

040

14

BRUCE COULL

PSAMMONALIA



NEWSLETTER OF THE ASSOCIATION OF
MEIOBENTHOLOGISTS

PSAMMONALIA

Newsletter of the Association of Meiobenthologists

Number 14

October 1971.

Editor : JOHN E. GRAY, Wellcome Marine Laboratory,
University of Leeds, Robin Hood's Bay,
Yorkshire, ENGLAND.

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

OFFICERS OF THE ASSOCIATION OF MEIOBENTHOLOGISTS

Executive Committee :

Chairman : JOHN S. GRAY, Wellcome Marine Laboratory,
University of Leeds, Robin Hood's Bay,
Yorkshire, England.

Committee :
Members

W. DUANE HOPE, Department of Invertebrate
Zoology, Museum of Natural History, Smithsonian
Institution, Washington D.C.20560, U.S.A.
ROBERT P. HIGGINS, Mediterranean Marine Sorting
Center, Khereddine, Tunisia.
WILFRIED WESTHEIDE, II Zoologisches Institut
und Museum der Universitat, Berlinerstrasse 28,
34 Gottingen, Germany.
DONALD J. ZINN, Department of Zoology,
University of Rhode Island, Kingston,
Rhode Island, 02881, U.S.A.

Board of
Correspondents:

PHILLIPE BODIN, Antennes de la S.M.B.,
C.R.E.O. Aleedes Tamaris 17, La Rochelle,
France ; CLAE CLAUSEN, Zoological Laboratory,
University of Bergen, Bergen, Norway ;
BRUCE C. COULL, Department of Biology, Clark
University, Worcester, Mass.01610, U.S.A. ;
TOM FENCHEL, Institute of Zoology, University
of Aarhus, DK 8000, Aarhus C, Denmark ;
LILIANA FORNERIS, Departamento de Zoologie,
Caixa Postal 8105, Sao Paulo, Brazil ;
TAIJI KIKUCHI, Amakusa Marine Biological
Laboratory, Lomioko, Reinhoku-cho, Amakusc,
Kuamoto-ken, Japan ; LELAND W. POLLOCK,
S.E.F., Marine Biological Laboratory,
Woods Hole, Mass.02543, U.S.A. ; JEANNE
RENAUD-MORNANT, Laboratoire de Zoologie,
Museum d'Histoire Naturelle, 57 Rue Cuvier,
Paris, Ve, France ; FRANZ RIEMANN, Institut
fur Meeresforschung, Am Handelshafen 12,
385 Bremerhaven, Germany ; PETER SCHMIDT,
II Zoologische Institut und Museum der
Universitat, Berlinerstrasse 28, 34 Gottingen,
Germany ; WOLFGANG STERRER, Bermuda Biological
Station for Research, St. George's West, Bermuda.

EDITORIAL

The request for nominations for committee members has met with a good response. This is most encouraging as it shows that the Association is maintaining its appeal to a wide audience.

There has been a little misunderstanding on the nomination procedure, probably due to translation difficulties. May I try and clarify this.

According to our new Constitution the editor (Chairman) asks for names of candidates for any committee vacancies that may fall. The names must be proposed and seconded by two members of the Association. Following this the editor then writes to each person whose name is put forward to see whether or not they are prepared to stand for Office. Following this all the names are put forward and the members then can vote for the candidates they think best suited for the job.

This is the stage we have reached. Overleaf you will find the voting slips which I trust you will all complete.

The cover has met with widespread approval, but I would like to have a new one for next year. Does anyone feel willing to agree to design another one ?

John S. Gray
Editor.

ELECTION OF TWO COMMITTEE MEMBERS OF
THE ASSOCIATION OF MEIOBENTHOLOGISTS

The following nominations for the two vacant positions
on the committee of the Association have been received.

