

The Echinoderms Newsletter<sup>1</sup>

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During the past year, we have spent much of our spare time in organizing the Echinoderms Conference, which was held in this Museum during early September. Since September, we have tried to catch up with the many things we had neglected; one of these was the Newsletter.

The present Newsletter contains the usual sections, including current research projects, recent publications, recent theses, requests, and additions and corrections to the Directory of Specialists. As always, we urge you to complete and return to us the last page of this Newsletter (see p.32).

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<sup>1</sup>The Echinoderms Newsletter is not intended to be part of the scientific literature, and should not be cited, abstracted, or reprinted as a published document.

## Notes and News

Most of you will be aware that the First International Congress of Systematic and Evolutionary Biology will be held in Boulder, Colorado on August 4-12, 1973. The latest brochure (ICSEB Brochure No. 2) states that if ten or more scientists have a common interest they will be given a time and place to meet on an informal basis during ICSEB. Those willing to organize such special interest sessions are asked to contact Dr. Doris Love or Dr. David Rogers, University of Colorado, Boulder, Colorado, to make a reservation.

Perhaps some may wish to discuss some aspects of echinoderm evolution or biology at ICSEB? If you desire, we can help with some aspects of the organizing through the Newsletter--please contact us if you feel we can help. You'll have to move quickly--the deadline for applications to Colorado is March 1.

The Second Inter-Congress of the Pacific Science Association will be held at the University of Guam on May 20-25, 1973. The Marine Laboratory of the University of Guam will sponsor a symposium on Biology and Ecology of the Crown-of-Thorns Starfish, Acanthaster planci. Those interested in attending should write to Dr. L. G. Eldredge, Chairman, Organizing Committee, Second Inter-Congress, University of Guam, P. O. Box EK, Agana, Guam 96910, U.S.A. The deadline date for pre-registration is February 15.

## Suggestions, Requests, etc.

- BRUN - does anyone know a simple, effective method of individual marking of live starfish for growth and migration studies.
- CHESHER - lists of echinoderm works which are currently on 16 mm microfilm are available on request. Asteroid and ophiuroid papers are principally key systematic works for world-wide identification. In echinoids, all subjects except larval and egg physiology are covered.
- FELL, F. J. - would like to examine material of Spatangus from the western and central Pacific.
- HESS - is interested in papers, reports or observations on population density of recent stalked crinoids.
- LAWRENCE - has prepared a 15-page annotated bibliography of articles dealing with relationships between echinoids and algae (ecology, food, reproductive cycles, covering reaction, etc.). It consists of approximately 90 titles. Dr. Lawrence has generously made the bibliography available for distribution to interested specialists. Copies of the bibliography can be obtained direct from Dr. Lawrence at a cost of \$0.55 (to cover copying and postage).
- SCURRY - would like to learn of Jurassic localities in England and/or Normandy from where collections of the cassiduloid echinoid Nucleolites can still be made.
- STANCYK - would be interested to learn of success in reliably inducing spawning of ophiuroids.
- MUSEUM OF COMPARATIVE ZOOLOGY, Harvard University, Cambridge, Massachusetts 02138 - has for sale some back issues of papers published in their Memoirs, Proceedings, Bulletin and Breviora. These include many works by A. Agassiz, H. L. Clark, and others on all groups of echinoderms. If you are seriously interested in purchasing any of these reprints (the prices are reasonable), please address enquiries to the Publications Office.

## Current Research Projects

- ANDERSON, E. J. - paleoenvironments of crinoidal limestones including the Becroft Formation (Dev.) Coeymans Fm. (Dev.) and Keynes Fm. (Sil.), in part to determine environmental position of crinoids and cystoids in mid-Paleozoic shelf seas.
- BELL - morphology, taxonomy, paleoecology of Edrioasteroidea.
- BERNASCONI - Antarctic asteroids, echinoids and ophiuroids; echinoderms collected by Walther Herwig in southwest Atlantic; asteroids of Argentina - Family Asterinidae.
- BINYON - ion transport across bounding membranes.
- BLAKE, S. E. - reproduction in three populations of Ophiopholis aculeata from the northwest Atlantic.
- BOOLOOTIAN - functional morphology of the species of burrowing echinoids; aspects of hemal physiology.
- BRITO - Cretaceous and Tertiary paleontology.
- BRUN - taxonomy and biology of North Atlantic Henricia; predation of Chlamys islandica by Asterias rubens, population dynamics of Asterias rubens.
- CALDWELL - larval ecology of Mellita quinquesperforata.
- CAMPBELL - physiology of pedicellariae; biology of Acanthaster planci.
- CASO - Echinoderms of Bahia de la Paz, Bahia de Mazatlan; second edition of "Echinoderms of Mexico"; internal morphology of Platasterias latiradiata; echinoids of the genus Clypeaster.
- CHANG - echinoid spinochromes.
- CHESHER - echinoids as indicators of pollution in the marine environment; status of Acanthaster research.
- CLARK - taxonomic study of Indian Ocean crinoids, based on collections of International Indian Ocean Expedition.
- DAMBACH - chromatophores of sea urchins; behavior of sea urchins.
- DARTNALL - taxonomy and zoogeography of asterinid sea stars; zoogeography of S.E. Australian echinoderms.

