

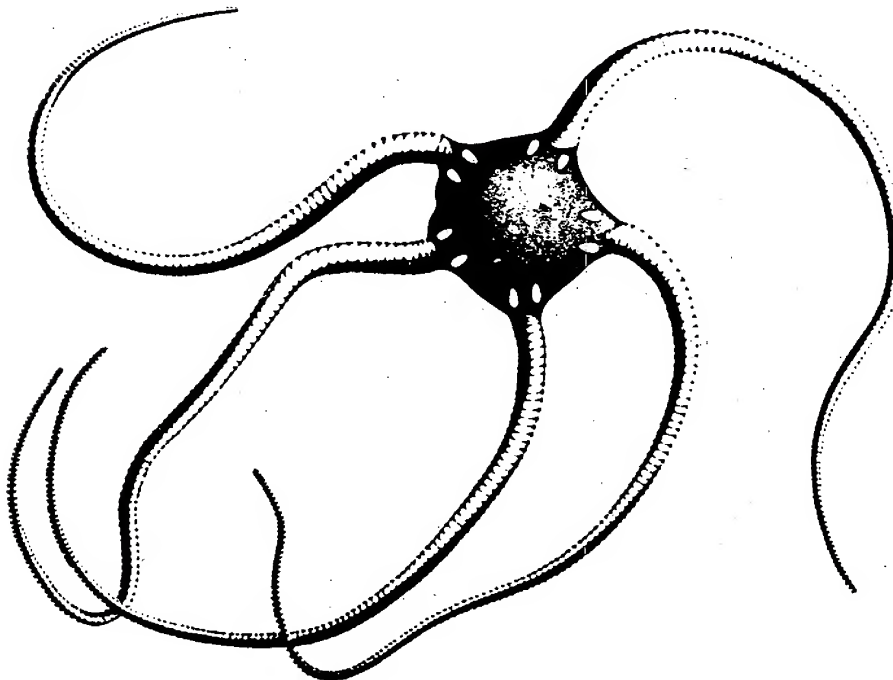
THE ECHINODERM NEWSLETTER
Number 15, July 1986

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Tampa, Florida 33620, U. S. A.

Distributed by the Department of Invertebrate Zoology
National Museum of Natural History
Smithsonian Institution
Washington, D.C. 20560, U. S. A.
(David Pawson, Maureen Downey)

The newsletter generally contains information concerning meetings and conferences and publications of interest to echinoderm biologists, titles of theses on echinoderms, and research interests and addresses of echinoderm biologists. The last page of this newsletter is a form which can be sent to the editor by individuals who desire to be added to the list of echinoderm specialists published in the newsletter.

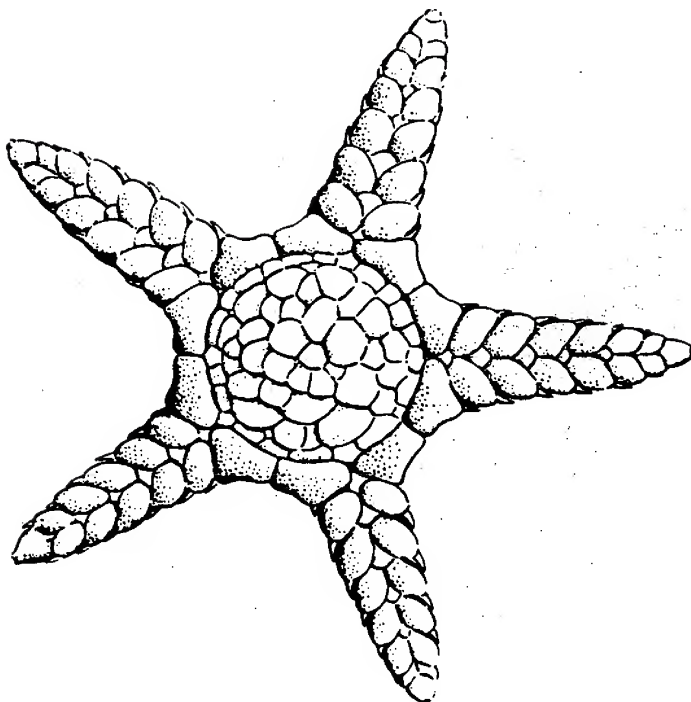
The newsletter is not intended to be a part of the scientific literature and should not be cited, abstracted, or reprinted as a published document.



*Pectinura
conspicua*
(from Koehler 1904)

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Ophiuraster perissus
(from H.L. Clark 1939)

MEETINGS

5^eme Seminaire International des Echinodermes
22-25 September 1986
Nantes, France

Organizer: Catherine Cuenca
Museum d'Histoire Naturelle
12, rue Voltaire, 44000 Nantes, France

Phylogeny and Evolutionary Biology of Echinoderms
15 to 17 December 1986
London, England

Organizer: A.B. Smith
Department of Palaeontology
British Museum (Nat. Hist.)
Cromwell Road, London SW7 5BD, U.K.

International Echinoderm Conference

First Announcement



**International
Echinoderm Conference**
August 23 - 28, 1987

University of Victoria, Victoria, British Columbia CANADA

For Information on the
Scientific Program,
Contact the Chairman
of the Organizing Committee
Dr. Robert Burke
Department of Biology
University of Victoria
Victoria, B.C., Canada
V8W 2Y2
(604) 721-7105

To Receive Registration
Information Please Contact:
Mary Ransberry
Conference Office
Div. of University Extension
and Community Relations
University of Victoria
Victoria, B.C., Canada
V8W 2Y2
(604) 721-8465
Telex 049-7222 UVic

Information and Requests

addresses are in the list of echinoderm specialists.

VAIL. Reports that an echinoderm department has been established at the Northern Territory Museum, Darwin, Australia. A primary function of the department is to work on the taxonomy and ecological aspects of Indo-West Pacific echinoderms, particularly those of northern Australia. Those with an interest in the echinoderms of the region should correspond with Vail who is the curator of the echinoderm department.

HOGGETT. Is studying systematics of tropical Australian ophiotrichids. Would like to exchange specimens of northern Australian echinoderms for ophiotrichid material from other Indo-Pacific localities.

Is interested in associations with eulimid gastropods.

KRISTAN-TOLLMANN. Is working on Triassic fossils, isolated elements of Echinodermata and on Crinoidea macrofossils.

WAREN. Is studying molluscs parasitic on echinoderms.

JELLETT. Is studying the pathology of echinoderms.

VADET. Is studying Jurassic regular echinoids.

BOULAND. Is interested in the control of echinoderm reproduction.

HIGHSMITH. Published information on ophiuroids living in cavities of coral heads: Highsmith, R.C. 1981. Coral bioerosion at Enewetak: agents and dynamics. *Int. Rev. ges. Hydrobiol.* 66: 335-375.

J.S. MILLER. Would like to know the location of the particularly fine lily encrinite figured by Knorr. Notes that it is said to have been purchased from the labourers at the limestone quarry at Schrapland, near Halle, by Inspector Wilkens, for 32 groschin, and given to Professor Lange, who sold it to Baron Niegart. However, it is also stated that it was not bought by Wilkins, but by Mr. Vitigo, at Farrenstadt, near Querfurt, for two dollars, and given to Lange, who sold it for three louis d'or. Miller says that if his memory does not misgive him, he thinks he saw the specimen about twenty years ago (1801) in the collection of the Naturforschenden Gesellschaft, at Dantzig. He asks: "Where is it now?"

KYTE. Is studying disease in *Pisaster ochraceus* and *Solaster stimpsoni* in Puget sound. Is interesting in corresponding with others working with asteroid diseases.

LEWIS, RD. Requests information and reprints on taphonomy of crinoids and ophiuroids.

STRATHMANN. Is working with the *Henricia* species of the northeast Pacific.

WRIGHT, C.W. & A.B. SMITH are preparing a monograph on the British Cretaceous echinoids as a revision of T. Wright's 1864-1882 monograph

JANGOUX M. requests information on the role of bacteria in echinoderms.

BROERTJES: DE WAARD are interested in immunology of echinoderms.

COBB, J.L.W., & A. MOORE are interested in echinoderm neurophysiology.

MEYER, DL. is interested in taphonomy, particularly of crinoids and edrioasteroids.

CASTILLA, JC. has a particular interest in the genus *Heliaster* along the Pacific coast.

GREEN, JJ. is studying middle Silurian camerate crinoids

CASO, ME is completing a monograph, *Los equinodermos de la Bahia de MAZATLAN*. Has a paper in press describing a new species of *Ophioderma* and another concerning the echinoderms collected during oceanographic campaigns.

HAMMOND, L is collating reports, photographs, observations etc. of holothuroid/sponge associations. Would like to receive any information available. Is continuing to work on holothuroid and other echinoderm deposit feeders, and on aggregations and reproduction in asteroids.

CLEMENT C R. is interested in ontogeny of crinoids, is studying rhombiferans, diploporitans.

MC CURDA, WATERS, and HOROWITZ are preparing a review of the blastoid genus Pentremites and can offer identifications of specimens. Specimens should be sent to Horowitz. Their general reviews of evolution in Pentremites, taxonomic survivorship in the Blastoidea, and a revision of the family Pentremitidae have been published. They are continuing work on a text of a monographic review of the genus Pentremites. Horowitz is considering preparing an index and bibliography of blastoids to extend the one published in 1943 by Bassler and Moodey. He would appreciate receiving appropriate reprints from blastoid workers.

BOCZAROWSKI is studying echinoderm fossils of the Middle Triassic from Upper Silesia (South Poland) and holothuroids from the Devonian of central Poland. He seeks reprints on fossil and recent holothuroids (paleontology, biology, paleoecology, ecology, systematics, anatomy, functional morphology, and evolution.

MACZYNSKA is studying the Upper Cretaceous and Tertiary (Miocene) echinoids.

MARTIN RE is studying echinoderms associated with marine turtles

AUSICH is studying the evolutionary biogeography of the Middle Silurian crinoid fauna, the palaeoecology of Middle Mississippian crinoids.

CLARK, AM. from June 1986, correspondence relating to curatorial aspects of the British Museum (Nat. Hist.) echinoderm collections should be directed to Gordon Paterson. Non-urgent mail is better directed to the address given in this newsletter.

MOORE A. is studying neurophysiology of echinoderms.

FUJITA T is interested in the ecology of deep-sea ophiuroids

STEPHENSON, DG requests information on Tertiary crinoids (particularly Tethys area) for taxonomy.

YAKOLEV YM is studying regeneration of the holothuroid reproductive system

JABLONSKI. Is interested in the evolution and biogeography of Mesozoic-Cenozoic-Recent echinoids and crinoids.

JELLETT. Is interested in the pathology of echinoderms.

MARSHALL. Is interested in genome structure; is establishing a library of DNAs of Clypeasteroids and close relatives (for DNA-DNA hybridization studies); desires live specimens/spermatozoa/DNA of clypeasteroids and close relatives

PROKOP. Is interested in cystoids and biostratigraphy.

GRYGIER. is interested in parasitology (Ascothoracida and Myzostomida). Asks that those who dissect echinoderms look for parasites. Is interested in new records of Ascothoracida from echinoderms; also in Myzostomida (especially from non-crinoid echinoderms). Has an interested also in parasitic copepods that are highly **modified**.

"I've got a little list" or "Isn't that a specimen of
Lhuyd's Latticed Seastar?"

by David L. Pawson

The Committee for Common and Scientific Names of Invertebrates (CCSNI) of the American Fisheries Society (AFS) has as its main purpose the preparation and publication of authoritative lists of common and scientific names of aquatic invertebrates. Lists of decapod crustaceans and mollusks have been prepared, and are going to press.

I have been asked to lead a group of specialists in the preparation of a list of echinoderm names for the American continent north of Mexico, within 200 miles of the coastal margin (to a depth of approximately 200 meters), including coastal islands, but excluding the West Indies.

I am not sure exactly how difficult this all will be; there are surely more than 1,000 species-names involved. Apparently, typical entries in the finished list will look something like this:

Flagrante delicto (Hendler, 1999) . . . A . . . The fun star of Uconn
Lawrencia jangouxii (Anon, 1999) A . . . The star of Balkema
Chrispaulia andrewsmithi (Britmus, 1999) . A . The theoretical star

(In the above entries, the letters "A" and "P" stand for Atlantic and Pacific).

If you are willing to help with this project in any way, or if you have species lists or faunal lists that might be available for reference purposes, please write to me soon (Room W323, National Museum of Natural History, Smithsonian Institution, Washington D.C. 20560). Many thanks.

COURSE OFFERING IN ECHINODERMS

The following course will be offered at Bamfield Marine Station in conjunction with the 1987 International Echinoderm Conference in Victoria, Canada.

Advanced Special Topics: Biology of Echinoderms

An advanced course on the systematics, ecology, functional morphology, physiology and life histories of the Echinodermata. Living local populations will be emphasized through field and laboratory studies.

The course will include both class and independent research projects. The use of SCUBA is encouraged for those who can satisfy the Bamfield Marine Station diving regulations. During the final week of the course, students have the option of either attending the Echinoderm Conference in Victoria or undertaking an additional special project at Bamfield.

- Dates: Approx. July 20 through August 28, 1987 (6 weeks)
- Prerequisites: Graduate or qualified senior undergraduate standing.
- Location: The Bamfield Marine Station is a research and teaching facility operated jointly by five Canadian Universities. It is located on the west coast of Vancouver Island about 3 1/2 hours driving time from the Echinoderm Conference site at the University of Victoria.
- Fees: To be determined; they will not include conference costs. Bursaries may be available based on need and qualifications.
- Instructors: Dr. Maria Byrne, University College Galway, Ireland
 Dr. William C. Austin, Khoyatan Marine Laboratory,
 Cowichan Bay, British Columbia
 Dr. John S. Pearse, University of California, Santa
 Cruz, California.

INQUIRIES

Director
 Bamfield Marine Station
 Bamfield, British Columbia, Canada
 VOR 1B0
 Telephone: (604) 728-3301

AN ECHINODERM SOCIETY?

For a number of years, an echinoderm society has been proposed. Although we have enjoyed the freedom associated with the lack of a society we have not enjoyed benefits that a society provides. The topic will be discussed at the Victoria conference.

FRIENDS OF ECHINODERMS: Will convene at the Annual Meeting of the American Society of Zoologists, 27 December 1986, Nashville

Disposal of reprint collections

Many of us have gathered together large collections of echinoderm reprints, sometimes supported by card indices or computer-based retrieval systems. Because collections can rarely be accepted nowadays by libraries, however specialized, the saleable portions are often dispersed of through secondhand booksellers following retirement or death.

Considerable effort has often gone into the curation of such collections, and some workers may well prefer to see them passed gratis to a younger worker just starting out. In this way the collection and its data base can be kept together, and hopefully continue in use for many more years.

Have colleagues any suggestions as to how contacts can best be made?

David Nichols
Department of Biological Sciences
Hatherly Laboratories
Prince of Wales Road
EXETER EX 4 4PS
U.K.

Directory of Palaeontologists of the World

The fifth edition is planned for the 28th Congress of the International Palaeontological Association (July 1989, Washington, D.C.). Names, addresses, and affiliations should be sent to Dr. Rex Doescher, Dept. of Paleobiology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.

Shallow-water hydrothermal vents in the Kuril Islands

Members of the Institute of Marine Biology of the Far East Science Center of the USSR (Vladivostok) discovered shallow-water hydrothermal vents in the summer of 1985. An account of their observations can be found in: Tarasov, V.G., M.V. Propp, L.M. Propp, S.V. Blinov, and G.M. Kamonov. 1986. Shallow hydrothermal vents and a unique ecosystem of Kraternaya caldera. Mar. Biol. (Vlad.). (2), 72-74.

The vents occur between the intertidal and 20-m depth. Bacterial mats cover the surface. Sulfide and reduced sulfur compounds are found in the water. Asteroids, echinoids, and holothuroids are present.

(A portion of this commentary by Peter Voogt was omitted in Newsletter 14. The entire text is given here.)

RESEARCH: SOLITARY OR JOINT EFFORT?

The last two decades have shown an explosive increase of the number of papers on echinoderms. Moreover, also the number of investigators working on echinoderms and that of topics studied have increased. This expansion of echinoderm research, resulting in a strong increase of data, has caused loss of overview for most investigators. However, a number of them, particularly those studying typically molecular aspects do not need or want this overview. This holds good also for a second category of investigators, who are primarily process-interested: they study basic processes (such as oocyte maturation or spermatogenesis) and just use echinoderms as well-suited test objects. These cell biologists fit in their results into the data known from other species and can arrive at a good integration of knowledge. Besides there is a third category of scientists who are interested in echinoderms per se. They, for example, do not study the process of reproduction as such, but reproduction of echinoderms; more generally processes in which the total animal is involved. This organismal physiology requires an integration of knowledge on several levels as morphology, metabolism, interorgan transport, and regulation by external or internal factors.

However, this integration has gradually become nearly impossible, which is clearly illustrated by the fact that twenty years ago the larger part of our knowledge on echinoderm physiology could be collected in one book ("The Physiology of Echinodermata", Booloottian, R.A., ed.). An update of this book would yield now a multivolume work, each volume dealing with one topic as has been done for nutrition in "Echinoderm nutrition", edited by M. Jangoux and J.M. Lawrence.

This development has made scientists increasingly dependent on reviews and summarizing lectures during conferences. In this respect the International Conferences on Echinoderms have provided for clearly existing needs.

Further, scientists are more and more conscious of the "tight junction" between morphology and physiology. Morphology should extrapolate towards function, and explanations of observed phenomena in physiology should be based also on morphological features. However, most scientists are trained in only one of the two ways of approach. Therefore they like to present their work to a forum of colleagues with expertise in the same, adjacent or complementary fields of research. The International Conferences on Echinoderms have fulfilled this informing and also accounting function. The increasing number of attendants clearly shows the need for information and consultation, but unfortunately made it necessary to assemble in parallel session.

Yet it remains a pity that only work that already has been done is presented, so that criticism of the work or valuable advices are too late.

Also the tendencies of decreasing average numbers of workers in a research-team (as a result of the worldwide economic recession) and of the increasing requirements in subsequent evaluations of research, force scientists to plan their research carefully. Duplications should be avoided and advices of colleagues should be obtained during the design of experiments.

These considerations result in a plea for adding to the functions of the International Conferences on Echinoderms at least an extra one, namely that of being starting point and, figuratively spoken, uterus for well-planned research projects. In these projects other research groups could participate in doing those parts of the work for which their special expertise is needed, or by planning and performing interrelated experiments. This will greatly stimulate the contacts between investigators and research-teams, resulting in exchange of ideas and techniques, and in stages in each others lab. It will also lead to higher efficiency in research, a well-structured gathering of data with an increase of integrated knowledge.

Furthermore several foundations highly appreciate collaboration in research and are willing to subsidize such projects.

Finally I would like to adstruct this with an example: From the Brussels echinoderm colloquium on, there has been an intensive collaboration between the lab of Dr. Ch.W. Walker, University of New Hampshire, and my lab. This included several visits of workers of these labs to each other (made possible by a NATO grant) and resulted among others in two Ph.D. theses. In one of these theses Dr. F. Smith, New Hampshire University, postulated an interesting hypothesis: Reproduction in male starfish is triggered by environmental conditions (for example photoperiod), this signal is integrated in the nervous system and leads to the release of (a) neurohormone(s), which influence(s) steroid metabolism: changes in steroid levels affect polyamine metabolism and these polyamines control gonocyte mitosis.

This is an attractive hypothesis, with several steps each of which can be tested. However, who or which research-group is able to do this? Yet we know that to the regular attendants of the Echinoderm Conferences belong scientists which are experts on photoperiodicity, or anatomy and morphology of the nervous system. There certainly are attendants which are able to examine the nervous system for neurohormones (it is too bad, that twenty years after the discovery of GSS we still have no idea about other neurohormones in echinoderms!), there are others who can study steroids and polyamines and their effects on metabolism.

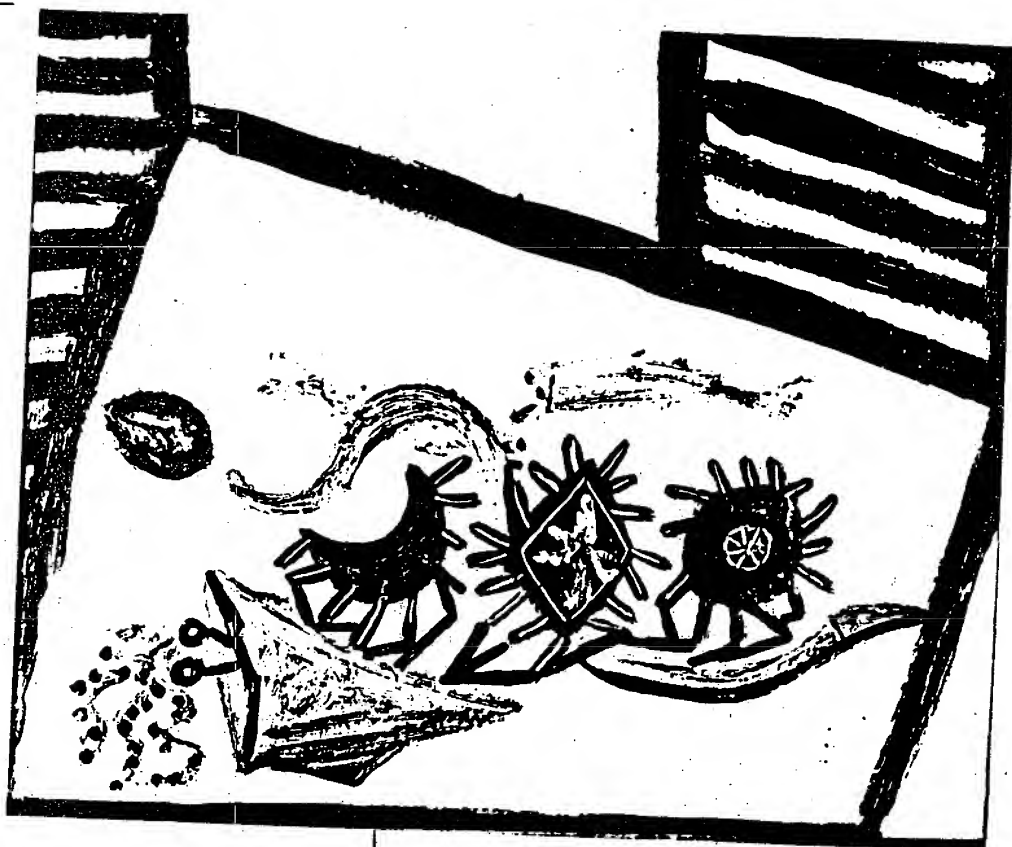
Only by forming bipartite or tripartite collaboration groups such an hypothesis can be tested. Of course this was only one example, but it clearly illustrates the present state of research.

Maybe a coordinating function on behalf of the "International Conferences on Echinoderms" (which is not a Society) will be very helpful to reach to what is my conclusion: Research today will be effective only by a joint effort!

