi's Mina Zayed by the vessel. It was lifted by crane, and was later given to local fishermen to use for its oil.

Also last year, on April 21st, one was caught off the breakwater, near Abu Dhabi. It was probably not more than 5 metres long and obviously a juvenile.

On September 13th 1989, a dead whaleshark was taken from a narrow channel near the watch tower at the entrance to Jebel Ali. It was lifted by a crane and its

weight put at seven tonnes. It was suggested by Tony Woodward, of Dubai Natural History Group, "that its death may have been caused by 'red tide', a red coloured algae, which is highly toxic to many animals, fish and birds. However, the exact cause of death could not be established, unless an autopsy was done." There is no record of this having been carried out.

A small whaleshark estimated to weigh 3 tonnes was caught on the East Coast 20 kms off Bidiya on the October 8th 1988. On December 17th the same year, one was caught 10 kms off the coast at Shaam in Ras al Khaimah. Its estimated weight was variously reported as half a tonne and 3 1/2 tonnes. Length was given as 6 metres.

The largest whaleshark reported to date was 10 metres long and estimated to weigh 50 tonnes although this is almost certainly a gross exaggeration. It was caught in December 1987 off the coast of Ras al Khaimah by Abdullah Mohammed Abdullah of Shaam village, who said "we normally catch up to six a year, but none as big as this one. It is probably the largest caught in the last 40 years."

The Arabic name has been quoted as 'Al Jara' or 'channaz.'

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BISH BROWN

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Sooty Gulls on Qarnein Island

During the Qarnein Expedition in April 1989, we found **Sooty Gull** (*Larus hemprichii*) nests on open ground, under rocky overhangs and partially under bushes. It was noted that in some of the nests there were three eggs, one of which was smaller and much lighter in colour than the other two eggs. Where there were only two eggs in a nest, both were almost identical in size and colour.

It has been observed in other species of gulls and terns that the last-laid egg in a clutch, the third egg, was more likely to be stolen by predators than was either of the other two eggs. Detailed studies of several species, including the familiar **Herring Gull** (*Larus argentatus*) have shown that the odds are definitely stacked against the contents of the third egg ever becoming a fully fledged bird.

The third egg is usually smaller than its two companions and contains less protein to nourish the growing chick. Not surprisingly, the third chick hatches out last, and is always the smallest of the brood. Some seabird ecologists have suggested that the female gull may be running out of energy after laying two large protein-rich

eggs, but that it may still be worth her while to take a gamble and produce number three. If food is plentiful, the theory goes, she has a sporting chance of getting a bonus chick through to fledging. If not, she and her mate can neglect it in favour of the two bigger nestlings.

There is now a different explanation for the third egg's characteristics. Some of its features could have evolved to give the two bigger eggs some extra protection from predators. The colour pattern of the smaller egg is usually different from that of the other two eggs. The background colour is paler, and the surface squiggles contrast with blotches on the other two eggs; the overall effect is to make the third egg less camouflaged. The parent birds rarely leave a nest or brood unguarded and attack any predators, but should one get through and land near the nest, it would hurriedly grab the most conspicuous (ie. the third) egg.

Gulls are indeterminate egg-layers, that is, they have the ability to replace eggs that are removed from the nest. Take away the first egg soon after it is laid, and the female will usually lay another to replace it. A gull cannot match the huge egg-output of a domestic hen, but she

can provide a few extra eggs.

Experiments have been carried out to see what a third egg would look like, if the first egg in the clutch had been stolen soon after laying. In such situations, females changed not only the size, but the colour and pattern of the third-laid egg. Third eggs in the experimental nests were generally big and well camouflaged, like the usual first and second eggs; it was the fourth eggs that were smaller and marked for sacrifice. Clearly, then, it is not because she has run low on egg-making resources that the female's third egg is smaller.

It seems that the gull is able to 'decide,' based on the

number of surviving eggs, the final size, colour, and pattern of an egg just a few hours before it is laid. If her first egg is lost, her third-laid one will then become as important as the second one, and so she pumps up its volume and "sprays" on extra pigment (in the uterus) to camouflage it.

References

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Veerbeek, Ibis, Vol 130: 512-518

BISH BROWN

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Occurrence of the Diadem Butterfly in the Emirates

Little has so far been published on the butterflies of the Emirates, except for a few passing references by Jongbloed, (1987, 1991), although a considerable amount of systematic collection and subsequent publication of butterflies has been undertaken in neighbouring countries like Oman, (Larsen and Larsen, 1980), and Saudi Arabia, (Walker et. al., 1987).

Common butterflies in the Emirates seem to include the **Common and Citrus Swallowtails**, (*Papilio machaon* and *P. demoleus*), various **Whites**, (*Pontia spp.*), **Blues** and **Pansies**, (*Junonia spp.*), the **Painted Lady**, **Brown** butterflies and the **Monarchs**, (such as *Danaus chrysippus*, the **Plain Tiger**). Most of these are confined to the mountainous wadis and streams in the Hajar Mountains, which run roughly north east to south west from Musandam to Oman. They can be found visiting man-made gardens, natural and artificial oases and villages, as well as, increasingly, the coastal areas where many ornamental plant species now flourish as a result of the extensive planting of recent years.

Between 1984 and the beginning of 1991, we did not record a **Diadem Butterfly**, (*Hypolimnys misippus*), in the United Arab Emirates, nor as far as we are aware, was it reported by others. According to Walker et. al, it has, however, been found in Oman, "to date only in gardens and oases of northern Oman, even though *Portulaca*, food plant of the larva, is widespread".

Between April 29th and May 3rd 1991, a single male Diadem Butterfly was seen in the premises of Dubai Zoo. According to Walker et. al., the common name 'Diadem' is derived from the colouration of the male, with its distinctive white spots and purple hue. Sexual dimorphism is so pronounced in this species that they

may be mistaken for two separate species. The female Diadem is very similar to the Plain Tiger.

Since the latter occurs commonly in the UAE, it is possible that female Diadems may have been overlooked, and only the occurrence of the male has permitted a confirmation that the species occurs.

The highest day temperatures for April and early May 1991, which rarely exceeded 34 degrees Centigrade, were substantially lower than previous years. Local climatologists suggested this might have been a side-effect of the burning of Kuwait's oil wells following the January-February Gulf War. Conceivably this might have been connected with the appearance of this highly migratory species.

The male Diadem seen spent most of its time perching on the dry hot concrete boulders found in the Zoo.

This is the first confirmed record of the Diadem in Dubai.

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Birds extinct in the Emirates

Within the memory of some of the older UAE citizens, or in that of their parents and grand-parents, the **Arabian Ostrich**, *Struthio camelus syriacus*, was known to have existed in the desert lands of the Emirates. A **Giant Heron**, *Ardea bennuides*, recorded from prehistoric bone remains (Hoch, 1979), is another extinct member of the local bird fauna. Little is known of any other species which may formerly have occurred here.

Now, thanks to the publication of details of bird bones collected during archaeological excavations up to 1961 of the Umm an Nar tombs and settlement, near Abu Dhabi, a few more species can be added to the list, some of which, however, may yet be recorded from living specimens.

In a recently published report by Ella Hoch on the bones of animals found in Umm an Nar grave 1 by a team led by Karen Frifelt, of Denmark's Aarhus University, the following forms are identified, along with others still present in the region, the majority of which are terns (Hoch, 1991).