- DIX - survey of echinoids in Townsville - Magnetic Is. area, Queensland, Australia.
- EMSON - fissiparity in asteroids; ultrastructure of sensory tube feet of asteroids; feeding and growth of Asterina gibbosa (with R. G. Crump).
- FELL, F. J. - revision of Pacific species of Spatangus; echinoids of southeast Pacific.
- FENNER - Echinoid morphology and classification.
- FONTAINE - metabolic stores of ophiuroids; ultrastructural studies on ophiuroids.
- GUILLE - ophiuroids of Madagascar and echinoderms of the Azores (with G. Cherbonnier); echinoderms of Kerguelen; biology of ophiuroids of the Bay of Banyuls.
- HENDLER - reproductive and feeding ecology of Amphioplus abditus; reproductive biology of Leptasterias tenera; reproductive biology of Axiognathus squamata in Connecticut; reproductive biology of Ophiocoma echinata and Ophioderma cinereum from Panama.
- HESS - illustrated guide to echinoderms of the Swiss Jura (mainly Jurassic and Lower Cretaceous); description of some "Polycidaris spinulosa" from the Bajocian.
- HOSHIAI - ecology of marine invertebrates (including echinoderms) at Syowa Station, Antarctica.
- HOTCHKISS - systematics, zoogeography, phylogeny of Paleozoic Asterozoa-- particularly ophiuroids.
- IRIMURA - ophiuroid fauna of Sagami Bay.
- KANATANI - gametogenesis and fertilization in starfishes.
- KAZUHIRO - fishery biology of Strongylocentrotus intermedius and S. nudus.
- KIER - evolution of post-Paleozoic echinoids, with emphasis on functional morphology; function of spines and tube feet of living echinoids; a Silurian echinoid from Scotland.
- KOBAYASHI - histochemistry of oogenesis of sea urchins; physiology of reproduction of sea urchins; marine pollution bioassay by sea urchin eggs.
- KYTE - biology of Gorgonocephalus arcticus in Gulf of Maine; systematics of Oregon ophiuroids and S.E. Pacific ophiuroids collected by Vema Expedition.

- LAWRENCE - bioenergetics of shallow water echinoids.
- LEES - population dynamics of the polychaete Flabelliderma commensalis commensal on three Californian echinoids; host-commensal relationships.
- LIMA-VERDE - ophiactid ophiuroids of northeast Brazil; biometry of the asteroid Luidia senegalensis (Lamarck) in the State of Ceara, Brazil.
- MACKIE - chemical basis of escape responses of marine invertebrates to predatory starfish.
- MACURDA - evolution of fissiculate blastoids; evolution and distribution of Mississippian Lake Valley crinoid fauna.
- MAERKEL - teeth of irregular sea urchins; growth of echinoderm skeleton.
- MARSH - systematics of Western Australian and Indo-Pacific Asteroidea.
- MEYER - postmortem disarticulation of Recent crinoids and ophiuroids under natural conditions; growth rates of comatulid crinoids; mortality of intertidal echinoid populations and ecology of intertidal ophiuroids (Atlantic Panama).
- MILEIKOVSKY - summarizing data on distribution of pelagic larvae of bottom-living invertebrates, on a world-wide basis.
- MITROVIC - Jurassic and Cretaceous Echinodermata.
- OKADA - secondary sexual characters in sea urchins, their morphology and development, with special reference to the mechanism of determination.
- PABIAN - taxonomy and paleoecology of Pennsylvanian and Permian echinoderms of the mid-Continental U.S.; (with Harrell L. Strimple).
- PARSLEY - monograph of Paracrinoidea; echinoderms of Lower Lexington Limestone (with John Pojeta); Ordovician and Devonian Mitrata of North America (with K. E. Caster).
- PAWSON - systematics of Indian Ocean holothurians and echinoids.
- PEARSE - possible neurosecretory control of reproduction in echinoids; growth lines in echinoid tests; reproduction in sea urchins.
- PECK - a restudy of Saccocoma cretacea Bather a cretaceous stemless crinoid.
- PETERSEN - respiratory metabolism in Asteroidea; gas exchange in holothurians (Thyonella, Cucumaria, Molpadia--with Dr. Kjell Johansen).