Dr. Peter A. Voogt
Utrecht
The Netherlands

AILSA'S SECTIONEchinoderms in Art

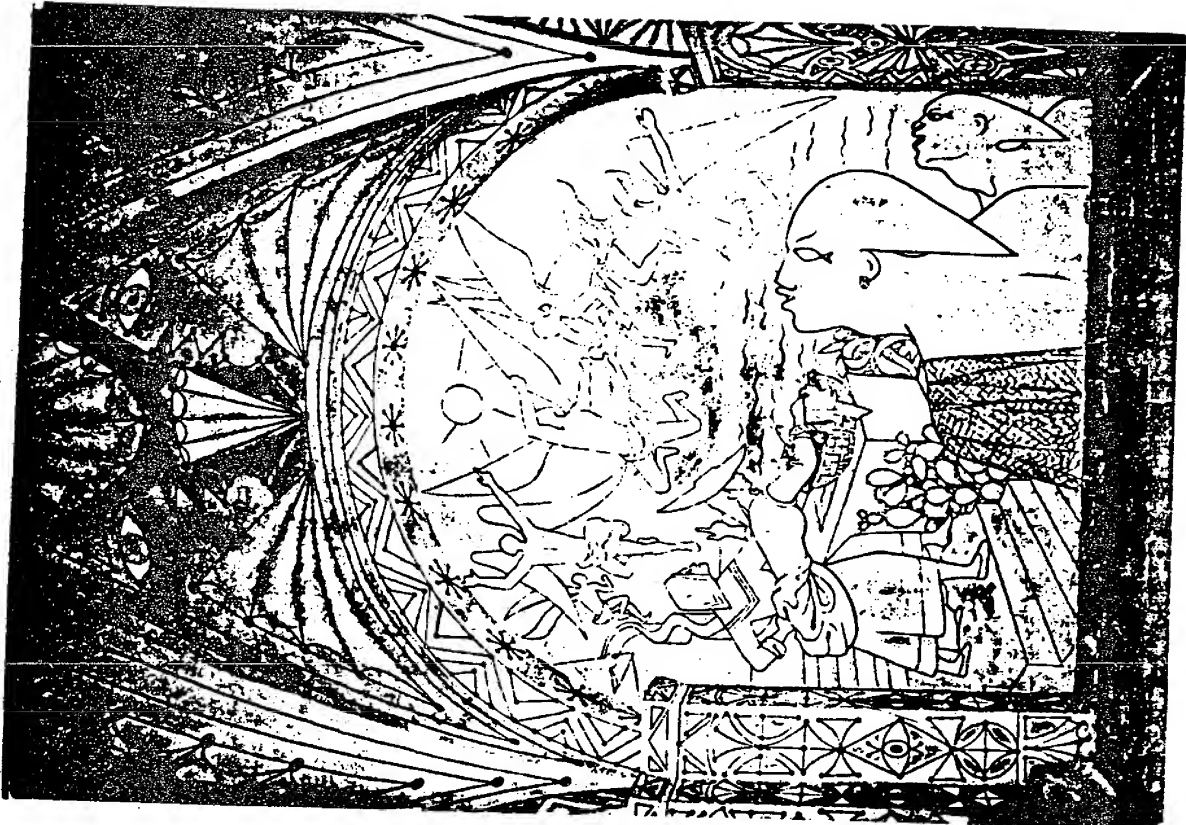
Picasso 1946
 "Fruits de mer"
 Antibes-(Alpes-
 Maritimes)
 (communicated
 by L. Fenaux)



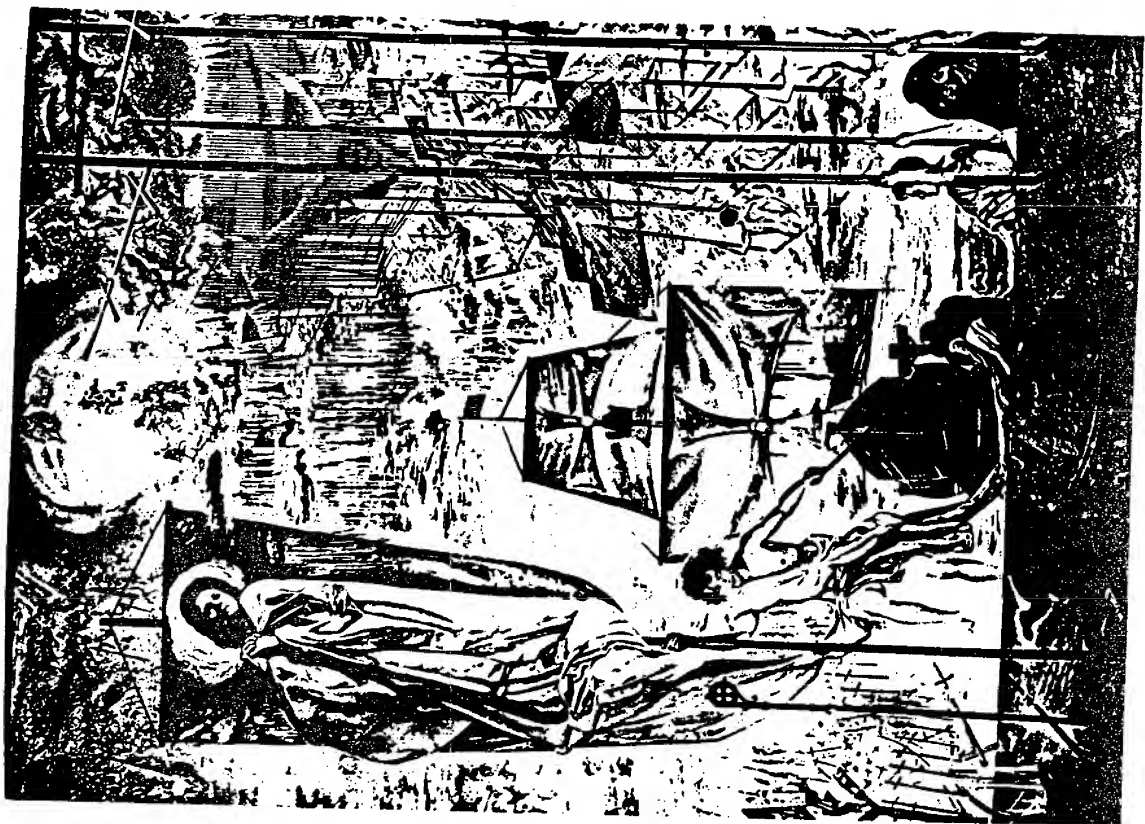
Picasso

"Hibou,
 Chaise et Oursins dans
 un panier"
 Musee Picasso, Antibes.
 (communicated by
 L. Fenaux)

Jean Cocteau
"Hommage aux demoiselles
de Villefranche"
Chapelle Saint-Pierre,
Villefranche-sur-Mer.



Salvatore Dali
"La Découverte de l'Amérique par
Christophe Colomb"
Dali Museum, St. Petersburg



"As a curious and beautiful creature he (Echinus) is full of interest, and as an adjunct to one's diet he is, in due season, full of excellent meat. We take the ugly and forbidding oyster with words of gratitude and flattery on our lips, and why pass with disrespect the creature that is beautiful and wonderful as well as savoury? To enjoy it to perfection, extricate the creature from his lurking place far down in the blue crevice of the coral, with a fish-spear. Don't experiment with your fingers. On the gunwale of your boat divest it of its slender black spines, and with a knife fairly divide the spheroid body, and a somewhat nauseous-looking meat is disclosed; but no more objection-able in appearance than the substance of a fully ripe passion fruit. The flavour! Ah, the flavour! It surpasseth the delicate oyster. It hath more of the savour and piquancy of the ocean. It clingeth to the palate and purgeth it of grosser tastes. It recalleth the clean and marvellous creature whose life has been spent in cool coral grottos, among limestone and the salty essences of the pure and sparkling sea, and if you be wise and devout and grateful, you forthwith give praise for the enjoyment of a new and rare sensation." from: E.J. Banfield. The confessions of a beachcomber. Scenes and incidents in the career of an unprofessional beachcomber in tropical Queensland. contributed by Judge Gooding
19 Highgate Park, St. Michael, Barbados.

"In (*Ophiosphaera insignis* and *Ophiodaphne materna*) ... the supposed young ones (carried over the mouths) are the males. The species-name 'materna' given by Koehler to *Ophiodaphne* is thus not very appropriate, the species, so far from being an affectionate mother nursing its young in a self-sacrificing manner, being a passionate mistress living in continuous close embrace with its male lover, and leaving its brood wholly to take care of itself." Mortensen, T. 1933. Papers from Dr. Th. Mortensen's Pacific Expedition 1914-16. LXIII. Dansk naturhistorisk forening. Copenhagen. Videnskabelige Meddeleser. 93, 171-194.

ARGUS NODDED

"A reflexive basis for the reversal of the covering reaction supports the suggestion of a reflexive basis for the covering reaction itself. The functional consequences of covering as proposed by other workers could still be valid, but would not be the casual explanations of the phenomenon."

J.M. Lawrence. 1976. Covering response in sea urchins. *Nature*. 262, 490-491.

cont.

"I interpret the correspondence of the moral size class and the point of zero growth to mean that each area has an 'optimum' size set by local conditions...."

T. Ebert. 1968. Growth rates of the sea urchin *Strongylocentrotus purpuratus* related to food availability and spine abrasion. *Ecology*. 49, 1075-1091.

"...aspects of the spawning activities reported support speculation that echinoderm spawning behavior serves to enchance the dispersal of gametes and to minimize gamete wastage."

G. Hendler & D.L. Meyer. 1982. Ophiuroids flagrante delicto and notes on the spawning behavior of other echinoderms in their natural habitat. *Bull. Mar. Sci.* 32, 600-607.

"Although food grooves can not be easily studied with a cost-benefit approach, the clear delineation of scutellid collecting and transporting systems can. For example, is it biogenetically beneficial for a sand dollar to entirely cover its test with feeding structures...."

J. Ghiold. 1984. Adaptive shifts in clypeasteroid evolution--feeding strategies on the soft-bottom realm. *N. Jb. Geol. Paläont. Abh.* 169, 41-73.

Echinoderms in literature

"It turned out to be called the Starfish Marina. Beer, bait, boats, slips for rent, charter service, guides I was running on the beach one morning. Puss had stepped on a sea urchin in shallow water. She was hobbling ashore, in obvious trouble. Okay, so I got the spines out and brought her over here, and got her heel fixed up. She was...a lot of fun." (John D. McDonald. 1985. *The Lonely Silver Rain*.)

RAPID SPECIATION IN CLYPEASTEROIDS

1985

1986



A daisy of a tale?

This is a tale which began in August, 1985, while Dr. Frank Rowe was visiting the National Museum of New Zealand in Wellington, to examine echinoderm collections for species common to New South Wales (Australia) and New Zealand. Frank also wished to complete, with Dr. Alan Baker, a paper on Tasman Sea echinoids, and discuss with Dr. Helen E.S. Clark, a study she is making of Tasman asteroids. We did achieve those aims but not before stumbling across perhaps the most astounding extant echinoderm yet found!

The 9 specimens of this unusual creature were taken from lumps of wood collected from the sea-floor off New Zealand in 1000-1200 m. Mr. Bruce Marshall (NMNZ) has been making a special study of gastropods living on that substrate. During his examination of waterlogged wood, Bruce was very careful to remove any whole or parts of other animals besides molluscs. These included some interesting echinoderms such as Caymanostella and Ophiambix. Hence the new animal was found by Frank in vials containing Caymanostella. The nick-name "sea daisy" was subsequently coined by Alan because of its general dorsal shape, and to avoid use of unpublished scientific names.

Helen and Alan were in or about at the time of the discovery of the sea-daisies. We all became very excited, to say the least. That we did, indeed have an echinoderm - it had a plated calcite skeleton with asteroid/ophiuroid-like plates on its dorsal surface, it had tube-feet (but these were arranged circumferentially rather than in radiate fashion), and its body was definitely pentamerous - was clear. The significance of the find was, therefore, immediately apparent. Wild ideas ensued. How did the tube-feet become circumferential? What about the wvs? What were its relationships? When the initial excitement died down we started finding other significant structures, including juveniles in the gonads or bursae, velum and associated structures and a hydropore.

Frank recalled an early drawing by David Nichols of what a cyclocystoid might have looked like. We were then struck by the superficial resemblance of our sea-daisy to those fossils. However, more recent interpretations of cyclocystoids by Andrew Smith and Chris Paul have scotched any ideas we might have entertained of a living fossil from that stock! Before we could get much further with our ideas Frank had to return to Sydney. We split the material and Frank took three specimens back with him, two of which were sectioned at Sydney University (with the co-operation of Prof. Don. T. Anderson). Alan and Helen continued to study the skeletal plates and soft parts by dissection. Alan traced the wvs from the hydropore to an internal circumferential ring and had a model made of one of the ring ossicles

on the under side of the animal. Frank, meanwhile, beavered away interpreting the internal anatomy from the sections, finding the external nerve and water ring and the connections to the tube-feet below the ampullae. He also worked on the derivation of the animal's shape, skeletal arrangement and wvs.

In February, 1986, Frank returned to Wellington for final discussions and preparation of a manuscript which was published in Nature (Baker, A.N., Rowe, F.W.E. and Clark, H.E.S. 1986. "A new Class of Echinodermata, based on a new genus and species", Nature, 321, 862-864.

We are now preparing a more detailed account, which will include SEMs of the skeleton, photomicrographs of the histological sections, and an elaboration of our ideas on the derivation, origin and relationships of the Class. We will also discuss the interpretations of the cyclocystoids made by both David Nichols and by Chris Paul and Andrew Smith, in the light of our understanding of Xyloplax. We believe this significant and fortunate find gives us a possible insight into the adaptive morphology of both living and fossil forms. The medusiform shape of Xyloplax would, however, appear to be novel in echinoderms.

None of us ever dreamt that a discovery at this level would come our way. For Frank and Helen, it is fortuitous timing, as it coincides with their 25th anniversary of echinoderm research.

F.W.E. Rowe

Allan Baker
Helen E.S. Clark



Cartoon communicated
by F.W.E. Rowe, From
the Sydney Morning Herald
20 March 1986

Response received to Gordon Hendler's advertisement:

Harlose, Hillerod, Denmark. 19 December 1985

Dear Dr. Hendler: I should like to apply for the post of curator at the Los Angeles County Museum, as advertised recently in the Echinoderm Newsletter. As you can see from my curriculum vitae I have had some experience with the group. The position will enable me to continue my studies of this fascinating group. I have done extensive field work and feel that I could bring another perspective to this study. Recently I have had some rare and privileged insights to the evolution of this group. I am frequently arguing with my colleagues here about evolution so I am well versed in the arguments proposed by fundamentalists. Between ourselves there are a lot of fundamentalists here. As I was saying to Dr. Darwin the other day some of them think that they had a personal stake in this creation bit! I hope you will consider my application and I look forward to hearing from you.

Yours sincerely, (signed) Theodor Mortensen

Name: Ole Theodor Jensen Mortensen

Date of Birth: 22 Feb 1868

Place of Birth: Harlose, Denmark

Education: Fredreriksberg Grammar School 1875 - 1885

University of Copenhagen 1885 = 1890 attaining a degree in
Theology

1895 M.Sc. Zoology

1897 Ph. D.

Employment: Taught at the Institute for the Blind 1890 - 1894.

Zoological Assistant at the Zoological Institute,
Giessen. I worked to Spengel.

Associate, Zoological Laboratory, University of
Copenhagen 1902-1910.

Head of Invertebrate Division 1917-1933.

Researcher, Zoological Museum 1933-1952

Field work: Expedition to the Gulf of Siam 1899-1900

West Indies 1905-1906

Pacific 1914-1916

Indo Malaya 1922, 1929-30.

Publications: I have several publications but I have no wish to bore or appear over-qualified for the post. I shall therefore concentrate on those of greatest merit.

(Unfortunately, Dr. Hendler had already made arrangements to hire a curatorial assistant when this application arrived.)

IN THE PAST

1886

- Bell, F.J. On a species of Echinocardium from the Channel Islands. Ann. N. H. (5), 516-517.
- Carpenter, P.H. On the variations in the form of the cirri in certain Comatulina. Tr. L.S. ii, 475-480.
- Chadwick, H.C. Report on the Ophiuroidea of the L.M.B.C. District. Fauna of Liverpool Bay. i. 140-143.
- Cotteau, G. Echinides nouveaux ou peu connus. Bull. Soc. Z. France, xi, 708-728.
- Cueñot, L. Sur les fonctions de la glande ovoïde, des corps de Tiedemann et des vésicules chez les Astérides. C.R., cii, 1568-1569.
- Duncan, P.M. & W.P. Sladen. On the anatomy of the perignathic girdle, and of other parts of the test of Discoidea cylindrica, Lamarck, sp. J.L.S. xx, 48-61.
- Etheridge, R., Jr., & P.H. Carpenter. Catalogue of the Blastoidea in the Geological Department of the British Museum (Nat. Hist.). London. 322 pp.
- Hamann, O. Vorläufige Mittheilungen zur Morphologie der Echiniden. Jen. Z. Nat. xx, suppl. 1.
- Koehler, R. Sur le système circulatoire des Echinides. C.R. ciii, 86-88; Recherches sur l'appareil circulatoire des Ophiures. C.R. ciii, 501-504.
- Ludwig, H. Echinodermen des Beringsmeeres. Zool. JB, i, 275-296.
- Perrier, E. Memoire sur l'organisation et le Développement de la Comatule de la Méditerranée (Antedon rosacea Linch). Paris. 300 pp.
- Preyer, W. Ueber die Bewegungen der Seesterne. MT. Stat. Neap. vii, 27-127.
- Rathbun, R. Report upon the Echini collected by the U.S. Fish Commission Steamer 'Albatross' in the Gulf of Mexico and Caribbean Sea. P.U.S. Nat. Mus. viii, 603-620.

Theel, H. Report on the Holothurioidea dredged by H.M.S. 'Challenger' during the years 1873-76. Chall. Rep. Zool. (39), 290 pp.

1936

Baldwin, G., & D.M. Needham. Phosphagen in echinoid muscle and in electrical tissue. Nature. 138, 506.

Bertolini, F. Ricerche sulla es crezione degli Oloturoidi. Pubbl. Staz. Zool. Napoli. 15, 322-338.

Child, C.M. Differential reduction of vital dyes in the early development of echinoderms. Arch. Entom. Mech. Org. 135, 426-456.

Clark, A.H. Crinoidea. John Murray Exped. 4, 87-108.

Cole, K.S., & R.H. Cole. Electric impedance in Asterias eggs. J. Gen. Physiol. 19, 609-623.

Döderlein, L. Die Asteriden der Siboga-Expedition. III. Die Unterfamilie Oreasterinae. Siboga Exped. 46c, 295-369.

Fox, H.M. Rates of cleavage of sea urchin eggs in different latitudes. Nature. 138, 839.

Harvey, E.B. Parthenogenetic merogony or cleavage without nuclei in *Arbacia punctulata*. Biol. Bull. 71, 101-121.

Hayashi, R. Variations of the sea-star, *Asterias amurensis* Lütken due to growth stages. J. Fac. Sci. Hokkaido Univ. 5, 5-20.

Hörstadius, S. Über die zeitliche Determination in Keim von *Paracentrotus lividus*. Arch. Entw. Mech. Org., 135, 1-39.

Moore, H.B. The biology of *Echinocardium cordatum*. J. Mar. biol. Ass. U.K., 20, 655-671.

Mortensen, Th. Echinoidea and Ophiuroidea. Discovery Repts, 12, 1-53.

Onodo, K. Notes on the development of some Japanese echinoids with special reference to the structure of the larval body. Japan J. Zool. 6, 637-654.

Panning, A. Die Gattung *Holothuria*. Mitt. Zool. Staatsins, Hamburg, 46, 103-121.

Thorson, G. The larval development, growth, and metabolism of Arctic marine bottom invertebrates compared with those of other seas. Medd. Grønland. 100, 1-155.

Tyler, A. On the energetics of differentiation. Biol. Bull. 71, 59-100.

NEW BOOKS

Giudice, G. 1985. The Sea Urchin Embryo: a developmental biology system. Springer-Verlag.

Jangoux, M. & J.M. Lawrence (eds.) (1986). Echinoderm Studies II. A.A. Balkema Publishers, P.O. Box 1675, NL-3000 BR Rotterdam, The Netherlands. US \$28.00 (20% discount to subscribers to the series, including Vol. I. Vol. III is in preparation.

R. Emlet, L. McEdward, & R. Strathman. Echinoderm larval ecology as viewed from the egg.

M. Roux. Evolutionary ecology and biogeography of modern stalked crinoids.

C. Harrold & J.S. Pearse. The ecology of kelp forest echinoderms.

W.B. Stickle and W. Diehl. The effect of salinity on echinoderms.

Guille, A., P. Laboute, and J.-L. Menov (eds) 1986. Guide des étoiles de mer, oursins et autre échinodermes du lagon de Nouvelle-Calédonie. Editions de l'Orstrom, Librairie-Diffusion, 70 route d'Aulnay, 93140, France. (350 FF + postage. 10% discount to newsletter readers. See order form below.)

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The excellent photographs provided for each species are in color (except for one ophiuroid) of living animals (except for two clypeasteroids), often in situ.

Irimura, Seiichi. The brittle-stars of Saagmi Bay. Edited by the Biological Laboratory, Imperial Household, Tokyo, Japan.

Keegan, B., and B.D.S. O'Connor (eds.). 1985. Echinodermata. Balkema. (Proceedings of the International Echinoderm Conference, Galway).

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Lewis, D.N. 1986. Catalogue of the type and figured specimens of fossil Echinoidea in the British Museum (Natural History). Brit. Mus. (Nat. Hist., pub. no. B30996. £13.50.

This includes an alphabetical list of the genera of specimens in the Department of Palaeontology giving information about each specimen, a bibliography, and an alphabetical list of species, each paired with the genus.

Jeffries, R.P.S. (in press) The ancestry of the vertebrates. approx. 350 pp. illus. Publications Sales, British Museum (Nat. Hist.), Cromwell Road, London SW7 5BD. approx £50

Concerns the relations between echinoderms and chordates. Based on the fossil calcichordates. Outlines the anatomy of living hemichordates, echinoderms and primitive chordates and discusses the mutual phylogenetic relationships of all deuterostomes.

Books in print

Broadhead, T.W. & J.A. Waters (eds.) 1980. Echinoderms. Notes for a short course. Univ. of Tennessee. Studies in Geology.

Clark, A.M. & J. Courtman-Stock. 1976. The echinoderms of Southern Africa. Brit. Mus. (Nat. Hist.)

Forbes, E. The echinoderms of the London clay, etc. Johnson Rept.

Jangoux, M., & J.M. Lawrence (eds). 1983. Echinoderm Studies, 1. Balkema.

Moore, R.C. 1966. Treatise on invertebrate paleontology. Pt. U. Echinodermata 3. 2 vols. Geol. Soc.

Moore, R.C. 1966. Treatise on invertebrate paleontology. Pt. S. Echinodermata 1, 2 vols. Geol. Soc.

Wright, T. The fossil Echinodermata Johnson Rept.

Jangoux, M., & J.M. Lawrence (eds.) 1982. Echinoderm nutrition. Balkema.

Chamberlain, J.B. et al. 1973. The sea urchin. Molecular biology. vol. 2. Irvington.

Clark, H.C. 1925. Catalogue of the Recent sea-urchins (Echinoidea) in the collection of the British Museum (Nat. Hist.). British Museum (Nat. Hist.)

Giudice, G. 1973. Developmental biology of the sea urchin embryo. Academic Press.

Grant, U.S. 4th, & C.G. Hertlein. 1938. The American Cenozoic Echinoidea. Johnson Rep.

Stearns, L.W. 1974. Sea urchin development. Cellular and molecular aspects. Van Nostram.

Terman, S.A. et al. Sea-urchin molecular biology. Vol. 3. Irvington.

