

THE ECHINODERM NEWSLETTER

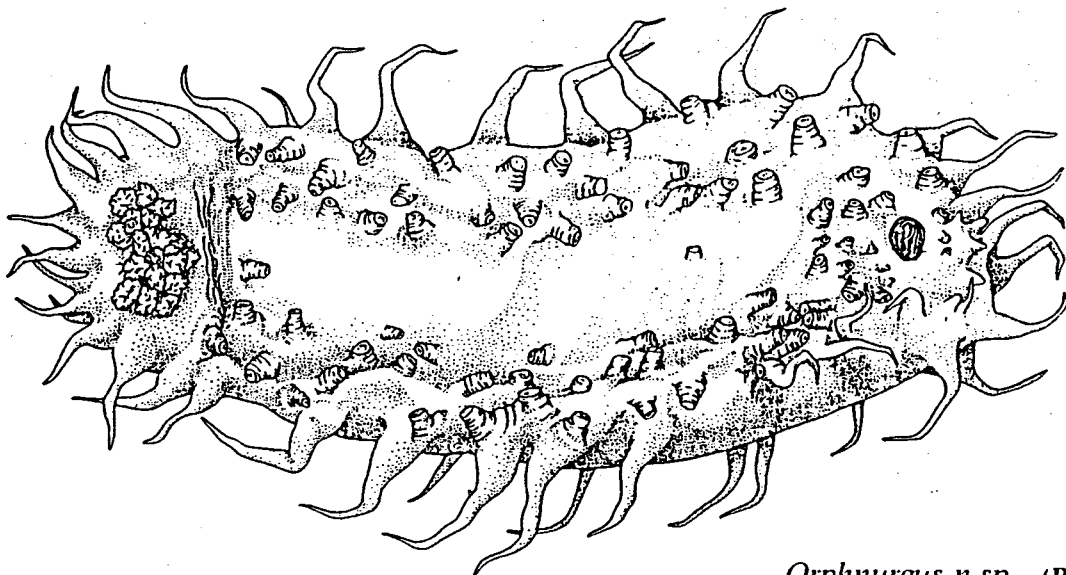
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The newsletter contains information concerning meetings and conferences, publications of interest to echinoderm biologists, titles of theses on echinoderms, and research interests, and addresses of echinoderm biologists. Individuals who desire to receive the newsletter should send their name, address and research interests to the editor.

The newsletter is not intended to be a part of the scientific literature and should not be cited, abstracted, or reprinted as a published document.



Orphnurgus n.sp. (P. Condit del.)

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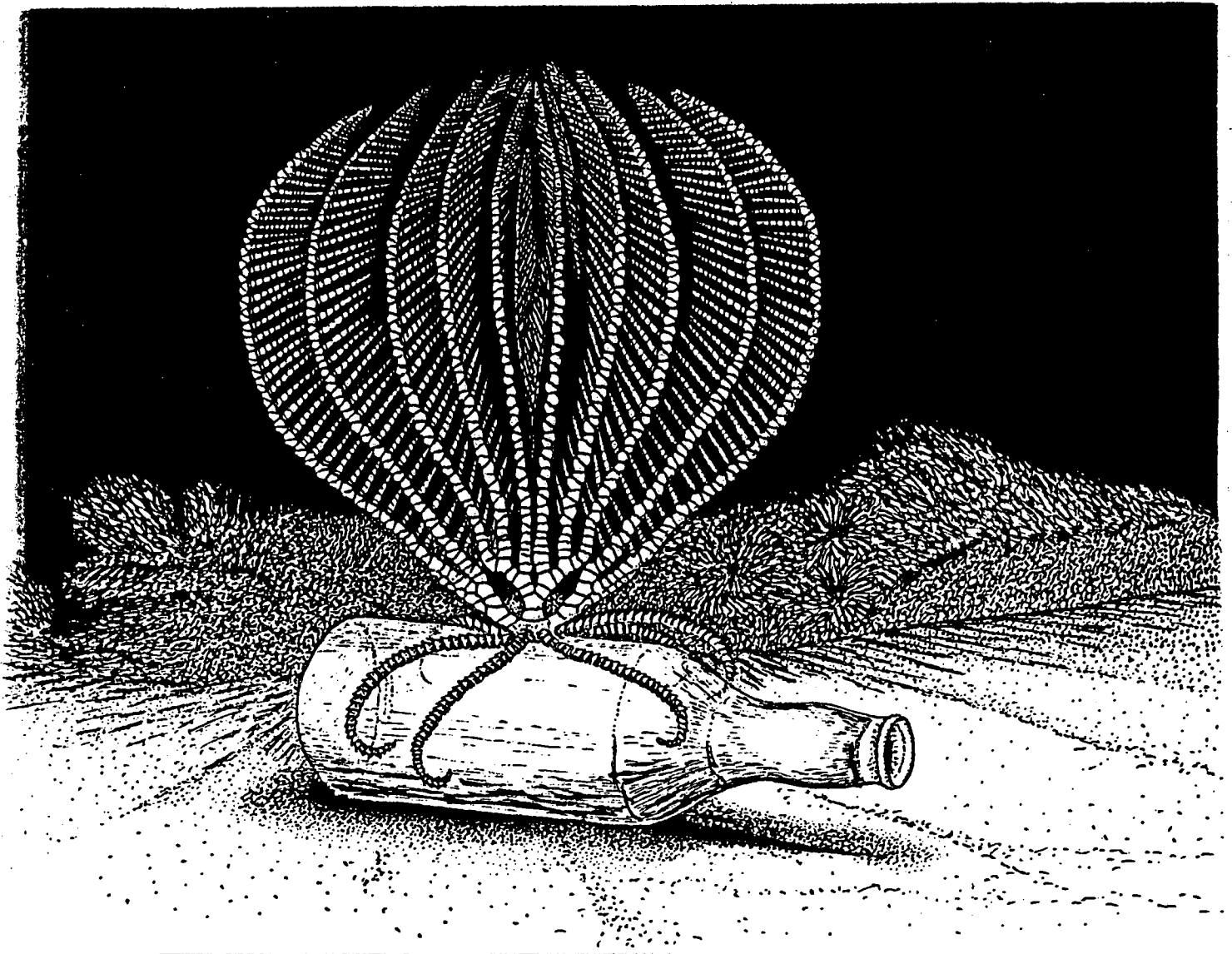
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Happy New Year! *Václav Petr*

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ZAVODNIK, DUSAN V.	385-52-811-544	385-52-813-496	
ZEIDLER, WOLFGANG	08-2077491	618-2077222	

CURRENT RESEARCH

ANDACHT, TRACY M.

studying the mechanism of dorsoventral polarity disruption by nickel chloride in sea urchin embryos

AUSICH, WILLIAM L.

Paleozoic crinoids

BALSER, ELIZABETH J.

studying the development of the gonad in holothuroid echinoderms (postdoctoral fellowship at Smithsonian Marine Station at Link Port, Ft. Pierce, Fla. - beginning Feb. 1994)

BARTSCH, ILSE

ophiuroid associates, endo- and ectoparasites

BAUMILLER, TOMASZ K.

ecology and functional morphology of recent isocrinids; taphonomy of arms and stalks of articulates and advanced cladids vs. other Paleozoic taxa; diversity of Permian and Triassic crinoids and effects of the P/T extinction; patterns of turnover and extinction of Paleozoic crinoids; ecology of Seirocrinus; borings in Paleozoic pelmatozoans

BEGBIE, KIRSTEN M.

studies on the hyponeural nervous system of the brittlestar, Ophiura ophiura

BENTLEY, ANDREW

biology of the sand dollar, Echinodiscus bisperforatus

BERENTS, PENELOPE B.

collection manager of marine invertebrates at the Australian Museum

BIRENHEIDE, RUDIGER

morphology, physiology and biomechanics of crinoids

BLAKE, DANIEL B.

Texas Cretaceous asteroids; Upper Paleozoic asteroids

BOCKELIE, JOHAN F.

Heliocrinitids (cystoids) from Scandanavia and the Bathic; taxonomy, functional morphology and palaeoecology

- BORZONE, CARLOS A.
bioecological study of Mellita quinquiesperforata and Encope emarginata in beaches of Parana's state; relation between morphodynamics and benthic macrofaunal distribution in sandy beaches of Parana's state; program management for the oceanic islands of Parana's state
- BOUDOURESQUE, CHARLES F.
feeding behaviour of Mediterranean sea urchins; population dynamics and structure of Mediterranean echinoderms
- BRETON, GERARD
studying Mesozoic asteroid paleontology
- BROWER, JAMES
taxonomy, paleoautecology, paleosynecology, ontogeny and phylogeny of Ordovician crinoids from the northern part of the midcontinent; comparative ontogeny of Ordovician and Mississippian crinoids
- BUITRON-SANCHEZ, BLANCA E.
Cenozoic echinoderms (Stelleroidea and echinoidea) from Baja California, Mexico
- BUSSARAWIT, SOMCHAI
Study of the echinoderms from the Andaman Sea of Thailand
- BYRNE, MARIA
evolution of direct development of Australian seastars in the genus Patiriella
- CAMERON, R. ANDREW
sea urchin cell lineage; gene activity during embryonic and larval development; population genetics of sea urchins; sea urchin inbred lines; signal transduction during development
- CAMPBELL, ANDREW
structure and function of pedicellaria in asteroids and echinoids; zoogeography of Indian Ocean echinoderms
- CANDIA-CARNEVAL, M. DANIELA
functional morphology of musculo-skeletal systems in echinoids and ophiuroids; arm regeneration in crinoids
- CONAND, CHANTAL
echinoderm influences on coral reefs in La Reunion, as part of the program on functioning, degradations and regeneration of the reefs in La Reunion; sea cucumber exploitations

- CUTRESS, BERTHA M.
changes in dermal ossicles during somatic growth in Caribbean littoral holothuroidea, Order Aspidochirotida (MS submitted to Bull. Mar. Sci.); deep-sea Holothuroidea of Puerto Rico (MS in preparation).
- DAFNI, JACOB
echinoid growth
- DE RIDDER, CHANTAL
symbioses between bacteria and spatangoid echinoids
- DEBENHAM, PATTY
population genetics of the red sea urchin Strongylocentrotus franciscanus
- DIEHL, WALTER J.
effects of environmental stress on multilocus heterozygosity-growth relationships in invertebrates
- DOBSON, WILLIAM E.
population biology of *Ophiura sarsi* on continental slope off North Carolina; use of skeletal growth bands in ophiuroid ossicles as biological markers for sublethal predation and population ecology experiments
- DOLMATOV, IGOR Y.
regeneration mechanisms and their changes during individual development of echinoderms
- ELISEIKINA, MARINA G.
physiological and reparative regeneration of echinoderm internal organs
- ETNIER, SHELLEY
comatulid crinoids
- FELDMAN, ABBY L.
studying echinoderm larvae based on hauls taken from sites on the west coast of Ireland to monitor seasonality and presence of echinoderm larvae in the water column and linking this with lab studies on morphological variation of larvae of Luidia ciliaris/sarsi with different food conditions (MSc thesis)
- FOX, DAVID J.
can genetic algorithms be used to position a mechanical brittlestar arm?