Anhinga sp. (15 bones; minimum number of individuals: 2 adults, 1 juvenile) — The **Darters** are now known only locally from the delta of the Tigris/Euphrates. The species on Umm an Nar can only be *Anhinga melanogaster*, formerly more wide-ranging. Its range has contracted due to the drainage of marshes. — Numerous bones of one or two species of Cormorants were also found. They are believed to represent the **Great Cormorant**, *Phalacrocorax carbo*, and the **Socotra Cormorant**, *P. nigrogularis*.

Anous (Gygis) albus (2 bones; minimum number of individuals: 1) = *Gygis alba*. — The **White Tern (or White Noddy)** is extra-limital in the Arabian Sea and the Gulf of Oman from the Indian ocean. The bones, two proximal parts of right and left ulna, also show similarity to the **Lesser (or Black) Noddy**, *Anous tenuirostris*, and may represent that species.

Treron aff. bicincta (1 bone) — The pigeon referred to in all probability is **Bruce's Green Pigeon**, *Treron waalia*. This species is not currently recorded from nearer than Dhofar, in southern Oman, where its status is uncertain.

Halcyon aff. smyrnensis (3 bones; minimum number of individuals: 1) — The **White-breasted Kingfisher**, *Halcyon smyrnensis*, is a resident in the Northern Gulf

and Iran, where it breeds along the Gulf coast. The species strays occasionally in winter to the Gulf states.

All of the bones were found inside the grave, meaning that they must have been introduced at some time in the last four and a half thousand years, since the grave was built. The majority of the bones are apparently much younger, "not being deposited until after the stone masonry of the grave was sufficiently disturbed to permit access," according to Hoch.

She goes on "Some of the collected bones, being from typically non-cave dwellers, raise no question as to their having been transported into the grave by other creatures."

Richardson and Bannon (1991) predict that the **White-breasted Kingfisher** is a potentially occurring species for the Emirates.

Does the presence of these species suggest a more fertile climate in the Umm an Nar area at the time when the bones were deposited? Certainly climatological studies have suggested that in the past five thousand years, there have been several periods of substantially greater rainfall than there is at present, possibly connected with higher sea level stands.

Unfortunately, no precise dating on the bones found is provided. The species, along with the Ostrich and the Giant Heron, could perhaps now form an appendix of the UAE Bird List, of birds known (Ostrich, Heron, Darters) or believed (Tern/Noddy, Pigeon, Kingfisher) to have existed in the country, but which no longer do so.

I am grateful to Colin Richardson and Ella Hoch for their comments on the drafts of this Note.

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PETER HELLYER

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Local bird names

Preliminary investigations have shown that the local names of birds resident in or visiting the United Arab Emirates are often significantly different from those used elsewhere in the Arab world, and may even differ from place to place within the Emirates.

In some cases, a common Arabic name like that for the **Hoopoe**, (*Upupa epops*), 'Hudhud,' may be used in some areas, alongside a local name, 'Abu Al Aal.'

Other birds may be more complicated. The **Stone Curlew**, (*Burhinus oedicnemus*), for example, is known widely as the 'Kairawan.' The **Curlew** (*Numenius arquata*), and the **Whimbrel**, (*Numenius phaeopus*), have both been identified to members of the Group as having the general Arabic name of either 'Kairawan Al Ma' (Water Kairawan) or 'Kairawan Al Bahr,' (Sea Kairawan), the other way round from the English, but logical enough. A member of the Manasir tribe from the south western deserts of the Emirates, however, has informed us that the local name for the Curlew and Whimbrel is 'Talili.'

With the support of one of our Corporate members, the

Abu Dhabi Petroleum Ports Operating Company, ADP-POC, members of the Group are now trying to collect the local Arabic names for the Birds of the Emirates, linking each name to the location and tribal affiliation of the source. There will be many species on the UAE List, (see TRIBULUS Vol. 1.2, October 1991), which probably do not have local Arabic names, such as the many warblers.

It is important, however, to collect details of as many local names as possible, and to match these up to the internationally-recognised scientific names. Beyond the intrinsic value of such a list, there will also be advantages in recording names that may otherwise be lost and in collecting material that may shed light upon slight differences in dialect.

UAE citizens are invited to contribute names known to them, while the Group's bird-watchers would be delighted to sit down with anyone who can provide information.

All details and suggestions, please, to **The Bird Recorder**, E.N.H.G., c/o P.O. Box 2380, Abu Dhabi, U.A.E.

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Local coin hoards

Two major coin hoards were discovered accidentally in the Emirates during the second half of 1991, both dating to the Islamic period.

In August a hoard was discovered by a farmer in the Fujairah village of Mirbah. Subsequently handed over to the recently opened Fujairah Museum, the coins, yet to be formally described and dated, were inscribed in Arabic script, and were decorated with motifs including lions, camels, horses and peacocks, indicating a possible Persian origin.

The second hoard, discovered in September just north of Hili in the Al Ain area, was again found by a local citizen. Buried in a small pot, the hoard, comprising a total of 303 silver coins, appeared all to come from the period of the Safavid dynasty in Persia, which ruled during the fifteenth to seventeenth centuries AD.

According to an official of the Department of Antiquities and Tourism in Al Ain, the coins were probably produced by a mint at Huwaiza and are typical of the 'shahi' denomination. Because of the size of the hoard, local experts speculate that it was probably buried during the Safavid period, when the coins would still have been in circulation.

An earlier Islamic coin hoard from Ras al Khaimah was described by J. Nisbet in ENHG Bulletin No. 9 (November 1979). Originally said to have been found by

a well-digger, the 43 coins in the hoard dated from the tenth century AD, between 921 AD and 981 AD. Some came from Persia, one from Balkh in northern Afghanistan, and the majority from the mints of Al Shash, Samarkand and Bokhara in Central Asia.

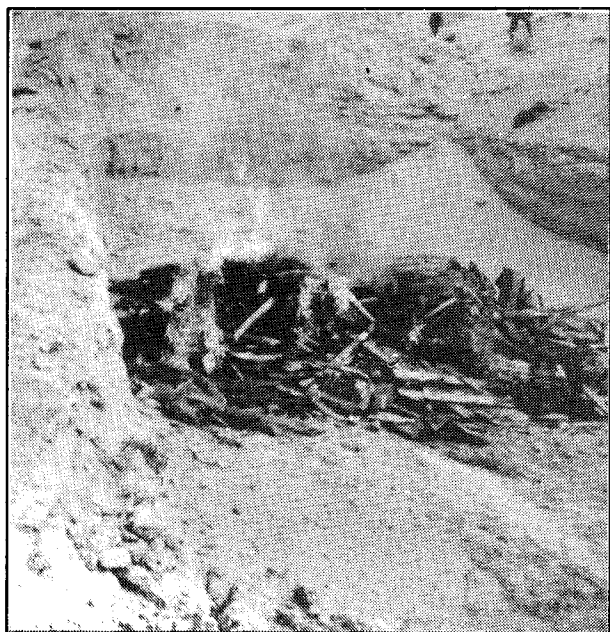
A substantial number of small coins from the Islamic period, often very debased, have been discovered during excavations at the Julfar site in Ras al Khaimah, most of which are of bronze, and can be dated to the fourteenth to seventeenth century AD. They were mainly minted at Jarun, the former name of the island of Hormuz. At least one, however, is a fifteenth century coin from Mogadiscio, in Somalia, suggesting trading relations between Ras al Khaimah and the Horn of Africa at that date.

Pre-Islamic coins in varying numbers, including one major hoard, have also been found in the Ad Door and Mileiha areas, some of which are described in the recent book 'The pre-Islamic Coinage of Eastern Arabia,' by Professor Dan Potts, (Carsten Niebuhr Institute, Copenhagen, 1991).