- PROKOP - Family Synbathocrinidae S. A. Miller 1869 from the Devonian of Bohemia (Crinoidea).
- ROMAN - Miocene and Eocene echinoids of Qatar (Arabia).
- ROSE - paleoecology of Tertiary echinoids from Mediterranean area.
- SALAZAR - photosensitivity in U. S. west coast echinoids; echinoderm behavior - effects on bottom equipment.
- SATO - crystallization and isolation of mitotic spindle protein from mature starfish oocytes; chromosome movement in artificially induced half-spindle of fertilized sea urchin eggs.
- SCURRY - variation in the Mesozoic echinoid Nucleolites: its functional paleoecological and taxonomic significance.
- SERAFY - echinoids of Gulf of Mexico; revision of genus Homolampas; variation in echinoid Lytechinus variegatus; zoogeography of North Atlantic echinoids.
- SOLOVJEV - classification and phylogeny of spatangoid echinoids; evolution of echinoids on the Cretaceous - Tertiary boundary.
- SOUZA SANTOS - ultrastructural and histochemical studies of the tube feet mucous granules of the starfish Echinaster brasiliensis.
- SPRINKLE - early evolution of attached echinoderms; new ord. Rhombiferan cystoids from Nevada; arm structures in Caryocrinites; new Upper Cretaceous brittle star and starfish occurrence in Austin, Texas; new Late Cambrian eocrinoid from the Wilberns Fm. of Texas; Middle Cambrian carpoids from the Spence Shale of Utah and Idaho.
- STANCYK - development and larvae ecology of estuarine ophiuroids; feeding of Luidia clathrata; subdivision of the environment by sympatric amphiuroid species.
- STEPHENSON - Conulus from English Chalk; Miocene regular echinoids from Malta.
- SUTTON - distribution of subtidal ophiuroid communities on continental shelf in Monterey Bay.
- TAHARA - secondary sexual characters in sea urchins, their morphology and development.
- THOMAS - systematics of tropical Atlantic echinoids.

TOMMASI - ophiuroids of subantarctic and Antarctic.

TURNER - systematics of asteroid genus Ctenodiscus; skeletal morphology, morphometric and meristic variability in Ctenodiscus crispatus.

UBAGHS - Crinoidea Camerata for Treatise on Invertebrate Paleontology; the Lower Ordovician eocrinoid Balantiocystis Chauvel; interpretation of the thecal plating of Aethoricus moorei Ubaghs, the oldest known dicyclic crinoid.

WOBBER - behavior of the asteroid Pycnopodia helianthoides.

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## Theses dealing with Echinoderms

Here are some additions to the list of recent theses included in Newsletter No. 3.

Master's theses

- Branstrator, J. 1969. A redescription of hudsonasterid (Asterozoa) types. University of Cincinnati.
- Dartnall, A. J. Taxonomy and biogeography of the sea star genus Patiriella in Tasmania. University of Tasmania.
- Doran, G. S. 1968. Ecology of Echinometra lucuntur (Linnaeus), a West Indian echinoid. McGill University, Montreal, Canada.
- Himmelman, J. H. 1969. Some aspects of the ecology of Strongylocentrotus droebachiensis in eastern Newfoundland. Memorial University of Newfoundland.
- Lees, D. C. 1970. The relationship between available food and movement in the sea urchin Strongylocentrotus franciscanus and S. purpuratus. San Diego State College.
- Stancyk, S. E. 1970. Studies on the biology and ecology of ophiuroids at Cedar Key, Florida. University of Florida, Gainesville.
- Turner, R. L. 1970. Skeletal morphology and general anatomy of the mud star, Ctenodiscus crispatus (Echinodermata: Asteroidea). University of Maine.