Clark, A.H. 1949. Ophiuroids of the Hawaiian islands. Kraus Rept.

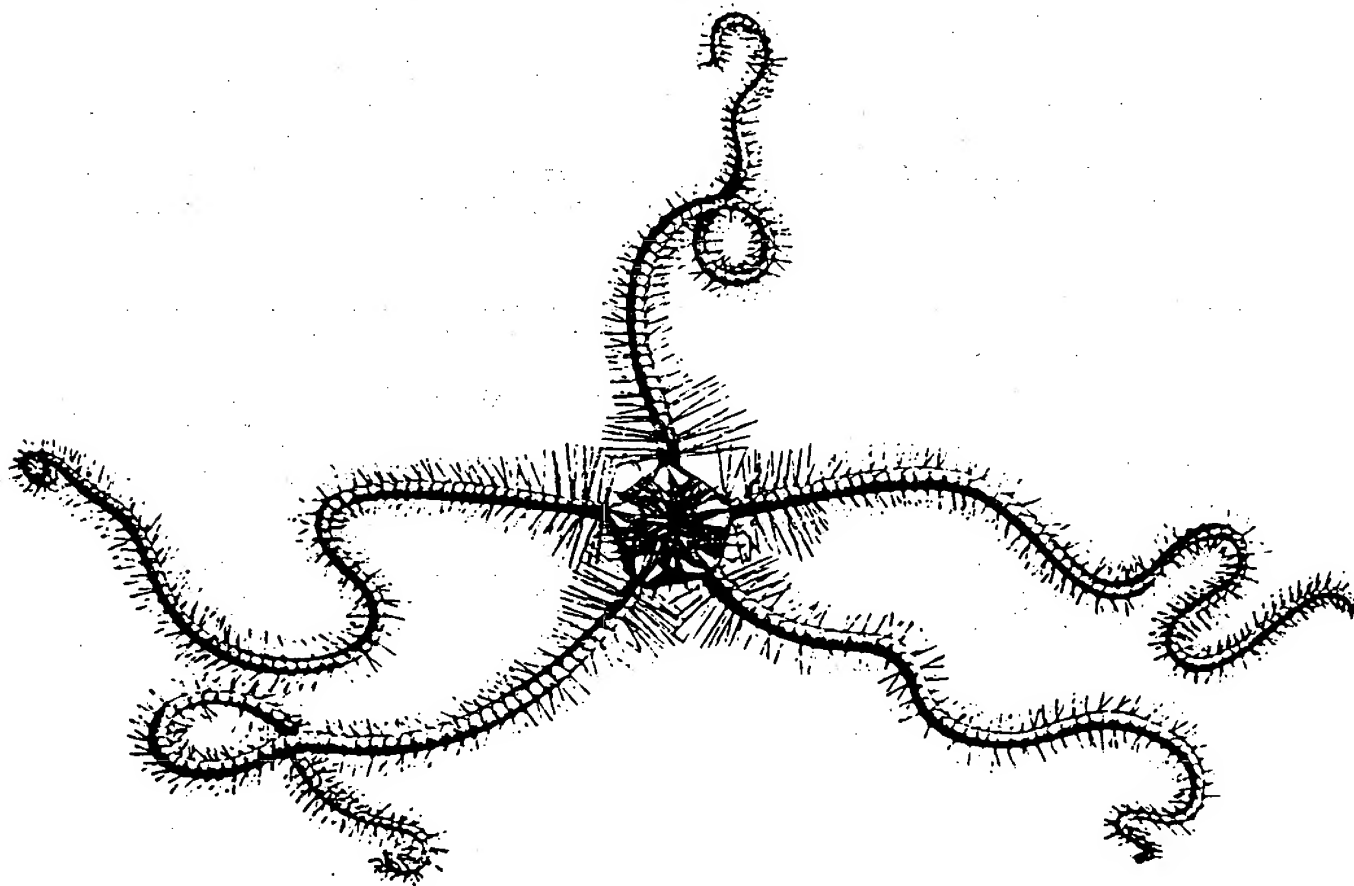
Ely, C.A. 1942. Shallow-water Asteroidea and Ophiuroidea of Hawaii. Kraus Rep.

Spencer, W.K. 1940. The Paleozoic Asteroidea. Johnson Rep.

Verrill, A.E. Monograph of the shallow-water starfishes of the North Pacific coast from the Arctic Ocean to California. 2 vols. Kraus Rep.

Jangoux, M. (ed.) 1980. Echinoderms: present and past. Balkema, (proceedings of the European Colloquium on Echinoderms, Brussels, 1979).

Lawrence, J.M. (ed.). 1982. Echinoderms: Proceedings of the International Conference, Tampa Bay. Balkema.



Ophiothrix pulchella (from Koehler 1904)

Translations

Gordon Hendler suggests that letter of articles which have been translated be listed in the newsletter so that they are available.

- Deutler, Fritz. 1926. Über das Wachstum des Seeigelskeletts. Zool. Jahrb., Abt. f. Anat. 48(2): 119-200. (On the growth of the echinoid skeleton. Transl. 36 typed pp.) (Mrs. Bertha M. Cutress, Dept. of Marine Sciences, Univ. of Puerto Rico, Mayaguez, P. R. 00708, U.S.A. Zerox \$0.10 per page).
- Döderlein, L. 1898. Ueber 'Krystallkörper' bei Seesternen. Denkschr Med Nat Ges Jena (8): 491-494. (On the 'crystal bodies' of seastars). (Dr. Gordon Hendler, Natural History Museum, 900 Exposition Blvd., Los Angeles, CA 90007, U.S.A.: NO CHARGE FOR COPY).
- Bargmann, W. & Behrens, B. 1964. Ueber die Tiedmannsche Organe die Seesternen (Asterias rubens L.). Zeit Zellforsch., 63: 120-133 (On the Tiedemann's Bodies of the starfish Asterias rubens). (Prof. David Nichols, Department of Biological Sciences, Hatherly Laboratories, Prince of Wales Road, EXETER EX4 4PS, U.K.: No charge for copy).
- Dambach, M. & Hentschel, G. 1970. Die Bedeckungsreaktion von Seeigeln. Neue Versuche und Deutungen. Mar. Biol., 6(2): 135-141. (The covering reaction in sea-urchins. New experiments and interpretations). (Prof. David Nichols, Department of Biological Sciences, Hatherly Laboratories, Prince of Wales Road, Exeter, EX4 4PS, U.K.: NO CHARGE FOR COPY).
- Fechter, H. 1965. Ueber die Funktion der Madreporenplatte der Echinoidea. Z. Vergleich. Physiol., 51: 227-257. (On the function of the madreporic plate in sea urchins) (Prof. David Nichols, Department of Biological Sciences, Hatherly Laboratories, Prince of Wales Road, EXETER EX4 4PS, U.K. NO CHARGE FOR COPY).
- Morozov, N.N. 1978. O povedenii i sutochnom ritma dvigatelnoi aktivnosti morskikh ezhei iz roda Strongylocentrotus. Zool. Zhurn., 57 (3): 459-462. (The behaviour and diurnal motility rhythm of sea urchins of the genus Strongylocentrotus). (Prof. David Nichols, Department of Biological Sciences, Hatherly Laboratories, Prince of Wales Road, Exeter EX4 4PS, U.K. No CHARGE FOR COPY).

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Over the years Paul Breen and I, in the Department of Fisheries and Oceans, Canada have had various French, Japanese and Soviet echinoderm papers translated. These are available (cost unknown) from:

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Transl.

No.—Year — pp. — Author — Year — Title — Journal (Book)

4727 - 1981 - 5 - Levin, V.S. - 1979. - The discovery of some ecological characteristics of Stichopus japonicus (Holothurioidea) in the intertidal zone. - Biol. Morya (Vladivostok) No. 3: 90-91.

4729 - 1981 - 10 - Levin, V.S. - 1979. - Aspidochirote holothurians of the upper sublittoral zone of the Indo-west Pacific: Species composition and distribution. - Biol. Morya (Vladivostok) No. 5: 17-23.

4730 - 1981 - 10 - Levin, V.S. - 1979. - Aspidochirote holothurians of the upper sublittoral zone of the Indo-west Pacific: The composition of food particles. - Biol. Morya No. 6: 20-27.

4731 - 1981 - 7 - Levin, U.S. - 1980. - Aspidochirote holothurians of the upper sublittoral zone of the Indo-west Pacific: Comparative study of the development of the tentacles and spicules. - Biol. Morya (Vladivostok) No. 3: 50-55.

4819 - 1982 - 12 - Levin, V.S. - 1981. - Methods of comparing morphological characters and spatial distribution as an example the holothurians from coral reefs. - Biol. Morya (Vladivostok) No. 3: 84-89.

4893 - 1982 - 24 - Levin, V.S. - 1982. - Chapter 7 (Feeding). - In: Japanese Sea Cucumber. Vladivostok, U.S.S.R. Acad. Sci., 191 p.

4951 - 1983 - 45 - Levin, V.S. - 1982. - Chapter 1 on Systematics and Chapter 2 on Morphology. - In: Japanese Sea Cucumber. Vladivostok, U.S.S.R. Acad. Sci., 191 p.

5075 - 1984 - 18 - Levin, V.S. and Skaletskaya, E. I. - 1981. - Dynamics of utilization of the resources of a foraging area by Stichopus japonicus. - In: Systematics and chronology of bottom-dwelling invertebrates of far eastern seas. Edited by, A. I. Kafanov, Collection of Papers, No. 24, Institute of Marine Biology, Vladivostok, U.S.S.R.

5089 - 1984 - 6 - Rakov, V.A. - 1982. - Growth rates and duration of life in the sea cucumber Stichopus japonicus in the Posset Bay - Biol. Morya (Vladivostok) No. 4: 52-854.

ASTERIODS

5153 - 1985 - 12 - Levin, A. V. et al. - 1984. - The reaction of asteroids Asterias amurensis and Distolasterias nipon to homogenates and chemical substances from far eastern asteroids. - Biol. Morya (Vladivostok) No. 5: 40-45.

5165 - 1985 - 13 - Volkov, Yu, P. et al. - 1982. - Changes in the distribution of the 'Yezo Scallop' (Pecten yessoensis) and starfishes after mass planting of the scallop on the bottom of Vityaz Bay (Sea of Japan). - Biol. Morya (Vladivostok) No. 4: 37-43.

5218 - 1986 - 19 - Takamoru, N. and Sato, I. 1983. Predation of bivalves by sea stars, with special reference to the predation of Pseudocardium sybillae and Mactra chinensis by Luidia yesoensis. - Hokusuishi Geppo 40: 127-139. (Hokkaido Fish. Exp. Stn.).

ECHINOIDS

1063 - 1968 - 172 - Matsui, I. - 1966. - The propagation of sea urchins. - Booklet No. 12, 105 pp., Nippon Shigen Hogo Kyokai (Jap. Fish. Resource Conservation Ass.).

3881 - 1976 - 49 - Kawamura, K. - 1966. - Ecological studies and methods of conservation of the sea urchin Strongylocentrotus nudus on the coast of Urakawa, Hokkaido. - Hokkaidoritsu Suisan Shikenjo Hokoku 5: 7-30. (Hokkaido Fish. Exp. Stn.).

3961 - 1977 - 53 - Allain, J. - Y. - 1975. - Population structure of Paracentrotus lividus in the fishing grounds of the north coast of Brittany. - Rev. Trav. Inst. Pêches Marit. 39(2): 171-209.

4259 - 1978 - 19 - Allain, J. - Y. - 1972. - Sea urchin fishing around the world. - Pêches Marit. No. 1133: 625-630.

4289 - 1978 - 4 - Kinoshita, T. - 1955. - Essays on cultivation in shallow seas. No. 4, Part 10, Facts about sea urchins. - Hokushishi Geppo 12 (7): 24-26. (Hokkaido Fish. Exp. Stn.).

5200 - 1985 - 48 - Anonymous - 1984. - On natural seed collection, intermediate culture, and release of the sea urchin, Strongylocentrotus intermedius. - Hokusishi Geppo 41: 270-315. (Hokkaido Fish. Exp. Stn.).

5229. - 1986 - 21 - Taki, J. - 1986. - Population dynamics of Strongylocentrotus intermedius in Akkeshi Bay. - Sci. Rep. Hokkaido Fish. Exp. Stn. No. 28: 33-43.



Citations of theses and dissertations should be sent to the editor

MASTER'S THESES

Canada

Goyette, D.E. 1967 Light and electron microscope study of the aboral nervous system and neurosecretion in the crinoid *Florometra*. Univ. Alberta, Edmonton.

United States

Fransler, S.C. 1983. Phenotypic plasticity of skeletal elements in the purple sea urchin, *Strongylocentrotus purpuratus*. California State Univ., San Diego.

Smiley, S. 1984. A description and analysis of the structure and dynamics of the ovary, of ovulation, and of oocyte maturation in the sea cucumber *Stichopus californicus*. Univ. Washington, Seattle.

Osborne, SW 1979. The seasonal distribution of *Luidia clathrata* (Say) in Charlotte Harbor with reference to various physical chemical parameters. Florida State Univ., Tallahassee.

Forcucci, D. 1985. The effects of salinity on the activity, feeding, growth and absorption efficiency of *Luidia clathrata* (Say) (Echinodermata: Asteroidea). Univ. South Florida, Tampa.

Brown, B.K. 1977. Gut replacement during regeneration of the autotomized disc of *Ophiophragmus filigraneus* (Echinodermata: Ophiuroidea). Florida Inst. of Technology, Melbourne.

Baird, B.H. 1984. Utilization of extracellular polymer by a deposit feeding holothurian. Florida State University, Tallahassee.

Ph.D. DISSERTATIONS

Argentina

Salvat, M.B. 1985. Biología de la reproducción de *Anasterias minuta* (Perrier) (Echinodermata, Asteroidea), especie incubadora de las costas patagónicas. Univ. of Buenos Aires.

Canada

Johnson C.R. 1984. Ecology of the kelp *Laminaria longicruris* and its principal grazers in the rocky subtidal of Nova Scotia. Dalhousie Univ., Halifax.

Burke, R.D. 1981. Development of the larval digestive tract of echinoids. Ph.D. Univ. Alberta, Edmonton.

Guerinot, M.L. 1979. The association of N_2 -fixing bacteria with sea urchins. Dalhousie Univ., Halifax.

Austria

Traer, K. 1984. Ehnährung und Energetic regulärer Seeigel in Beständen des mediterranen Seegrases *Posidonia oceanica*. Univ. Wien.

Israel

Dafni, J. 1984. Skeletal growth and calcification in the short-spine sea urchin (*Tripneuster gratilla elatensis*) Hebrew University Jerusalem

Scotland

Mayo, P. 1974. Ecological, behavioral and biochemical studies of avoidance responses in sea-stars. Univ. of Aberdeen.

Singh, H.T. 1974. The nature, distribution and function of steroid glycosides of the starfish *Marthasteias glacialis* (Linnaeus, 1765). Univ. of Aberdeen.

United States

Emler, R.B. 1985. Functional morphology & ecology of larvae of clypeasteroid echinoderms and other ciliated larvae. Univ. of Washington, Seattle.

Watts, S.A. 1986. Metabolic changes in the pyloric caeca during the annual reproductive cycle of *Luidia clathrata* (Echinodermata: Asteroidea). Univ. South Florida, Tampa.

Chen, C.-P. 1985. The role of carbonic anhydrase in the calcification of the tooth of the sea urchin *Lytechinus variegatus* (Lamarck). Univ. South Florida, Tampa.

Smiley, S. 1986. *Stichopus californicus*: oocyte maturation hormone, metamorphosis, and phylogenetic relationships. Univ. Washington, Seattle.

Gluck, D.C. 1984. Biomass, chemical composition and oxygen consumption of the near-bottom pelagic communities in two deep-sea basins off southern California. Univ. California, Santa Barbara. (holothuroid, Scotoplanes)

Northern Ireland (contributed by D. Roberts)

Bell, A.C. Histology and ultrastructure of *Acrocrida brachiata*. Queen's Univ., Belfast. 1974.

James, D.W. 1974. Amino acid absorption through the gut of the regular echinoid, *Echinus esculentus*. Queen's Univ., Belfast.

McKenzie, J.D. 1985. A comparative study of dendrochirote holothurians, with special reference to tentacular functional anatomy. Queen's Univ., Belfast.

Papers presented at the 1985 annual meeting of the American Society of Zoologists. Abstracts published in the American Zoologist, 25.

Witman, JD, DP Sebens. Benthic faunal zonation at a subtidal rock ledge in the central gulf of Maine. 10A. (crinoids)

Denoux, GJ, MC Kennicutt, RR Bidigare, JM Brooks, RR Ray., RD Turner. Description of a hydrocarbon-seep community on the Louisiana slope. (ophiuroids) 10A

Stickle, WB. Ureotelism in the phylum Echinodermata. 33A.

Wessel, GM, DR McClay. Sequential expression of germ-layer specific molecules in the sea urchin embryo. 38A

Ruppert, EE, EJ Balser. Nephridia in the larvae of echinoderms and hemichordates. 41A

Campbell, DB. The effect of competition reduction on foraging decisions. (asteroids). 53A

Swift, DM. Analysis and function of organic matrix from sea urchin tests. 56A

Dexter, RW. Invasions of southern marine fauna into Cape Ann, Mass., during periods of warmer sea water. (echinoid). 64A

Dobson, WE. A comparison of the disc autotomy regions in four species of ophiuroid echinoderm. 66A

Duffy, JE, ME Hay. Chemical feeding deterrents in a marine alga: effects on three sympatric herbivores. (echinoids). 87A

Williams, AH, WR Garstka, K Wasmund, DL West. Damselfish-sea urchin community structure of a back reef environment at Magueyes, Puerto Rico. 90A

Morrill, J, L Santos, S Doyle, S Doty. SEM visualization of morphogenesis during gastrulation in the sea urchin, *Lytechinus variegatus*. 98A

Buckland-Nicks, J, F-S Chia. A comparative analysis of sertoli-like cells of some molluscs and echinoderms. 110A

Roller, RA, WB Stickle. Salinity effects on the tolerance and developmental rate of the sea urchin, *Lytechinus variegatus* (Echinodermata: Echinoidea). 111A

Klinger, TS, SA Watts, D Forcucci. The effects of feeding and starvation on the level and content of nucleic acids in the gut tissues of *Lytechinus variegatus* (Lamarck) (Echinodermata: Echinoidea). 127A

Lawrence, JM, TS Klinger, JB McClintock, SA Watts, C-P Chen, A Marsh, L Smith. Allocation of nutrient resources in the regenerating asteroid *Luidia clatrata*. 127A

Clements, LAJ. Evidence of the nutritional role of dissolved organic material during regeneration by an amphiuroid ophiuroid. 127A.

McEdward, LB, LK Coulter. Relationship between egg volume and energy content within a single spawn of the starfish *Pteraster tessellatus*. 128A

Cavey, MJ, RLM Marsden. Early regenerative events in the coelomic lining of the starfish tubefoot. 129A

Sullivan, KM. In situ energetics of coral reef brittle stars (Ophiuroidea) during oral disc and regeneration. 135A.

Hendler, G, M Byrne. First description of a brittlestar photoreceptor system. 143A.

Bisgrove, BW. Immunohistochemical localization of neurotransmitters in the nervous system of the pluteus larva of *Strongylocentrotus droebachiensis*. 143A.

Shinn, GL. Ultrastructure of the transrectal coelomoducts of a sea cucumber (Echinodermata: Holothuroidea). 144A.



Festoon of straight pedicellariae from the upper surface of *Pisaster brevispinus* (from Fisher 1930)

4^{ème} Séminaire International sur les Echinodermes. 1985
Saint-Aubin sur Mer, France

Conand, C., P. Chardy. Les Holothuries Aspidochirotés du Lagon de Nouvelle-Calédonie: Abondance et Association d'espèces.

David, B. Influence du substrat sur la répartition des Echinides irréguliers dans l'Hauterivien du Bassin de PARIS.

Meyer, C.A. Données préliminaires sur la sédimentologie et la paléocéologie des Crinoïdes dans le Bajacien du Jura Suisse.

Lawrence, J.M. Les échinodermes intertidaux de Kerguelen.

Philippe, M. Presence du genre METALIA Gray, 1855 (Spatangoida, Brissidae), dans le Miocène du Bassin du Rhône: Données paléontologiques, paléogéographiques et paléocéologiques.

Roman, J. Les premières Astéries entières de l'Eocène d'Égypte.

Guillou, M. Evolution des populations d'Etoiles de mer en Baie de Douarnenez (Finistère) de 1981 à 1985.

Le Gall, P., D. Bucaille. Croissance et longévité de *Psammechinus miliaris* en Baie de Seine et dans un élevage en milieu contrôlé.

Bourgoin, A. Importance de la régénération chez *Acrocnida brachiata* (Ophiuroidea: Amphiuridae).

Régis, M.B. Microstructure adaptative des radioles de *Paracentrotus lividus* (Echinodermata: Echinoidea) en milieu eutrophisé par des eaux usées.

de Greef, Y. Croissance du squelette chez la larve de l'oursin *Paracentrotus lividus* (Lamarck) en condition normale et en condition d'inanition.

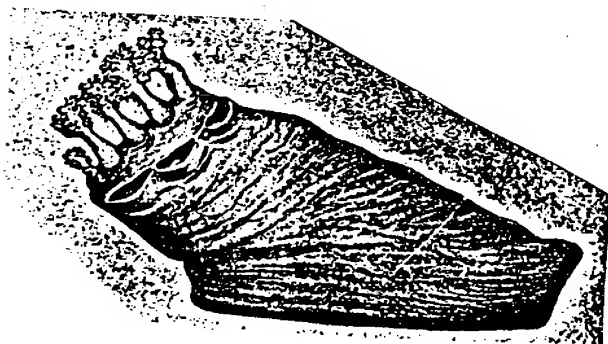
Bucaille, D., P. Le Gall. Cycle sexuel et indices gonadiques de *Psammechinus miliaris* en Baie de Seine et dans un élevage en milieu contrôlé.

Pedrotti, M.L., L. Fenaux. Répartition spatio-temporelle des larves d'Echinodermes le long d'une demi radiale entre Nice et Calvi.

Dance, C. Les déplacements de *Paracentrotus lividus* dans la Baie de Port-Cros (Var).

Savy, S. Données préliminaires sur les déplacements de *Marthasterias glacialis* (Asteroidea) dans la Baie de Port-Cros (Var).

- Vasserot, J. Un Crustacé décapode prédateur de l'Holothurie Dendrochirote
Ocnus planci: la cigale de mer Scyllarus arctus.
- Breton, G. Valettaster? Sphaerasteridae mesozoïque.
- Vasserot, J. Un crustacé décapode prédateur de l'oursin clypeastride
Peronella japonica: le crabe Cancer japonicus.
- Coulon, P. Présentation des cycles parasitaires des grégarines
(Apicomplexa, Sporozoa) chez les Echinodermes. Eléments nouveaux
concernant les grégarines d'Echinocardium cordatum (Spatangoidea).
- Bouland, C. Description du phénomène d'atrophie gonadique chez l'Astérie,
Asterias rubens.
- Ferrand, J.G. Parasitisme ovocytaire chez Brissopsis lyrifera (Echinoderme,
Echinide).
- Maes, P., M. Jangoux. La maladie de l'"oursin chauve": état des recherches.
- Ghyoot, M. Etude morphologique des glandes du pédoncule des pédicellaires
globifères de l'oursin Sphaerechinus granularis.
- Dubois, P. Presence d'une matrice organique intrastéréomique dans le
piquant adambulacraire d'Asterias rubens.
- Lahaye, M.C. Etude de la croissance du squelette larvaire chez Antedon
bifida (Echinodermata, Crinoidea).
- Yourassowsky, C., M. Jangoux. Le complexe axial de l'Astéride Asterias rubens.
- Lambert, A., M. Jangoux. Nature mésothéliale de la musculature des
pedicellaires de l'astéride Marthasterias glacialis.
- Van Den Spiegel, D., M. Jangoux. Mécanisme d'éjection et structure fine
des tubes de C'vier chez l'holothurie Holothuria forskali.