There have also been surface finds of individual coins throughout the country, including a few very debased samples from Site One on the Al Ain to the Abu Dhabi road, a former camp-site for local nomads, which are probably of nineteenth century date, originating from regional mints in Iran.

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Ivory burned



Confiscated elephant ivory goes up in flames in Dubai.

A total of a little over twelve tons of elephant ivory worth Dh. 7 million was burned by the Dubai Municipality in January 1992 at a ceremony observed by Municipal officials and by diplomats in Dubai, in the latest evidence of a crack-down by local authorities in the Emirates in trading in wild-life products.

The ivory had been confiscated by local dealers who had imported the ivory before the introduction of a ban by the Municipality, and the owners of the seized tusks were paid compensation at above the current international market rate for the loss.

The import, export and trade in ivory and in products from rhinoceroses was banned by the Municipality three years ago, on the instructions of the UAE Vice President and Prime Minister Sheikh Maktoum bin Rashid al Maktoum, who is also Ruler of Dubai. Subsequently the UAE resumed membership in the Convention on International Trade in Endangered Species of Flora and Fauna, CITES, and enabling legislation is now being drawn up to permit the terms of the Convention to be applied to the Emirates.

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Emirates Bird Report

With the backing of the Emirates Natural History Group, the Emirates Bird Report, formerly a quarterly duplicated sheet of bird records, has been turned into a twice-yearly printed A5 magazine, which includes not only six months of records, but also short articles relating to birds and birding in the UAE and neighbouring countries.

The Report is edited by Colin Richardson, Bird Recorder

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Environmental Protection Agency

At a meeting in January 1992, the United Arab Emirates Council of Ministers agreed to establish an Environmental Protection Agency, which, as a parastatal body, will be given the responsibility for drawing up and monitoring the implementation of environmental legislation in the country.

The new agency, whose structure had yet to be approved as this issue of TRIBULUS went to press, will

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Jashanmal Award

In 1990, the Group, in collaboration with the Jashanmal National Company of Abu Dhabi, instituted the Jashanmal Annual Award for Natural History, to be presented to a person considered by the Committee to have made a major contribution to the study and promotion of natural history in the Emirates. The winner in 1990 was JNB 'Bish' Brown, a founder-member of the Group.

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for the Northern Emirates, and the author of the standard work on local ornithology, 'The Birds of the United Arab Emirates.'

EBR 15 is the first of the new format, covering January to June 1991, and copies of this, and of previous issues, can be obtained from the editor, Colin Richardson, P.O. Box 2825, Dubai, UAE, at a local price of 10 UAE dirhams, (Overseas rates available on request).

replace the Higher Environmental Council, chaired by the Minister of Health, and is expected to be headed by an official of Ministerial rank.

The EPA is also expected to liaise closely with similar organisations overseas and within the Middle East, and to be responsible for the initiation of research on the country's natural environment.

For 1991, the Committee chose A.R. 'Rob' Western, the Chief Editor of TRIBULUS, who was also Editor for all but the very earliest of the former thrice-yearly Bulletins issued by the Group. Currently the Plants Recorder, Rob is also author of the standard work 'An Introduction to the Flowers of the United Arab Emirates,' published in 1989 by the Emirates University Press.

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Book Review

The Pre-Islamic Coinage of Eastern Arabia, by D.T. Potts. Carsten Niebuhr Institute Publication No. 14, 1991.

With the expansion of archaeological activity in the Emirates and elsewhere in the Arabian Peninsula over the last two or three decades, there have been a steadily growing number of coins being uncovered, some dating to the Islamic period, and others to the kingdoms and states that preceded Islam. Many of the coins, of course, have come in from outside the region, evidence of its involvement in international trade, but there were also local mints producing coinage as well.

This book by Professor Daniel Potts, director of the archaeological excavations at Tell Abraq in Umm al Qaiwain, is an attempt to pull together some of the records of local pre-Islamic coinage from a total of eleven sites, two, Ad Door and Mileiha, in the United Arab Emirates, and the remainder in Saudi Arabia.

Many of these coins are now in private collections, having been picked up over the years by, for example, expatriate employees of ARAMCO, although others have turned up in archaeological excavations. It is to Potts' credit that he has spent several years tracking down as many as possible, and persuading owners to let him study them.

A total of 529 coins are studied, which he has divided into a total of fifty one classes, all of which come from the Hellenistic and Parthian period, between around 300 BC to 200 AD. Foreign coins, from, for example, Seleucid kings and Roman Emperors, have been excluded from the study, which confines itself to Arabian issues, beginning with those minted under the authority of the rulers Abyatha and Abi'el.

A number of other coins have come to light since Potts

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completed his work, including some from the UAE, but it represents an important beginning in the study of this neglected aspect of the area's history.

The book also includes an Appendix by Remy Bouchardat and Monique Drieux of the French Archaeological Mission in the Emirates, on the coin mold found at Mileiha in 1990, tentatively dated to between the 1st Century BC and the 1st Century AD.

The book will be of most interest to numismatists, although it sheds new light on the sophistication of the region around 2,000 years ago. It also underlines the importance of making any casual coin finds known to archaeologists, so that they can be properly studied, and their provenance can be recorded. Many pre-Islamic coins in the Emirates, as well as many more recent finds, have been turned up accidentally, including one major hoard, (which fortunately has been scientifically examined). Anyone finding coins should make sure they are given a proper scientific examination, while Potts, like all archaeologists, abhors the random waving of metal detectors over ancient sites, always likely to contribute to the destruction of scientific evidence.

Not one of the coins in Potts' book, incidentally, is of gold, so the book should not be taken as an encouragement to go out looking for treasure trove. Expensive, of course, but worth having for those interested in this aspect of the country's history.

Carsten Niebuhr Institute of Ancient Near Eastern Studies, University of Copenhagen, Njlasgade 94, DK-2300, COPENHAGEN, Denmark.

PETER HELLYER

RECORDERS' REPORTS FOR JULY - DECEMBER 1991

Archaeology and Palaeontology

After the inevitable disruptions caused in the first half of 1991 by events further up the Gulf, the usual teams of foreign archaeologists and palaeontologists returned to the Emirates in the second half of the year, (and in early 1992), to continue excavations and surveys throughout the country.

On the palaeontological front, the teams co-ordinated by the British Museum (Natural History) and funded by our Corporate member, the Abu Dhabi Company for Onshore Oil Operations, ADCO, continued work in both the Western and Eastern Region of the Emirate of Abu Dhabi. The teams' co-ordinator, Peter Whybrow, reports on the season of work elsewhere in this issue of TRIBULUS.

Archaeological studies, as usual, have been much more diverse, with major activity by teams from Britain, France, Belgium, Australia/Denmark, Germany and Japan during the course of the cooler months on sites at Julfar, in Ras al Khaimah, Ad Door and Tell Abraq in Umm al Qaiwain, and at Mileiha in Sharjah, while survey work was undertaken in the East Coast enclaves of Sharjah. The Department of Antiquities and Tourism in Al Ain continued work on sites in the Hili area, and also began investigation early in 1992 of some Islamic sites in the desert south west of Al Wathba.

Apart from the excavations at Julfar, little work has been done on the country's Islamic archaeology, and the Al Ain Department now plans a series of surveys and excavations to get a clearer picture of the pattern of settlement in the Islamic period.

A related project has been a survey of the traditional architecture of Islamic date in the Emirate of Ras al Khaimah, carried out by members of the British team that worked at Julfar autumn and early winter. The focus was on buildings of a defensive nature and on mosques, whether in good repair or in ruins, with a view to recording these vestiges of the country's past, and to identifying candidates for future restoration.