FUKUYAMA, ALLAN K.

looking at recovery of intertidal invertebrates in Prince William Sound, Alaska following the 1989 Exxon Valdez oil spill and am particularly interested in molluscan and echinoderm assemblages and the contrast in recovery patterns between areas that were treated with hot-water, high pressure treatment with areas that were oiled and untreated

GLUCHOWSKI, EDWARD L.

Genus Haplocrinites (Inadunata) from the Devonian of Poland

GOLDBERG, ARTHUR S.

investigating antiarthritic properties of echinoderms

GOODING, RICHARD U.

animals associated with Caribbean diadematids; animals associated with diadematid echinoids, world

GRABOWSKY, GAIL L.

examining the population genetics of sea urchins in the genus Echinometra throughout the tropical Pacific (sequencing mtDNA, actin and bindin genes for all individuals)- with S. Palumbi at Univ. of Hawaii

GREENSTEIN, BENJAMIN J.

taphonomy of crown-of-thorns starfish; comparative taphonomy of Caribbean reefs; mode of formation of Pliocene shell beds

GUILLOU, MONIQUE

population dynamics of sea urchins; study of the morphological and physiological changes in sea urchin population as a response to environmental stress (Sphaerechinus granularis)

HADEL, VALERIA FLORA

respiratory metabolism of Chiridota rotifera (small holothuroid found in beaches of coarse sand)

HAMZA HASSAN, MOHAMED

ecology and biology of echinoderms from Gulf of Suez - Red Sea

HARTSOCK, FRANKLIN B.

biology of Asterias amurensis in the eastern Bering Sea and the Gulf of Alaska; attempt to age sea stars by madreporites, using Asterias amurensis and Leptasterias hexactis; cooperative study with John Lawrence on the incidence of missing arms of various species of sea stars

HESS, HANS K.

writing a book on fossil crinoids, concentrating on assemblages (co-authors: Carlton E. Brett and Michael J. Simms), to be published by Cambridge University Press; also researching Mesozoic starfish

HODGSON, ALAN N.

reproduction of southern African echinoderms; feeding biology of south African holothurians

HOLTERHOFF, PETER F.

paleoautecology and paleocommunity ecology of Late Paleozoic crinoids; paleoecology and systematics of the Catacrinidae; paleoecology and systematics of the Ampelocrinacea; dynamics of the Late Permian crinoid extinctions and origin of the earliest Triassic articulates

HOOPEr, ROBERT G.

ecology of Strongylocentrotus drobachiensis

HOROWITZ, ALAN STANLEY

bibliography of the Blastoidea (with J. Waters)

HOSHI, MOTONORI

egg-jelly components responsible for the induction of acrosome reaction in starfish; signal transduction in starfish oocytes; glycosphingolipids of sea urchins and starfish

HOTCHKISS, FREDERICK H.C.

larval homeomorphism, Loven's law and adult ray homologies in echinoids, ophiuroids and edrioasteroids; isolated ophiuroid vertebrae and ossicles from Devonian, Bohemia (with Petr & Prokop); Paleozoic ophiuroid morphology & evolution; teratology of sea stars; tetramerism/hexamerism in echinoids and stelleroidea; relation of larval axis to adult axis symmetry

IRIMURA, SEIICHI

taxonomic studies of Japanese ophiurans; taxonomic significance on ossicles of stomach wall of ophiurans

IVY, W. GRISILDA

seed production and sea ranching of sea cucumbers

JABLONSKI, DAVID

onshore-offshore and latitudinal patterns in the origins of higher taxa, and their subsequent shifts in environmental and latitudinal distribution; studying post-Paleozoic echinoids and stalked crinoids; studying mainly molluscan but some echinoid mass extinction and recovery patterns, especially at the Cretaceous-Tertiary boundary

- JAECKLE, WILLIAM B.
Functional morphology of somatocoels in planktotrophic echinoderm larvae; levels of nutritional integration in echinoderm larvae
- JAMES, DANIEL B.
seed production and sea ranching of sea cucumbers
- JELL, PETER A.
Australian fossil echinoderms - Cambrian to Tertiary (excluding Tertiary echinoids) particularly, 1. Silurian & Devonian crinoids & asteroids, 2. Permian crinoids, 3. Carboniferous crinoids
- KLINGER, THOMAS S.
isolation and characterization of digestive enzymes from temperate, subtropical, and Antarctic echinoderms
- KOBAYASHI, NAOMASA
marine pollution bioassay by using sea urchin eggs
- KRISTAN-TOLLMAN, EDITH M.K.
Triassic crinoids
- KURIHARA, TAKEO
distribution of starfishes
- LAMBERT, PHILIP
taxonomy of west coast sea cucumbers; describing new species DNA analysis of holothuroids
- LAWRENCE, JOHN M.
characteristics of arm regeneration in starfish; comparative nutrition of sea urchins
- LE MENN, JEAN
Paleozoic crinoids western-Europe, Africa
- LeCLAIR, ELIZABETH E.
ophiuroid arm skeletal morphology and biomechanics
- LEVERONE, JAY R.
reproductive cycles of Astropecten and Luidia in lower Tampa Bay
- LEVITAN, DONALD R.
ecological and evolutionary consequences of sperm limitation in echinoderms; echinoid grazing pressure in the Caribbean
- LIAO, YULIN
lesser known and new taxa of dendrochirote holothurians from China

- LITVINOVA, NINA M.
investigation on morphological and functional structures of the brittlestar's arms; revision of the genus Ophiomyces (Ophihelinae)
- LORDSON, JINBERT
seed production and sea ranching of sea cucumbers
- MAIER, MARTA
studying asterosaponius
- MARCOS-DIEGO, CONCEPCION
study of benthic fauna and flora from the southern of the Livingston Island (South Shetland, Antarctica).
- MARSH, LOISETTE M.
revision of Nardoa and Gomophia (Asteroidea: Ophidiasteridae) - with F.W.E. Rowe; echinoderms of the northwest shelf of Western Australia
- MATERIA, CHRISTINE J.
the distribution and abundance of asteroids in Tasmania (funded through Australian Heritage Commission); investigation into the endemic Tasmanian seastar Marginaster littoralis (funded through Australian Nature Conservation Agency).
- MATTOS-SEGOVIA, ELIO
the assessment of bioinducers of the settlement in larvae of sea urchin Loxechinus albus
- MCKENZIE, J. DOUGLAS
subcuticular bacteria in echinoderms; antifouling mechanisms of echinoderms
- MEDEIROS-BERGEN, DOT E.
molecular identification of echinoderm larvae transport, dispersal and small scale hydrodynamics of sea cucumber larvae
- MEIJER, LAURENT
cell division cycle control using starfish oocytes and sea urchin eggs; anti-mitotic drugs discovery using purified kinase from starfish oocytes
- MESSING, CHARLES G.
ecology and taphonomy of Bahamian stalked crinoids (Isocrinida), including growth rates, behavior and distributional controls; ecology, zoogeography and systematics of tropical Indo-West Pacific comatulids

- MIRONOV, ALEXANDER
taxonomy and biogeographic history of recent holasteroid
echinoids
- MLADENOV, PHILIP V.
ecology and population genetics of asexual echinoderms;
reproductive ecology and population genetics of the New Zealand
sea urchin, Evechinus chloroticus; reproductive biology and
ecology of the euryalinid snake star, Astrobrachion
constrictum (with B. Stewart); comparative reproductive biology
of South Pacific ophiuroids (with R. Lan); ecology and
reproduction of Holothuria atra in Fiji (with J. Seeto);
reproductive biology of the New Zealand comatulid crinoid,
Oxycomanthus plectrophorum (with D. Nichol)
- MUKAI, HIROSHI
ecosystem study in tropical and boreal seagrass beds;
bioturbation and restructural effects on material flow at
interface of sea floor
- MUNK, ERIC J.
growth/recruitment with green urchins
- NAKAMURA, RAYMOND K.
hydrodynamics and morphometric variation in the Pacific sand
dollar Dendraster excentricus
- NAKANO, EIZO
extracellular matrix in the sea urchin embryo
- NEBELSICK, JAMES H.
taphonomy of Red Sea echinoids; paleobiogeography of Miocene
echinoids
- NESTLER, HELMUT
Cretaceous echinoids
- NEUMANN, CHRISTIAN
functional morphology and ecology of some Toxasterida from the
Middle Cretaceous (Albium-Cenomanium) of Spain; traces or
predation of fossil and recent sea urchins
- NISHIHARA, MORITAKA
population studies on Echinometra mathaei and Archaster typicus
- O'CONNOR, BRENDAN D.S.
ophiuroid population structure and ecology
- OJI, TATSUO
evolutionary paleontology of Crinoidea