A female *Psolus koehleri*
from a lateral view
showing the openings to
the brood pouches
behind the tentacles
(from Vaney 1914)

Papers presented at the annual meeting of the
Western Society of Naturalists (1985)
(communicated by James B. McClintock)

BARON, CJ. Test failure in sea urchins from four different locations

BAY-SCHMITH, E. Induction and repression of gametogenesis in the sea urchin *Strongylocentrotus purpuratus* by different photoperiod regimes.

BOSCH, I., JS PEARSE. Predominance of pelagic lecithotrophic development among shallow water Antarctic asteroids.

BYRNE, M. The reproductive biology of a species of *Ophionereis* (Echinodermata: Ophiuroidea) that broods its young.

CAMERON, JL. Reproductive periodicity and spawning behavior of the California sea cucumber *Parastichopus californicus* (Stimpson)

COYER, JA, JM ENGLE, RF AMBROSE, BV NELSON. Utilization of purple (*Strongylocentrotus purpuratus*) and red (*S. franciscanus*) urchins as food by the white urchin (*Lytechinus anamesus*) in the field and laboratory.

DAVIS, KK. A study of spermatogenesis and DNA synthesis in teste culture in vitro from the sea star *Patiria miniata*.

DRUEHL, L., P. BREEN. Some ecological effects of harvesting *Macrocystis integrifolia*. (densities of Echinoids and Holothuroids)

DUGGINS, DO. The effects of kelp forests on nearshore environments Biomass, detritus, and altered flow. (echinoids)

EBELING AW, DR LAUR. Kelp forests without sea otters: Effects of storm damage and destructive sea urchin grazing on fish populations.

ESTES, JA, C HARROLD. The influences of sea otter predation on plant/herbivore interactions: some questions of scale. (echinoid)

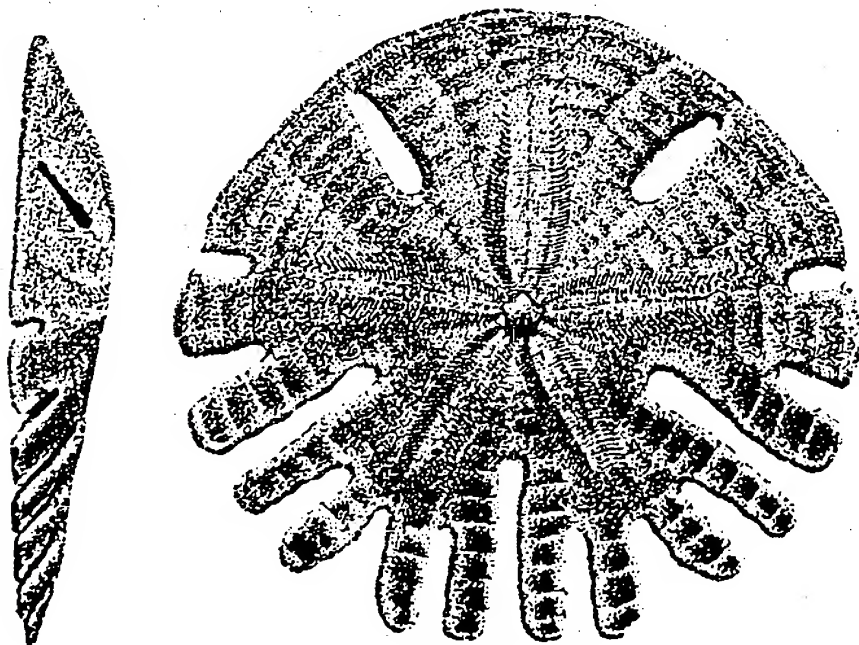
FOSTER, MS, DR SCHIEL. Sea otters and kelp communities: keystone species or just another brick in the wall. (echinoids)

GOTSHALL. D. *Macrocystis* and fish abundance: does more kelp mean more fish? (echinoids)

GREBMEIER, JM. The influence of oceanographic frontal dynamics on benthic community structure in the NE Bering and SE Chukchi seas. (echinoids)

HAY, ME, K GUSTAUFSO, W FENICAL. Chemical defenses against herbivory in coral reef seaweeds. (echinoids)

- KENNER, M. Ecology of a cryptic population of *Strongylocentrotus purpuratus* inhabiting sublittoral coralline mats.
- LAMBERT, P. A comparative study of west coast *Parastichopus* with a description of a new species.
- LAUR, DR, AW EBELING, D COON. Effects of sea otter foraging in subtidal communities of the central California coast (echinoids)
- MCALARY, FA, J ENGLE. Biogeography of shallow-water asteroids of the California channel islands.
- MCCLINTOCK, JB, JS PEARSE. Organic and energetic content of eggs and juveniles of direct-developing asteroids and echionids from McMurdo Sound, Antarctica.
- MILLER, RL. A possible sex pheromone in starfishes.
- PENNINGTON, JT, RB EMMET. Ontogenetic and diel vertical migration of a planktonic echinoid larva (*Dendraster excentricus*): occurrence, causes, and probable consequences.
- ROBNETT, TJ, JB MCCLINTOCK, JS PEARSE. Size-selective predation by the asteroid *Pisaster ochraceus* on the bivalve *Mytilus californianus*: a cost-benefit analysis.
- ROWLEY, RJ. Growth of newly settled urchins in an urchin barren ground and adjacent kelp bed.
- RUMRILL SS. Recruitment of *Patiria miniata*: a post-facto assessment of larval predation, settlement and post-larval motility.
- STRICKER, SA. The calcified skeletal elements of holothurian echino derms.

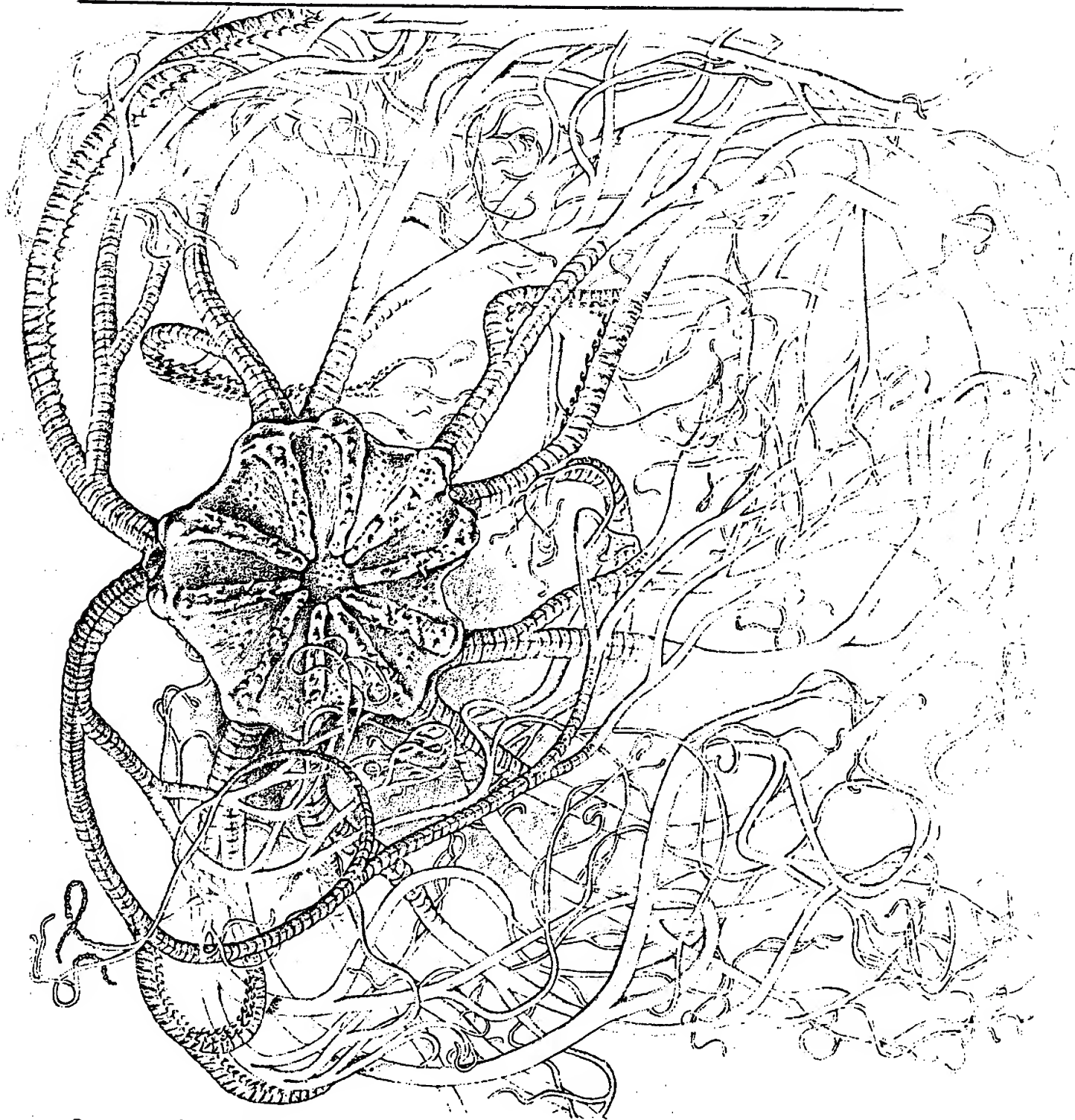


Rotula augusti
(from
L. Agassiz 1841)

Papers presented at the annual meeting of the Florida Academy of Sciences (1986). Abstracts published in Florida Sci. 49, suppl. 1.

Lawrence, JM, PF Dehn, SA Watts. Annual cycles of the gonads and pyloric caeca of *Luidia clathrata* (Echinodermata: Asteroidea) in Tampa Bay) (1971-1985)

Turner, R.L. Distribution of sea urchins, sand dollars, and heart urchins off the Atlantic coast of Florida.



RECENT PUBLICATIONS

Reprints or citations of recent publications should be sent to the editor to insure inclusion.

- Arendt, Yu. A. *Paleontol Zh.* 0(2): 69-76. 1985. Biotic relations of crinoids.
- Anteunis, A., M. Leclerc, M. Vial, C. Brillouet, G. Luquet, R. Robineaux and R.A. Binaghi. *Cell Biol Int Rep* 9: 663-670. 1985. Immunocompetent cells in the starfish *Asterias rubens*: An ultrastructural study.
- Angerer, L., D. Deleon, K. Cox, R. Maxson, L. Kedes, J. Kaumeyer, E. Weinberg and R. Angerer. *Dev Biol* 112: 157-166. 1985. Simultaneous expression of early and late histone messenger RNA in individual cells during development of the sea urchin (*Strongylocentrotus purpuratus*) embryo.
- Amos, W.B., L.A. Amos and R.W. Linck. *Cell Motil* 5: 239-250. 1985. Proteins closely similar to flagellar tektins are detected in cilia but not in cytoplasmic microtubules.
- Azorin, Rocha, Cornudella and J.A. Subirana. *Eur J Biochem* 148: 529-532. 1985. Anomalous nuclease digestion of *Holothuria tubulosa* sperm chromatin containing histone H1 variants.
- Achituv, Y. and Z. Malik. *Int J Invertebr Reprod Dev* 8: 67-72. 1985. The spermatozoa of the fissiparous starfish, *Asterina burtoni*.
- Ausich, William I. *J Paleontol* 60: 84-106. 1986. Early Silurian Rhodocrinitacean crinoids (Brassfield Formation, Ohio [USA]).
- Alexandraki, and V. Ruderman. *Proc Natl Acad Sci U S A* 82: 134-138. 1985. Multiple polymorphic α -tubulin and β -tubulin messenger RNA are present in sea urchin eggs.
- Armant, D., D. Carsonk, L. Decker, K. Welpy and J. Lennarz. *Dev Biol* 11: 342-355. 1986. Characterization of yolk platelets isolated from developing embryos of *Arbacia punctulata*.
- Bourgoin, A., M. Guillou and C. Morvan. *Ann Inst Oceanogr* 61: 39-50. 1985. Preliminary study on epifauna in biosediments in the Bay of Brest (Finistere, France) using an underwater video camera (ophiuroid).
- Busslinger, M. and A. Barberis. *Proc Natl Acad Sci U S A* 82(17): 5676-5680. 1985. Synthesis of sperm and late histone complementary DNA species of the sea urchin [*Psammechinus miliaris*] with primer complementary to the conserved 3' terminal palindrome: Evidence for tissue-specific and more general histone gene variants.
- Bulet, P., T. Kishimoto and H. Shirai. *Dev Growth Differ* 27: 243-250. 1985. Oocyte competence to maturation-inducing hormone: 1. Breakdown of terminal vesicles of small oocytes in starfish, *Asterina pectinifera*.
- Belyaev, G. *Zool ZH* 64: 865-876. 1985. Abyssal starfishes of the genera *Eremicaster* and *Abyssaster* (Porcellanasteridae): Composition and distribution.
- Berrios, A., D. Brink, J. Del Castillo and D. Smith. *Comp Biochem Physiol* 81: 15-24. 1985. Some properties of the action potentials conducted in the spines of the sea urchin, *Diadema antillarum*.

- Bulet, P., T. Kishimoto, S. Shirai. *Develop. Growth and Differ.* 27, 243-250. 1985. Oocyte competence to maturation-inducing hormone. I. Breakdown of germinal vesicles in starfish, *Asterina pectinifera*.
- Briggs, K. B. *Mar Ecol Prog Ser* 21: 127-134. 1985. Deposit feeding by some deep-sea megabenthos from the Venezuela basin: Selective or non-selective.
- Broertjes, J.J.S., P. De Waard, J. P. Kamerling and P. A. Voogt. *J Mar Biol Assoc U K* 65: 79-84. 1985. Some characteristics of the non-protein moiety of vitellogenic substances in the starfish, *Asterias rubens*.
- Bradbury, R.H., L.S. Hammond, P.J. Moran and R. E. Riechelt. *J Theor Biol* 113: 69-80. 1985. Coral reef communities and the crown-of-thorns starfish (*Acanthaster planci*): Evidence for qualitatively stable cycles.
- Bedford, A.P. and P.G. Moore. *Estuarine Coastal Shelf Sci* 20: 19-40. 1985. Macrofaunal involvement in the sublittoral decay of kelp debris: The sea urchin *Psammechinus miliaris* (Echinodermata: Echinoidea).
- Beukema, J.J. *Neth J Sea Res* 19: 129-134. 1985. Growth and dynamics in populations of *Echinocardium cordatum* living in the North Sea off the Dutch north coast.
- Bianconcini, S.C., E. G. Mendes and D. Valente. *Comp Biochem Physiol A* 80: 1-4. 1985. The respiratory metabolism of the lantern muscles of the sea urchin, *Echinometra lucunter*. 1. The respiratory intensity.
- Bentley, J. and L. Garbers. *Biol Reprod* 34: 413-422. 1986. Retention of the speract receptor by isolated plasma membranes of sea urchin spermatozoa.
- Berg-Madsen, V. *Lethaia* 19: 67-80. 1986. Middle Cambrian cystoid (sensu lato) stem columnals from Bornholm, Denmark.
- Byrne, Maria. *Ophelia* 24: 75-90. 1985. Evisceration in the holothurian *Eupentacta quinquesemita*.
- Byrne, M. *J Exp Biol* 117: 69-86. 1985. The mechanical properties of the autotomy tissues of the holothurian *Eupentacta quinquesemita* and the effects of certain physico-chemical agents.
- Byrne, M. *J Exp Biol* 120: 25-40. 1986. Induction in evisceration in the holothurian *Eupentacta quinquesemita* and evidence for the existence of an endogenous evisceration factor.
- Carson, D., C. Farach, S. Earles, L. Decker and W.J. Lennarz. *Cell* 4: 639-649. 1985. A monoclonal antibody inhibits calcium accumulation and skeletal formation in cultured embryonic cells of the sea urchin.
- Candia Carnevali, M. and A. Saita. *J Morphol* 185: 75-88. 1985. Muscle system organization in the echinoderms: 3. Fine structure of the contractile apparatus of the arm flexor muscles of the comatulids (*Antedon mediterranea*).
- Crawford, B. and M. Abed. *J. Morphol* 187: 23-38. 1986. Ultrastructural aspects of the surface coatings of eggs and larvae of the starfish, *Pisaster ochraceus*, revealed by Alcian Blue.
- Cobb, J. L. S. *Biol Bull (Woods Hole)* 168: 432-446. 1985. The neurobiology of the ectoneural/hyponeural synaptic connection in an echinoderm.

- Costelloe, J. Mar Biol (Berl) 88: 155-166. 1985. The annual reproductive cycle of the holothurian *Aslia lefevrei* (Dendrochirota: Echinodermata).
- Claereboudt, M. and M. Jangoux. Biochem Syst Ecol 13: 51-54. 1985. Digestion conditions and activity of some polysaccharidases in the digestive tract of the sea urchin *Paracentrotus lividus* (Echinodermata).
- Canicatti, C. and N. Parrinello. Biol Bull 168: 175-182. 1985. Hemagglutinin and hemolysin levels in the coelomic fluid from *Holothuria polii* (Echinodermata) following sheep erythrocyte injection.
- Cariello, L. and L. Nelson. Gamete Res 11: 261-270. 1985. Transglutaminase inhibitors, calmodulin antagonists and calcium channel blockers: Influence on *Arbacia* sperm motility.
- Cranmer, G. J. J Mar Biol Assoc U K 65: 351-358. 1985. Recent investigations into the distribution of regular echinoids in the North Sea.
- Chandler, D.E. J Ultrastruct Res 89: 198-211. 1985. Exocytosis in vitro: Ultrastructure of the isolated sea urchin [*Strongylocentrotus purpuratus*] egg cortex as seen in platinum replicas.
- Coffe, G., G. Foucault, M. N. Raymond and J. Pudles. Exp Cell Res 156: 175-181. 1985. Dual effect of procaine in sea urchin eggs: Inducer and inhibitor of microtubule assembly.
- Cariello, L., J. Wilson and L. Lorand. Biochemistry 23: 6843-6850. 1984. Activation of transglutaminase during embryonic development.
- Chiba, K. and M. Hoshi. Dev Growth Differ 27: 277-282. 1985. Mass isolation of germinal vesicles from starfish [*Asterina pectinifera*] oocytes.
- Cameron, J. and P.V. Fankboner. Can J Zool 64: 168-175. 1986. Reproductive biology of the commercial sea cucumber *Parastichopus californicus* (Echinodermata: Holothuroidea): I. Reproductive periodicity and spawning behavior.
- Candia Carnevali, M. and A. Saita. J Morphol 185: 59-74. 1985. Muscle system organization in the echinoderms: 2. Microscopic anatomy and functional significance of the muscle-ligament-skeleton system in the arm of the comatulids (*Antedon mediterranea*).
- Dobson, E. J Exp Mar Biol Ecol 94: 223-232. 1985. A pharmacological study of neural mediation of disc autotomy in *Ophiophragmus filigraneus* (Echinodermata: Ophiuroidea).
- Drozdov, A.A. and V.L. Kas'yanov. Ontogenez 16: 49-59. 1985. Size and form of gametes in echinoderms.
- Drouin, G., J.H. Himmelman and P. Beland. Can J Zool 63: 1377-1387. 1985. Impact of tidal salinity fluctuations on echinoderm and mollusk populations.
- Dayton, P.I. Ecol Monogr 55: 447-468. 1985. The structure and regulation of some South American kelp communities.

- De Ridder, C., M. Jangoux and L. De Vos. *J Exp Mar Biol Ecol* 9: 65-76. 1985. Description and significance of a peculiar intradigestive symbiosis between bacteria and a deposit-feeding echinoid.
- De Ridder, C. and M. Jangoux. *Ann Inst Oceanogr* 6: 51-58. 1985. Origin and turnover rate of ingested sediment in the spatangoid echinoid, *Echinocardium cordatus*.
- Davis, K. K. *Biol Bull* 169: 313-327. 1985. DNA synthesis and the annual spermatogenic cycle in individuals of the sea star *Patiria miniata*.
- Davis, J.P., G.C. Stephens and M. A. Rice. *Comp Biochem Physiol A Comp Physiol* 81: 899-904. 1985. Net energy of amino acids into the brittle star, *Ophionereis annulata*.
- Dube, F., T. Schmidt, C. Hirschie Johnson and D. Epel. *Cell* 40: 657-666. 1985. The hierarchy of requirements for an elevated intracellular pH during early development of sea urchin embryos.
- De Simone, S.W. and M. Spiegel. *Exp Cell Res* 156: 7-14. 1985. Micromere-specific cell surface proteins of 16-cell stage sea urchin embryos.
- Dale, B. and L. Santella. *J Cell Sci* 74: 153-168. 1985. Sperm-oocyte interaction in the sea-urchin.
- Dale, B. *J Exp Biol* 118: 85-98. 1985. Sperm receptivity in sea urchin oocytes and eggs.
- Emler, R.B. *Science* 230: 937-940. 1985. Crystal axes in recent and fossil adult echinoids indicate trophic mode in larval development.
- Epel, D. and C. Patton. *Dev. Growth Differ* 27: 361-370. 1985. Cortical granules of sea urchin [*Strongylocentrotus purpuratus*] eggs do not undergo exocytosis at the site of sperm-egg fusion.
- Elliott, J.; J. Dalby, Jr., R. Cohen and D. M. Ross. *Can J Zool* 63: 1921-1985. Behavioral interactions between the actinian *Tealia piscivora* (Anthozoa: Actiniaria) and the asteroid *Dermasterias imbricata*.
- Emson, R. H., P. V. Mladenov and I. C. Wilkie. *J Nat Hist* 19: 151-172. 1985. Studies of the biology of the West Indian copepod *Ophiopsyllus* 161-172. Studies of the West Indies copepod *Ophiophyllus reductus* (Siphonostomatoida: Cancerillidae) parasitic upon the brittle star *Ophiocomella ophiactoides*.
- Elsen, A. and G. T. Reynolds. *J Cell Biol* 100: 1522-1527. 1985. Source and sinks for the calcium released during fertilization of single sea urchin [*Arbacia punctulata*] eggs.
- Emler, R.B. *J Exp Mar Biol Ecol* 95: 183-202. 1986. Facultative planktotrophy in the tropical echinoid *Clypeaster rosaceus* and a comparison with obligate planktotrophy in *Clypeaster subdepressus* (Clypeasteroidea: Echinoidea).
- Erber, Wilhelm. *Zool Anz* 215(5): 329-337. 1985. The larval coelom as a significant feature of bipinnaria and brachiolaria in asteroid ontogeny: A critical approach.