- | | | |
|-----------|---|---|
| Candidate | : P.J.S.BOADEN,
Department of Zoology,
Queen's University,
Belfast,
N. Ireland | Proposed by A.D.MCINTYRE
Seconded by H.M.PLATT |
| Candidate | : W.D.HUMMON
Department of Zoology,
Ohio University,
Athens,
Ohio 45707, U.S.A. | Proposed by L.W.POLLOCK
Seconded by D.J.ZINN |
| Candidate | : C.JOUIN,
Laboratoire de Zoologie,
Faculté des Sciences,
9, Quai St. Bernard,
75, Paris Ve,
France. | Proposed by P.AX
Seconded by P.SCHMIDT |
| Candidate | : A.D.MCINTYRE
Marine Laboratory,
P.O. Box 101,
Victoria Road,
Aberdeen,
Scotland. | Proposed by B.C.COULL
Seconded by E.W.LINDGREN |
| Candidate | : J.RENAUD-MORNANT,
Laboratoire de Zoologie,
Muséum d'Histoire
Naturelle,
57, Rue Cuvier,
75, Paris Ve,
France. | Proposed by W.WESTHEIDE
Seconded by P.SCHMIDT |

Candidate : J.H.TIETJEN,
Department of Biology,
City College of New York,
138th St. at Convent Av.,
New York 10031,
U.S.A.

Proposed by D.J.ZINN
Seconded by J.J.LEE

VOTING SLIPS

In addition I have today banked U.S. \$56 - and
£9.87 which should realise assets of around £33.90.
So the assets of the Association are healthy.

SUBSCRIPTIONS

Still over half the membership has not paid their dues.
In accordance with the Constitution I give notice that
unless dues are paid promptly your membership rights
of the association will be cancelled.

NEWS FROM THE MEMBERS

DAVID DOW.

"I hope to start a programme measuring chemically the respiratory activity of sediment communities and the environmental factors affecting this parameter. This will be at my new address in Williamsburg, Virginia."
(see address changes. ed.)

A.C.BORROR.

"I have, in finished manuscript form, a key to the families of marine ciliated protozoa. This key is being prepared as one of a series of keys to be published by the Systematics Ecology Program, Marine Biological Laboratory at Wood's Hole. Although not generally available, this key should be available for use within a year or so. Those interested in having access to such a key should write to me or to Dr. Melbourne E. Carriker, Director, Systematics Ecology Program, Biological Lab., Wood's Hole, Mass. 02543, U.S.A.

MEIOBENTHIC RESEARCH OPPORTUNITIES IN BERMUDA

Wolfgang E. Sterrer, Director, Bermuda Biological Station was recently awarded a grant by the National Science Foundation for a project entitled "Marine Meiofauna of Bermuda and the North Atlantic". The project is for two years, and also involves Mrs. Christiane Schöpfer-Sterrer.

The main emphasis will be on systematics and zoogeography of interstitial fauna (with Wolfgang working on Gnathostomulida and Turbellaria, and Christiane on Gastrotricha), as well as deep-sea meiofauna.

We would be very pleased to have other meiobenthologists work with us on the project. Although funds are limited, there will be several means of providing at least partial support for travel, subsistence or laboratory fees. If you are interested please contact :

Dr. W. E. Sterrer, Director,
Bermuda Biological Station,
St. George's West, Bermuda.

14-October 71

-8-

CHANGES OF ADDRESS

D.DOW,
College of William & Mary,
Department of Biology,
Williamsburg,
Virginia 23185,
U.S.A.

R.P. HIGGINS,
Office of Oceanography
& Limnology,
Smithsonian Institution,
Washington D.C. 20560,
U.S.A.

M.J.TYNEN,
53, Newstead Road,
Abbey Hulton,
Stoke-on-Trent ST2 8HU,
England.

B.-O. JANSSON,
Department of Environmental
Engineering,
Area Code 904,
University of Florida,
Gainesville,
Florida 32601,
U.S.A.

(September 15th, 1971 -
September 15th, 1971).

E.W. LINDGREN,
Department of Biology,
University of Puget Sound,
Tacoria,
Washington 98416,
U.S.A.

Bibliography of the Gnathostomulida.
W.E.STERRER, Bermuda Biol. Stn., St. George's West,
Bermuda.

Since 1956, more than 60 papers dealing with or mentioning Gnathostomulida have been published (or are in press). Only in 1969 did the first papers begin to appear in American journals and in English, whereas all the earlier literature is scattered over several European journals and almost exclusively in German.

To facilitate further investigation, the complete bibliography is given below, preceded by a classification of the papers into ten major categories.

1. Original descriptions : Ax (1956), Gerlach (1958), Kirsteuer (1964, 1969a, 1970), Mamkaev (1961), Riedl (1970a, 1970b, 1971a, 1971b), Sterrer (1965, 1966a, 1966b, 1969, 1970a, 1971a, 1971b, 1972a).
2. Complementary descriptions : Ax (1964a, 1964b, 1965), Graebner (1968a, 1968b, 1969), Riedl (1966, 1969a, 1971b), Sterrer (1965, 1966a, 1966b, 1969, 1971b, 1972a).