- PABIAN, ROGER K.
Late Pennsylvanian crinoids, systematics, paleoecology,
biostratigraphy
- PARDO, ROBERTO A.
ecology and population dynamics of echinoderms (particularly
echinoids and ophiuroids) - currently, population dynamics of
sand dollars
- PARMA, GRACIELA
fossil echinoids
- PAULS, SHEILA MARQUES
inventory of species and bibliography of the echinoderms from
Venezuela, South America
- PENCHASZADEH, PABLO E.
ecology of sand dollars (Mellita spp); trophic ecology of
asteroids
- PEREZ-RUZAFÁ, ANGEL
wetlands and coastal lagoons of Galapagos Islands (Ecuador) -
basis for its protection and management; Iberic fauna; study of
benthic fauna and flora from the southern of Livingston Island
(South Shetland, Antarctica); design of new algorithms for the
primary productivity and water quality prediction in coastal
zones using remote sensing techniques.
- PIEPENBURG, DIETER
ecology of brittle stars in Eurasian Arctic seas
- PROKOP, RUDOLF JAN
new implications for palaeobiology of float-bearing crinoids from
the Bohemian Upper Silurian - Lower Devonian; genus Pygmaeocrinus
Bouska (Crinoidea) in the Devonian of Barrandian (Czech Republic)
with Dr. V. Petr
- ROCCATAGLIATA, ALEJANDRO J.
chemistry of physiologically active saponins of starfishes and
sea cucumbers in the South Atlantic Ocean
- ROGERS-BENNETT, LAURA
culturing of larval red sea urchins for experimental outplanting
in northern California (California Dept. Fish & Game); growth
studies of red sea urchins in northern California
- ROSE, EDWARD P.F.
Jurassic irregular echinoids; Cenozoic hololectypoid echinoid
Echinoneus

- ROWE, FRANK
Indo-west-Pacific echinoderms and their systematics and zoogeography
- SCALLY, KEVIN
tooth form function and evolution of invertebrate dental systems, especially tooth sharpening behaviour (thegosis)
- SHELTEMA, RUDOLF S.
long distance dispersal of teleplanic larvae and the relevance of such transport to gene flow and biogeography of tropical invertebrate species
- SCHOPPE, SABINE
working with Quinones on ophiuroids of Providencia Island, Caribbean Colombia; taxonomy, reproduction and ecology of ophiuroids; association of echinoderms with other taxa
- SCHUETZ, ALLEN W.
development of a new model for multiparameter analyses of perturbations of gametic and embryonic processes
- SHEPHERD, SCORESBY A.
management of echinoderm fisheries
- SIBUET, MYRIAM
taxonomy and ecology of deep sea echinoderms
- SINGLETARY, ROBERT L.
role of Arbacia punctulata in the bottom community of Long Island Sound
- SKOLD, MATTIAS
production, dynamics and demography of infaunal brittle stars (Amphiura filiformis and A. chiajei); regeneration and gonad development under different environmental conditions as hypoxia, contaminants and organic enrichment
- SMITH, ALBERT C.
writing book about marine animals in medical research (including echinoderms)
- SMITH, ANDREW B.
morphological and molecular phylogenies for echinoderms; post-Palaeozoic echinoid systematics and evolution
- SOLIS-MARIN, FRANCISCO A.
evolution of echinoids; taxonomy of the phylum
- STAMPANATO, SALVATORE
Antarctic starfish

- STANCYK, STEPHEN E.
population biology, predation and regeneration of Ophiura sarsi;
sublethal predation of echinoderms; use of markers and growth
rings of ophiuroid ossicles for age/growth studies
- STEWART, BRIAN G.
reproduction and growth of the euryalinid ophiuroid Astrobrachion
constrictum
- STICKLE JR., WILLIAM B.
the systematic status, zoogeographical distribution, and
environmental physiology of sea stars belonging to the
Leptasterias species complex; focusing on species differences in
the adaptation to a freshwater lens system that develops annually
at Little Port Walter, southern tip of Baranoff Island, south-
eastern Alaska (with Jeff Tamplin, Ph.D. Student)
- STRATHMANN, RICHARD R.
developmental plasticity of larvae in response to food
- TABLADO, ALEJANDRO
systematics of Asteroidea for southwestern Atlantic
- TAKAHASHI, KEIICHI
structure and function of the madreporite; motile mechanism in
sperm flagella
- THANDAR, AHMED S.
holothurians collected by the South African Museum's Africana II
cruises; new records of holothurians from the northern coast of
Natal; southern African holothuroids of the family Holothuriidae
- THIERRY, JACQUES
systematics, taxonomy, evolution, palaeoecology and
biostratigraphy of Jurassic echinoids, especially irregular ones;
possible extension to Cretaceous but only in collaboration to
compare biodiversity between the two systems
- THORSEN, MARIANNE S.
ecophysiology of irregular echinoids (spatangoids)
- UBAGHS, GEORGES J.
echinoderms from the Upper Cambrian of the Montagne Noire
(southern France)
- VADET, ALAIN
Jurassic echinoids
- VAN DER HAM, RAYMOND
Upper Cretaceous and Danian, SE Netherlands and NE Belgium
(Maastrichtian area)

VISTISEN, BODIL

studying the two brittle stars Ophiura albida and Amphiura filiformis concerning their tolerance towards hypoxi with and without the presence of hydrogenesulphide

WARREN, ANDERS H.

gastropods parasitizing echinoderms

WEBSTER, GARY D.

working on several Carboniferous crinoid faunas from the western U.S.; compiling the bibliography and index of Paleozoic crinoids & coronates, worldwide; relationship of Permian crinoid faunas of western Australia and Timor

WILKIE, IAIN C.

functional morphology, biomechanics and physiology of the echinoid lantern; morphological and mechanical aspects of the starfish autotomy; morphological and mechanical aspects of the ophiuroid mouth-frame; variable tensility of brittlestar ligaments

WORHEIDE, GERT

comparative biometrical and ecomorphological studies on boreal and Mediterranean populations of the Echinocardium cordatum (Pennant, 1777) group (Echinoidea, Spatangoida)

WRAY, GREGORY A.

developmental bases for major life history transformations in echinoderms; evolution of echinoderm larvae; origin and diversification of echinoderm body plans; phylogeny of camarodont sea urchins

ZAVODNIK, DUSAN V.

contributions to fauna and flora of the Adriatic Sea

REQUESTS AND INFORMATION

- Bentley, A. - any news pertaining to sand dollars or any irregular urchins. Any news on occurrence or distribution of Echinodiscus bisperforatus from elsewhere around the world.
- Breton, G. - Who could give to the Natural History Museum of Le Havre (France) one or two good specimen(s) (with or without spines) of the burrowing spatangoid sea-urchin Pericosmus? This rare bathyal echinoid is thought to be the present descendant of the Cretaceous Micraster. In a showcase dealing with the evolution of Micraster, I have put pictures of Pericosmus, but I would better present one or two specimen(s).
- Conand, C. - As coordinator of the Beche-de-mer Information Bulletin published by the South Pacific Commission, I shall appreciate information on commercial sea-cucumbers, dealing with ecology, biology and fishery.
- De Ridder, C. - requests information on symbioses involving bacteria and echinoderms.
- Feduccia, J. - I'm seeking stock footage (film or video) of sea cucumbers with written permission for its use in a motion picture. The footage will be used to enhance the story line of an action-adventure sci-fi movie. Close-ups of cucumber's mouths and tentacles, the process of burrowing in the sand, habitat shots with other invertebrates, eating, a cluster of immature cucumbers, and an evisceration would be helpful. An evisceration in slow motion would be of particular usefulness. The story actually depends on some cucumber footage, and can (will) be modified to include more if it's spectacular. - If someone doesn't feel comfortable sending material directly to us, we'll try to make arrangements with a local library, or conform to other conditions. Any person or institution helping with this project obviously deserves a credit; we simply request specifics on how the credit should read. Please contact: Joseph Feduccia, 8626 Braewick, Houston, TX 77074-7708. Ph: 713-777-5162. FAX: 713-777-7445.
- Feldman, A.L. - requests information on anything to do with echinoderm larvae, especially genus Luidia. If there is any new information on metamorphoses of ophiuroid larvae I would be especially interested in that, as I have specimens from plankton hauls I wish to identify. Also if anyone knows anything about finding larvae in the plankton I would like to get in touch with them to compare notes.
- Gluchowski, E. - interested in information on Crinoidea in paleoecology and taphonomy, stratigraphy, morphology and stem taxonomy.

- Gooding, R.U. - requests examples of calcification of test from parasitism, e.g., thickening of terminal part of spine by rasping of Microlepas diadema, crater-like swellings caused by rasping of Rugilepas pearsi, both on Indo-Pacific diadematids. Also, requests copepods "external to the buccal cavity (within the Aristotle lamp)" of 2 Echinometra spp. and Tripneustes esculentus (ventricosus?), Puerto Rico.
- Guillou, M. - requests information on the plasticity of echinoderms in response to environment; temporal successions in echinoderm populations of the littoral ecosystems.
- Hartsock, F.B. - requests information on - the biology of Asterias species and Leptasterias spp.; medicinal, or other uses for sea stars; the ecology of Pycnopodia helianthoides, especially in relation to Paralithoides camtschatica; methods for aging sea stars; studies on missing arms of sea stars; studies on regenerative capabilities of sea stars.
- Hotchkiss, F.H.C. - information and material of 4-part and 6-part echinoids arising at metamorphosis (which is the extra/missing part?). Information and material of teratology of starfish.
- James, D.B. - would like references and, reprints if possible, on hatchery and culture of sea cucumbers.
- Kristan-Tollman, E. - interested in all papers about Triassic echinoderms for the Zentralblatt Geol. Pal. II, Referier Organ, Stuttgart, Germany. As the reporter for Holothuroidea, I would be happy to receive your papers on all aspects of fossil holothurians. Please send them to: Edith Kristan-Tollman, Scheibenbergstr. 53/6, A-1180 Wien, Austria. Also, I'm working on Comatulida and Roveacrinida and would be interested in an exchange of literature.
- Kurihara, T. - information on space pattern, population dynamics, and life history of starfishes.
- Lambert, P. - Trying to locate specimens of Cucumaria fallax Ludwig from Alaska. Apart from specimens at Smithsonian and one lot from Fairbanks have not located any.
- Moura-Britto, M. - I would like to know about recent studies of scanning electron microscopy in Asteroidea and Ophiuroidea.
- Mukai, H. - Suggests that it is time to publish a journal of echinoderm biology.
- Oji, T. - Information about new or undescribed crinoid occurrences from the Mesozoic and Cenozoic.