- Féral, J.-P. *Mar Biol (Berl)* 86: 297-306. 1985. Effect of short-term starvation on the biochemical composition of the apodous holothurian *Leptosynapta galliennei* (Echinodermata): Possible role of dissolved organic material as an energy source.
- Fujino, Y., K. Mitsunaga, A. Fujiwara and I. Yasumasu. *J Exp Zool* 235: 281-288. 1985. Inhibition of calcium-45 uptake in the eggs and embryos of the sea urchin, *Anthocidaris crassispina*, by several calcium antagonists, anion transport inhibitor and chloride transport inhibitors.
- Fouray, M. and B. Pomerol. *Ann Paleontol Vertebr-Invertebr* 71: 59-82. 1985. The *Micraster* (Echinoidea, Spatangoida) of the Turonian-Senonian boundary in the stratotypical region of Senonian (Sens, Yonne, France): Stratigraphical comments.
- Pabian, R.K. and H.L. Strimple. *Bull Univ Nebr State Mus* 11: 1-81. 1985. Classification, paleoecology and biostratigraphy of crinoids from the Stull Shale (Late Pennsylvanian) of Nebraska, Kansas and Iowa [USA].
- Fink, D. and D.R. McClay. *Dev Biol* 107: 66-74. 1985. 3 cell recognition changes accompany the ingression of sea urchin [*Strongylocentrotus purpuratus*] primary mesenchyme cells.
- Fenaux, L., C. Cellario and M. Etienne. *Mar Ecol Prog Ser* 24: 161-166. 1985. Variations in the ingestion rate of algal cells with morphological development of larvae of *Paracentrotus lividus* (Echinodermata: Echinoidea).
- Fenaux, L., C. Cellario and M. Etienne. *Mar Biol (Berl)* 86: 151-158. 1985. Larval growth of the sea urchin *Paracentrotus lividus*.
- Gatti, J.-L. and R. Christen. *J. Biol Chem* 260: 7599-7602. 1985. Regulation of internal pH of sea urchin [*Arbacia lixula*] sperm: A role for the sodium/potassium pump.
- Giga, Y. and A. Ikai. (*Anthocidaris crassispina*) which immunologically cross-reacts with 23S glycoprotein in the sea urchin eggs. *J Biochem (Tokyo)* 98: 19-26. 1985.
- Giga, Y. and A. Ikai. *J Biochem (Tokyo)* 98: 237-244. 1985. Purification and physical chemical characterization of 23S glycoprotein from sea urchin (*Anthocidaris crassispina*) eggs.
- George, C. L. and R. M. Warwick. *J Mar Biol Assoc U K* 65: 713-736. 1985. Annual macrofauna production in a hard-bottom reef community. (ophiuroid)
- Glynn, B.P. and D.B. Johnson. *Comp Biochem Physiol B Comp Biochem* 80: 941-948. 1985. Glutamyltransferase (EC 2.3.2.2) from *Marthasterias glacialis*: Purification procedures and enzyme characterization.
- Gage, J.D. *J Mar Biol Assoc U K* 65: 255-262. 1985. New Synaptidae (Holothuroidea: Apoda) from the Rockall Trough.
- Glabe, G. *J Cell Biol* 100: 800-806. 1985. Interaction of the sperm adhesive protein, bindin, with phospholipid vesicles: 2. Bindin induces the fusion of mixed-phase vesicles that contain phosphatidylcholine and phosphatidylserine in vitro.
- Grimmer, J.C., N.D. Holland and I. Hayami. *Zoomorphology (Berl)* 105: 39-50. 1985. Fine structure of the stalk of an isocrinid sea lily (*Metacrinus rotundus*) (Echinodermata, Crinoidea).
- Goudard, F., J. Galey, J. Pieri, S.W. Fowler, S. Heussner and J. La Rosa. *Mar Biol (Berl)* 85: 43-50. 1985. Intracellular localization and binding of technetium-95m in the sea star, *Marthasterias glacialis*.

- Glabe, Charles G. J Cell Biol 100: 794-799. 1985. Interaction of the sperm bindin with gel-phase phospholipid vesicles.
- Gibson, A.W. and R.D. Burke, Dev Biol 107:414-419. 1985. The origin of pigment cells in embryos of the sea urchin, *Strongylocentrotus purpuratus*.
- Gilmour, T.H.J. J Exp Mar Biol Ecol 95: 27-36. 1986. Streamlines and particle paths in the feeding mechanisms of larvae of the sea urchin *Lytechinus pictus*.
- Gundersen, G. G , L. Medill and B. M. Shapiro. Dev Biol 113: 207-217. 1986. Sperm surface proteins are incorporated into the egg membrane and cytoplasm after fertilization.
- Hinkley, R.E. , B.D. Wright and C.A. Greenberg. Biol Reprod 34: 119-126. 1986. Induction of the acrosome reaction in the sea urchin [*Lytechinus variegatus*] spermatozoa by the volatile anesthetic halothane.
- Herrin, D., C. Helling and S.A. Watts. Comp Biochem Physiol B Comp Biochem 8(1): 143-148. 1985. Relative levels of actin and actin gene sequences in tube feet and pyloric ceca of the adult starfish, *Luidia clathrata* (Echinodermata: Asteroidea).
- Harper, J.A. Ann Carnegie Mus 54(11): 357-373. 1985. A new look at *Eugasterella logani* (Stelleroidea: Ophiuroidea) from the Middle Devonian of New York State [USA].
- Harriott, V.J. Aust J Mar Freshwater Res 36: 51-58. 1985. Reproductive biology of 3 congeneric sea cucumber species, *Holothuria atra*, *Holothuria impatiens* and *Holothuria edulis*, at Heron Reef, Great Barrier Reef [Australia].
- Horowitz, A.S. , R.F. Blakely and D.B. Macurda, Jr. J. Paleontol 59: 543-550. 1985. Taxonomic survivorship within the Blastoidea (Echinodermata).
- Hollenbeck, P.J. and W. Z. Cande. Eur J Cell Biol 37: 140-148. 1985. Microtubule distribution and reorganization in the 1st cell cycle of fertilized eggs of *Lytechinus pictus*.
- Horowitz, A.S. , S. Able and H.L. Strimple. J Paleontol 60: 390-399. 1986. Abnormalities in Pentremites (Blastoidea) from the Pella Formation (Upper Mississippian) of Iowa [USA].
- Ikegami, S., J. Imayoshi, N. Takahashi and H. Nagano. Dev Growth Differ 27: 393-403. 1985. Dihydrofolate reductase in starfish [*Asterina pectinifera*] oocytes and embryos: Developmental consequences of its inhibition by methotrexate.
- Isoai, A. and Ikuo Y. Biochem J 225: 429-434. 1985. ADP-ribosyltransferase in isolated nuclei from sea urchin [*Hemicentrotus pulcherrimus*] embryos.
- Isaeva, V.V. and E.V. Presnov. Ontogenez 16: 597-604. 1985. The effect of injury of unfertilized sea urchin [*Strongylocentrotus nudus*] eggs on the animal-vegetal embryo polarity.
- Jackson, R.C. , K.K. Ward and J.G. Haggerty. J Cell Biol 101: 6-11. 1985. Mild proteolytic digestion restores exocytotic activity to N-ethylmaleimide-inactivated cell surface complex from sea urchin [*Strongylocentrotus purpuratus*] eggs.

- Jang, J.W. and Y. R. Lee. Korean J Zool 28: 71-84. 1985
Changes in the RNA and protein synthesis at the pre-fertilization and post-fertilization stages of a sea urchin, *Hemicentrotus pulcherrimus*.
- Jones, G.M., A.J. Hebda, R.E. Scheibling and R.J. Miller. Invertebr Pathol 45: 260-271. 1985. Histopathology of the disease causing mass mortality of sea urchins (*Strongylocentrotus droebachiensis*) in Nova Scotia [Canada].
- Jacobs, H.T. and B. Grimes. J Mol Biol 187: 509-528. 1986. Complete nucleotide sequences of the nuclear pseudogenes for cytochrome oxidase subunit I and the large mitochondrial ribosomal RNA in the sea urchin *Strongylocentrotus purpuratus*.
- Kallenbach, R.J. J Cell Sci 73: 261-278. 1985. Ultrastructural analysis of the initiation and development of cytasters in sea urchin [*Strongylocentrotus purpuratus*] eggs.
- Klinger, T. and W.J. Diehl. Comp Biochem Physiol B Comp Biochem 8(2): 401-404. 1985. Activities and kinetics of digestive α -glucosidase, β -glucosidase and β -galactosidase of *Luidia clathrata* (Echinodermata: Asteroidea).
- Kamel, L., J. Bailey, Schoenbaun and W. Kinney. Lipids 20: 350-356. 1985. Phosphatidylinositol metabolism during fertilization in the sea urchin egg.
- Kamimura, S., M. Yano and H. Shimizu. J Biochem (Tokyo) 97: 1509-1516. 1985. ATP hydrolysis coupled to microtubule sliding in sea urchin [*Hemicentrotus pulcherrimus*] sperm flagella.
- Kuriyama, R. and G. G. Borisy. J Cell Biol 101: 524-530. 1985. Identification of molecular of the centrosphere in the mitotic spindle of sea urchin [*Strongylocentrotus purpuratus*] eggs.
- Kostetskii, E. Ya. and N.N. Sergejuk. Zh Evol Biokhim Fiziol 21: 235-241. 1985. Phospholipids and their plasmalogen forms in muscle tissue of marine invertebrates.
- Komukai, M., A. Fujiwara, I. Yasumasu and K. Asami. Zool Sci (Tokyo) 2: 497-504. 1985. Inhibitory effect of some anti-inflammatory compounds on respiration of sea urchin [*Hemicentrotus pulcherrimus*] eggs activated by sperm or by melittin.
- Klinger, T.S. and J.M. Lawrence. J Nat Hist 19: 917-920. 1985. The hardness of the teeth of five species of echinoids (Echinodermata).
- Komukai, M., A. Fujiwara, Y. Fujino and I. Yasumasu. Exp Cell Res 159: 463-472. 1985. The effects of several ion channel blockers and calmodulin antagonists on fertilization-induced acid release and calcium-45 uptake in sea urchin eggs.
- Kas'yanov, V.L. Zool Zh 64: 1107-1109. 1985. summ.] Gonadal development in *Cucumaria fraudatrix* (Holothuriodea)
- Kishimoto, T., M. Yoshikuni, H. Ikadai and H. Kanatani. Dev Growth Differ 27: 233-242. 1985. Inhibition of starfish [*Asterina pectinifera*] oocyte maturation by tumor-promoting phorbol esters.
- Kobzar, G.T. and S.A. Shelkownikov. Comp Biochem Physiol C Comp Pharmacol Toxicol 80: 385-394. 1985. Cholinergic receptors of the dentis retractor muscle of the sea urchin, *Strongylocentrotus intermedius*.
- Kammer, T.W. J Paleontol 59: 551-560. 1985. Aerosol filtration theory applied to Mississippian deltaic crinoids.
- Killian, C.E., C.E. Bland, J.M. Kuzava and D. Nishioka. Exp Cell Res 158: 519-524. 1985. Effects of aphidicolin on premature condensation of sperm chromosomes in fertilized sea urchin eggs.

- Kondo, N., H. Shirai, P. Bulet, M. Isobe, K. Imai, T. Goto. Biomed. Res. 7, 89-95. 1986. Effective desalting techniques for a hormonal peptide, gonad-stimulating substance of starfish.
- Kozur, H., C.W.H. Mulder-Blanken and O.J. Simon. Proc K Ned Akad Wet Ser B Palaeontol Geol Phys Chem Anthropol 88: 83-110. 1985. The Triassic of the Betic Cordilleras (southern Spain), with special emphasis on holothurian sclerites.
- Khotimchenko, Yu. S., I.I. Deridovich and E.A. Zalutskaya. Comp Biochem Physiol C Comp Pharmacol Toxicol 81: 457-460. 1985. Spectrofluorometric determination of indolylalkylamines in gonads of echinoderms.
- Karp, G.C. and M. Solursh. Exp Cell Res 158: 554-557. 1985. In vitro fusion and separation of sea urchin primary mesenchyme cells.
- Kazazoglou, T., R.W. Schackmann, M. Fosset and B.M. Shapiro*. Proc Natl Acad Sci U S A 82: 1460-1464. 1985. Calcium channel antagonists inhibit the acrosome reaction and bind to plasma membranes of sea urchin sperm.
- Kari, B.E. and W.L. Rottmann. Dev Biol 108: 18-25. 1985. Analysis of changes in a yolk glycoprotein complex in the developing sea urchin embryo.
- Kane, R.E. Exp Cell Res 162: 495-506. 1986. p-Tosyl-L-arginine methyl ester stabilizes the cortex and mitotic apparatus of the sea urchin [*Tripneustes gratilla*] egg during isolation.
- Klikushin, V.G. Palaeontogr Abt A 190: 159-192. 1985. Crinoids of the genus *Austinocrinus* in the USSR.
- Kominami, T. Dev Growth Differ 27: 679-688. 1985. The role of cell adhesion in the differentiation of mesendodermal tissues in the starfish, *Asterina pectinifera*.
- Levin, V.S., V.I. Kalinin, I.I. Mal'tsev and V.A. Stonik. Biol Morya (Vladivost) 0(2): 3-11. 1985. The structure of triterpene glycosides and the systematics of aspidochirote holothurians.
- Lahaye, M.C. and M. Jangoux. Mar Biol (Berl) 86: 307-318. 1985. Functional morphology of the podia and ambulacral grooves of the comatulid crinoid *Antedon bifida* (Echinodermata).
- Lee, C. J Biol Chem 260: 10794-10799. 1985. The voltage-sensitive sodium/hydrogen exchange in sea urchin [*Strongylocentrotus purpuratus*] spermatozoa flagellar membrane vesicles studied with an entrapped pH probe.
- Lane, N. and G.D. Sevastopulo. J Paleontol 59: 438-445. 1985. Redescription of *Allagecrinus americanus*, a late Devonian microcrinoid.
- Lievano, A., J.A. Sanchez and A. Darszon. Dev Biol 112: 253-257. 1985. Single-channel activity of bilayers derived from sea urchin sperm plasma membranes at the tip of a patch-clamp electrode.
- Lane, N.G., G.D. Sevastopula and H.L. Strimple. J Paleontol 59: 79-84. 1985. *Amphipsalidocrinus*: A monocyclic camerate microcrinoid.
- Linck, R.W., L.A. Amos and W.B. Amos. J Cell Biol 100: 126-135. 1985. Localization of tektin filaments in microtubules of sea urchin [*Strongylocentrotus purpuratus*] sperm flagella by immunoelectron microscopy.
- Lee-Eiford, A., R.A. Ow and I.R. Gibbons. Biol Chem 26: 2337-2342. 1986. Specific cleavage of dynein heavy chains by UV irradiation in the presence of ATP and vandate.

- Leclerc, M., C. Brillouet, G. Luquet and R.A. Binaghi. *Immunology* 57: 479-482. 1986. Production of an antibody-like factor in the sea star *Asterias rubens*; Involvement of at least three cellular populations.
- Marsh, A. and J. Lawrence. *Comp Biochem Physiol B Comp Biochem* 81(3): 767-770. 1985. The effects of cations on the activity of citrate synthase (EC 4.1.3.7) in *Luidia clathrata* (Echinodermata: Asteroidea).
- Mladenov, P.V. *Biol Bull (Woods Hole)* 168: 285-295. 1985. Development and metamorphosis of the brittle star *Ophiocoma pumila*: Evolutionary and ecological implications.
- Maruyama, Y. K. *Biol Bull (Woods Hole)* 168: 249-262. 1985. Holothurian oocyte maturation: induced by radial nerve.
- Meyer, D. L. *Paleobiology* 11: 154-164. 1985. Evolutionary implications of predation on Recent comatulid crinoids from the Great Barrier Reef [Australia].
- Morioka, M. and H. Shimada. *Dev Biol* 112: 261-263. 1985. Change in the cellular level of diadenosine-5',5''-p¹-p⁴-tetraphosphate is correlated with the initiation of DNA replication in sea urchin [*Strongylocentrotus nudus*] embryos.
- Maruyama, Y.K., Y. Nakaseko and S. Yagi. *J Exp Zool* 236: 155-164. 1985. Localization of cytoplasmic determinants responsible for primary mesenchyme formation and gastrulation in the unfertilized egg of the sea urchin *Hemicentrotus pulcherrimus*.
- Mabuchi, I., Y. Hamaguchi, T. Kobayashi, H. Hosoya, S. Tsukita and S. Tsukita. *J Cell Biol* 100: 375-383. 1985. α -Actinin from sea urchin [*Hemicentrotus pulcherrimus*] eggs: Biochemical properties, interaction with actin and distribution in the cell during fertilization and cleavage.
- Miller, R.L. *J Exp Zool* 234: 383-414. 1985. Demonstration of sperm chemotaxis in echinodermata: Asteroidea, holothuroidea, ophiuroidea.
- Maglott, D.R. *Comp Biochem Physiol B Comp Biochem* 80: 513-516. 1985. 2-dimensional electrophoretic analysis of major phosphoproteins of the sea urchin, *Arbacia punctulata*.
- Matsuoka, N. *Comp Biochem Physiol B Comp Biochem* 80: 767-772. 1985. Biochemical phylogeny of the sea-urchin of the family Toxopneustidae.
- Maerkel, K. and U. Roeser. *Zoomorphology (Berl)* 105: 197-207. 1985. Comparative morphology of echinoderm calcified tissues: Histology and ultrastructure of ophiuroid scales (Echinodermata, Ophiuroidea).
- Martinage, A., G. Biriand, A. Van Dorsselaer, C. H. Turner and P. Sautière. *Eur J Biochem* 147(2): 351-360. 1985. Primary structure of histone H2B from gonads of the starfish *Asterias rubens*: Identification of an N-dimethylproline residue at the amino-terminal.
- Moore, A. and J.L.S. Cobb. *Comp Biochem Physiol A Comp Physiol* 80: 11-16. 1985. Neurophysiological studies on photic responses in *Ophiura ophiura*.
- Miller, L. *Veliger* 28: 394-396. 1986. Avoidance and escape responses of the gastropod *Nucella emarginata* to the predatory sea-star *Pisaster ochraceus*.

- Minale, L., R. Riccio, O. Squillace Greco, J. Pusset and J.L. Menou. *Comp Biochem Physiol B Comp Biochem* 80: 113-118. 1985. Starfish saponins: 16: Composition of the steroidal glycoside sulfates from the starfish, *Luidia maculata*.
- Mapes, R. H., N. G. Lane and H. L. Strimple. *J Paleontol* 60: 400-404. 1986. A microcrinoid colony from a cephalopod body chamber (Chesterian: Arkansas [USA]).
- McNamara, K.J. *Trans R Soc S Aust* 161-166. 1985. The spatangoid echinoid *Linthia* from the Late Eocene of southern Australia.
- Marsh, A. G., S.A. Watts, C. P. Chen and J. B. McClintock. *Comp Biochem Physiol A Comp Physiol* 83: 229-232. 1986. The effect of high salinity on development, mortality and ray number of *Echinaster spinulosus* (Echinodermata: Asteroidea) at different development stages.
- Manchenko, G.P. and A.G. Oleinik. *Biol Morya (Vladivost)* 0(4): 46-50. 1985. Genetic evidence for a new species of sea dollar for Peter the Great Bay, Sea of Japan [USSR].
- Meijer, L., J. Maclouf and R. W. Bryant. *Dev Biol* 114: 22-33. 1986. Arachidonic acid metabolism in starfish oocytes.
- Nanba, T., K. Maekawa and N. Ishiwata. *Mer (Tokyo)* 23: 23-25. 1985. Studies concerning the fishery biology of the sea urchin *Hemicentrotus pulcherrimus* in Kaji, Fukui Prefecture [Japan]: 5. Gonad index of the sea urchin population.
- Nichols, D., A.A.T. Sime and G.M. Bishop. *J Exp Mar Biol Ecol* 86: 219-228. 1985. Growth in populations of the sea urchin, *Echinus esculentus* (Echinodermata: Echinoidea), from the English Channel and Firth of Clyde.
- Nemer, M. *Dev. Biol* 114: 214-224. 1986. An altered series of ectodermal gene expressions accompanying the reversible suspension of differentiation in the zinc-animalized sea urchin embryo.
- Oji, T. *Palaeontology* 28: 629-642. 1985. Early Cretaceous *Isocrinus* from northeast Japan.
- Ohtsubo, M. and Y. Hiramoto. *Dev Growth Differ* 27: 371-384. Regional difference in mechanical properties of the cell surface in dividing echinoderm eggs.
- Ohta, S. *J Oceanogr Soc Jpn* 41: 121-133. Photographic observations of the swimming behavior of the deep-sea pelagothuiriid holothurian, *Enypniastes* (Elasipoda, Holothurioidea).
- Ozaki, H., O. Moriya and F. E. Harrington. *Arch Dev Biol* 195: 74-79. 1985. A glycoprotein in the accessory cell of the echinoid ovary and its role in vitellglycoprotein in the accessory cell of the echinoid ovary and its role in vitellogenesis.
- Paine, R.T., J.S. Castillo, J. Cancino. 1985. *Am. Nat.* 125, 679-691. Perturbation and recovery patterns of starfish dominated intertidal assemblages in Chile.
- Patton, W.K., R.J. Patton and A. Barnes. *J Crustacean Biol* 5: 616-626. 1985. On the biology of *Gnathophylloides mineri*, a shrimp inhabiting the sea urchin *Tripneustes ventricosus*.

- Picard, A., G. Peaucellier, F. Le Bouffant and M. Doree . Dev Growth Differ 27: 251-262. 1985. One millimeter large oocytes as a tool to study hormonal control of meiotic maturation in starfish [*Echinaster sepositus*]: Role of the nucleus in hormone-stimulated phosphorylation of cytoplasmic proteins.
- Pate, E.F. and C.J. Brokaw. J Muscle Res Cell Motil 6: 507-512. 1985. Resolution of the competitive inhibitory effects of lithium and β, γ -imido-ATP on the heat frequency of ATP-reactivated, demembrated, sea urchin sperm flagella.
- Pennington, J. Biol Bull 169: 417-430. 1985. The ecology of fertilization of echinoid eggs: The consequences of sperm dilution, adult aggregation, and synchronous spawning.
- Pagett, R. M. Mar Biol Assoc U K 65: 293-304. 1985. Some observations upon the distribution of strontium in 4 species of ophiuroids: *Ophiocomina nigra*.
- Pagano, G., M. Cipollaro, G. Corsale, A. Esposito, E. Ragucci and G. Giordano. Teratog Carcinog Mutagen 5: 101-112. 1985. pH-induced changes in mitotic and developmental patterns in sea urchin [*Paracentrotus lividus*] embryogenesis: 1. Exposure of embryos.
- Podell, S. B., V. D. Vacquier . J Biol Chem 260: 2715-2718. 1985. Purification of the 80000-molecular-weight and 210000-molecular-weight sperm plasma membrane: Evidence that the 210000-molecular-weight protein interacts with egg jelly.
- Pratt, M. J Biol Chem 26: 956-964. 1986. Homology of egg and flagellar dynein: Comparison of ATP-binding sites and primary structure.
- Penningsroth, S. M., P. Rose, A. Cheung, D. D. Peterson, D. Q. Rothacker and P. Bershak. Cell Motil 5: 61-76. 1985. An erythro-9-[3-2-(hydroxynonyl)adenine-sensitive ATPase in unfertilized sea urchin eggs.
- Perry, G. and D. Epel. Dev Biol 107: 47-57. 1985. Characterization of a calcium-stimulated lipid peroxidizing system in the Sea Urchin [*Strongylocentrotus purpuratus*] egg.
- Perry, G. and D. Epel. Dev Biol 107: 58-65. 1985. Fertilization stimulates lipid peroxidation in the sea urchin [*Strongylocentrotus purpuratus*] egg.
- Pawson, D.L. Proc Biol Soc Wash 98: 523-525. 1985. *Psychropotes hyalinus*, new species, a swimming elasipod sea cucumber (Echinodermata: Holothuroidea) from the north central Pacific Ocean.
- Petzelt, C. and M. Hafner. Proc Natl Acad Sci U S A 83: 1719-1722. 1986. Visualization of the calcium-transport system of the mitotic apparatus of sea urchin eggs with a monoclonal antibody.
- Pehrson, J. R. and L. H. Cohen. Dev Biol 113: 522-526. 1986. The fate of the small micromeres in sea urchin [*Strongylocentrotus purpuratus*] development.
- Podgornaya, O. I. and V. V. Isaeva. Biol Morya 3: 26-31. 1985. Clotting function of coelomic morula cells in the sea urchin.