Most of the forts and towers were shown to be of relatively recent date, less than three hundred years old. Some of the more prominent ones, however, like the old

fort at Dhayah, north of Ras al Khaimah, which was abandoned after being shelled by the British in 1819, are on sites which, judging by the pottery present, had clearly been occupied much earlier.

With restoration of the country's older buildings now being given a higher priority, the best news of the autumn was the announcement by the Government of Fujairah that UAE President Sheikh Zayed bin Sultan al Nahyan has agreed to finance the restoration of the great mud-brick castle that dominates the plain of Fujairah. Much of the work is expected to be carried out by Omani craftsmen who have completed similar, and excellent, restoration projects in Oman.

Another candidate for urgent restoration work is the old palace in the Wadi Hail, also in Fujairah, and some Group members were active early in 1992 in efforts to put together a restoration programme.

While the Group as such undertook no archaeological work of its own, Group members were also involved in the successful raising of sponsorship for the Tell Abraq excavation in Umm al Qaiwain and for the archaeological survey of the islands of Sir Bani Yas, Dalma and Merawah, which was due to begin in late March.

General Motors, Emirates Airline, Spinneys Abu Dhabi, The British Council, the Holiday Inn, the Abu Dhabi National Hotels Company, the Union National Bank, ADCO, Wimpeys and the Higher Colleges of Technology, a number of them amongst our Corporate members, deserve thanks for their readiness to support studies on the archaeology of the Emirates.

Previous issues of TRIBULUS have profiled excavations at Julfar and Ad Door: elsewhere in this issue is a report on the expedition led by Professor Daniel Potts on the Bronze and Iron Age site at Tell Abraq. Notes and Queries also includes items on recent accidental discoveries of coin hoards and on other topics of an archaeological interest.

PETER HELLYER
Archaeology Recorder

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Programme of Meetings – July to December 1991

1st July	–	"Desert Driving," two films from ADCO.
5th Aug	–	"Conserving America: the Challenge on the Coast," USIS film.
2nd Sept	–	"These Beautiful People," Film on Namibia.
16th Sept	–	"An Introduction to Abu Dhabi," by Peter Hellyer
7th Oct	–	"A Day above Oman," by John Nowell.
21st Oct	–	"Plate Tectonics," by Dr. Ken Glennie.
4th Nov	–	"A History of Al Ain," an ADCO film.
18th Nov	–	"A Look back at Natural History in the UAE," by Bish Brown.
2nd - 5th Dec	–	Group trip to Oman
16th Dec	–	"Ancient Astronomy," by Ghassan Kubba.

Birds

In December Emirates Bird Report No 15 (January to June 1991) was produced by Colin Richardson our member based in Dubai. The fifteenth report, however, differs substantially from its predecessors in size, content, and format. It has now adopted the familiar UK county bird report dimensions and has been expanded to include some interesting notes and articles by a number of contributors. Numerous illustrations by Bill Morton break up the list of species recorded in the period, which comprises the body of the report, and serves to give a highly readable and attractive appearance.

The ENHG Committee feels this publication is the preferred vehicle for presenting the bird records for the country and has substantially financed the publication of EBR No. 15. To avoid duplication, therefore, it is not appropriate to use these pages for a detailed report of species sightings and only the exceptional records are mentioned below.

Of those the **Sabine's Gull** found in June remained until the middle of July at Ramtha Tip and was the pick of the bunch. **Great Snipe** were seen from the middle of August in one's and two's at the Emirates Golf Course and other species rarely recorded were **Chaffinch**, **Brambling**, and **Hooded Wheatear**, all of which were found on Das Island in mid-November. At the same time an **Eversmann's Redstart** was seen in the Jebel Ali area and a **Moustached Warbler**, which was located at the Fish Farm in Dubai, was still present in March 1992. In December another **Eversmann's Redstart**, this time on Das Island, stayed briefly and a **Long-toed Stint** turned up at Ruwais. Still in December two separate **Woodcocks** were seen near Jebel Ali and a **Merlin** was identified in Ras al Khaimah. Potential additions to the UAE list were **Bar-tailed Desert Lark** and **Oriental Skylark** both of which were found in the Baynunah region of Abu Dhabi emirate in autumn but for which no details have yet been received.

There were also a series of records which will lead to the review of the status of some species in UAE. For instance the greater number of reports of **Montagu's Harrier** and **Long-legged Buzzard** in 1991 suggest both species are fairly common migrants, at least in autumn. Discovery of numerous **Mourning Wheatears** in the Jebel Dhanna/Ruwais area in October indicates it too is a more frequent migrant than the previous records show. One bird now being identified more frequently is the **Bimaculated Lark** which is probably a regular winter visitor in small numbers to the fodder fields of the region.

Not only are we finding new birds to add to the national list on an annual basis but finding new localities at which to look for them. The latest addition to the sites list is the Creek Golf Course in Dubai which is still under construction and, therefore, as yet generally out of bounds to the bird-watcher. Even so it has been possible to make some observations there and the newly seeded turf

proved very inviting to **Casplan Plovers** which were seen occasionally during the earlier part of the autumn. In Abu Dhabi the lake at Al Ghar continues to be one of the more exciting local spots. The numbers of **Greater Flamingo** there rose to 650 on 20 November and it was estimated that more than 500 **Black-winged Stilts** were presented by the end of the breeding season. Waders of many species crowded the lake during the autumn migration, feeding on the abundant insect larvae.

The **Crab Plover** colony on Abu al Abyad island had 600 adult birds at the end of July which produced between them 116 fledged young.

Due to the persistent efforts of the Chairman we were also able to report in the October Newsletter details of a ringing recovery made in 1989. The ring was from a **Great Black-headed Gull** ringed earlier the same year on Zschemchiuzshny Island in the Caspian Sea. No ringing (called banding in North America) is currently being done in the UAE and only limited work is being done in those countries to the north of us which probably provide most of our migrant and winter visitors and so any recovery locally is a valuable addition to the record.

The major topic to report on is the work being carried out by the National Avian Research Centre. Unfortunately the Centre has no physical space to call its own yet and the scientists working on their first major project, the **Houbara**, are UK-based when not in the field. Their results will be published in due course but we can give here a brief description of their progress to date.

The first steps to setting up a captive breeding station have been taken by studying pinioned birds at close quarters in large penned-off enclosures. The food items, plant and animal, were being identified to establish the conditions under which breeding may be possible. At the same time a survey of randomly selected squares in Abu Dhabi emirate has been made to assess the probable winter population of the species. The survey team are using satellite photographs of the area and matching the different plant associations recorded on the ground with the images from space. The **Houbara** sightings for each plant association can then be compared with the amount of suitable habitat identified from space to give an indication of the number of birds likely to be present. During that first survey carried out in the early winter all bird species were in fact recorded so that it will be possible to make quantitative judgements about the number of birds present in the emirate. These methods and techniques, rather crudely described, are in fact highly sophisticated and represent the leading edge of this kind of study.

Thanks are due to all contributors for writing down and submitting their bird records. Please continue to do so.

R.A. RICHARDSON
Bird Recorder

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Mammals

As usual, few reports of mammals, either live or dead, were received during the second half of 1991, although it's pleasant to note that not only were there a few more people submitting records, but that they included species different from the normal ones, and came from all over the country.

One feature was three reports of Bats, a notoriously difficult group to identify. At Qarn Nazwa (VB 27), on July 8th, a number of bats of two clearly distinct species were seen flying at dusk, presumably coming from roosts in little caves in the mountain. Some room for research here.