Pardo, R. - Is anyone working on ecology and population dynamics of echinoids (particularly sand dollars); also, bioerosion in coral or rocks for the echinoderms ?

Rowe, F.W.E. - would be very grateful to receive reprints and be put on reprint mailing list. I am particularly interested in taxonomic, zoogeographic, recent and palaeontological papers.

Segovia, E.M. - information about cultivation of sea urchins.

Shepherd, S.A. - currently engaged on a long-term project on the problems of stock assessment in dive-fisheries (which include molluscs, sea urchins and sea cucumbers). Of particular interest are: estimation of abundance, fertilization success in relation to affects of reduced abundance on recruitment, stock recruitment relations and fishery models. I would very much like to receive reports/reprints on these matters for sea-urchin or sea-cucumber fisheries.

Stewart, B.G. - information on euryalinid reproduction.

Thandar, A.S. - would like to receive/purchase English translations of: 1. Panning's (1929-35) revisions of the family Holothuriidae; 2. Heding and Panning's (1954) revision of the family Phylloporidae.

Thierry, J. - if anyone has collected irregular echinoids in Jurassic deposits of western Europe please contact me; also, if anyone knows about or has ancient collections; especially interested in Collyritids of Metaporhinus group to make a revision of the genus and its species.

ITEMS OF INTEREST

Scally, K.B. - I compiled a recipe book of echinoid delights. Also, references on electronic database - like "Reference Manager" bought by subscription - including journals and books.

Contributed by F.W.E. Rowe

CLARK AND DOWNEY, 1992. STARFISHES OF THE ATLANTIC: FURTHER ERRATA

There was a late change (at page proof stage) in the symbols used in the distribution table (table 83, pp. 490-502) from plus

signs in various types according to the depths, to the letters S, M and D (for shallow, medium and deep). Unfortunately we omitted to make a corresponding change in the explanatory text concerning the apparent anomaly of records more than 200 m (M) being used in columns primarily for the continental shelf. Please note the following modifications:

Page 488

Line 21: Substitute 'As M rather than S' for 'but in italics'.

Lines 22 & 23: Delete whole sentence beginning 'A corollary -'.

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Caption to Table 83, center of line 2 should read: 'c. 500+ m'. Please ignore the occasional use of italics or bold type for a few entries in the table which crept in unnoticed.

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**FOSSIL CRINOID COLLECTIONS
AT
THE NATIONAL MUSEUM OF NATURAL HISTORY
SMITHSONIAN INSTITUTION**

Visitors to the National Museum of Natural History's Department of Paleobiology fossil crinoid collections, housed in the Springer Room, will find some changes. Tom Kammer and Bill Ausich are in the process of curating selected portions of those collections; the project is expected to be completed in 1995.

The Department's holdings of fossil crinoids are housed in four main collections, 1. type, 2. biologic, 3. special (e.g., Budenbach), and 4. miscellaneous. Our efforts are being concentrated on the biologic and miscellaneous collections.

The crinoid biologic collection was arranged in the systematic scheme of Wachsmuth and Springer (1881-1886); many generic identifications had not been updated. When our task is completed, the biologic collection will be in the systematic order of the Treatise on Invertebrate Paleontology and specimen identifications updated to the best of our ability.

The miscellaneous collections are stored throughout the Springer Room in small units of specimens related to each other by locality, collector, identification, etc. The majority of those specimens will be consolidated into a single, stratigraphically organized collection to facilitate access; the remaining specimens will have their identifications updated and be integrated into the crinoid biologic collection.

Similar curation for other Springer Room collections has been performed (e.g., Post Paleozoic Echinoid Collection by Andrew Smith, Blastoid Biologic Collection by Alan Horowitz and Johnny Waters). The Department of Paleobiology houses some of the finest collections of fossil echinoderms in the world and these improvements will further secure their value to science and public programs.

W.I. Ausich

PAPERS PRESENTED AT MEETINGS

- 8TH INTERNATIONAL ECHINODERM CONFERENCE, DIJON, FRANCE, September 6-10, 1993. Proceedings of the 8th International Echinoderm Conference, Dijon, France, 1993: In: B. David et al. (eds.). Echinoderms: Dijon. Balkema Press, Rotterdam.
- Ameziane-Cominardi, N., M. Roux. Mosaic pattern of ontogeny in modern stalked crinoids. Consequences for evolutionary paleontology and taxonomy.
- Baumiller, T.K. Patterns of extinction and faunal dominance in the record of Paleozoic crinoid genera.
- Birenheide, R., S. Amemiya, T. Motokawa. Video observations of the movements of the stalked crinoid *Metacrinus rotundus* (Echinodermata, Crinoidea).
- Birenheide, R. T. Motokawa, S. Amemiya. Morphology and biomechanics of the "problematical" ligament in the arm of *Metacrinus rotundus*.
- Bonasoro, F., M.D. Candia Carnevali. Chordoid structures in regular sea urchins.
- Byrne, M., M.J. Anderson. Hybridisation of sympatric *Patiriella* species in New South Wales.
- Candia Carnevali, M.D., I.C. Wilkie, F. Bonasoro. Structural and mechanical aspects of the mouth-frame of the brittlestar *Ophioderma longicaudum* (Retz.)
- Cerra, A., M. Byrne. Ultrastructure of wrinkled blastula formation in the asteroid *Patiriella exigua*.
- Cobb, J.L.S., K.M. Begbie. Aspects of the hyponeural nervous system of the brittlestar, *Ophiura ophiura*.
- Cross, N.E., E.P.F. Rose. Predation of the Upper Cretaceous spatangoid echinoid *Micraster*.
- De Ridder, C. Symbiosis with sulfo-oxidizing bacteria in spatangoids: a possible pass for fine-grained sediments ?
- De Ridder, C. Symbioses between spatangoids (Echinoidea) and the Thiothrix-like bacteria (Beggiatoales).
- Drummond, A.E. Aspects of the life history biology of three species of sea urchin on the South African east coast.
- Foltz, D.W., W.B. Stickle Jr. Genetic structure of four species in the *Leptasterias hexactis* complex along the Pacific coast of North America.
- Grigolava, I., J.D. McKenzie. Biochemical studies of echinoderm surface coats using radiolabelling techniques.
- Hamel, J.-F., A. Cabanac, J.H. Himmelman. Morphological adaptations of the sand dollar *Echinarachnius parma*.
- Hamel, J.-F., A. Mercier. Behavioural response of the basket star *Gorgonocephalus arcticus* in reaction to mechanical stimulation.
- Hamel, J.-F., A. Mercier. Influence of environmental factors on pre-spawning behaviour and spawning and developmental biology of the brooding starfish *Leptasterias polaris*.
- Hamel, J.-F., G. Desrosiers. Larval fixation and small scale migration of the sea cucumber *Cucumaria frondosa*.

- Heinzeller, Th., N. Ameziane-Cominardi, U. Welsch. Light and electron microscopic studies on arms and pinnules of the cyrtocrinid *Gymnocrinus richeri*.
- Jagt, J.W.M., R.W.J.M. Van Der Ham. Early Palaeocene marsupiate regular echinoids from NE Belgium and SE Netherlands. (poster).
- Kelly, M., J.D. McKenzie, M. Barker. Sub-cuticular bacteria: their incidence in the echinoderms of the British Isles and New Zealand.
- King, C.K., O. Hoegh-Guldberg, M. Byrne. The reproductive cycle of the sea urchin *Centrostephanus rodgersii* in New South Wales.
- Klinger, T.S., C.R. Johnson, J. Fell. Sediment utilization, niche breadth, and niche overlap of Aspidochirotida (Echinodermata: Holothuroidea) in the lagoon and reef flat of Heron Island, Great Barrier Reef.
- Lawrence, J.M., M. Byrne. Allocation of resources to body components in *Heliocidaris erythrogramma* and *Heliocidaris tuberculata* (Echinodermata: Echinoidea).
- Lawrence, J.M., M. Byrne. A comparison of the sizes and proximate composition of *Heliocidaris erythrogramma* and *H. tuberculata*.
- Lawrence, J.M., J.B. McClintock. Energy acquisition and allocation by echinoderms in polar seas: adaptations for success?
- LeClair, E.E. Quantitative morphological and microstructural variation in the vertebral ossicles of the Ophiurida (Ophiuroidea).
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- Birenheide, R., S. Amemiya, T. Motokawa. Morphology and mechanics of the arm ligament in a stalked crinoid *Metacrinus rotundus*. 115A
- Bishop, C.D., S.A. Watts. Osmolarity and ion concentrations in the fluid compartments of *Lytechinus variegatus* in varying salinities. 48A
- Bryan, P.J., D. Rittschof, J.B. McClintock. Antifoulants from echinoderms. 127A
- Carroll, A.K., J.M. Shick. Dietary accumulation of the uv-absorbing compounds in the ovaries of the green sea urchin. 62A
- Eernisse, D.J., R.A. Strathmann. What molecular phylogenies tell us about the evolution of larval forms. 136A (echinoderms)
- Ellers, O. A mechanical, developmental morphospace classifies shapes of camarodont echinoids. 71A
- Emlet, R.B. Functional requirements and structural patterns in the evolution of nonfeeding larval forms among echinoderms. 137A
- Herrera, J.C. Body form and skeletal growth in larvae of the sea urchin *Lytechinus variegatus* in response to differences in diet. 118A
- Hines, G.A., J.B. McClintock, S.A. Watts. Water-soluble compounds (pheromones?) are produced by echinoderms. 70A
- Hines, G.A., S.A. Watts. Potential endocrine capability of echinoderm coelomocytes. 9A
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- Jonsen, S. Polarization sensitivity in *Ophiidermata brevispinum*. 69A
- Kier, W.M., R.S. McCurley. The functional morphology of starfish tube feet: the role of a crossed fiber array in movement. 115A
- Klinger, T.S., J.B. McClintock, S.A. Watts. Chymotrypsin and α - and β -glucosidase activity of digestive tissues of echinoderms of Antarctica and the Gulf of Mexico. 50A
- Lares, M.T., J.M. Lawrence. The effects of feeding periodicity of *Echinometra lucunter* (Echinodermata: Echinoidea). 51A
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(Cucumaria) 109A
- Pearse, J.S. Five rays or six: does it make any difference in potential fecundity of sea stars? 72A
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- Sewell, M.A. Mortality of pentaculæ during intraovarian brooding in the sea cucumber *Leptosynapta clarki*. 110A
- Shick, J.M., W.C. Dunlap, R.M. Larsen. Coral reef holothuroids (Echinodermata) accumulate uv-photoprotectants from their diets. 62A
- Stickle Jr., W.B., D.W. Foltz. Distribution of species in the *Leptasterias hexactis* complex from the west coast of the continental United States. 47A
- Strathmann, R.R. Peculiar constraints on life histories imposed by protective or nutritive devices for embryos. 101A
- Stricker, S.A. Calcium transients during starfish oocyte maturation. 72A
- Swezey, R., B. Rees. Are calcium-mediated redox changes involved in sea urchin egg activation at fertilization? 100A
- Szulgit, G., J. Trotter, T. Koob. Glycosaminoglycans in the ligaments of the pencil urchin *Eucidaris tribuloides*. 35A
- Vidal, A.M., C. Sierra, D.S. Smith, J. del Castillo. Contractile properties of the articular capsular capsule or ligament, in the primary spines of the sea urchin *Eucidaris tribuloides*. 35A
- Watts, S.A., G.A. Hines, J.B. McClintock, K.R. Marion, T.S. Hopkins. 5 α -reductase activity during androgen synthesis in echinoderm tissues. 122A