- Pearse, J.S., V. B. Pearse and K. K. Davis. J Exp Zool 237: 107-118. 1986. Photoperiodic regulation of gametogenesis and growth in the sea urchin *Strongylocentrotus purpuratus*.
- Pearse, J. S. and C. W. Walker. Int J Invertebr Reprod Dev 9: 71-78. 1986. Photoperiodic regulation of gametogenesis in a North Atlantic sea star, *Asterias vulgaris*.
- Rappaport, R. and B. N. Rappaport. J Exp Zool 235(1): 87-104. 1985. Experimental analysis of polar body formation of starfish eggs.
- Rideout, J.A. and M.D. Sutherland. Aust J Chem 38: 793-808. 1985. Pigments of marine animals: 15. Bioanthrones and related polyketides from *Lamprometra palmata gyges* and other species of crinoids.
- Rumrill, S., J. T. Pennington and F/S. Chia. J Exp Mar Biol Ecol 90: 193-208. 1985. Differential susceptibility of marine invertebrate larvae: Laboratory predation of sand dollar, *Dendraster excentricus* embryos and larvae by zoeae of the red crab, *Cancer productus*.
- Rappoport, R. and B. N. Rappaport. J Exp Zool 235: 217-226. 1985. Surface contractile activity associated with isolated asters in cylindrical sand dollar [*Echinarachnius parma*] eggs.
- Rozhnov, S.V. Paleontol ZH 0(2): 4-16. 1985. Morphology, symmetry and systematic position of hybocrinid sea lilies.
- Rowe, F. W. E. and D. L. Pawson. Proc Biol Soc Wash 98(3): 672-677. 1985. *Loisettea amphictena*, new genus new species from the sublittoral of northwestern Australia (Echinodermata: Holothuroidea).
- Rikmenspoel, R. J Theor Biol 116: 127-148. 1985. Algebraic expressions for the waveforms of sea urchin sperm flagella.
- Riccio, R., C. Pizza, O. Squillace-Greco and L. Minale. J Chem Soc Perkin Trans I 0(4): 655-660. 1985. Starfish saponins: 17. Steroidal glycoside sulfates from the starfish, *Ophidiaster ophidianus* and *Hacelia attenuata*.
- Ramarao, C.S. and D. L. Garbers. J Biol Chem 260: 8390-8396. 1985. Receptor-mediated regulation of guanylate cyclase activity in spermatozoa.
- Riccio, R., O. Greco, L. Minale, J. Pusset and J. L. Menou. J Nat Prod (Lloydia) 48: 97-101. 1985. Starfish saponins: 18. Steroidal glycoside sulfates from the starfish *Linckia laevigata*.
- Rikmenspoel, R. and C.A. Isles. Biophys J 47: 395-410. 1985. Digitized precision measurements of the movements of sea urchin [*Arbacia*] sperm flagella.
- Resing, K., J.D. Green and K.A. Walsh. Dev. Biol 107: 87-93. 1985. A 53000-dalton esterase in *Strongylocentrotus purpuratus* semen is derived from phagocytic cells, not sperm.
- Rideout, J.A. and M. D. Sutherland. Aust J Chem 38: 793-808. 1985. Pigments of marine animals: 15. Bioanthrones and related polyketides from *Lamprometra palmata gyges* and other species of crinoids.
- Rowe, F.W.E., A.K. Hoggett, R.A. Birtles and L.L. Vail. Zool J Linn Soc 86: 197-278. 1986. Revision of some comasterid genera from Australia (Echinodermata: Crinoidea), with descriptions of two genera and nine new species.

- Roccheri, M.C., G. Sconzo, M. La Rosa, D. Oliva, A. Abrignani and G. Guidice. *Cell Differ* 18: 131-136. 1986. Response to heat shock of different sea urchin species.
- Rowe, F.W.E. *Bull Mus Natl Hist Nat Sect A* 7: 531-578. 1985. Six new species of *Asterodiscides* (Echinodermata, Asteroidae), with a discussion of the origin and distribution of the Asterodiscididae and other "amphi-Pacific" echinoderms.
- Reyment, R.A. *Palaeogeogr Palaeoclimatol Palaeoecol* 52: 347-350. 1986. Nekroplanktonic dispersal of echinoid tests.
- Sharypov, V.F., A.I. Kalinovskii, V.A. Stonik, S.A. Avilov and G.B. Elyakov. *Khim Prir Soedin (Tashk)* 0(1): 55-59. 1985. Isolation of native aglycons from the triterpene glycosides of the Pacific sea cucumber *Cucumaria japonica*.
- Shen, S.S. and L.J. Burgart. *J Cell Biol* 101: 420-426. 1985. Intracellular sodium activity in the sea urchin [*Lytechinus pictus*] egg during fertilization.
- Satterlie, R.A. and R.A. Cameron. *J Exp Zool* 235: 197-204. 1985. Electrical activity at metamorphosis in larvae of the sea urchin, *lytechinus pictus* (Echinoidea: Echinodermata)
- Sprinkle, J. *Univ Kans Paleontol Contrib Pap* 0(115/116): 2-4. 1985. New edrioasteroid from the Middle Cambrian of western Utah [USA].
- Smith, A.B. and D. Zaghbib Turki. *Ann Paleontol Vertebr-Invertebr* 71: 1-33. 1985. Upper Cretaceous Archiaciidae (Cassiduloida, Echinoidea) from Tunisia and their mode of life.
- Stricker, S.A. *Zoomorphology (Berl)* 105: 209-222. 1985. The ultrastructure and formation of the calcareous ossicles in the body wall of the sea cucumber *Leptosynapta clarki* (Echinodermata, Holothuroidea).
- Sillers, J. and A. Forer. *Cell Biol Int Rep* 9: 275-282. 1985. Calcium in fertilization and mitosis: The phosphatidylinositol cycle in sea urchin gametes and zygotes is involved in control of fertilization and mitosis.
- Sakai, K. *Galaxea* 4: 23-32. 1985. Brief observations on the population of *Acanthaster planci* and coral assemblages around Sesoko Island, Okinawa [Japan] in 1983.
- Sano, Kiyoshi. *Dev Growth Differ* 27: 263-276. 1985. Calcium- and cyclic AMP-independent, labile protein kinase appearing during starfish [*Asterina pectinifera*] oocyte maturation: Its extraction and partial characterization.
- Schroeder, T.E. *Dev Growth Differ* 27: 311-322. 1985. Cortical expressions of polarity in the starfish oocyte.
- Sardet, C. and P. Chang. *Exp Cell Res* 160: 73-82. 1985. A marker of animal-vegetal polarity in the egg of the sea urchin *Paracentrotus lividus*: The pigment band.
- Smith, A.B. *Palaeontology* 28: 715-757. 1985. Cambrian eleutherozoan echinoderms and the early diversification of edrioasteroids.
- Smiley, S. and R.A. Cloney. *Biol Bull* 169: 342-364. 1985. Ovulation and the fine structure of the *Stichopus californicus* (Echinodermata: Holothuroidea) fecund ovarian tubules.
- Shirai, H., N. Kondo, P. Bulet, M. Isobe, K. Imai, T. Goto. *Biomed. Res.* 7, 97-102. 1986. Separation by preparative electrofocusing of several components of gonad-stimulating substance of starfish.

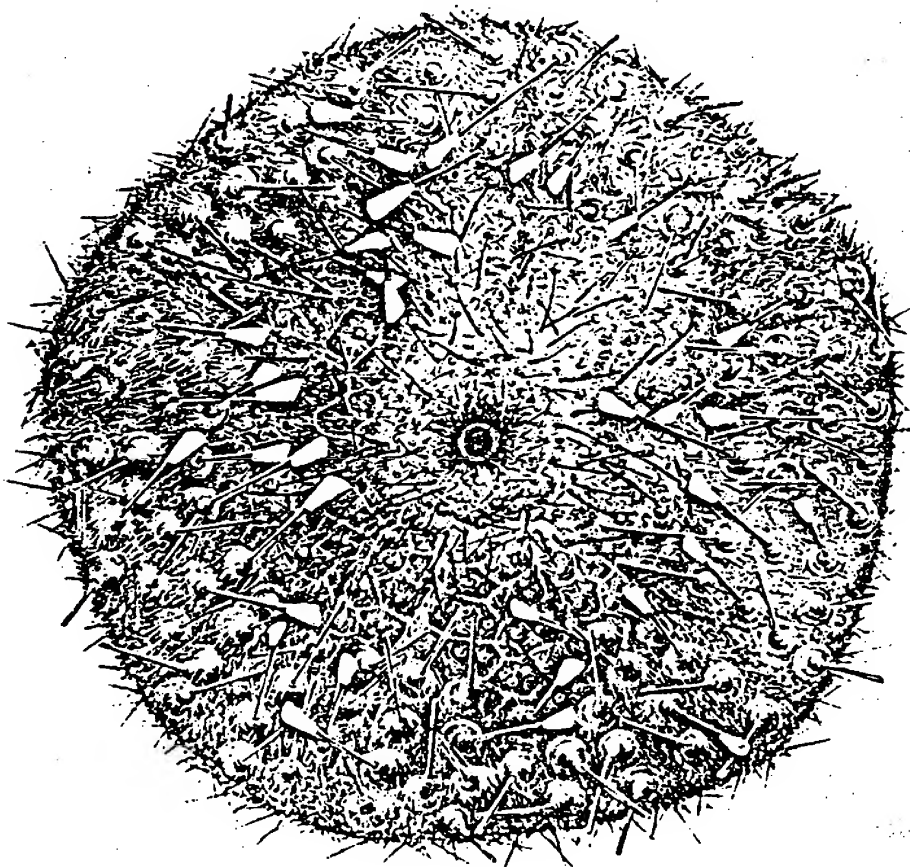
- Sadykova, K.A. *Ontogenez* 16: 411-413. 1985.
Sensitivity of permeabilized sea urchin embryos to 5-hydroxytryptamine antagonists.
- Sluder, G. and D.A. Begg. *J Cell Sci* 76: 35-52. 1985. Experimental analysis of the reproduction of spindle poles.
- Shinn, G.L. *Biol Bull* 169: 199-214. 1985. Infection of new hosts by *Anoplodium hymanae*, a turbellarian flatworm (Neorhabdozoa, Umagillidae) inhabiting the coelom of the sea cucumber *Stichopus californicus*.
- Sibirtsev, Yu. T., A. A. Konechnyi and V.A. Rasskazov. *Biokhimiya* 50: 1095-1104. 1985. Isolation and properties of site-specific endonuclease from mature eggs of the sea urchin *Strongylocentrotus intermedius*.
- Seldes, A.M. and E.G. Gros. *Comp Biochem Physiol B Comp Biochem* 80: 337-340. 1985. Main sterols from the starfish *Comasterias lurida*.
- Sparling, M.L., T. Killeen, Y. Sinisgallo and C. Yabuta. *J Exp Zool* 234: 459-470. 1985. Effects of redox agents on glucose-6-phosphate dehydrogenase isozymes and enzyme activity in sea urchin eggs and zygotes.
- Semenova, M.N. and T.M. Turpaev. *Zh Evol Biokhim Fiziol* 21: 19-24. 1985. Regulation of cholinesterase activity in sea urchins.
- Sale, W.S. and L. Taylor. *Cell Motil* 5: 209-224. 1985. Study of the properties of magnesium-induced stationary bends in demembrated sea urchin [*Lytechinus pictus*] sperm.
- Schneider, E. *Biol Bull* 168: 61-74. 1985. Cell-cell recognition and adhesion during embryogenesis in the sea urchin: Demonstration of species-specific adhesion among *Arbacia punctulata*, *Lytechinus variegatus* and *Strongylocentrotus purpuratus*.
- Suprynovicz, F.A. and D. Mazia. *Proc Natl Acad Sci U S A* 82: 2389-2393. 1985. Fluctuation of the calcium-sequestering activity of permeabilized sea urchin [*Lytechinus pictus*] during the cell cycle.
- Smith, D.S., D. Brink and J. Del Castillo. *Proc Natl Acad Sci U S A* 82: 1555-1557. 1985. Nerves in the spine of a sea urchin (*Diadema antillarum*): A neglected division of the echinoderm nervous system.
- Sousa, Mario and Carlos Azevedo. *Gamete Res* 11: 157-168. 1985. Acrosomal reaction and early events at fertilization in *Marthasterias glacialis* (Echinodermata: Asteroidea).
- Sluder, G., C. L. Rieder and F. Miller. *J Cell Biol* 100: 897-903. 1985. Experimental separation of pronuclei in fertilized sea urchin eggs: Chromosomes do not organize a spindle in the absence of centrosomes.
- Sluder, G. and C.L. Rieder. *J Cell Biol* 100: 887-896. 1985. Centriole number and the reproductive capacity of spindle poles.
- Schneider, E. *Dev Biol* 108: 152-163. 1985. Activation of sodium ion dependent transport at fertilization in the sea urchin [*Strongylocentrotus purpuratus*]: Requirements of an early event associated with exocytosis and a later event involving increased energy metabolism.
- Shirai, H. *Meth. Cell Biol.* 27, 73-88. 1986. Gonad-stimulating and maturation-inducing substance.

- Schatten, G. , T. Bestor, R. Balczon, J. Henson and H. Schatten. Eur J Cell Biol 36: 116-127. 1985. Intracellular pH shift leads to microtubule assembly and microtubule-mediated motility during sea urchin fertilization: Correlations between elevated intracellular pH and microtubule activity and depressed intracellular pH and microtubule disassembly.
- Sisak, M. M. and F. Sander. Comp Biochem Physiol A 80: 25-30. 1985. Respiratory behavior of the Western Atlantic holothuroidean (Echinodermata), *Holothuria glaberrima*, at various salinities, temperatures and oxygen tensions.
- Smirnova, G.P. and N.K. Kochetkov. Bioorg Khim 11: 1650-1655. 1985. A ganglioside with sialic acid located in the inner part of the carbohydrate chain isolated from the starfish *Luidia quinaria bispinosa*.
- Sui, A.-L. and S. S. Shen. Dev Biol 114: 208-213. 1986. Intracellular free magnesium concentration in the sea urchin [*Lytechinus pictus*] egg during fertilization.
- Smith, F.F. and C. W. Walker. J Exp Zool 237: 351-364. 1986. Biochemical changes in the composition of the testes during spermatogenesis in the sea star *Asterias vulgaris*.
- Scheibling, R. Oecologia 68: 186-198. 1986. Increased macroalgal abundance following mass mortalities of sea urchins (*Strongylocentrotus droebachiensis*) along the Atlantic coast of Nova Scotia [Canada].
- Semenova, M.N. and T.M. Turpaev. Ontogenez 16: 568-573. 1985. Localization and catalytic properties of acetylcholine esterase in sea urchin [*Strongylocentrotus nudus*] egg cells.
- Slack, E., J.E. Bell and D.J. Benos. Am J Physiol 250(2): C340-C344. 1986. Inositol 1,4,5-trisphosphate injection mimics fertilization potentials in sea urchin [*Strongylocentrotus purpuratus*] eggs.
- Tyler, P.A. , J.D. Gage and D.S.M. Billett. Mar Biol (Berl) 89: 71-82. 1985. Life-history biology of *Peniagone azorica* and *Peniagone diaphana* (Echinodermata: Holothurioidea) from the northeast Atlantic Ocean.
- Terentev, L.L. , N.A. Terenteva, V.A. Rasskazov, L.A. Aleksandrova, L.S. Viktorova and A.A. Kraevskii. Biokhimiya 50: 1024-1029. 1985. Inhibition of individual steps of DNA replication in sea urchin [*Strongylocentrotus intermedius*] embryos.
- Thandar, A.S. S Afr J Zool 20: 109-114. 1985. A new southern African genus in the holothurian family Cucumariidae (Echinodermata: Holothuroidea) with the recognition of two subspecies in *Cucumaria frauenfeldi*.
- Tortonese, E. Oebalia 10: 133-140. 1984. Young stage of *Chaetaster longipes* (Echinodermata, Asteroidea).

- Tarr, H.L.A. Gen Comp Endocrinol 60: 280-292. 1985. Biosynthesis of 1-methyladenine by isolated segments of starfish ovaries.
- Telford, M., R. Mooi and O. Ellers. Biol Bull 169: 431-448. 1985. A new model of podial deposit feeding in the sand dollar, *Mellita quinquesperforata*: The sieve hypothesis challenged.
- Telford, M. Zoomorphology (Berl) 105: 114-124. 1985. Domes, arches and Sea urchins: The skeletal architecture of echinoids (Echinodermata).
- Tyler, P.A., A. Muirhead, D.S.M. Billett and J.D. Gage. Mar Ecol Prog Ser 23: 269-278. 1985. Reproductive biology of the deep-sea holothurians *Laetmogone violacea* and *Benthogone rosea* (Elasipoda: Holothurioidea).
- Tsuchida, E., A. Fujiwara, Y. Fujino, T. Yonaga and I. Yasumasu. Dev Growth Differ 27: 63-72. 1985. Inhibitory effect of calmodulin antagonists and calcium antagonists on fertilization-induced cyanide-insensitive respiration in sea urchin eggs.
- Trimmer, J.S., I.S. Trowbridge and V. D. Vacquier. Cell Biol 40: 697-704. 1985. Monoclonal antibody to a membrane glycoprotein inhibits the acrosome reaction and associated calcium and proton fluxes of sea urchin (*Strongylocentrotus purpuratus*) sperm.
- Tombes, R. M. and B.M. Shapiro. Cell 41: 325-334. 1985. Metabolite channeling: A phosphorylcreatine shuttle to mediate high energy phosphate transport between sperm mitochondrion and tail.
- Tsuchiya, M. and M. Nishihira. Galaxea 3(2): 131-144. 1984. Ecological distribution of 2 types of the sea-urchin, *Echinometra mathaei*, on an Okinawan reef flat [Japan].
- Taki, Jyo. Sci Rep Hokkaido Fish Exp Stn 28: 33-44. 1986. Population dynamic of *Strongylocentrotus intermedius* in Akkeshi Bay [Japan].
- Tsuchiya, T. J Exp Biol 119: 31-40. 1985. The maximum shortening velocity of holothurian [*Isostichopus badionotus*] muscle and effects of tonicity change on it.
- Ubahgs, G. and R.A. Robinson. Univ Kans Paleontol Contrib Pap (115/116): 1-24. 1985. A new homoiosteleian and a new eocrinoid from the middle Cambrian of Utah [USA].
- Varaksina, G.S. Biol Morya (Vladivost) 0(2): 46-52. 1985. Histology of accessory cells of the ovary of the sea urchin *Strongylocentrotus nudus*.
- Vadas, R.L., R.W. Elner, P.E. Garwood and I. G. Babb. Mar Biol (Berl) 90: 433-448. 1986. Experimental evaluation of aggregation behavior in the sea urchin *Strongylocentrotus droebachiensis*: A reinterpretation.
- Varaksina, G.S. Biol Morya (Vladivost) 0(4): 40-46. 1985. Cytoplasmic inclusions in accessory cells of sea urchin ovary.
- Valenticic, T. J Comp Physiol A 157: 537-545. 1985. Behavioral study of chemoreception in the sea star *Marthasterias glacialis*: Structure-activity relationships of lactic acid, amino acids, and acetylcholine.
- Wells, F.E., R.A. Rose and S. Lang. Rec West Aust Mus 12: 47-56. 1985. An analysis of benthic marine invertebrate communities in subtidal seagrass and sand habitats in Shark Bay, Western Australian.

- Witman, J.D. *Ecol Monogr* 55: 421-446. 1985. Refuges, biological disturbance, and rocky subtidal community structure in New England [USA].
- Warnock, R. E. and W. D. Liddell. *J Exp Mar Biol Ecol* 91: 169-182. 1985. Oxygen consumption in two shallow-water comatulid crinoids.
- Waters, J.A., A. Horowitz and D.B. Macurda, Jr. *J Paleontol* 59: 701-702. 1985. Ontogeny and phylogeny of the Carboniferous blastoid *Pentremites*.
- Weiner, S. *J Exp Zool* 234: 7-16. 1985. Organic matrix-like macromolecules associated with the mineral phase of sea urchin [*Paracentrotus lividus*] skeletal plates and teeth.
- Walker, M.M. *N Z J Mar Freshwater Res* 18: 393-398. 1984. Larval life span, larval settlement and early growth of *Evechinus chloroticus*.
- Weidman, P.J., E.S. Kay and B. M. Shapiro. *J Cell Biol* 100: 938-946. 1985. Assembly of the sea urchin [*Strongylocentrotus purpuratus*] fertilization membrane: Isolation of proteoliasin, a calcium-dependent ovoperoxidase binding protein.
- Winkler, M.M., E.M. Nelson, C. Lashbrook and J.W.B. Hershey. *Dev Biol* 107: 290-300. 1985. Multiple levels of regulation of protein synthesis at fertilization in sea urchin [*Lytechinus pictus*] eggs.
- Ward, G.E., D.L. Garbers and V.D. Vacquier. *Science* 227: 768-770. 1985. Effects of extracellular egg factors on sperm guanylate cyclase.
- Welply, J.K., J.T. Lau and W.J. Lennarz. *Dev Biol* 107: 252-258. 1985. Developmental regulation of glycosyltransferases involved in synthesis of N-linked glycoproteins in sea urchin embryos.
- Webster, G.D. and Stephen E. Fox. *J Paleontol* 60: 405-410. 1986. A new Devonian species of flexible crinoid from the lost river range, east-central Idaho [USA].
- Yamashita, M. *J Exp Zool* 235: 105-118. 1985. Electron microscopic analysis of the sperm nuclear changes in meiosis inhibited eggs of the brittle-star [*Amphipholis kochii*].
- Yamada, H., S. Hirai, C. Suzuki-Hori and H. Nagano. *J Exp Zool* 235: 247-254. 1985. Achromosomal cleavage of fertilized starfish [*Asterina pectinifera*] eggs treated with cyclic GMP.
- Yasumasu, I., K. Mitsunaga and Y. Fujino. *Exp Cell Res* 159: 80-90. 1985. Mechanism of electrostatic calcium transport to cause calcification of spicules in sea urchin [*Hemicentrotus pulcherrimus*] embryos.
- Yamaguchi, M. and S. Kinoshita. *Exp Cell Res* 159: 353-365. 1985. Polysaccharides sulfated at the time of gastrulation in embryos of the sea urchin *Clypeaster japonicus*.
- Yano-Toyoshima, Y. *J Biochem (Tokyo)* 98: 767-780. 1985. Two heavy chains of 21S dynein from sea urchin sperm flagella.
- Yoneda, M. and K. Yamamoto. *Dev Growth Differ* 27: 385-391. 1985. Periodicity of cytoplasmic cycle in non-nucleate fragments of sea urchin [*Hemicentrotus pulcherrimus*] and starfish [*Asterina pectinifera*] eggs.