On August 6th, at least fifty four bats, again unidentified, but presumably all of the same species, were counted leaving a roost site in the roof of a villa verandah in Jumeirah (VA27). The villa owners were advised to put up a board to catch their droppings, and leave them undisturbed, and we can only hope the advice was taken.

Finally, on November 12th, a **Sind Serotine Bat**, (*Eptesicus nasutus*), was caught in a mist-net in Ruwais, (SB25), during the course of a survey being done for the National Avian Research Centre, and was retained for identification purposes, adding a rare confirmed record to our list.

There is clearly a lot of work to be done on the UAE's bats, elusive creatures at the best of times.

Another species uncommonly sighted, in the wild at least, was an **Arabian Gazelle**, (*Gazella gazella cora*), spotted on October 25th running on the Madam Plain. Another record from the same area dates to 1989, while similar gazelles have been seen on Jebel Qatar.

Wisely cautious, because of the continuation of hunting, even though it is officially illegal in the Emirates, our two main species of wild gazelles, the **Arabian Gazelle**, ('Idhmi' in Arabic, and sometimes known as the Mountain Gazelle), and the **Sand Gazelle** or Rheem, (*Gazella subgutturosa marica*), are certainly more common than the occasional sighting would suggest. More records would be welcome.

Three records were made of the fairly common **Ethiopian Hedgehog**, (*Paraechinus aethiopicus dorsalis*), one near Dhaid (VB27) on July 4th, another, a road casualty, in Fujairah, (WA27), on November 14th, and finally two, one dead and one alive, in a tributary of the Wadi Bih (WA28) later in the month.

Two Cheesman's Gerbils, (*Gerbillus cheesmani arduus*), were road casualties on a sandy track near Jebel Dhanna, (SB25), on November 12th, and were collected, while a **Black Rat**, (*Rattus rattus rattus*), was spotted in the Bateen Wood in Abu Dhabi, (UA25), on July 13th. The species has previously been recorded nesting in trees in the wood.

The two species most commonly sighted, either alive or as road casualties or skeletons, were, as usual, the **Cape Hare**, (*Lepus capensis omanensis*), and the **Common Red Fox**, (*Vulpes vulpes arabica*). Cape Hares were spotted at Site One on the Al Ain Road, (UB25), Arada, in West Liwa, (TA22), the Liwa resthouse, (TA23), and at Ras al Aysh on the coast, (TA25).

Red Foxes were reported alive or as road casualties from Jebel Ali Free Zone, (VA27), Al Khatim, (UB25), Hamra (SB25), and on Bahrani Island, west of Abu Dhabi, (UA25). Precisely what they feed on an offshore island is unclear, but presumably a diet of small birds and lizards, and possibly hares, may be supplemented by garbage left behind by campers.

Fox skeletons were also reported from Jebel Dhanna, (SB25), Jebel Barakah, (SA25), Ras al Aysh, (TA25), and Mirfa, (TB25), all seen by Dr. Vera Eisenmann, of the French National Museum of Natural History, who was involved in the ADCO-supported palaeontological survey in Abu Dhabi's Western Region, (see **Notes and Queries**).

She also reported the skull of a **Dugong**, (*Dugong dugon*), from near Mirfa, (TB25), and the skull of an unidentified Dolphin, probably a **Bottle-nosed Dolphin**, (*Tursiops truncatus*), from Ras al Aysh, (TA25), all during the course of late December.

Our thanks to her for her records, and to those others who supplied records during the period, Bish Brown, Will Duckworth, Sylvie Emmerson-Cambet, Gary Feulner, D. Hopkins, Marijke Jongbloed, Colin Richardson, John Reid and Charles Stevens.

Members, and others, have no doubt seen other mammals, (such as dolphins offshore), but no records have come in. We look forward to a few more during the first half of 1992.

PETER HELLYER

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Corporate Members of the ENHG

Production of TRIBULUS, and much of the other activity of the Emirates Natural History Group, like our sponsorship of the new Emirates Bird Report, would not be possible without the generous support of the Group's Corporate members. Indeed, the Group Committee would not have been able even to consider converting our duplicated Bulletin into a printed format without such support.

The Editorial Board and the Group Committee acknowledge, with thanks, the sponsorship of the

following Companies and bodies, whose support has been invaluable.

Abu Dhabi Company for Onshore Oil Operations, ADCO, Abu Dhabi National Hotels Company, Abu Dhabi National Oil Company, ADNOC, Abu Dhabi Marine Operating Company, ADMA-OPCO, Abu Dhabi Petroleum Ports Operating Company, ADPPOC, ANZ Grindlays Bank plc, Al Fahim Group, The British Council, British Petroleum plc, The Higher Colleges of Technology, Mobil Abu Dhabi Inc, Shell Gas Abu Dhabi, Spinney's Abu Dhabi and Union National Bank.

Plants

Little field-work was done during the second half of the year, and, as predicted in *TRIBULUS* Vol. 1.2 (October 1991), the year failed to produce the country's first endemic plant species. This continues to look increasingly unlikely as field-work covers more of the country.

A couple of species new to the Emirates were recorded for the first time, however, while an extension of range was noted for another species.

A one day visit by the Plant Recorder and J.N.B. 'Bish' Brown along the coast to Dhabbiyyah, west of Abu Dhabi, on October 28th produced some interesting finds, according to specialists at the Royal Botanic Gardens in Edinburgh, Scotland, who identified a collection of 'Saltbush' specimens for us.

While most of the species collected were not unexpected, a new species for the Emirates of *Salsola*, (*S. drummondii* Ulbrich), turned up. *Blenertia cycloptera*, of the same family, Chenopodiaceae, was also recorded here, right on the upper tide line, the first time it had been found west of Abu Dhabi. The plants

that used to exist near Umm an Nar appear to have completely disappeared since 1988, leaving the Jebel Ali area as the only other known site in the country.

A collection of marine grasses made by 'Bish' Brown in a pool along the Sweihan Road turned out to be *Ruppia maritima* Linn., another first for the Emirates, although it is known from other Gulf countries. It grows both in the sea and in very brackish inland pools.

As reported in the last issue of *Tribulus*, a single crucifer recorded on Das, *Rorippa palustris* (L.) Besser, turned out to be a first for the whole of the Arabian Peninsula, although it is common in the Indian sub-continent. The plant flowered and fruited continuously from March to December under a dripping air-conditioner, and then died back. It revived in January 1992 and was in full flower for about three weeks, before apparently succumbing to a few days of persistently strong, cold winds.

ROB WESTERN
Plant Recorder

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Reptiles

The number of records submitted during this period has been disappointing. The summer exodus and the much cooler weather at the end of the year may have had some affect. However, we still have a few members who report their sightings of reptiles from areas not regularly visited.

Rob Morris was resident for some time on the island of Abu al Abyad (TB23) during his Houbara Bustard breeding trials. He noted **Ocellated skink** (*Chalcides ocellatus*), **Turkish gecko** (*Hemidactylus turcicus*) and the **Race-runner** (*Mesalina adramitana*). During a visit to the island I also saw a **Stone gecko** (*Bunopus tuberculatus*). There must be many more species waiting to be discovered.

Sherif Baha El Din, a member of the Avian Research Survey Team recorded twenty three reptile species in areas covering the whole of Abu Dhabi Emirate. He returned to Abu Dhabi in March 1992, and will supply more details of the species found. It is believed that some species found in adjacent countries, but not on the current ENHG list, were amongst those collected.