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- Birenheide, R., T. Motokawa, S. Amemiya. Functional morphology of an elastic ligament in the arm of the stalked crinoid *Metacrinus rotundus*. p. 171.
- Chiba, K., H. Abe, S. Tanuma, M. Hoshi. Involvement of protein poly(ADP-ribosyl)ation during meiosis reinitiation in starfish oocytes. p. 64.
- Furuya, S., Y. Kamata, M. Okuyama, I. Yasumasu. [ADP-ribosyl]ation of histones in nuclei isolated from sea urchin embryos. p. 32.
- Hamaguchi, Y. Effects of DNA breakage on cleavage division of sea urchin eggs. p. 29.
- Horiguchi, T., K. Ohsumi, T. Kishimoto. Possible involvement of histone H1 in the regulation of DNA replication rate. p. 28.
- Iuchi, Y., K. Yamada, K. Akasaka, H. Shimada. An element in first intron is needed for increased expression of the arylsulfatase

- (Ars) gene of sea urchin (*H. pulcherrimus*) embryo. p. 33.
- Iwakoshi, E., T. Takahashi, Y. Muneoka, T. Ikeda, H. Minakata, K. Nomoto. Bioactive peptides in the sea cucumber *Stichopus japonicus* -- a preliminary report. p. 89.
- Jujiwara, A., I. Yasumasu. Inhibition of fertilization envelope hardening and hyaline layer formation by SCN- and ClO4 in sea urchin eggs. p. 73.
- Kajihara, K., H. Fujisawa, S. Amemiya. Scanning electron microscopical studies on the larval development of a sand dollar, *Peronella japonica*. p. 59.
- Kamata, Y., T. Tojo, A. Fujiwara, S. Furuya, I. Yasumasu. Participation of ADP-ribosylated protein in Ca²⁺-induced exocytosis of cortical granule in sea urchin eggs. p. 72.
- Kanda, M., A. Fujiwara, K. Mitsunaga-Nakasubo, I. Yasumasu. Analysis of proto-oncogene expression during early development in embryos of sea urchin. p. 31.
- Kawamoto, M., Y. Yasumasu. Partial purification & characterization of a casein-kinase 2-type protein kinase from sea urchin. p. 34.
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- Kojima, M.K., M. Asai, S. Nakamura. Effects of blastocoelic substances of gastrulae cultured in SO4 2- free sea water on spicule formation in isolated micromere descendant cells of sea urchin embryos. p. 37.
- Komatsu, M., M. Kawai, Y.D. Noda, M. Dan-Sohkawa, C. Oguro. Occurrence of the left coelomic vesicle in bipinnaria, with a consideration to the relation to developmental type of asteroids. p.175
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- Matsushita, S. Fate mapping study of the endoderm of the 1.5 day-old chick embryo. p. 50.
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- Mogami, Y., J. Ishii, S.A. Baba. Gravitaxis of sea urchin larvae: changes in mechanical properties during development. p. 97.
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- Nishigaki, T., K. Chiba, W. Miki, M. Hoshi. Purification and sequencing of sperm activating peptides in the jelly coat of starfish, *Asterias amurensis*. p. 70.
- Nishimura, A., K. Hijikata, K. Yamada, K. Takata, K. Akasaka, H. Shimada. Gene-transfer into sea urchin embryos with particle gun. p. 33.
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- Nomura, K., N. Suzuki. Structure of sea urchin hatching enzyme and the mechanism of fertilization envelope dissolution. p. 34.
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- Seki, T., K. Seki. Observation of phagocytosis of echinoderm phagocyte on bacterial thin-layer in vitro. p. 84.
- Shimizu, T., S. Horiike, S. Ikegami. New histone molecules produced at the blastula stage of starfish embryos. p. 31.
- Shingyoji, C., K. Yoshimura, D. Eshel, I.R. Gibbons, K. Takahashi. Effect of outer dynein arm extraction and recombination on the velocity of microtubule sliding in reactivated sea urchin sperm flagella under imposed head vibration. p. 98.

- Saotome, K. Karyotypic comparison of the sea urchin, *Pseudocentrotus depressus* with 3 species of echinoids belonging to the family Strongylocentrotidae. p. 175.
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- Takahashi, K., T. Mito. Bidirectional transport in sea urchin madreporite. p. 99.
- Tanaka, S., K. Yamada, K. Akasaka, H. Shimada. Purification of G-string binding proteins that interact with transcriptional regulatory element of sea urchin arylsulfatase (Ars) gene. p. 33.
- Teramura, W., T. Shimizu, S. Ikegami, H. Kaneko, M. Dan-Sohkawa. Ontogeny and characterization of extra-cellular matrix antigens in starfish antigens. p. 37.
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- Wada, Y., Y. Mogami, S.A. Baba. A new type of motile response of cilia of echinopluteus. p. 98.
- Wada, H., N. Satoh. Phylogenetic analysis of deuterostomes. On the evolutionary history from invertebrates to vertebrates. p. 179.
- Yamada, K., K. Akasaka, H. Shimada. In vitro transcription of sea urchin (*Hemicentrotus pulcherrimus*) arylsulfatase gene. p. 33.
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- Yazaki, I. Metamorphosis in sea urchins induced by L-glutamine. p. 59.
- Yokota, Y., K.H. Kato, E. Nakano. Intracellular distribution and secretion into the hyaline layer of an extracellular matrix protein of sea urchin, *Temnopleurus hardwicki*. p. 38.
- Yoshida, S., T. Shimizu, Y. Hashimoto, R. Matsuda, H. Katow. Spatial distribution and role epitope of primary mesenchyme cell (PMC) - specific monoclonal antibody (P4) in embryo of the sand dollar, *Clypeaster japonicus*. p. 37.
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CINCINNATI, OHIO, October 26-29, 1992. Geological Society of
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Baumiller, T.K. Major extinction events in the record of Paleozoic
crinoids: new metrics for measuring extinction intensities.

Bodenbender, B.E. Blastoid phylogeny: morphological and
crystallographic evidence.

Dixon, H.L., S.K. Donovan. The upper Oligocene Echinoidea of
Jamaica.

Holterhoff, P.F. Heterochronic ecophenotypes and distribution
patterns of *Delocrinus subhemisphericus* in Upper Missourian
cyclic sequences, midcontinent, North America.

Kendrick, D.C. Crinoid arm branching topology, pinnulation, and
the convergence of crinoid arm designs.

Sprinkle, J., T.E. Guensburg. Tiering history of suspension
feeders on hard substrata.

Webster, G.D., P.A. Jell. Permian holdovers and the world's
youngest Paleozoic crinoids from western Australia.

FIELD TRIP -- The post-meeting field trip "Fort Payne Carbonate
Facies of South-Central Kentucky" led by D.L. Meyer and W.I.
Ausich was a fossil echinoderm feast for all those who attended.

1993 SOUTH-CENTRAL SECTION OF THE GEOLOGICAL SOCIETY OF AMERICA --
FORT WORTH, TEXAS, March 15-16, 1993. Geological Society of
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Wernlund, R.J. A monotypic model for Late Paleozoic holothurian
sclerites.

1993 NORTHEASTERN SECTION OF THE GEOLOGICAL SOCIETY OF AMERICA --
BURLINGTON, VERMONT, March 24-26, 1993. Geological Society of
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Brower, J.C. Paleoeology of a Middle Ordovician Pleurocystidid-
crinoid community from the midcontinent.

Taylor, W.L., C.E. Brett. Taphonomy and paleoeology of Silurian
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southern Ontario.

1993 NORTH-CENTRAL SECTION MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA -- ROLLA, MISSOURI, March 29-30, Geological Society of America Abstracts with Program 25(3). (communicated by W.I. Ausich).

Ausich, W.I., D.L. Meyer. *Eretmocrinus* from the Lower Mississippian Fort Payne Formation of South-Central Kentucky - can we recognize hybrid specimens in the fossil record?

1993 SOUTHEASTERN SECTION MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA -- TALLAHASSEE, FLORIDA, April 1-2, Geological Society of America Abstracts with Program 25(4). (communicated by W.I. Ausich).

Oyen, C.W. Evolution and heterochrony in Neogene echinoids (Family Mellitidae) from the Gulf and Atlantic Coastal Plains.

1993 JOINT CORDILLERAN SECTION AND ROCKY MOUNTAIN SECTION MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA -- RENO, NEVADA, May 19-21, Geological Society of America Abstracts with Program 25(5). (communicated by W.I. Ausich).

Sprinkle, J., T.E. Guensburg. Between evolutionary faunas: comparison of Late Cambrian and Early Ordovician echinoderms and their paleoenvironments.