Ph.D. theses

- Branstrator, J. W. Generic redescription and ontogeny of North American Ordovician Asteroidea. University of Cincinnati.
- Fricke, H.-W. 1968. Beiträge zur Biologie der Gorgonenhäupter Astrophyton muricatum (Ophiuroidea, Gorgonocephalidae). Free University Berlin.
- Meyer, D. L. 1971. Functional morphology and autecology of shallow water unstalked crinoids (Echinodermata) of the Caribbean Sea. Yale University.
- Singletary, R. L. 1970. The biology and ecology of Amphioplus coniertodes Ophioneophthys limicola and Micropholis gracillima (Ophiuroidea: Amphiuridae). University of Miami.
- Sprinkle, J. 1970. Morphology and evolution of blastozoan echinoderms. Harvard University.

## Some Recent Publications and Papers in Press

This list is based on contributions from specialists and on reprints received by us. Of course it is by no means complete. Please note that many of the papers listed below as "in press" will have already been published.

- ALEXANDROWICZ, Z., 1971. Carboniferous Holothuroidea sclerites in the Upper Silesia coal basin (Southern Poland). *Ann. Soc. Geol. Pologne* 41 (2): 281-291.
- BAKER, A. N., 1972. *Araeosoma coriaceum* (A. Agassiz) and *Pseudoboletia indiana* (Michelin), new to New Zealand, with notes on other echinoids from the Bay of Plenty, New Zealand. *Records Dominion Museum* 8 (2): 9-19.
- BAKUS, G. J., In press. The biology and ecology of tropical holothurians. O. A. Jones and R. Endean (eds.), *Coral Reefs-Biology, Geology, Geography*. Academic Press.
- \_\_\_\_\_, In press. Marine studies on the north coast of Jamaica. *Atoll Res. Bull.* 15 pp.
- \_\_\_\_\_, In press. Ecology and toxicity of some holothurians. 14 pp.
- BEARDSLEY, A. J., 1971. "Beche-de-Mer" Fishery for Truk? *Commercial Fisheries Review*, 33 (7-8): 64-66.
- BERNASCONI, I. and M. M. D'AGOSTINO, 1971. Ofiuroideos Argentinos Claves Para Los Ordenes, Subordenes, Familias, Subfamilias Y Generos. *Physis*, Tomo XXX, no. 81: 447-469.
- BERNASCONI, I., 1972. Nuevas Especies de Asteroidea: *Bathybiaster herwigi* sp. nov. (Astropectinidae) Y *Calypraster vitreus* sp. nov. (Pterasteridae). *Physis*, Tomo XXXI, no. 82: 9-14.
- BINYON, J., 1972. The effects of diluted sea water upon podial tissues of the starfish *Asterias rubens* L. *Comp. Biochem. Physiol.*, 41A: pp. 1-6.
- BIRKELAND, C., 1971. Biological observations on Cobb Seamount. *Northwest Science*, 45 (3): 193-199.
- \_\_\_\_\_, and F.-S. CHIA, 1971. Recruitment risk, growth, age and predation in two populations of sand dollars, *Dendraster excentricus* (Eschscholtz) *J. Exp. mar. Biol. Ecol.*, v. 6: 265-278.
- \_\_\_\_\_, F.-S. CHIA and R. STRATHMANN, 1971. Development, substratum selection, delay of metamorphosis and growth in the sea-star *Mediaster aequalis* Stimpson. *Biological Bulletin*, 141 (1): 99-108.