Looking for birds, (reptiles with feathers), in Saffa Park (VA27), Colin Richardson noticed a terrapin (turtle in the USA) in the irrigation water tank. It was basking in the sun on a sunken log. Unfortunately, it quickly disappeared below the surface before a positive description could be obtained. This could not have been an indigenous species, so was probably one released by some kind-hearted person when they tired of looking after it. A year ago Carolyn Lehmann found a dead **Red-eared Terrapin** (*Pseudemys scripta elegans*) on the beach near Jebel Ali. Obviously its previous owner did not know it was a fresh water animal.

The Belgian archaeologists digging at Ad Door (VB28),

uncovered a small **Thread snake** (*Leptotyphlops macrorhynchus*) on their last day, December 5th. This is the third specimen found at the site since 1989. It was allowed to return to its subterranean lifestyle.

A first for the Reptile Recorder was the discovery of a small **Skink** (*Ablepharus pannonicus*) at Mahdah, Oman (VB25). Although not in the UAE, our reptile list covers the UAE and nearby areas, where visas are not required. It was already on the ENHG list having been found at Wadi Asimah (WA28) in 1971.

In nearby Aboule, Oman (WA25) there were **Blue rock agamid** (*Agama sinaiti*), **Dwarf rock gecko** (*Pristurus rupestris*), **Fanfooted gecko** (*Ptyodactylus hasselquistii*), **Jayakar's lacertid** (*Lacerta jayakari*) and **Arabian toad** (*Bufo arabicus*).

The common **Yellow-bellied house gecko** (*Hemidactylus flaviviridis*) was seen regularly at night around house lights. The very small **Dwarf rock gecko** (*Pristurus rupestris*) sometimes known as a semaphore gecko from the way it waves its tail, is a daytime animal on trees and walls. In the sandy areas the **Yellow toad-headed agamid** (*Phrynocephalus arabicus*) and the **White-spotted brown lacertid** (*Acanthodactylus schmidtii*) were most frequently seen. One dead **Spiny-tailed agamid** was seen on the road near the Al Hassah roundabout (VA26) on the Abu Dhabi/Dubai road in August.

There are references in the Group Library for anyone wishing to study these very interesting creatures.

Our thanks to all members and non-members who submitted records.

BISH BROWN
Reptile Recorder

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الطيور في الامارات:

تم وبدعم من جمعية الامارات للتاريخ الطبيعي تطوير نشرة الطيور في الامارات الربع سنوية الى مجلة تصدر مرتين في العام، وذلك لتسجيل وتدوين الطيور في الامارات طوال ستة أشهر، اضافة الى نشر العديد من الموضوعات حول الطيور في دولة الامارات والدول المجاورة.

يشرف على تحرير النشرة «كولن ريتشاردسون» مسجل

ومراقب الطيور في الامارات الشمالية، ومؤلف كتاب «الطيور في دولة الامارات العربية المتحدة».

وصدرت المجلة في شكلها الجديد لتغطي الفترة من يناير وحتى يونيو ١٩٩١، ويمكن الحصول على هذه النسخة الى جانب الأعداد السابقة من: «كولن ريتشاردسون» ص.ب: ٢٨٢٥ - دبي - دولة الامارات العربية المتحدة، مقابل مبلغ ١٠ دراهم. الاسعار خارج الدولة يتفق عليها مع السيد «كولن ريتشاردسون».

وكالة حماية البيئة:

وافق مجلس الوزراء بدولة الامارات العربية المتحدة في أحد اجتماعاته خلال شهر يناير من هذا العام على انشاء وكالة لحماية البيئة. وتقوم الوكالة بوضع ومراقبة تنفيذ تشريعات حماية البيئة

في الدولة وسوف تحل محل اللجنة العليا لحماية البيئة برئاسة وزير الصحة.

وسوف تقوم الوكالة بتوثيق الاتصال مع المنظمات المشابهة في العالم وفي منطقة الشرق الأوسط، كما سوف تقوم الوكالة بالعمل على اجراء الأبحاث حول البيئة الطبيعية في الدولة.

جائزة جاشنمال:

قامت المجموعة في عام ١٩٩٠ وبالتعاون مع شركة جاشنمال الوطنية - أبوظبي، باستحداث جائزة جاشنمال للتاريخ الطبيعي. وتمنح الجائزة سنوياً لأحد الأشخاص الذين ساهموا في دراسة ونشر الوعي في مجال التاريخ الطبيعي بدولة الامارات. منحت الجائزة لعام ١٩٩٠ الى السيد «بيش براون» وهو أحد مؤسسي المجموعة.

واختارت اللجنة «روب ويسترن» رئيس تحرير «تريبيلوس» لجائزة العام ١٩٩١. والى جانب «تريبيلوس» قام السيد «ويسترن» برئاسة تحرير النشرات التي كانت تصدرها المجموعة من قبل.

والسيد ويسترن الذي يعمل أيضاً مسجلاً للنباتات، قام بتأليف كتاب «مقدمة لزهور دولة الامارات العربية المتحدة» والذي قامت بطبعته ونشره مطبعة جامعة الامارات.

حرق كميات من العاج:

قامت بلدية دبي خلال شهر يناير من هذا العام بحرق حوالي ١٢ طناً من العاج تحت اشراف عدد من مسؤولي البلدية وعدد من أعضاء السلك الدبلوماسي.

وتأتي عملية احراق العاج في نطاق جهود المسؤولين في امارة دبي لمحاربة الاتجار في المواد المستخرجة من الحيوانات البرية. وتمت مصادرة الكمية من بعض التجار المحليين الذين قاموا باستيرادها قبل صدور قرار منع الاتجار في العاج والذي أصدرته

بلدية دبي.. وقامت السلطات بدفع تعويضات مجزية للملكية الكميات المصادرة فاقت الأسعار السائدة للعاج في الأسواق العالمية.

وكانت بلدية دبي قد قامت وقبل ثلاث سنوات بمنع الاستيراد والتصدير والاتجار في العاج وذلك بناء على توجيهات من صاحب السمو الشيخ مكتوم بن راشد آل مكتوم نائب رئيس الدولة رئيس مجلس الوزراء حاكم دبي.

وكانت دولة الامارات العربية المتحدة قد انضمت الى الاتفاقية الدولية لمنع الاتجار في الحيوانات المهددة بالانقراض.

مجموعات العملات المحلية:

تم اكتشاف أكبر مجموعتين من العملات القديمة في دولة الامارات العربية المتحدة خلال النصف الثاني من عام ١٩٩١، وعن طريق الصدفة المحضة.. ويعود تاريخ المجموعتين الى العصر الإسلامي.

في أغسطس من العام الماضي اكتشف أحد المزارعين في قرية مريج بالفجيرة ذخيرة كبيرة من العملات القديمة وقام على الفور بتسليمها الى متحف الفجيرة الذي تم افتتاحه مؤخراً.

وتحمل العملات مجموعة من الخطوط والرسومات العربية وهي مزينة برسومات لحيوانات كالأسود والجمال والخيول والطاووس، مما يرجح انها من أصل فارسي.

وتم اكتشاف المجموعة الثانية في سبتمبر من العام الماضي الى الشمال من منطقة هيلي بالعين بواسطة أحد المواطنين.

وتشمل المجموعة التي تم دفنها في جرة صغيرة حوالي ٣٠٣ قطعة فضية. ومن المرجح أن المجموعة بكاملها تعود إلى عهد سلالة «سافافيد» الفارسية والتي تولت الحكم في القرن الخامس عشر وحتى السابع عشر بعد الميلاد.