1993 ANNUAL MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA -- BOSTON, MASSACHUSETTS, October 25-28, 1993. Geological Society of America Abstracts with Program 25(6). (communicated by W.I. Ausich).

Ausich, W.I., G.D. Sevastopulo. Physical environmental and biologically mediated controls on the preservation of crinoids (Tournaisian; Co. Wexford, Ireland).

Baumiller, T.K., G. Llewellyn, C.G. Messing, W.I. Ausich. Autotomy and taphonomy of isocrinid stalks. A105.

Bodenbender, B.E. Crystallographic patterns in blastoid skeletal elements.

Carter, B.D., M.M. Azab. Substrate availability as a primary control on echinoid diversity.

Fisher, D.C. Life orientation of mitrate stylophorans and its implications for the calcichordate theory of vertebrate origins.

Foote, M. Morphological disparity in Ordovician through Devonian crinoids.

Greenstein, B.J., J.M. Pandolfi. Taphonomic biasing of populations

- of crown-of-thorns starfish: Implications for recognizing past outbreaks in the reef sedimentary record.
- Guensburg, T.E., J. Sprinkle. Edrioasteroid phylogeny.
- Kammer, T.W., W.I. Ausich. Did facies specialists evolve more rapidly than facies generalists in Early Carboniferous crinoids?
- Kendrick, D.C. Computer modelling of crinoid calyx morphologies and comparisons with real forms.
- Lane, N.G., J.A. Waters, S.A. Marcus, C.G. Maples. Paleozoic echinoderms from the People's Republic of China: A video presentation of field and laboratory studies in May 1993.
- Llewellyn, G., T.K. Baumiller. Stem growth strategies for two Western Atlantic isocrinid species. A104-A105.
- Messing, C.G. Depth, current flow and morphological variations among living crinoids. A104.
- Oyen, C.W. Mosaic patterns of heterochrony in fossil mellitids from Florida and the role of ecology in evolution of Cenozoic echinoids.
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1994 NORTH-CENTRAL SECTION MEETING OF THE GEOLOGICAL SOCIETY OF AMERICA, KALMAZOO, MICHIGAN, April 28-29. Geological Society of America Abstracts with Program 26(3). (communicated by William I. Ausich).

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- Blake, D.B. Asteroids and taphonomy: Observations and implications.
- Donovan, S.K., B.J. Embden. Pleistocene echinoids of Jamaica.
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- Taylor, W.L., C.E. Brett. Tiered taphonomy: Examples from the Rochester Shale (Silurian, Wenlockian) of western New York and southern Ontario, Canada.

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HOW I BEGAN TO STUDY ECHINODERMS ... Part 4.

Feldman, Abby L. (University College, Galway). Studying Zoology as an undergrad in Trinity College Dublin, I became fascinated with echinoderms and cnidarians during a course of lectures given by Frank Jeal. When it came time to choose a supervisor for my final year project I grabbed him before anyone else did! He suggested I work with brittlestars. During my course of study I met up with Elizabeth Sides who had worked with *Ophiothrix fragilis* in Jamaica for 15 years. My association with both of these echinoderm people only served to install the feeling in me. The final straw, so to speak, occurred when my father convinced me to learn how to dive. Being terrified of the water this was no easy feat for me, but on my very first open water dive in Dalkey Sound, east coast of Ireland, the first thing I saw was a bed of brittlestars! I became so excited that I forgot to be afraid and since then, I have decided that there is nothing more interesting than an echinoderm. Or an Echinoderm scientist!!

Messing, Charles G. (NOVA University). I became fascinated with the great diversity of marine invertebrates sometime during college (having finally been convinced by parents and teachers that I could not make a living from dinosaurs--if they only knew about Jurassic Park), but had no real understanding of systematic research or on which group to concentrate. At the University of Miami's Institute of Marine Science (now RSMAS) in 1970 for graduate school, I gravitated to the invertebrate museum and came under Frederick M. Bayer's tutelage. I recall being made aware that the large R/V Gerda and Pillsbury crinoid collection needed working up. Bayer gave me several volumes of A.H. Clark's crinoid monograph and also used crinoid specimens in teaching me how to use a camera lucida. However, Gilbert Voss, then department chair, recommended that I work on the development and taxonomy of a large neotanaid crustacean from the Puerto Rico Trench for my master's thesis. I pursued this subject for about a year, finally discovering that someone had recently monographed the entire family; my own work had to await its publication, which kept getting put off. Seeking an alternative, I expanded a project on crinoid taxonomy for Bayer and Voss's Systematics of Invertebrates course into a thesis on comatulid crinoids of the Straits of Florida.

Zavodnik, Dušan (Center for Marine Research, Rudjer Bošković Institute, Rovinj, Croatia). Although born in a "continent" town, from childhood I felt an affinity to the sea and marine

creatures. But in the post-second-world-war times of poverty, I have had few opportunities to visit the Adriatic Sea. Luckily, due to kind gifts from some of my 'sea acquaintances', my collection of land flora exiccata, minerals, and land and fresh water mollusc shells became enriched by marine animals. At the age of fifteen, I held an open exhibition of my collections for the city community: about 150 specimens of marine molluscs and also, some corals, dried sea stars and sea urchins. By the end of my college studentship, because I lacked the money to cover train expenses, I undertook a cycle journey about 600 kilometers to visit and practice at the Institute of Oceanography and Fisheries at Split. There the assistant Mr. J. Hoenigman introduced me to zooplankton research which was also my occupation during the initial years of my University education. My scientific interest turned mostly to pelagic Copepod Crustaceans, and as well I have much enjoyed the skin and "hand-pump" diving. Thus it happened that I collected a beautiful female parasitic copepod Cancerilla tubulata with ovisacs attached on the oral side of a disk of a tiny brittle-star concealed in an algal thalus. I succeeded in identifying the creature as Amphipholis squamata. This event turned my major interest to echinoderms, to their taxonomy, ecology and distribution in the Adriatic Sea. In 1960, after my military service was over, I was engaged as an assistant at the Marine Biological Station at Rovinj, which continues to be my employer institution. But alas, in our small state, and in a small institute, it very soon became evident that an exclusive engagement in echinoderm studies is a mere illusion. The funds were available for other tasks and therefore I have had to do research in physiology of sardines, in morphology and ecology of small pelagic fish, in zooplankton, benthic communities studies, shellfish culture, pollution studies and even hydrography of the north Adriatic Sea. In the bulk of the "indispensable" i.e. first ranked tasks, echinoderms could be treated only as a hobby task - and regrettably, they remained to me a hobby until now. But it is true that continuous studies of shallow water benthic communities, especially by SCUBA diving always were excellent opportunities to collect immense quantities of by-the-way data on echinoderm diversity and their behavior and distribution patterns.



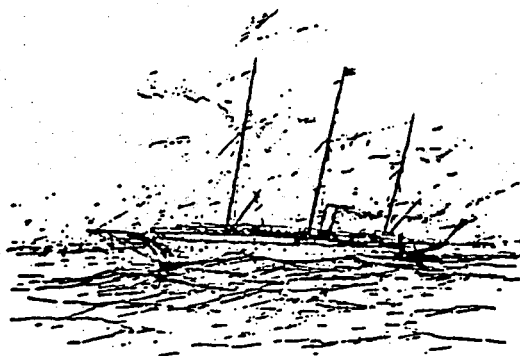
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SOUVERAINS OCEANOGRAPHES

PRÉFACE DE S.A.S. LE PRINCE RAINIER III DE MONACO



Documents réunis et commentés par
JACQUELINE CARPINE-LANCRE et LUIZ VIEIRA CALDAS SALDANHA

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Fourth European Echinoderms Colloquium

London

The Natural History Museum
9th - 12th April, 1995



First circular

Fourth European Echinoderms Colloquium

9th - 12th April, 1995

This will be held in London, under the auspices of the Natural History Museum, jointly organized by Andrew B. Smith, the Natural History Museum, Roland Emson, King's College, London, and Andrew Campbell, Queen Marys College, London. It will be a four day meeting, without concurrent sessions, covering all aspects of echinoderm research, but including three thematic half-day sessions. To mark the retirement of Professor David Nichols and the contribution he has made to our knowledge of the echinoderms these will be on Reproductive biology, Structure and function, and Palaeobiology, topics in which he has had a particular interest.

A second circular calling for papers and including registration and booking forms will be sent out in April, 1994.

To receive the next circular please fill in and return the form below to:

Dr. Andrew B. Smith, Department of Palaeontology, the Natural History Museum, London SW7 5BD, U.K.

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COTS COMMS

Dr Brian Lassig and Udo Engelhardt

We've reported on an apparent increase in the number of crown-of-thorns starfish on some reefs off Cairns and further north in the last two issues of COTS COMMS. The increase was based on reports from Reef users through the COTSWATCH Program (see next section). Recent analysis of the information collected through this scheme over the last few years and the results of 7 years of AIMS surveys (see Current COTS) shows that the increase in starfish numbers in parts of the northern GBR is real.

But before the panic button gets pushed, the newspaper headlines typeset and the COTS Program Coordinator besieged by bloodhounds, consider the densities of starfish being reported. During the peak of outbreaks on reefs off Townsville in the late 1980s, the AIMS manta tow surveys recorded averages of 200 to 300 COTS per reef, and around 4 starfish per 2-minute manta tow. The current average densities of starfish being reported on reefs off Cairns and further north are two orders of magnitude lower (i.e. 1/100th of outbreak densities). These are averages based on reefs within the particular Reef Sectors. On some individual reefs (e.g. Michaelmas Cay and Lizard Island) the COTS densities aren't too far from being called localised outbreaks.

We don't know whether or not the increase in starfish numbers represents the early stages of another major outbreak for the GBR. During the previous outbreak episodes there were no substantial monitoring programs in place that could have detected the increases currently being seen, so we don't know if outbreaks start with a bang or a gradual build up in starfish numbers. The only way we will get a clear picture of the dynamics of COTS on the Reef and the initiation of outbreaks is to maintain a close watch on the current situation.

RELAUNCH OF THE COTS - REEF USER SURVEY SCHEME (COTSWATCH)

A new and improved public participation program aimed at getting more Reef users actively involved in reporting COTS sightings was launched in November 1993. The new program continues the evolution of survey schemes that were spawned in 1982. Largely in response to comments made by previous contributors, we decided to introduce some fairly major and hopefully beneficial changes. COTSWATCHERS of the world report!