- BLAKE, D. B., 1972. Sea Star Platasterias Ossicle morphology and taxonomic position. *Science*, v. 176, pp. 306-307.
- BOOLOOTIAN, R. A., In press. Selenka's "Mulleria" formosa re-discovered. (with Elisabeth Deichmann)
- BRANSTRATOR, J. W., 1972. Lanthanaster cruciformis, a new upper Ordovician sea star from Cincinnati, Ohio. *Journal of Paleontology* 46 (1): 66-69.
- BRITO, I. M., 1971. Contribuição Ao Conhecimento Dos Equinodermas da Ilha Da Trindade, Brasil. *Arq. Museu Nacional*, V. LIV, 261-265, 3 plates.
- BRUN, E., In press. Food and feeding habits of Luidia ciliaris (Philippi) (Echinodermata: Asteroidea). *J. mar. biol. Ass. U.K.*
- CAMPBELL, A. C., In press. Observation of Acanthaster planci and other coral reef echinoderms in the Red Sea. *Symp. Zool. Seoc. London.*, (1971), no. 28, 433-453. (with R. F. G. Ormond)
- CASO, M. E., In press. Situación taxonomica actual, morfología externa y ecología de Platasterias latiradiata.
- \_\_\_\_\_, In press. La importancia de Platasterias latiradiata en el estudio de los equinodermos.
- \_\_\_\_\_, In press. Morfología externe de Acanthaster planci (Linnaeus). *Memoirs of Symposium on Indian Ocean and Adjacent Seas.* India.
- \_\_\_\_\_, In press. Morfología externa e interna y ecología de Holothuria grisea Selenka.
- \_\_\_\_\_, In press. Estudio morfologica de Brissopsis alta Mortensen, erizo de profundidad.
- \_\_\_\_\_, In press. El aspecto economico de las Holothurias o Pepinos de Mar, en la alimentacion humana.
- \_\_\_\_\_, El genero Acanthaster. Su biología, ecología y su afecto destructor de los arrecifos.
- CHAN, Y. G., and A. R. FONTAINE, 1971. Is there a B-cell homolog in starfish? *Gen. Comp. Endocrin.*, 16: 183-191.
- CHESHER, R. H., In press. The status of knowledge of Panamanian echinoids, 1971, with comments on other echinoderms. *Bull. Biol. Soc. Washington* 2: 139-158.
- \_\_\_\_\_, In press. A new Paraster (Echinoidea: Spatangoida) from the Caribbean. *Bull. Mar. Sci.*
- \_\_\_\_\_, In press. Echinoids as pollution sensitive animals.

- CLARK, A. M. and F. W. E. ROWE, 1971. Monograph of Shallow-Water Indo-west Pacific Echinoderms. British Museum (Natural History) London. xii + 238 p. + 31 p. pl. with legends; ill.
- \_\_\_\_\_ and J. D. TAYLOR, 1971. Echinoderms from Diego Garcia. Atoll Research Bulletin No. 149, pp. 89-92.
- CLARK, H. E. S., 1971. Pentopliidae, a new family of Asteroidea from the South Atlantic Ocean. Bulletin of Marine Science, 21 (2): 545-551.
- \_\_\_\_\_, 1972. Knightaster, a new genus of asteroid from Northern New Zealand. J. Roy. Soc. New Zealand 2 (2): 147-150.
- CRUMP, R. G., 1971. Annual reproductive cycles in three geographically separated populations of Patiriella regularis (Verrill), a common New Zealand asteroid. J. exp. mar. Biol. Ecol. 7: pp. 137-162.
- DARTNALL, A., 1971. A sea star of genus Ctenodiscus from Tasmania. Proc. Linn. Soc. N.S.W., 96 (1): 50-52.
- \_\_\_\_\_, 1971. Australian Sea Stars of the genus Patiriella (Asteroidea Asterinidae). Proc. Linn. Soc. N.S.W., 96 (1): 39-49.
- \_\_\_\_\_, 1972. A brooding echinoid from Tasmania. Proc. Linn. Soc. N.S.W., 97 (1): 30-34.
- \_\_\_\_\_, 1972. Sea urchin that carries its young. Australian Natural History, 172-173.
- \_\_\_\_\_, 1972. Sea stars of Tasmania. Tasmania Year Book 1972: 72-79.
- \_\_\_\_\_, In press. Littoral Biogeography (includes echinoderms) in Biogeography and Ecology in Tasmania. W. William Ed. Junk, The Hague.
- DOMANTAY, J. S., 1972. Monographic studies and check list of Philippine littoral echinoderms. Acta Mailana A9 (15): 36-161.
- EBERT, T.A., 1971. A preliminary quantitative Survey of the Echinoid Fauna of Kealakekua and Honaunau Bays, Hawaii. Pacific Science, Vol. XXV (1): 112-131.
- FECHTER, H., 1972. Untersuchung über den Wasserwechsel der Seeigel und seine Bedeutung für Atmung und Exkretion. Helgoländer wiss. Meeresunters., 23, 80-99.
- FENNER, D. H., 1971. A comparative study of the respiratory adaptations of the podia of echinoids. Biol. Bull., 141: 385-386.