ويقول مسئول بوزارة الآثار والسياحة في العين ان تلك القطع ربما تم سكها في حويزة وهي من فئة الـ «شاهي».

وكان «جي. نسبيت» قد قام بشرح لمجموعة من القطع النقدية العائدة الى العصر الإسلامي وتم اكتشافها في رأس الخيمة في العدد ٩ من نشرة جمعية الامارات للتاريخ الطبيعي الصادرة في نوفمبر ١٩٧٩.

وتعود المجموعة التي تضم حوالي ٤٣ قطعة نقدية - والتي يعود اكتشافها لأحد عمال حفر الآبار - الى العام العاشر بعد الميلاد، ومن المرجح أن يكون مصدر بعضها بلاد الفرس والبعض الآخر من منطقة «بلخ» شمال أفغانستان في حين ان معظمها من دور سك العملة في الشاش وسمرقند وبخاري بآسيا الوسطى.

كما تم اكتشاف بعض القطع الصغيرة التي تعود الى العصر العباسي وذلك خلال أعمال الحفر في موقع جلفار في رأس الخيمة.. وتم سك معظمها من البرونز، ويعود تاريخها الى مابين القرن الرابع عشر والسابع عشر بعد الميلاد. وتم سك معظمها في جارون وهو الاسم القديم لجزيرة هرمز.

وتضم المجموعة قطعة واحدة على الأقل تعود الى القرن الخامس عشر ومصدرها مقديشو في الصومال، وهو ما يرجح قيام علاقات تجارية بين رأس الخيمة ومنطقة القرن الأفريقي في تلك الفترة.

كما تم اكتشاف مجموعات متفاوتة من عصر ما قبل الإسلام وذلك في منطقتي الدور ومليحة، وتم شرح والاشارة الى بعض تلك القطع في كتاب عملات عصر ما قبل الإسلام في شرق الجزيرة العربية تأليف البروفسور «دان بوتس» ونشر معهد كارستين نيبوهر - كوينهاجن - ١٩٩١.

هذا بالإضافة الى اكتشافات متفرقة على سطح الأرض لبعض القطع النقدية، وفي مناطق عدة من دولة الامارات العربية المتحدة. كما في ذلك بعض القطع ذات القيمة المنخفضة التي تم جمعها من الموقع (أ) على طريق العين - أبوظبي، وهو أحد مواقع مخيمات البدو. ومن المرجح أن تعود تلك القطع الى القرن التاسع عشر وتم سكها في بعض مناطق ايران.

الأسماء المحلية للطيور:

أظهرت الأبحاث الأولية أن الأسماء التي تطلق على الطيور في دولة الامارات العربية المتحدة تختلف عادة عن الأسماء الشائعة في مناطق أخرى من العالم العربي.

ليس هذا فحسب بل ان في دولة الامارات نفسها نجد في بعض الأحيان أن أسماء مختلفة تطلق على طائر بعينه، وذلك باختلاف المناطق من الصحراوية الى الساحلية أو المناطق الجبلية.

على سبيل المثال فإن طائر الهدهد والمعروف بهذا الاسم في معظم الدول العربية يطلق عليه محلياً اسم «أبو العال».

هنالك أيضاً طائر كيراوان الذي يفضل الكثيرون من محبي الصيد بالصقور اصطياده. والكيراوان كبير الحجم والذي يطلق عليه كيراوان الماء، أو كيراوان البحر.. نجد له اسم آخر في بعض المناطق من دولة الامارات.. حيث يطلق عليه بعض أفراد قبيلة المناصير اسم «طليلي».

وبمعاونة ودعم شركة أبوظبي لإدارة الموانئ البترولية بدأت «جمعية الامارات للتاريخ الطبيعي» في جمع الأسماء المحلية للطيور في الدولة.

وتنوي الجمعية جمع أكبر كمية ممكنة من المعلومات حول هذه الأسماء المعروفة لدى بعض المواطنين من كبار السن فقط، وعليه يجب تدوين هذه الأسماء وإلا كان مصيرها طي النسيان.

وتدعو الجمعية المواطنين الى الانضمام الى هذا المشروع وتزويد الجمعية بأسماء الطيور المعروفة لديهم مع توضيح الاسم الانجليزي أو اللاتيني لها اذا كان ذلك ممكناً.

ويمكن للراغبين في ابداء أي اقتراحات أو توضيحات.. الكتابة الى مسجل الطيور - جمعية الامارات للتاريخ الطبيعي - ص. ب: ٢٣٨٠ - أبوظبي - دولة الامارات العربية المتحدة.



في الختام يتقدم بروفيسور بوتس بالثناء لحكومة أم القيوين وعلى رأسها صاحب السمو الشيخ راشد بن أحمد المعلا عضو المجلس الأعلى حاكم أم القيوين، والشيخ سعود بن راشد ولي عهد أم القيوين، والشيخ خالد بن راشد مدير الديوان الأميري.

ويعلق بروفيسور بوتس قائلاً: لقد قدم صاحب السمو الشيخ راشد وأبنائه الدعم الكامل لعملنا حيث يعتبر تل ابرق من أهم المواقع الأثرية التي يتم اكتشافها لعصر ما قبل الإسلام في الجزيرة العربية.

وقد قام بروفيسور بوتس بنشر نتائج أعمال الموسمين اللذين أمضاهما في الموقع تحت عنوان «هضبة ما قبل التاريخ بامارة أم القيوين بالإمارات العربية المتحدة - كشف آثار تل ابرق ١٩٨٩، وكذلك تحت عنوان آخر هو مزيداً من الاكتشافات الأثرية في تل ابرق موسم ١٩٩٠. وقد تم نشر النتائج في عامي ١٩٩٠ و ١٩٩١ على التوالي في كوبنهاجن.

ثم يواصل بوتس حديثه قائلاً: ان الموقع يبدو انه كان محتلاً خلال الفترة ٢٥٠٠ - ٥٠٠ ق.م، وهناك فجوة تلت ذلك العهد وهي الفترة الواقعة خلال مدة الحضارة الاغريقية والتي نجد أثرها في مواقع: مليحة، ومدام بالشارقة قبل عام ١٠٠ بعد الميلاد.

وقد أدى هذا الاحتلال الدائم الى اضافة أهمية خاصة لموقع تل ابرق حيث انه لم يمنحنا فقط فرصة دراسة نموذج تشييد قلعة أم النار بل وهبنا فرصة دراسة تطور الانسان خلال فترة تمتد الى ٢٠٠٠ سنة.

لقد بدأ بروفيسور بوتس أعمال الحفريات في موقع تل ابرق عام ١٩٨٩، حينما كان يعمل آنذاك في جامعة كوبنهاجن بالدانمرك.. وقد أتى هذه السنة يرافقه فريق يضم علماء آثار من جامعات سيدني باستراليا، ارياس بالدانمرك، وجوتنجن بالمانيا.

هذا.. وقد قامت شركة جنرال موتورز بتقديم العون لعمليات التنقيب حيث أعارة الفريق سيارتين اضافة الى الدعم المادي، كما قامت بعض المنظمات والمؤسسات الأخرى بدعم الفريق.

اكتشافات جديدة في «تل ابرق»

بقلم: بيتر هيلير

صرح البروفيسور دانييل بوتس - من جامعة سيدني باستراليا، والذي يقوم بأعمال حفر أثرية بموقع «تل ابرق»، بأن الموسم الثالث للحفريات بهذا الموقع الأثري في أم القيوين - والذي تم خلال شهري يناير وفبراير ١٩٩٢م - قد كشف عن معلومات جديدة حول تركيبة قلعة الموقع الأثري.