The survey form used for reporting on starfish sightings has been redesigned, making it more user-

friendly and easier to complete. The number of questions on the form has also been reduced. An illustration of a mature crown-of-thorns starfish now assists Reef users in the positive identification of the species. There is also a warning in relation to the danger posed by the venomous spines of the starfish.

What hasn't changed is the emphasis on reporting 'zero-sightings' as well as actual sightings of starfish. Appropriate management action, i.e. giving permission to attempt local-scale controls, requires knowledge of both the past and present situations at any given reef. Also, our chances of detecting any real increase in the numbers of starfish over time rely very much on long-term records, including reports on both the presence and absence of COTS!

We have also attempted to address some other shortcomings of previous schemes - namely the insufficient feedback given to COTSWATCHERS. In the past, lack of time and resources often prevented us from maintaining an effective two-way flow of information between contributors to the scheme and ourselves. However, this is already changing. The new user survey scheme now provides added incentives to all contributors through a variety of new measures.

COTSWATCHERS will now:

- receive free information (i.e. brochures, booklets) on the latest research into the starfish phenomenon and on the Great Barrier Reef Marine Park in general;
- be acknowledged in *Reef Research* (starting with this issue; see below);
- be invited to attend regular slide presentations and updates on the current status of the starfish on the Reef. The aim is to conduct these presentations every six months in the major regional centres along the north Queensland coast.

Regular contributors to the scheme who provide information for extended periods of time may also receive additional tokens of our appreciation i.e. in the form of research publications, slides and maybe even a video tape (note that this doesn't mean that you'll score more brownie points by reporting more COTS!).

INFORMATION: The Editor,
Reef Research GBRMPA

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Conservation and
Coastal Ecology

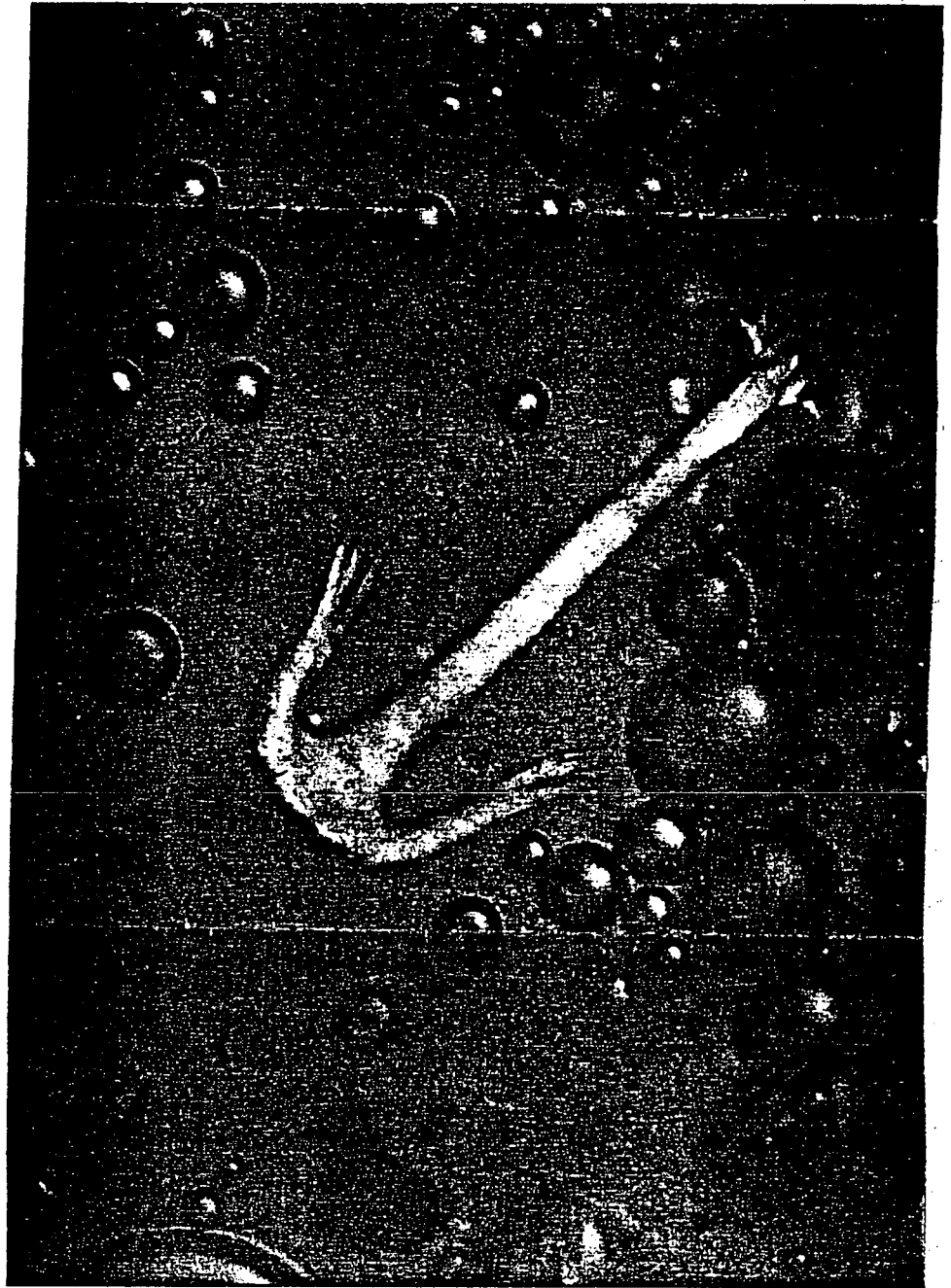
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Anchor ossicle from the sea cucumber *Labidoplax digitata*. The anchors are used in locomotion. Photograph. by Dr J. Douglas McKenzie. taken on a Zeiss Axioskop using Nomarski differential interference contrast.

Newsletter 9
March 1994

A B S T R A C T

The monograph represents a review on data, concerning structure, taxonomical distribution, biological activities and functions of unique group of natural products, namely triterpene glycosides of holothurians. Detailed information on biology and biochemistry of these animals is given to demonstrate the place of the triterpene glycosides among functional systems and subsystems of their producers - holothurians. Triterpene glycosides are used as a model for the analysis of evolution of complex adaptation. Structure-function relationship for these compounds are analyzed using so-called holistic or system-theoretical approach of Van-der-Claauw - Dullemeijer. Application of such morphological trends of evolution as aromorphosis, idioadaptations as well as the theories of organogenesis modes and phylembryogeneses to the studies on evolution of triterpene glycosides has been also shown. We suggest to call the approach, dealing with the application of comparative-morphological method to biochemical level as chemical morphology.

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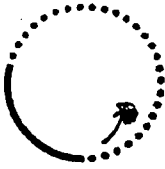
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Pacific Institute of Bioorganic Chemistry of the Far East Branch of the
Russian Academy of Sciences; Kamchatka Department of the Pacific



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BECHE-DE-MER

INFORMATION BULLETIN

Number 5 — August 1993

Editor: Chantal Conand, Université de la Réunion, Lab. de Biologie Marine, 97715 Saint-Denis Messag. Cedex 9, La Réunion
 Production: Jean-Paul Gaudechoux, Fisheries Information Officer, SPC, PO Box D5, Noumea, New Caledonia

NOTE FROM THE EDITOR

Since the last issue, new members have joined our Special Interest Group. They are welcome and invited to send comments, information and articles to the next bulletins which will be published now, we hope, twice a year. Thanks to those who have contributed to this issue.

The first section of this issue contains useful information on our main areas of interest, i.e. markets and fisheries, the biology and ecology of sea-cucumbers, and management. Several articles present recent data on world markets, marketing and local fisheries in the tropical Pacific and the Indian Ocean. According to world market statistics, beche-de-mer imports have peaked in 1988, but recent figures are needed to interpret the 1989 decline.

Within the Pacific region, fishery statistics present contrasting trends. In Papua New Guinea, production appears stable. In Solomon Islands, production first increased in 1986 when it passed 100 t; in 1991 it peaked at 662 t. The mean value per kg has not changed much since 1988. In Fiji, production has declined since 1989, but the mean value per kg for exported products has doubled since that time. The decline is probably related to the population decline described by Tim Adams in his article.

Most of the recent progress made on the biology and ecology of holothurians is presented in the section on publications. The reply by Lyle Vail to the request for information on spawning provides some interesting data. If you have made similar observations, please provide them, and we will publish them in the next issue.

Chantal Conand

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NEW BOOK INFORMATION

Genetics and Evolution of Aquatic Organisms

Edited by **A Beaumont**, School of Ocean Sciences,
University College of North Wales, UK

Two thirds of the Earth is covered by water; aquatic organisms therefore play a vital role in the Earth's ecosystem. This single volume is based on the selected proceedings of an international conference held at the University of Wales, Bangor, UK on 10-16 September 1992. Review articles and research papers from a truly international list of contributors provide a unique combination of background information together with current directions of research in the evolution and genetics of organisms in aquatic habitats.

The wide range of topics discussed include genetic differentiation at population, species and higher taxonomic levels, heterosis and adaptation, genetics and evolution of asexually reproducing organisms, genetics and pollution, and genetics in aquaculture. Both traditional karyology and allozyme approaches are covered; however, there is a strong focus on the latest developments in DNA technology and their power to address problems in the field throughout the book.

The book is organized into themes, each introduced by keynote papers. Keynote authors include G R Carvalho (UK), E M Gosling (Ireland), H Hummel (Netherlands), A Meyer (USA) T Patamello (Italy) D O F Skibinski (UK) C Thiriot-Quievreux (France) and E Zouros (Greece and Canada). All papers in this volume have been tightly edited to provide a clear, coherent, state-of-the-art review.

Key Benefits

- * brings a wide range of information together in one place
- * information presented in a manner suitable for both students and researchers

Contents: Preface. Speciation and wide scale genetic differentiation. Gene flow and population structure. Heterozygosity, heterosis and adaptation. DNA technology and genetics of aquatic invertebrates. DNA technology and phylogeny of fish. Genetics of aquatic clonal organisms. Chromosomal genetics. Genetics and pollution. Genetics and aquaculture.