- GUILLE, A., 1971. Nouvelle signalisation de Anseropoda lobiancoi (Ludwig) dans la region de Banyuls/mer. Vie Milieu, XXI (2A): 505-506.
- \_\_\_\_\_, In press. Note sur l'Holothurie Dendrochirote Phyllophorus granulatus (Grube). Vie Milieu, XXII (2A). (en coll. avec G. Cherbonnier)
- \_\_\_\_\_, In press. Nouvelle description de Ophiosphaera insignis (Brock) et position systématique de genre Ophiosphaera. Bull. Mus. His. Nat. (en coll. avec G. Cherbonnier)
- HAYASHI, R. and KOMATSU, In press. Development of the sea-star Certonardoa semiregularis. Proc. Japan. Soc. System. Zool., 7..
- HEATFIELD, B. M., 1971. Growth of the Calcareous Skeleton during Regeneration of Spines of the Sea Urchin, Strongylocentrotus purpuratus (Stimpson): A light and scanning electron microscopic study. The Journal of Morphology 134 (1): 57-89.
- HESS, H., 1971. Über einige Echiniden aus Dogger und Malm des Schweizer Juras. Eclogae geol. Helv., Vol. 64/3, Seiten 611-633.
- \_\_\_\_\_, 1972. Chariocrinus n. gen. für Isocrinus andreae Desor aus dem unteren Hauptrogenstein (Bajocien) des Basler Juras. Eclogae geol. Helv. 65 (1): 197-210.
- \_\_\_\_\_, 1972. Planktonic crinoids of Late Jurassic age from Leg 11, Deep Sea Drilling Project. In Hollister, C. D., et al 1972 Initial reports of Deep Sea Drilling Project vol. 11, Washington.
- \_\_\_\_\_, 1972. Eine Echinodermen-Fauna aus dem mittleren Dogger des Aargauer Juras. Schweizerische Paläontologische Abhandlungen 92: 1-87, 23 pls.
- HIMMELMAN, J. H. and D. H. STEELE, 1971. Foods and predators of the green sea urchin Strongylocentrotus droebachiensis in Newfoundland waters. Marine Biology, 9 (4): 315-322.
- HYNDA, V. A. and G. M. POMYANOVSKOYA, 1971. On Echinodermata from Ordovician Volhynian. Paleontological Magazine 8: 47-50.
- JAMES, D. B. and J. S. PEARSE, 1971. Echinoderms from the Gulf of Suez and Northern Red Sea. J. Mar. Biol. Ass. India 11: 78-125.
- JAMES, D. B., In press. Beche-de-mer resources of India. Proc. Symp. Living Resources.
- \_\_\_\_\_, In press. Studies on Indian echinoderms - 3. Ophiarthrum pictum (Muller and Troschel) a new record from the Indian Ocean with additional notes on the species. J. Mar. Biol. Ass. India., v. 12 (1).

- \_\_\_\_\_, In press. Studies on Indian echinoderms - 4. On the brittle stars Amphioplus graveleyi sp. nov. and Amphioplus depressus (Ljungman) from the Indian coasts. J. Mar. biol. Ass. India, v. 12 (1).
- \_\_\_\_\_, In press. Studies on Indian echinoderms - 5. Redescription of the holothurian Havelockia versicolor (Semper) with notes on its synonymy. J. Mar. biol. Ass. India.
- \_\_\_\_\_, In press. Studies on Indian echinoderms - 6. On a new record of an asteroid Halityle regularis Fisher from the Indian Ocean. J. Mar. biol. Ass. India.
- \_\_\_\_\_, In press. Studies on Indian echinoderms - 7. On the little known holothurian Pseudocolochirus violaceus (Theel) with additional notes on the species. J. Mar. biol. Ass. India.
- \_\_\_\_\_, In press. Note on the development of the asteroid Asterina burtoni Gray. J. Mar. biol. Ass. India.
- \_\_\_\_\_, In press. History of echinodermology of the Indian Ocean. Pro. Sym. Indian Ocean.
- JANGOUX, M. and E. VAN IMPE, 1971. Etude comparative des activités phosphomonoestérasiqes alcalines du tube digestif de plusieurs espèces d'Astéroïdes (Echinodermes) précédée d'une note anatomique. Cahiers de Biologie Marine, Tome XII, pp. 405-418.
- JANGOUX, M., 1972. La structure fine des caecums rectaux de deux Asteriidae: Marthasterias glacialis (L) et Coscinasterias tenuispina (Lam) (Echinodermata, Asteroidea). Z. Zellforsch. 128, 366-384.
- JENSEN, M., 1972. The Ultrastructure of the echinoid skeleton. Sarsia 48: pp. 39-48 and plates.
- JESPERSEN, A. and J. LÜTZEN, 1971. On the ecology of the Aspidochirote sea cucumber Stichopus tremulus (Gunnerus) Norwegian Journal of Zoology 19 (2): 117-132.
- KALABIS, V., 1970. Einige echiniden aus der Senon-Ablagerungen van Murgui ir der Osttünkei. Casopis moravského Musea 55: 31-40.
- KANATANI, H. AND S. HIRAI, 1971. Site of production of meiosis-inducing substance in ovary of starfish. Exptl. Cell Res. 67: 224-227.
- \_\_\_\_\_ and H. SHIRAI, 1971. Chemical structural requirements for induction of oocyte maturation and spawning in starfishes. Development, Growth, and Differentiation 13: 53-64.
- \_\_\_\_\_, S. IKEGAMI, H. SHIRAI, H. OIDE, and S. TAMURA, 1971. Purification of gonad-stimulating substance obtained from radial nerves of the starfish, Asterias amurensis. Development, Growth, and Differentiation, 13 (3): 151-164.