وقال بروفيسور بوتس.. ان موقع «تل ابرق» يقع فوق هضبة تعلو السهل المحيط بها بمقدار ١٠ أمتار فوق سطح البحر ويشابه الهضاب التي كانت توجد في بلاد ما بين النهرين. ويعتبر «تل ابرق» - عدا التل الصغير الموجود بمنطقة «خت» برأس الخيمة - التل الوحيد المعروف بالامارات. ويواصل البروفيسور بوتس قوله بأن هذا الموقع هو أهم موقع في ذلك العصر على امتداد منطقة جنوب الخليج.

ومن الملاحظات التي يبديها البروفيسور بوتس قوله: ان المنطقة المحيطة توحى بانها كانت محتلة خلال الفترة ٣٨٠٠ ق.م، مع وجود استحکامات دفاعية على مسافات قريبة من السواحل القديمة مع احتمال ارجاع تاريخها لتلك العهود رغمًا عن عدم اكتشاف الفخاريات التي يرجع تاريخها الى الفترة العبيدية.

كما يبدو أن قمة احتلال موقع «تل ابرق» قد بدأ حوالي منتصف عام ٣٠٠٠ قبل الميلاد.. أي حوالي ٢٥٠٠ ق.م. وتتزامن هذه الفترة مع بناء المعابد والمستوطنات بمنطقة أم النار - بالقرب من أبوظبي - وأم النار بمنطقة الهيلي - بالقرب من العين - حيث اشتهرت ببناء أبراجها الحجرية. مازالت القلعة تتوسط موقع تل ابرق حيث تتمركز فوق هضبة يقدر ارتفاعها بحوالي ٧ر٥ مترًا عن باقي السهل المحيط بها. وبالرغم من ان اكتشاف جدران القلعة قد تم خلال الموسم الأول للعمل في حفريات القلعة إلا أن هذا الموسم قد أدى الى اكتشافات وضحت الكثير من النقاط والمعلومات.

أولاً: يبدو حالياً بأن جدران القلعة قد تم إعادة بناؤها أو قويت في فترة ما خلال الفترة (٢٠٠٠ - ١٠٠٠ ق.م) مع بناء منصات لدعمها.

يبلغ قطر القلعة حوالي ٤٠ مترًا مما يجعل منها أكبر قلعة - على نموذج قلعة أم النار - تم العثور عليها حتى الآن في الامارات أو عُمان، حيث يبلغ قطر معظم القلاع الأخرى مثل البدية بالفجيرة والهيلي بالعين ما بين ١٦ - ٢٥ مترًا. ويستثنى من ذلك المبنى التاريخي الذي يماثل حجمه قلعة تل ابرق الا وهو الحصن الدائري العظيم الموجود في منطقة نزوة بعمان والذي تم بناءه في القرن السابع عشر أي بعد مرور ٤٠٠٠ سنة على تل ابرق.

ان موقع تل ابرق هو الموقع الوحيد الذي أظهر استيطاناً متواصلاً منذ ٢٥٠٠ ق.م حتى منتصف عام ١٠٠٠ قبل الميلاد (حوالي ٥٠٠ ق.م) وهو بذلك يستمد أهمية متنامية لفهم تطور الحياة في هذه المنطقة خلال تلك الفترة.

ويواصل البروفيسور بوتس قوله.. بأن هنالك العديد من أنواع القطع الأثرية للأواني الفخارية تم العثور عليها لم تكن معروفة لدى جهات أخرى بالمنطقة، وحيث انه تم العثور عليها خلال الحفريات حيث نستنتج من ذلك ان هنالك أنواعاً من الفخاريات قد تم استخدامها خلال تلك الفترة.

تضمنت المواد التي تم العثور عليها خلال عام ١٩٩٢ والموسمين الماضيين بعض القطع الفخارية المزخرفة من بلوشستان ووادي اندس (باكستان حالياً) والتي يرجع عهدها الى ٢٢٠٠ ق.م. لقد وجدت الكثير من بقايا مستودعات كبيرة للنار مازال العمل جارياً لاثباتها بالاضافة الى اكتشاف حجرين كبيرين من بقايا وادي اندس (باكستان حالياً) ووعاء حجري ناعم بجزئين وملعقة في شكل غير طبيعي مصنوعة من النحاس والبرونز.

هذا وهناك أيضاً بعض الاكتشافات المهمة التي تحتوي على بعض الخزف من البحرين يرجع عهدها الى ٢٠٠٠ - ١٧٠٠ ق.م.

ويقول البروفيسور بوتس: ان هذه الاكتشافات يرجع عهدها الى زمن لم تكن الحروف البابلية والآشورية في بلاد ما بين النهرين موضحاً فيها اسم ماجان كمصدر للنحاس. وقد كان يطلق اسم ماجان على منطقة انتاج النحاس في «جبال الحجر» وقد اختلف هذا الاسم في الوقت الحالي من المراجع علماء بأن مدينة «اور» في بلاد ما بين النهرين كانت مازال تستورد النحاس من ملون «البحرين».

وقد حوت الاكتشافات بالقرب من الهضبة هياكل عظمية لأربعة أغنام يبدو أنها ذبحت ومن ثم قذفت داخل حفرة عند قاعدة حائط القلعة حيث من المحتمل أن يكون ذلك نوعاً من طقوس الفداء عندما اعياد بناء وتقوية الحائط في سنة ١٥٠٠ ق.م.

هذا وقد بُذل الكثير من الجهد خلال موسم ١٩٩٢ لتوسيع الحفريات الى داخل القلعة والتي بدورها قد أدت الى اكتشاف الكثير من المعلومات الهامة.

ويواصل البروفيسور بوتس حديثه قائلاً.. بأن هذه هي المرة الأولى التي يتم فيها كشف ما تحتويه مثل هذه القلعة من الداخل، حيث ان القلاع الأخرى كالهيلي والبدية تم التمكن فقط من المحافظة على أساسيات بنائها، بينما نجد هنا قلعة كاملة فعلياً.

وقد تم التمكن من الحفاظ على سطحها الأعلى حيث تمت تغطيته بطبقة مسطحة من عصر الحديد يحتمل أن يكون قد تم بناءها في أواخر سنين احتلال الموقع أي ما بين ١٠٠٠ - ٥٠٠ ق.م.

لقد تمت تعرية بعض أجزاء الطبقة المسطحة المصنوعة من الطوب الطيني المجفف خلال المواسم السابقة ولكن تمكن البروفيسور بوتس وفريق العمل التابع له من تعرية المزيد من هذه الطبقة المسطحة والتي أوضحت انها تغطي فعلياً كل سطح الهضبة.

ومن الأشياء التي تم اكتشافها ولها دلائل خاصة .. بشر ضربت أركانها بالحجارة، ومن المحتمل أن تكون هي البئر الرئيسية في القلعة.

لقد ادرج أيضاً ضمن الطبقة المسطحة حوالي ١٢ قبراً يرجع عهدها الى سنة ١٠٠٠ بعد الميلاد.

ان الدليل على وجود حياة الانسان في موقع تل ابرق قد أثبتته وجود سكنين صُقل بعناية يبدو مشابهاً تماماً للسكاكين التي عرفت في مصر في العصر السابق لعهد الفراعنة، حوالي ٣٨٠٠ ق.م.

تريپلوس



جمعية الإمارات للتاريخ الطبيعي

ابريل ١٩٩٢م

العدد: (٢,١)