- Yamashita, M. Biol Bull. 169: 131-142. 1985. Embryonic development of the brittle-star *Amphipholis kochii* in laboratory culture.
- Yoshimoto, Y. and Y. Hiramoto. Cell Struct Funct 10: 29-36. 1985. Cleavage in a saponin model of the sea urchin [*Hemicentrotus pulcherrimus*] egg.
- Yamamoto, K. Dev Biol 107: 213-219. 1985. Germinal vesicle contents are required for the cytoplasmic cycle during meiotic division of starfish [*Asterina pectinifera*] oocytes.
- Yamada, H. and S. Hirai. Gamete Res 13: 135-142. 1986. Initiation of cleavage in starfish [*Asterina pectinifera*] eggs by the injection of Triton-treated spermatozoa.
- Zimmerman, S. , A.M. Zimmerman, G.D. Fullerton, R.F. Luduena and I.L. Cameron. J Cell Sci 79: 247-258. 1985 . Water ordering during the cell cycle: NMR studies of the sea-urchin [*Strongylocentrotus purpuratus*] egg.



View of the lower surface of *Pleurechinus bothryoides* showing spines modified into hoofs (from A Agassiz 1881)

- Aziz, A. and M. Jangoux. *Bijdr Dierkd* 55(2): 263-274. 1985. Four new species and one new subspecies of Asteroidea (Echinodermata) collected by the "Sioboga" expedition in the Indo-Malayan region.
- Ausich, W.I. *Palaeontology* 29: 85-99. 1985. Paleocology and history of the Calceocrinidae (Paleozoic crinoidea).
- Ausich, W.I. *J Paleontol* 59: 793-808. 1985. New crinoids and revision of the superfamily Glyptocrinacea (Early Silurian, Ohio) [USA].
- Allemand, D., G. De Renzis, C. Maistre, J. P. Girard and P. Payan. *J Membr Biol* 87: 217-224. 1985. Uptake of valine and alanine by a neutral amino-acid carrier in sea urchin eggs: Cyclic variations in the early cleavage stage.
- Alliegro, M.C. and H. Schuel. *Biochemistry* 24: 3926-3931. 1985. Characterization of soybean trypsin inhibitor sensitive protease from unfertilized sea urchin (*Strongylocentrotus purpuratus*) eggs.
- Bloom, G.S., F.C. Luca., A. Collins and R.B. Vallee. *Cell Motil* 5: 431-446. 1985. Use of multiple monoclonal antibodies to characterize the major microtubule-associated protein in sea urchin eggs.
- Baba, S.A. and Y. Mogami. *Cell Motil* 5: 475-490. 1985. An approach to digital image analysis of bending shapes of eukaryotic flagella and cilia.
- Breen, P.A., W. Carolsfeld and K. L. Yamanaka. *J Exp Mar Biol Ecol* 92: 45-62. 1985. Social behavior of juvenile red sea urchins, *Strongylocentrotus franciscanus*.
- Burnell, D.J., J.W. Apsimon and M.W. Gilgan. *Steroids* 44: 67-76. 1984. Variations in the levels of asterone and asterogenol, 2 steroids from the saponins of the starfish, *Asterias vulgaris*.
- Baccetti, B., K.R. Porter and M. Ulrich. *J Submicrosc Cytol* 17: 171-176. 1985. High-voltage electron microscopy of sperm axoneme.
- Brett, C.E. *J Paleontol* 59: 820-838. 1985. Pelmatozoan echinoderms on Silurian bioherms in western New York [USA] and Ontario [Canada].
- Boukarsh, N. and M. Kunkle. *Gamete Res* 12: 55-64. 1985. Ultrastructural organization of heterochromatin within sea urchin [*Strongylocentrotus purpuratus*] sperm nuclei.
- Christen, R. *Dev Growth Differ* 27: 529-538. 1985. Isolation of acrosomal vesicles and their surrounding membranes from starfish sperm.
- Canellakis, Z.N., P.K. Bondy* and A.A. Infante. *Proc Natl Acad Sci U S A* 82: 7613-7615. Spermidine is bound to a unique protein in early sea urchin [*Strongylocentrotus purpuratus*] embryos.
- Chung, Y.W., K.S. Eom and H.J. Rim. *Korea Univ Med J* 22: 43-54. 1985. Comparative studies on the immunodiagnosis of *Capillaria hepatica* infection in white rats with egg antigens.
- Candia Carnevali, M. and A. Saita. *J Morphol* 185: 75-88. 1985. Muscle system organization in the echinoderms: 3. Fine structure of the contractile apparatus of the arm flexor muscles of the comatulids (*Antedon mediterranea*).
- Carson, D.D., Mary C. Farach, D.S. Earles, G.L. Decker and W.J. Lennarz. *Cell* 41: 639-649. 1985. A monoclonal antibody inhibits calcium accumulation and skeletal formation in cultured embryonic cells of the sea urchin.

- Cherbonnier, G. and J.-P. Feral. Bull Mus Natl Hist Nat Sect A Zool Biol Ecol Anim 6: 827-852. 1984. The holothurians from New Calodonia: 2. Stichopodidae, Cucumariidae, Phyllophoridae and Synaptidae.
- Chartock, M.A. Micronesica 19: 131-150. 1984. Habitat and feeding observations on species of *Ophiocoma* (Ophiocomidae) at Enewetak [Marshall Islands, Pacific Ocean].
- Dall, B. and L. Santella. J Cell Sci 74: 153-168. 1985. Sperm-oocyte interaction in the sea urchin.
- Davis, J.P., C.L. Keenan and G.C. Stephens. J Comp Physiol B Biochem Syst Environ Physiol 156: 121-128. 1985. Sodium-dependent amino acid transport in bacteria-free sea urchin [*Strongylocentrotus purpuratus*] larvae.
- De Correa, R.S., R. Riccio, L. Minale and C. Duque. J Nat Prod (Lloydia) 48: 751-755. 1985. Starfish saponins: Part 21. Steroidal glycoside from the starfish *Oreaster reticulatus*.
- Desimone, D.W., E. Spiegel and M. Spiegel. Biochem Biophys Res Commun 133: 183-188. 1985. The biochemical identification of fibronectin in the sea urchin [*Arbacia punctulata*] embryo.
- Downing, J.A. and H. Cyr. Can J Fish Aquat Sci 42: 1570-1579. 1985. Quantitative estimation of epiphytic invertebrate populations.
- Dube, F. and D. Epel. Exp Cell Res 162: 191-204. 1986. The relation between intracellular pH and rate of protein synthesis in sea urchin [*Strongylocentrotus purpuratus*] eggs and the existence of a pH-independent event triggered by ammonia.
- Donovan, S.K. and C.R.C. Paul. Paleontology 28: 527-544. 1985. Coronate echinoderms from the Lower Paleozoic of Britain [UK].
- Eckert, J.D. and C.E. Brett. R Ont Mus Life Sci Contrib (14): 1-10. 1985. Taxonomy and paleoecology of the Silurian myelodactylid crinoid, *Crinobrachiatus brachiatus*.
- Fujino, Y., K. Mitsunaga, A. Fujiwara and I. Yasumasu. J Exp Zool 235: 281-288. 1985. Inhibition of calcium-45 uptake in the eggs and embryos of the sea urchin, *Anthocidaris crassispina*, by several calcium antagonists, anion transport inhibitor and chloride transport inhibitors.
- Fitzgerald, P.C. and R.T. Simpson. J Biol Chem 260: 15318-15324. 1985. Effects of sequence alterations in a DNA segment containing the 5S RNA gene from *Lytechinus variegatus* on positioning of a nucleosome core particle in vitro.
- Garcia-Soto, J. and A. Darszon. Dev Biol 11: 338-345. 1985. High pH-induced acrosome reaction and calcium uptake in sea urchin [*Lytechinus pictus*] sperm suspended in sodium-free seawater.
- S. Greco, L. Minale, M. Debray and J. Luis Menou. J Nat Prod (Lloydia) 48: 756-765. 1985. Starfish saponins: Part 22, Asterosaponins from the starfish *Halityle regularis*: A novel 22,23-epoxysteroidal glycoside sulfate.
- Gatti, J.-L. and R. Christen. J Biol Chem 260: 7599-7602. 1985. Regulation of internal pH of sea urchin [*Arbacia lixula*] sperm: A role for the sodium/potassium pump.

- Holzman, T.F., S.F. Russo and D.C. Williams. *Mar Biol* 90: 55-60. 1985. Effects of feeding and starvation on proteolytic and tryptic activities in pyloric cecal tissues and duct fluids of the sea star *Pisaster ochraceus*.
- Hamaguchi, Y., M. Toriyama, H. Sakai and Y. Hiramoto. *J Cell Biol* 100: 1262-1272. 1985. Distribution of fluorescently labeled tubulin injected into sand dollar [*Clypeaster japonicus*] eggs from fertilization through cleavage.
- Jones, G.M. and R.E. Scheibling. *J Parasitol* 7: 559-565. 1985. *Paramoeba* sp. (Amoebida, Paramoebidae) as the possible causative agent of sea urchin [*Strongylocentrotus droebachiensis*] mass mortality in Nova Scotia [Canada].
- Kojima, M. K. *Dev Growth Differ* 27: 547-552. 1985. Acceleration of the cleavage in sea urchin eggs by treatment with local anesthetics: II. Treatment with some other local anesthetic than procaine.
- Kojima, M.K. *Dev Growth Differ* 27: 539-546. 1985. Acceleration of the cleavage in sea urchin eggs by treatment with local anesthetics: I. Procaine treatment.
- Klinger, T. and W.J. Diehl. *Comp Biochem Physiol B Comp Biochem* 81: 401-404. 1985. Activities and kinetics of digestive α -glucosidase, β -galactosidase of *Luidia clathrata* (Echinodermata: Asteroidea).
- Kallenbach, R.J. *J Cell Sci* 73: 261-278. 1985. Ultrastructural analysis of the initiation and development of cytasters in sea-urchin (*Strongylocentrotus purpuratus*) eggs.
- Khotimchenko, Yu. S., E.A. Zalutskaya and I.I. Deridovich. *Zh Evol Bjokhim Fiziol* 20: 565-569. 1984. Catecholamines and indolylalkylamines in the radial nerves of starfishes and sea urchins.
- Kas'yanov, V.L. and E.S. Kornienko. *Biol Morya* (6): 40-45. 1984. Seasonal changes in the gonads of the sea star *Distolasterias nipon* in Vostok Bay, Sea of Japan.
- Kuriyama, R. and G. G. Borisy. *J Cell Biol* 101: 524-530. 1985. Identification of molecular components of the centrosphere in the mitotic spindle of sea urchin [*Strongylocentrotus purpuratus*] eggs.
- Karp, G.C. and M. Solursh. *Exp Cell Res* 158: 554-557. 1985. In vitro fusion and separation of sea urchin primary mesenchyme cells.
- Levin, A.V., E.V. Levina and V.S. Levin. *Biol Morya* (5): 40-45. 1984. The response of the asteroids *Asterias amurensis* and *Distolasterias nipon* to homogenates and chemical substances from tissues of Far-Eastern starfishes.
- Larrain, A.P. *J Paleontol* 59: 1401-1408. 1985. A new, early *Hemiaster* (Echinodermata: Echinoidea) from the Lower cretaceous of Antofagasta, Northern Chile.
- Larrain, A.P. and L. Biro-Bagoczky. *J Paleontol* 59: 1409-1413. 1985. New *Pygurus* (Echinodermata: Echinoidea) from the Tithonian of Central Chile: First record from the Jurassic of the southern Hemisphere.

- Mceuen, F.S. and Fu-Shang Chia. *Can J Zool* 63: 2553-2559. 1985. Larval development of a molpadiid holothuroid, *Molpadia intermedia* (Echinodermata).
- Moody, W.J. and M.M. Bosma. *Dev Biol* 112: 396-404. 1985. Hormone-induced loss of surface membrane during maturation of starfish [*Leptasterias hexactis*] oocytes: Differential effects on potassium and calcium channels.
- Moody, W.J. *Dev Biol* 112: 405-413. 1985. The development of calcium and potassium currents during oogenesis in the starfish, *Leptasterias hexactis*.
- Mita, M. *Dev Growth Differ* 27: 563-572. 1985. Effect of cysteine and its derivatives on 1-methyladenine production by starfish [*Asterina pectinifera*] follicle cells.
- Miura, M., M. Sakamoto, Y. Aoki, G. Zea F. and O. Ochoa A. *Trop Med* 27: 141-146. 1985. Scanning electron microscopy of *Onchocera volvulus microfilariae* from Guatemala.
- McNamara, K.J. *Palaeontology* 28: 311-330. 1985. Taxonomy and evolution of the Cainozoic spatangoid echinoid *Protenaster*.
- Maruyama, Y.K. *Biol Bull* 168: 249-262. 1985. Holothurian oocyte maturation induced by radial nerve.
- Nuss, B. *Veroeff Inst Meeresforsch Bremerhaven* 21: 1-70. 1985. Ultrastructure investigations on food absorption in aquatic nematodes.
- Noll, H., V. Matranga, M. Cervello, T. Humphreys, B. Kuwasaki and D. Adelson. *Proc Natl Acad Sci U S A* 82: 8062-8066. 1985. Characterization of toposomes from sea urchin blastula cells: A cell organelle mediating cell adhesion and expressing positional information.
- Pureur, R.P., G. Coffe, M.O. Soyer-Gobillard, F. De Billy and J. Pudles. *Exp Cell Res* 162: 63-76. A network of 2-4 nanometer filaments found in sea urchin smooth muscle: Protein constituents and in situ localization.
- Pearson, T.H., A.B. Josefson and R. Rosenberg. *J Exp Mar Biol Ecol* 92: 157-206. 1985. Petersen's benthic stations revisited: I. Is the Kattegat becoming eutrophic? (echinoid, ophiuroid).
- Peters, E.C. and M.E.Q. Pilson. *J Exp Mar Biol Ecol* 92: 215-230. 1985. A comparative study of the effects of sedimentation on symbiotic and asymbiotic colonies of the coral *Astrangia danae*.
- Riccio, R., M.V. D'Auria and L. Minale. *Tetrahedron* 4: 6041-6046. 1985. Unusual sulfated marine steroids from the ophiuroid *Ophioderma longicaudum*.
- Rostomyan, M.A., K.S. Abramyan, G.A. Buznikov and E.V. Gusareva. *Tsitologiya* 27: 877-881. 1985. Electron cytochemical detection of adenylate cyclase in embryos of sea urchin.
- Ragyalis, A.K. and I.S. Bartninkaite. *Liet Tsr Mokslu Akad Darb Ser C Biol Mokslai* (3): 57-62. 1985. Effect of metathion on the percentage of hemocytes in the hemolymph of *Acantholyda posticalis* larvae.
- Rozhnov, S.V. and Yu A. Arendt. *Paleontol Zh* (6): 118-121. 1984. [In Russ.] New genus, of Crinoidea from the Upper Carboniferous of the Main Devonian Field.
- Ramarao, C.S. and D.L. Garbers. *J Biol Chem* 260: 8390-8396. 1985. Receptor-mediated regulation of guanylate cyclase activity in spermatozoa.
- Smith, A.C. *J Aquaric Aquat Sci* 4: 58-60. 1985. Humoral response of a marine invertebrate (sea cucumber, *Pentacta pygmea*) to environmental foreign protein: A preliminary report.

- Soudet, H.J. and M. Fouray. *Cretaceous Res* 6: 117-128. 1985. Paleontological study of material from the A 10 highway [France]: Irregular echinoids.
- Sprinkle, J*, L. Henry, F. S. Zimmer, L. S. Kelley and J. Whiteley. *J Paleontol* 59: 1476-1480. 1985. New Pleurocystites from the bromide formation of Oklahoma [USA].
- Schroeder, T.E. and D.E. Battaglia. *J Cell Biol* 100: 1056-1062. 1985. "Spiral asters" and cytoplasmic rotation in sea urchin eggs: Induction in *Strongylocentrotus purpuratus* eggs by elevated temperature.
- Smith, A.B. and T.H. Tranter. *Geol Mag* 122: 351-360. 1985. *Protremaster*, new genus, a new Lower Jurassic genus of asteroid from Antarctica.
- Shen, S.S. and L.J. Burgart. *J Cell Biol* 101: 420-426. 1985. Intracellular sodium activity in the sea urchin [*Lytechinus pictus*] egg during fertilization.
- Satterlie, R.A. and R.A. Cameron. *J Exp Zool* 235: 197-204. 1985. Electrical activity at metamorphosis in larvae of the sea urchin, *Lytechinus pictus* (Echinodermata).
- Turner, P.R., L.A. Jaffe and A. Fein. *J Cell Biol* 102: 70-76. 1986. Regulation of cortical vesicle exocytosis in sea urchin [*Lytechinus variegatus*] eggs by inositol 1,4,5-trisphosphate and GTP-binding protein.
- Thomas, L.A. and C. O. Hermans. *Biol Bull* 169: 675-688. 1985. Adhesive interactions between the tube feet of a starfish, *Leptasterias hexactis*, and substrata.
- Turner, R.L. *Proc Biol Soc Wash* 98: 1028-1029. 1985. *Microphiopholis* new name, replacement name for *Micropholis* (Ophiuroidea: Amphiuridae) (Amphibia: Dissorophidae).
- Tsuchiya, M. and M. Nishihara. *Galaxea* 4: 37-48. 1985. Agonistic behavior and its effect on the dispersion pattern in two types of the sea urchin, *Echinometra mathaei*.
- Treigite, G.M. and A.A. Gineitis. *Biokhimiya* 50: 154-161. 1985. The heterogeneity of histones in embryonic and coelomic cells of the sea urchin, *Strongylocentrotus droebachiensis*.
- Tilney, L.G. and S. Inque. *J Cell Biol* 100: 1273-1283. 1985. Acrosomal reaction of the *Thyone briareus* sperm: 3. The relationship between actin assembly and water influx during the extension of the acrosomal process.
- Ward, G.E., C.J. Brokaw, D.L. Garbers and V.D. Vacquier. *J Cell Biol* 101: 2324-2329. 1985. Chemotaxis of *Arbacia punctulata* spermatozoa to resact, a peptide from the egg jelly layer.
- Webb, C.M. and P.A. Tyler. *Mar Biol* 89: 281-292. 1985. Post-larval development of the common north-west European brittle stars *Ophiura ophiura*, *Ophiura albida* and *Acrocrida brachiata* (Echinodermata: Ophiuroidea).
- Zitt, J. and J. Michalik. *Geol Zb* 35: 601-629. 1984. Upper Jurassic Crinoids in the West Carpathian Klippen Belt [Czechoslovakia].

- Abed, M., and B.J. Crawford. *J. Morph.* 188, 239-250. Ultrastructural aspects of mouth formation in the starfish *Pisaster ochraceus*. 1986.
- Andrew, N.L., and J.H. Choat. *Mar. Ecol. Prog. Ser.* 27, 155-161. 1985. Habitat related differences in the survivorship and growth of sea urchins.
- Augier. *Vie Mar.* 5, 1-11. 1983. Contribution a l'inventaire des Echinodermes des iles d'Hyeres (Mediterranee, France).
- Aronson, R.B., and C.A. Harms. *Ecology.* 66, 1472-1483. 1985. Ophiuroids in a Bahamian saltwater lake: the ecology of a Paleozoic-like community
- Andrew, N.L. *J. Exp. Mar. Biol. Ecol.* 97, 63-79. 1986 The interaction between diet and density in influencing reproductive output in the echinoid *Evechinus chloroticus* (Val.)
- Bussarawit, S., and F.W.E. Rowe. *Phuket Mar. Biol. Center Res. Bull. No. 35.* A new species in the ophiocomid genus *Ophiocoma* (Echinodermata: Ophiuroidea) from the west coast of Thailand, Andaman Sea.
- Byrne, M. *Ophelia.* 24, 91-101. 1985. The life history of the gastropod *Thyonicola americana* Tikasingh, endoparasitic in a seasonally eviscerating holothurian host.
- Bell, M.V., and J.R. Sargent. *J. Exp. Mar. Biol. Ecol.* 87, 31-40 1985. Fatty acid analysis of phosphoglycerides from tissues of the clam *Chlamys islandica* (Müller) and the starfish *Ctenodiscus crispatus* (Retzius) from Balsfjorden, northern Norway
- Bradbury, R.H., L.S. Hammond, P.J. Moran, and R.E. Reichelt. *J. Theoret. Biol.* 113, 69-80. Coral reef communities and the crown of thorn starfish: evidence for qualitatively stable cycles.
- Brito, E.M. *An. Acad. Brasil. Cienc.* 54, 365-368. 1982. A ocorrência de *Clypeaster durandi* Cherbonnier no Brasil (Echinoidea Clypeasteroidea)
- Brito, I.M. 1981. *An. Acad. Brasil. Cienc.* 53, 570-578. 1981. Os Equinóides fósseis do Brasil. III. Espatangóides, exceto Hemiasteridae.
- Brito, I.M. 1981. *An. Acad. Brasil. Cienc.* 53, 513-527. Os equinóides fósseis do Brasil. II. Holectipóides e Cassidulóides.
- Baker, A.N., F.W.E. Rowe. *Nature.* 321, 862-864. A new class of Echinodermata from New Zealand.
- Breton, G. *Bull. Trim. Soc. Geol. Normandie.* 72, 91-99 Valettaster? Sphaerasteridae Mesozoique.
- Blankley, W.O., and J.R. Grindley. *Antarctic nutrient cycles and food webs* (Siegride, Condy, & Laws, eds.). 1985. The intertidal and shallow subtidal food web at Marion Island. (asteroid)
- Boggild, G.R., and E.P.F. Rose. *Ann. Geol. Pays Hellen.* 32, 57-67. Mid-Tertiary echinoid biofacies as palaeoenvironmental indices
- Cobb, J.L.S. *Cell Tissue Res.* 242, 685-688. The motor innervation of the oral plate ligament in the brittlestar *Ophiura ophiura* L.
- Choat, J.H., N.L. Andrew. *Oecologia.* 68, 387-394 Interactions amongst species in a guild of subtidal benthic herbivores (echinoids)
- Castilla, J.C. *Antarctic nutrient cycles and food webs* (Siegfried, Condy, Laws, eds.). Food webs and functional aspects of the kelp, *Macrocystis pyrifera*, community in the Beagle Channel, Chile. (asteroids, echinoids)

- Cameron, J.L., P.V. Frankboner. Can. J. Zool. 64, 168-175. 1986
 Reproductive biology of the commercial sea cucumber *Parastichopus californicus* (Stimpson) (Echinodermata: Holothuroidea).
 I. Reproductive periodicity and spawning behavior.
- Costelloe, J., B.F. Keegan. Proc. Roy. Irish Acad. 84B, 29-34. 1984.
 Synonymy, diagnostic morphology, distribution and life-style of *Aslia lefevrei* (Barrois 1882) (Holothuroidea: Echinoidea)
- Candia Carnevali, M.D., A. Saita. Muscle system organization in the echinoderms. II. Microscopic anatomy and functional significance of the muscle-ligament-skeleton system in the arm of the comatulids (*Antedon mediterranea*)
- Chen, C.P., J.M. Lawrence. Acta Zool. 67, 27-32. Localization of carbonic anhydrase in the plumula of the tooth of *Lytechinus variegatus* (Echinodermata: Echinoidea). 1986
- Chen, C.P., J.M. Lawrence. Acta Zool. 67, 33-41. 1986. The ultrastructure of the plumula of the tooth of *Lytechinus variegatus* (Echinodermata: Echinoidea)
- Colman, R.S., D.L. Meyer, H.C. Crenshaw, J.R. Strickler. Mar. Biol. 1984. A non-motorized dye ejector for visualization of flow in situ and its use with coral reef crinoids.
- Delmas, P., M.-B. Regis. Vie Mar. 6, 63-72. Influence d'une pollution complexe a dominante domestique sur les population de l'echinoide comestible *Paracentrotus lividus* (Lamarck).
- DeWilde, P.A.W.J., E.M. Berghuis, A. Kok. Netherlands J. Sea Res 18, 143-159. 1984. Structure and energy demand of the benthic community of the oyster ground, Central North Sea.
- Delmas, P., M.-B. Regis. C.R. Acad. Sc. Paris. 300, 143-146. 1985. Impact de la pollution domestique sur la biologie et la morphologie de l'echinoide *Paracentrotus lividus* (Lamarck)
- Da Silva, J., J. L. Cameron, P.V. Frankboner. Mar. Behav. Physiol. 12, 133-147. 1986. Movement and orientation patterns in the commercial sea cucumber *Parastichopus californicus* (Stimpson) (Holothuroidea: Aspidochirotida)
- Drozdov, A.L., V.L. Kasyanov. Ontogenia. 16, 49-59. 1985. Size and form of gametes in echinoderms.
- Donachy, J.E., N. Watabe. Mar. Biol. 91, 253-258. Effects of salinity and calcium concentration on arm regeneration by *Ophiothrix angulata* (Echinodermata: Ophiuroidea).
- Emson, R.H., P.V. Mladenov, I.C. Wilkie. NOAA Symp. Ser. Undersea Res. 3, 87-100. Patterns of reproduction in small Jamaican brittlestars: fission and brooding predominate.
- Fukuyama, A.K., J.S. Oliver. 1985. *Ophelia*. 24, 17-36. 1985. Sea star and walrus predation on bivalves in Norton Sound, Bering Sea, Alaska.
- Fankboner, P.V., and J.L. Cameron. Can. J. Zool. 63, 2888-2892. 1985. Seasonal atrophy of the visceral organs in a sea cucumber.
- Gage, J.D., P.A. Tyler. Mar. Biol. 90, 41-53. 1985. Growth and recruitment of the deep-sea urchin *Echinus affinis*.
- Guille, A., C. Vadon. Bull. Mus. Natn. Hist. Nat. Paris. 7A, 61-72. Les Ophiures littorales de Nouvelle-Caledonie.
- Franz, D.R. Mar. Biol. 91, 553-560. 1986. Seasonal changes in pyloric caeca and gonad indices during the annual reproductive cycle in the seastar *Asterias forbesi*.