- \_\_\_\_\_, S. HIRAI, and J. KUBOTA, 1971. Induction of cytoplasmic maturation by 1-Methyladenine in starfish oocytes after removal of the germinal vesicle. *Experimental Cell Research*, 68, pp. 137-143.
- \_\_\_\_\_, S. IKEGAMI, and H. SHIRAI, 1971. On the occurrence of progesterone in ovary of the Starfish, *Asterias amurensis*. *Zoological Magazine*, 80 (1): 26-28.
- KESLING, R. V., 1971. *Antiquaster magrumi*, a new unusual brittle-star from the middle devonian silica formation of northwestern Ohio. *Contrib. Museum of Paleontology, The University of Michigan*, v. 23, no. 10, pp. 181-191.
- \_\_\_\_\_, 1971. Arms of *Decadocrinus hughwingi* Kesling. *Contrib. Museum of Paleontology, The University of Michigan*, vol. 23, no. 11, pp. 193-199.
- \_\_\_\_\_, 1971. *Dolatocrinus kutasii*, a new crinoid from the middle devonian bell shale of Michigan. *Contrib. Museum of Paleontology, The University of Michigan*, v. 23, no. 12, pp. 201-211.
- \_\_\_\_\_, 1971. *Logocrinus brandoni*, a new inadunate crinoid from the middle devonian silica shale of Ohio. *Contrib. Museum of Paleontology, The University of Michigan*, v. 23, no. 13, pp. 213-220. (with James P. Sigler and Donald White)
- \_\_\_\_\_, 1971. *Agostocrinus* and *Acolocrinus*, two new ordovician crinoids with peculiar ray and respiratory structures. *Contrib. Museum of Paleontology, The University of Michigan*, v. 23, no. 14, pp. 221-237. (with Christopher R. C. Paul)
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### Questionnaire

The questionnaire below was sent by Mr. Paul Mayo, Institute of Marine Biochemistry, St. Fittick's Road, Aberdeen AB1 3RA, Scotland. If you have information on the topic, please complete the questionnaire and return it to Mr. Mayo.

#### Distribution

1. Have you observed Crossaster papposus in your locality? YES/NO
  - 1a. If so, where exactly? Location and depth.
  
2. Have you observed Asterias rubens in your locality? YES/NO
  - 2a. If so, where exactly? Location and depth.
  
3. Have you observed any other species of Crossaster/Solaster in your locality? Location and Depth. YES/NO
  - 3a. If so, where and which species exactly?

#### Escape Responses

4. Have you observed an escape response by A. rubens to C. papposus? YES/NO
  - 4a. If so, any details? e.g., Nature of response, Whether in lab. or in the sea?
  
5. Do you have any other observations on escape reactions of A. rubens?

Predation

6. Have you observations or information on whether A. rubens is predated upon by C. papposus?
  
7. Do you have any other observations of sea star predators of A. rubens?

Other Information

8. Do you have any information or observations on phenomena similar to this but involving different species of sea stars?
  
  9. Other apt comments or suggestions.
  
  10. My thanks and best wishes,      PAUL MAYO.
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Name \_\_\_\_\_  
                                last                                first                                middle

Address (if recently changed) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Current research project(s):

Recent publications (within last year) and papers in press:

Suggestions and requests:

(please complete and return to editors)