March 1994: 234x156: 560pp, 109 line illus, 40 halftone illus
Hardback: 0-412-49370-5: £69.00



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(Professor John) Swan Poem

Professor John Swan commemorated his retirement from chair of the Crown-of-Thorns Starfish Research Committee (COTSREC) by bequeathing the following literary legacy:

The Age of Reason and *Acanthaster planci*

Under the December moon, more often under sun,
Chance encounters during spawning, there are almost none.
The female egg, as ever was the case,
Attracts the male sperm to her embrace.
And chemotaxis, as the name implies,
Makes no distinction 'twixt the foolish and the wise.
And what is more, the oft-observed communal aggregation,
Ensures for all a most successful starfish propagation.

Gastrula! Bipinnaria! Brachiolaria!
Fourteen days of buoyant freedom, sometimes twenty-eight,
A pea-soup diet, *Dimaliella*, presently their fate.
Then down they go! To bed with crustose algae and
Lithothamnium pseudosorum.
Now watch each starfish grow from its remarkable
primordium.

Then come the fish, the crabs, the worms
Their brothers, sisters, cousins,
That finally reduce our *Acanthaster* population
From the millions to the dozens.

A few more months and then, the promised land!
Where milk and honey flow from coral strand.
White scars appear on branching staghorn corals,
And far away - the muted roar of academic quarrels.

"It's predator removal"; "Heavy rainfall after drought";
"It's the farmers"; "It's El Nino"; "Larval transport without
doubt".

It seems the reef is "under threat",
And who to blame? - the Managers, I'll bet.

But Johnson points to H. McCallum's optimistic simulations:
"The patterns of the starfish plagues in reef sub-populations,
Are cyclical, or quite chaotic, numbers high or low,
Depending on the larval pulses, water movement, ebb and
flow."

The oceans are resilient, their systems are robust,
Life forms adapt, evolve and flourish; corals will adjust.
So shoot the foxes, feral cats, the pigs, the goats and rabbits,
But learn to love the crown-of-thorns; accept its natural
habits.

Source: *Reef Research* Vol. 3(1), March 1993



Antarctica - Continuing Trend Toward More Science Personnel

Australia's 1992-93 Antarctic science season, the 46th of Australia's modern Antarctic program, got under way on 17 October with the departure from Hobart of *Aurora Australis*. This summer saw a total of 185 scientific personnel undertaking research in Antarctic and subantarctic regions, nearly three times the number of researchers in the mid-1980s.

Major research programs included:

- deep ice core drilling at Law Dome, inland from Casey, analysing cores to provide records of past climatic conditions;
- research into the interaction between ice and atmosphere to determine the role of sea ice in global climate change;
- investigations of the UV radiation climate over the Southern Ocean south of Australia and the response of phytoplankton to UV radiation exposure;
- upper atmospheric and geological studies; and
- two major inter-disciplinary marine science voyages.

Two marine science research cruises saw the most extensive use yet of *Aurora Australis* as a scientific research vessel. The first concentrated on krill and zooplankton distribution, with associated biological, oceanographic and geological studies, while an autumn ice-edge voyage examined the oceanographic structure of the water masses between Hobart and the Antarctic continental shelf. This second cruise was part of the World Oceanographic Circulation Experiment (WOCE), investigating ocean currents' current and potential role in driving climate.

Much of this season's effort went into improving Australia's already high standards of environmental management. It included continuing removal of rubbish from disused tips and completion of removal of the former Casey station.

The *Aurora Australis* was supported by the supply vessel *Icebird*, in its ninth season with the Australian Antarctic Program.

Source: *ANARE News Spring/Summer 1992-93*

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CRINOIDEA

Antedon mediterranea (Lamarck, 1816)

HOLOTHUROIDEA

Holothuria tubulosa Gmelin, 1788
Holothuria helleri Marenzeller, 1878
Holothuria polii Delle Chiaje, 1823
Holothuria impatiens (Forsk., 1775)
Holothuria forskali Delle Chiaje, 1823
Eostichopus regalis Cuvier, 1817
Ocnus planci (Brandt, 1835)
Stereoderma kirschbergi (Heller, 1868)
Leptopentacta elongata (Düben and Koren, 1844)
Leptopentacta tergestina (M. Sars, 1857)
Thyone fusus mediterranea Madsen, 1941
Thyone cherbonnieri Reys, 1960
Havelockia inermis (Heller, 1868)
Pseudothyone sculponea Cherbonnier, 1958
Phyllophorus urna Grube, 1840
Neocucumis marioni (Marenzeller, 1878)
Leptosynapta inhaerens (O.F. Müller, 1776)
Labidoplax digitata (Montagu, 1815)

ASTEROIDEA

Astropecten aranciacus (Linnaeus, 1758)
Astropecten irregularis pentacanthus (Delle Chiaje, 1825)
Astropecten bispinosus (Otto, 1823)
Astropecten platyacanthus (Philippi, 1837)
Astropecten spinulosus (Philippi, 1837)
Asterina gibbosa (Pennant, 1777)
Asterina phylactica Emson and Crump, 1979
Anseropoda placenta (Pennant, 1777)
Echinaster sepositus (Retzius, 1783)
Coscinasterias tenuispina (Lamarck, 1816)
Marthasterias glacialis (Linnaeus, 1758)

OPHIUROIDEA

Ophiomyxa pentagona (Lamarck, 1816)
Amphiura chiajei Forbes, 1843
Amphiura mediterranea Lyman, 1882
Amphiura cherbonnieri Guille, 1972
Amphiura filiformis (O.F. Müller, 1776)
Amphipholis squamata (Delle Chiaje, 1828)
Ophiothrix fragilis (Abildgaard, 1789)
Ophiothrix quinquemaculata (Delle Chiaje, 1828)
Ophiopsila aranea Forbes, 1843
Ophioderma longicaudum (Retzius, 1805)
Ophioconis forbesi (Heller, 1863)
Ophiura albida Forbes, 1839
Ophiura grubei Heller, 1863
Ophiura ophiura (Linnaeus, 1758)

ECHINOIDEA

Arbacia lixula (Linnaeus, 1758)
Sphaerechinus granularis (Lamarck, 1816)
Echinus acutus Lamarck, 1816
Echinus melo Lamarck, 1816
Psammechinus microtuberculatus (Blainville, 1825)
Paracentrotus lividus (Lamarck, 1816)
Echinocyamus pusillus (O.F. Müller, 1776)
Spatangus purpureus (O.F. Müller, 1776)
Echinocardium cordatum (Pennant, 1777)
Schizaster canaliferus (Lamarck, 1816)
Brissopsis lyrifera (Forbes, 1841)

contributed by D. Zavodnik

Howard Barraclough Fell, 1917-1994

Dr. H. Barraclough ("Barry") Fell died of heart failure on 21 April 1994, in San Diego, California. This was a sudden end to an extraordinary career that touched on many branches of science, a career that illuminated the lives of legions of people around the world.

Barry was born in England on June 6, 1917, and resided in New Zealand from 1921 to 1938. After completing an M.Sc. degree at Victoria University College, Wellington, New Zealand in 1938, Barry traveled to the University of Edinburgh, Scotland for his Ph.D. research, which he completed in 1941. From 1941 to 1946 he served with the British Army, and he was demobilised in 1946 with the rank of Major. He returned to New Zealand and joined the faculty of Victoria University College, where he was Senior Lecturer in Zoology from 1946 to 1957 and Associate Professor of Zoology from 1957 to 1964. Edinburgh University awarded him a D.Sc. degree in 1955. In March, 1964, Barry took up an appointment as Curator of Invertebrate Zoology, later Professor of Invertebrate Zoology, at Harvard University's Museum of Comparative Zoology. At the M.C.Z. he was the last in a long line of distinguished students of the echinoderms (L. and A. Agassiz, Lyman, H.L. Clark, Deichmann...). He remained at Harvard until his retirement in 1979, when he and his wife Rene moved to San Diego, California.

He became a Fellow of the Royal Society of New Zealand in 1960, and he was awarded the Royal Society's Hector Research Medal (1959) and Hutton Memorial Medal (1962). He was a Fellow of the American Academy of Arts and Sciences (1964).

His career in science comprised approximately 3 phases. From 1940 to the early 1970's, he was one of the world's leading echinoderm specialists. From 1966 to the early 1970's he became involved in studying distribution patterns of fossil invertebrates. Then, an interest in epigraphy (ancient writings, usually on stone) gradually evolved from an avocation of many years' standing to a full-time late career which captured Barry's interest for the last 25 years of his life. Barry founded the Epigraphic Society in 1974; today, 20 years on, the Society is flourishing, with world-wide membership. His later work, on early history of the Polynesians, on early migrations of man to North America, and on epigraphy in general, resulted in prolific publications, including three very popular books. Here, again, Barry stimulated a fever of enquiry into this intriguing field of research.

Barry's research on the Echinodermata resulted in more than 100 publications, many of these being original works of great importance. Several of his papers, on embryology, on brittlestar classification, on evolution of major groups, have become classics that are constantly cited today. He vigorously sought answers to larger questions, and never hesitated to step into controversial issues, usually providing new and unique perspectives. There is no doubt that, during the period 1950-1970, Barry attracted more students to the study of echinoderms than any

of his contemporaries.

I feel greatly privileged to have been a long-time friend and colleague of Barry Fell's, and I am always grateful to have been a graduate student under him. He was a superb teacher and lecturer; as undergraduate students, we were always impressed by the clarity and precision of his lectures in advanced vertebrate zoology and invertebrate zoology, and at the graduate level, he dazzled us with his expositions on zoogeography and evolution. He guided his graduate students with care and compassion, and we were always delighted to be sounding boards for the avalanches of new ideas that he produced.

Barry was a polymath. He had a broad and deep knowledge of many aspects of science and the arts. He was an authority on astronomy and numismatics, and he was an extraordinary linguist, being thoroughly familiar with many languages, ancient and modern.

Barry is survived by his wife Rene, sons Roger and Julian, daughter Veronica, and three grandchildren.

David L. Pawson