- Gomez, E.D., R.A. Guieb, E. Aro. Fish. Res. J. Philipp. 8, 1-17. 1983. Studies on the predators of commercially important seaweeds.
- Glynn, P.W., D.A. Krupp. J. Exp. Mar. Biol. Ecol. 96, 75-96. 1986. Feeding biology of a Hawaiian sea star corallivore, *Culcita novaeguineae* Muller & Troschel.
- Gutierrez-Marco, J.C., J. Chauvel, B. Melendez, A.B. Smith. Estudios geol. 40, 421-453. 1984. The lower Palaeozoic Echinoderms (Cystoidea, Homalozoa, Stelleroidea, Crinoidea) from the Toledo Mountains and Sierra Morena (Spain).
- Hammond, L.S., C.R. Wilkinson. J. Exp. Mar. Biol. Ecol. 94, 1-9. 1985. Exploitation of sponge exudates by coral reef holothuroids.
- Horowitz, A.S., D.B. Macurda, Jr., J.A. Waters. Geol. Soc. Am. Bull. 97, 156-161. Polyphyly in the Pentremitidae (Blastoidea Echinodermata. 1986.
- Hughes, T.P., B.D. Keller, J.B.C. Jackson, M.J. Boyle. Bull. Mar. Sci. 36, 377-384. 1985. Mass mortality of the echinoid *Diadema antillarum* Philippi in Jamaica.
- Helmke, E., H. Weyland. 1986. Mar. Biol. 91, 1-7. Effect of hydrostatic pressure and temperature on the activity and synthesis of chitinases of Antarctic Ocean bacteria (holothuroids, echinoids)
- Harrold, C., D.C. Reed. Ecology. 66, 1160-1169. 1985 Food availability, sea urchin grazing, and kelp forest community structure.
- Hay, M. Proc. Fifth Internat. Coral Reef Cong. 4, 29-34. 1985. Spatial patterns of herbivore impact and their importance in maintaining algal species richness. (echinoids)
- Hay, M.E., P.R. Taylor. Oecologia. 65, 591-598. 1985. Competition between herbivorous fishes and urchins on Caribbean reefs.
- Hay, M.E., R.R. Lee, Jr., R.A. Buieb. J. Exp. Mar. Biol. Ecol. 96, 147-153. 1986. Food preference and chemotaxis in the sea urchin *Arbacia punctulata* (Lamarck) Philippi
- Jennings, J.B., L.R.G. Cannon. Ophelia. 24, 199-215. 1985. Observations on the occurrence, nutritional physiology and respiratory pigment of three species of flatworms (Rhabdocoela: Pterastericolidae) entosymbiotic in starfish from temperate and tropical waters.
- Jablonski, D. Phanerozoic Diversity Patterns (JW Valentine, ed.) 335-354. 1985. Marine regressions and mass extinctions: a test using modern biota. (asteroids, ophiuroids, echinoids)
- Jablonski, D., KW Flessa. Malacologia. 27, 43-66. 1986. The taxonomic structure of shallow-water marine faunas: implications for Phanerozoic extinctions.
- Jablonski, D. Dynamics of extinction (DK Elliott, ed). Causes and consequences of mass extinctions: a comparative approach (echinoids, asteroids, ophiuroids)
- Kobayashi, N. Pub. Seto Mar. Biol. Lab. 30, 213-226. 1985. Marine pollution bioassay by sea urchin eggs, an attempt to enhance accuracy.
- Klinger, T.S., H.L. Hsieh, R.A. Pangallo, C.P. Chen, J.M. Lawrence. Physiol. Zool. 59, 332-336. 1986. The effect of temperature on feeding, digestion, and absorption of *Lytechinus variegatus* (Lamarck) (Echinodermata: Echinoidea)
- Hanson, J.L., G. Gust. Mar. Biol. 92, 125-134. 1986. Circulation of perivisceral fluid in the sea urchin *Lytechinus variegatus*.

- Kobayashi, N. Ecotoxicological Testing for the Marine Environment (Persoone, Jaspers, Claus, eds.). 341-405. 1984. Marine ecotoxicological testing with echinoderms.
- Kobayashi, N. Sci. Eng. Rev. Doshisha Univ. 26, 1-7. 1985. Studies on the effects of some agents on fertilized sea urchin eggs, as a part of the bases for marine pollution assay II.
- Klinger, T.S., J.M. Lawrence. Mar. Behav. Physiol. 11, 327-344. 1985. Distance perception of food and the effect of food quantity on feeding behavior of *Lytechinus variegatus* (Lamarck) (Echinodermata: Echinoidea)
- Kristan-Tollmann, E., A. Tollmann. Schriftenr. Erdwiss. Komm. Osterr. Akad. Wien. 5, 177-230. 1983. Überregionale Züge der Tethys in Schichtfolge und Fauna am Beispiel der Trias zwischen Europa und Fernost, speziell China. (crinoid)
- Kristan-Tollmann, E., A. Tollmann. Mitt. Osterr. Geol. Ges. 76, 213-272. 1983. Tethys-Faunenelemente in der Trias der USA (echinoid, crinoid)
- Liddell, W.D., S.L. Ohlhorst. J. Exp. Mar. Biol. Ecol. 95, 271-278. 1986. Changes in benthic community composition following the mass mortality of *Diadema* at Jamaica.
- Casanova, C.S., J.E.G. Raso, A. Lopez-Ibor. Act. IV Simp. Iberico de Estudios do Benthos Marinho. 1984. 1, 123-146. Estudio del macrobenthos infralitoral (Mollusca, Crustacea Decapoda, y Echinodermata) de la Bahia de Malaga (Espana)
- Liao, Y., G. Li. Acta Sci. Circumstantiae. 5, 491-494. 1985. Abnormal phenomenon of a sea urchin *Temnopleurus toreumaticus* (Leske) from Dayawan, Guangdong, China.
- Liao, Y. Chin. J. Oceanol. Limnol. 2, 109-116. 1984. On the family Asterometridae (Crinoidea) of China, with a description of *Sinometra acuticirra* gen. et sp. nov.
- Liao, Y. Oceanol. Limnol. Sinica. 15, 478-481. 1984. *Rosaster attenuatus*, a new species of the family Goniasteridae (Asterozoa) from the East China Sea.
- Litvinova, N. Zool. J. 63, 1585-1588. 1984. A remarkable new species of the genus *Ophiopyrgus* (Echinodermata: Ophiuroidea)
- Morin, J.G., J.E. Kastenidek, A. Harrington, and N. Davis. Mar. Ecol. Prog. Ser. 27, 163-185. 1985. Organization and patterns of interactions in a subtidal sand community on an exposed coast. (echinoid, asteroid)
- Miller, R.J. Can. J. Fish. Aquat. Sci. 42, 2061-2072. 1985. Seaweeds, sea urchins, and lobsters: a reappraisal.
- Miranov, A.N. Oceanologia. 25, 301-307. 1985. The role of dispersal in the formation of the Recent faunistic complex of echinoids within the tropic zone.
- Mann, K.H. Behavioral ecology (Sibley & Smith, eds.). 1985. Invertebrate behavior and the structure of marine benthic communities.
- Monteiro, A.M.G., L.R. Tommasi. Bolm Inst. oceanogr S. Paulo. 32, 33-54. 1983. Ophiuroidea das regiões Antártica e Subantártica. 1. Sobre três espécies de Gorgonocephalidae e Ophiacanthidae.
- Monteiro, A.M.G., L.R. Tommasi. Bolm Inst. oceanogr. S. Paulo. 32, 55-61. 1983. Ophiuroidea das regiões Antártica e Subantártica. 2. Variação em *Gorgonocephalus chilensis* (Philippi) (Echinodermata, Ophiuroidea, Gorgonocephalidae).
- Moriarty, D.J.W., P.C. Pollard, W.G. Hunt, C.M. Moriarty, T.J. Wassenberg. Mar. Biol. 85, 293-300. 1985. Productivity of bacteria and microalgae and the effect of grazing by holothurians in sediments on a coral reef flat.

- Meyer, C.A. *Eclogae Geol. Helvetiae*. 77, 649-671. 1984.
Palökologie und Sedimentologie der Echinodermenlagerstätte
Schofgraben (mittleres Oxfordian, Weissenstein, Kt. Solothurn).
- McEdward, L.R. *Trans. Am. Microsc. Soc.* 104, 194-200. 1985. An
apparatus for measuring and recording the depth dimension of
microscopic organisms. (echinoid)
- Miyazawa, K., T. Noguchi, J. Maruyama, J.K. Jeon, M. Otsuka,
K. Hashimoto. *Mar. Biol.* 90, 61-64. Occurrence of tetrodotoxin
in the starfishes *Astropecten polyacanthus* and *A. scoparius* in
the Seto Inland Sea. 1985.
- McNamara, K.J. *Trans. Roy. Soc. S. Australia*. 109, 161-165. 1985.
The spatangoid echinoid *Linthia* from the late Eocene of
southern Australia.
- Mukai, H., S. Nojima. *Spec. Pub. Mukaishima Mar. Biol. Sta.* 1985,
185-192. 1985. A preliminary study on grazing and defecation rates
of a seagrass grazer, *Tripneustes gratilla*, (Echinodermata;
Echinoidea) in a Papua New Guinean seagrass bed.
- Meijer, L., P. Pondave, H.Y. Lim Tung, P. Cohen, R.W. Wallace.
Exp. Cell Res. 163, 489-499. 1986. Inhibition of starfish oocyte
maturation by intracellular microinjection of protein phosphatases
1 and 2A and alkaline phosphatase.
- McEdward, L.R. *J. Exp. Mar. Biol. Ecol.* 96, 267-286. 1986. Comparative
morphometrics of echinoderm larvae. II. Larval size, shape,
growth, and the scaling of feeding and metabolism in echinoplutei
- McEdward, L.R. *J. Exp. Mar. Biol. Ecol.* 96, 251-265. 1986.
Comparative morphometrics of echinoderm larvae. I. Some
relationships between egg size and initial larval form in
echinoids.
- McClintock, J.B., J.M. Lawrence. *Oecologia*. 66, 291-298. 1985.
Characteristics of foraging in the soft-bottom benthic starfish
Luidia clathrata (Echinodermata: Asteroidea): prey selectivity,
switching behavior, functional responses, and movement patterns.
- McClintock, J.B. *Polar Biol.* 4, 95-98. 1985. Avoidance and escape
responses of the sub-Antarctic limpet *Nacella edgari*
(Powell) (Mollusca: Gastropoda) to the sea star *Anasterias perieri*
(Smith) (Echinodermata: Asteroidea)
- Mahendran, M., T.W. Abraham, S.R. Krishnarajah. *J. Nat. Sci. Coun.*
Sri Lanka. 11, 185-190. 1983. A comparative study of the glycoside
fractions of some holothurians found in Sri Lankan waters.
- Meijer, L., P. Pondaven, P. Guerrier, M. Moreau. *Cah. Biol. Mar.* 25,
457-480. 1985. A starfish oocyte user's guide.
- Mladenov, P.V., S.F. Carson, C.W. Walker. *J. Exp. Mar. Biol. Ecol.*
96, 155-175. 1986. Reproductive ecology of an obligately
fissiparous population of the sea star *Stephanasterias albula*
- Marsh, A.G., S.A. Watts, C.P. Chen, J.B. McClintock. *Comp. Biochem.*
Physiol. 83A, 229-231. 1986. The effect of high salinity on
development, mortality and ray number of *Echinaster spinulosus*
(Echinodermata: Asteroidea) at different developmental stages.
- Negretti, B. *Trav. Lab. Stratigraphie Paleoecologie, Univ. Provence.*
n.s. 2. 1984. *Echinides neogenes* du littoral de la Nerthe.
- Nojima, S., H. Mukai. *Spec. Pub. Mukaishima Mar. Biol. Sta.* 1985,
173-183. 1985. A preliminary report on the distribution pattern
daily activity and moving pattern of a seagrass grazer,
Tripneustes gratilla (L.) (Echinodermata: Echinoidea),
in Papua New Guinean seagrass beds.
- Olson, R.R. *Mar. Biol. Prog. Ser.* 25, 207-210. 1985. In situ
culturing of larvae of the crown-of-thorns starfish
Acanthaster planci
- Nichols, D. *Nature*. 321, 808. 1986. A new class of echinoderms.

- Poddubiuk, R.H., E.P.F. Rose. Ann. Geol. Pays Hellen. 32, 115-128. 1984. Relationships between Mid-Tertiary echinoid faunas from the central Mediterranean and eastern Caribbean and their palaeobiogeographic significance.
- Pondaven, P., L. Meijer. Exp. Cell Res. 163, 477-488. 1986. Induction of starfish oocyte maturation by a phosphatase inhibitor, alpha-naphthylphosphate.
- Paine, R.T. Limnol. Oceanogr. 31, 351-360. 1986. Benthic community-water column coupling during the 1982-1983 El Nino. Are community changes at high latitudes attributable to cause or coincidence?
- Piotrowski, A. Bull. Acad. Polonaise Sci. Cl. II. 29, 451-456. 1983. Structure of teeth of the class Ophiocystioidea (Echinodermata)
- Pawson, D.L. Marine Fauna and Flora of Bermuda. (Sterrer, ed.) 1986. Phylum Echinodermata. pp. 522-541.
- Rowe, F.W.E., A.K. Hoggett. Proc. Linn. Soc. N.S.W. 108, 225-261, 1986. The cidarid echinoids (Echinodermata) of New South Wales.
- Philippe, M. Nouv. Arch. Mus. Hist. Nat. Lyon. 22, 85-91. 1984. Echinides.
- Roman, J.P., J. Fabre. C.R. 111e Congr. natn. Soc. sav. Un rivage à Echinoides Réguliers de la base du Crétacé à Canjuers (Aiguines, Var).
- Roman, J., A. Strougo. Ann. Paleont. Fayoumaster strougoi n.gen., n.sp. (Goniasteridae), premier Astéroïde entire de l'Eocène d'Egypte.
- Regis, M.B., B.A. Thomassin. 1985. Anomalies de structure des radioles de *Heterocentrotus mammillatus* (Echinodermata: Echinoidea) en microcosme in vitro
- Rowe, F.W.E. Bull. Mus. Natn. Hist. Nat. Paris. 7A, 309-325. 1985. On the genus *Podosphaeraster* A.M. Clark & Wright (Echinodermata, Asteroidea), with description of a new species from the North Atlantic.
- Rose, E.P.F. Ann. Geol. Pays Hellen. 32, 171-181. 1984. Problems and principles of Neogene echinoid biostratigraphy.
- Regis, M.B. Mar. Biol. 90, 271-277. 1986. Microstructure adaptative des radioles de *Paracentrotus lividus* (Echinodermata: Echinoida) en milieu eutrophisé par des eaux usées.
- Suzuki, M., R. Kikuchi, T. Ohnishi. Bull. Jap. Soc. Sci. Fish. 50, 1255-1260. 1984. The polysaccharide degradation activity in digestive tract of sea urchin *Strongylocentrotus nudus*.
- Stricker, S.A. Zoomorphology. 105, 209-222. 1985. The ultra-structure and formation of the calcareous ossicles in the body wall of the sea cucumber *Leptosynapta clarki* (Echinodermata, Holothuroidea)
- Sides, E.M., J.D. Woodley. Bull. Mar. Sci. 36, 701-715. 1985. Niche separation in three species of *Ophiocoma* (Echinodermata: Ophiuroidea) in Jamaica, West Indies.
- Smith, A.B., C.R.C. Paul. Spec. Pap. Palaeontol. (33), 29-37. 1985. Variation in the irregular echinoid *Discoides* during the Early Cenomanian.
- Sime, A.A.T., G.J. Cranmer. J. Mar. Biol. Ass. U.K. 65, 583-588. 1985. Age and growth of North Sea echinoids.
- Sastry, D.R.K. Rec. Zool. Surv. India. 79, 19-30. 1981. On some crustacean associates of Echinodermata from the Bay of Bengal

- Sastry, D.R.K. Bull. Zool. Surv. India. 4, 239. 1981. Emendation of the name *Peronella rullandi* (Koehler) (Echinodermata: Echinoidea)
- Soliman, F. E.-S., S. Nojima. PUBS. Amakusa Mar. Biol. Lab. 7, 81-93. 1984. Some observations on dispersal behaviour of the early stage of the sea-star, *Asterina minor* Hayashi
- Sprinkle, J., L. Henry, F.S. Zimmer, L.S. Kelley, J. Whitely. J. Paleontol. 59, 1476-1480. New Pleurocystites from the Bromide Formation of Oklahoma 1985
- Serafy, D.K., F.J. Fell. NOAA Techn Rep. NMFS 33. 1985. Marine flora and fauna of the northeastern United States. Echinodermata: Echinoidea
- Sebens, K.P. Am. Sci. 73, 548-557. 1985. The ecology of the rocky subtidal zone. (asteroids, echinoids)
- Sugi, H., S. Gomi, M. Toride, A. Emura, T. Tsuchiya, N. Takei. Comp. Biochem. Physiol. 81A, 397-401. Mechanical activity in the lantern retractor muscle of a sea-urchin *Anthocidaris crassispina*. 1985
- Soliman, F. E.-S., S. Nojima, T. Kikuchi. PUBS. Amakusa Mar. Biol. Lab. 8, 143-171. Daily activity patterns and their seasonal change in the sea star *Asterina minor* Hayashi (Asteroidea: Asterinidae) 1986
- Tollmann, A., E. Kristan-Tollmann. The Tethys (Nakazawa & Dickens eds.). 3, 22. Paleogeography of the European Tethys from Paleozoic to Mesozoic and the Triassic relations of the eastern part of the Tethys and Panthalassa. 1985.
- Vasquez, J.A., J.C. Castilla. Medio Ambiente. 7, 47-51. 1984. Some aspects of the biology and trophic range of *Comasterias lurida* (Asteroidea, Asteriinae) in belts of *Macrocyttis pyrifera* at Puerto Toro, Chile.
- Warner, G. Prog. Underwat. Sci. aa, 109-118. 1986. Behaviour of brittle-stars: in situ observations by divers.
- Williams, D. McB. Mar. Ecol. Prog. Ser. 28, 157-164. 1986. Temporal variation in the structure of reef slope fish communities (central Great Barrier Reef): short-term effects of *Acanthaster planci* infestation.
- Waters, J.A., G.D. Sevastopulo. Ir. J. Earth Sci. 6, 137-154. 1984. The stratigraphical distribution and palaeoecology of Irish Lower Carboniferous blastoids.
- Witman, J.D. Ecol. Monogr. 55, 421-445. 1985. Refuges, biological disturbance, and rocky subtidal community structure in New England.
- Weiner, S. J. Exp. Zool. 234, 7-15. 1985. Organic matrixlike macromolecules associated with the mineral phase of sea urchin skeletal plates and teeth.
- Zavodnik, Rapp. Comm. Int. Mer. Medit. 29, 297-298. 1985. Sur l'Holothuroidea) identifiées récemment dans la Mer Adriatique.
- Zavodnik, D., A. Simunović, Rapp. Comm. Int. Mer. Medit. 29, 299-300. 1985. On some echinoderms rarely noted in the Adriatic Sea.
- Zavodnik, N., D. Zavodnik. Bilten Drustva ekologija BiH, 2, ser b. 27-32. 1984. Contribution to the benthic bionomy of the Kornati archipelago.

A list of echinoderm specialists

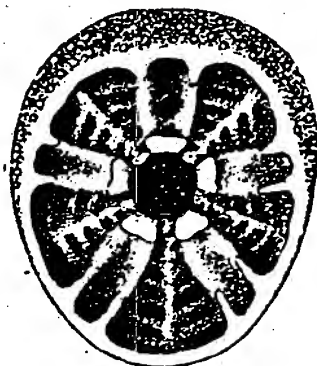
The list in this newsletter provides additions and address changes to the list in Newsletter 14.

Those whose names are not included here and those who have a change of address can use the last page of this newsletter to send the information to the editor.

The last page of the newsletter can also be used to submit requests, information about current research, meetings, publications, suggestions.

Code (areas of interest)

- 1 asteroids
- 2 ophiuroids
- 3 echinoids
- 4 holothuroids
- 5 crinoids
- 6 blastoids
- 7 edrioasteroids
- 8 stylophorans
- 9 paleontology
- 10 ecology
- 11 behavior
- 12 physiology
- 13 biochemistry
- 14 embryology, developmental biology
- 15 systematics
- 16 anatomy
- 17 functional morphology
- 18 reproduction
- 19 larvae
- 20 evolution
- 21 biogeography



Internal buttresses of the test of *Echinocyamus pusillus*
L. Agassiz 1841

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