3. Mentions (no new contributions) : Ax (1966b, 1966c), Riedl (1965), Swedmark (1964).
4. Ecology and distribution (see also "original descriptions") Ax (1964, 1965), Boaden (1965, 1966), Fenchel & Riedl (1970), Fize (1964), Karling (1962), Kirsteuer (1969b), Riedl (1969a), Salvini-Plawen (1968), Sterrer (1970b), Swedmark & Teissier (1967), Ulig (1964, 1968).
5. Cleavage : Riedl (1969a).
6. Postembryonic development : Riedl (1969a, 1970a, 1971b), Sterrer (1969, 1971b, 1971c).
7. Biology : Riedl (1969a, 1970a, 1970b, 1971a, 1971b), Sterrer (1969, 1971b, 1971c).
8. Ultrastructure : Graebner (1968a, 1968b, 1969), Riedl (1969a), Riedl & Rieger (1972).
9. Systematics and relationships : Ax (1956, 1960, 1961, 1964a, 1965, 1966a), Delamare-Deboutteville (1960), Durden, Rpdgers, Yochelson and Riedl (1969), Hendelberg (1969), Karling (1963), Mamkaev (1961), Ochietti & Cailleux (1969), Reisinger (1961), Romane (1958), Riedl (1969a, 1970a, 1970b, 1971a, 1971b), Steinböck (1958a, 1958b), Sterrer (1965, 1966b, 1969, 1970a, 1971a, 1971c, 1972a, 1972b), Yochelson (1971).
10. Review articles : Ax (1966a), Delamare-Deboutteville (1960), Riedl (1969a), Riedl & Sterrer (1970), Sterrer (1970b, 1971b, 1971c, 1972b), Sterrer & Riedl (1970).

REFERENCES

- AX, P. 1956. Die Gnathostomulida, eine rätsechafte Wurmgruppe aus dem Meeressand. Abh. Akad. Wiss. u. Lit. Mainz, math. - nat. Kl. 8 : 1-32.
- AX, P. 1960. Die Entdeckung neuer Organisationstypen im Tierreich. Die neue Brehm-Bucherei, Band 258, A. Ziemsen Verlag, Wittenberg. 116pp.
- AX, P. 1961. Verwandtschaftsbeziehungen und Phylogenie der Turbellarien. *Ergebn. d. Biol.* 24 : 1-68.
- AX, P. 1964a. Das Hautgeisselepithel der Gnathostomulida. *Verh. Dtsch. Zool. Ges. München* 1963 : 452-461.
- AX, P. 1964b. Die Kieferapparatur von *Gnathostomaria lutheri* Ax (Gnathostomulida). *Zool. Anz.* 173 : 174-181.
- AX, P. 1965. Zur Morphologie und Systematik der Gnathostomulida. Untersuchungen an *Gnathostomula paradoxa* Ax. *Z. Zool. Syst. Evol.forsch.* 3 : 259-276.

- AX, P. 1966a. Eine neue Tierklasse aus dem Litoral des Meeres - Gnathostomulida. Umschau in Wissenschaft u. Technik 66 : 17-23.
- AX, P. 1966b. Die Bedeutung der interstitiellen Sandfauna für allgemeine Probleme der Systematik, Ökologie und Biologie. Veröff. Inst. Meeresforsch. Bremerhaven, Sonderband 2 : 15-66.
- AX, P. 1966c. Das chordoide Gewebe als histologisches Lebensformmerkmal der Sandlückenfauna des Meeres. Naturwissenschaftliche Rundschau. Juli 1966, 282-289.
- BOADEN, P.J.S. 1965. Interstitial fauna from Porto Paone. Pubbl. Staz. Zool. Napoli 34 : 235-239.
- BOADEN, P.J.S. 1966. Interstitial fauna from Northern Ireland. Veröff. Inst. f. Meeresforsch. Bremerhaven, Sonderband 2 : 125-130.
- DELAMARE-DEBOUTTEVILLE, C. 1960. Biologie des eaux souterraines littorales et continentales. Actualités scientifiques et industrielles 1280, Hermann, Paris, 740pp.
- DURDEN, C.J., RODGERS, E., YOCHELSON & R. RIEDL. 1969. Gnathostomulida : is there a fossil record ? Science 164 : 855-856.
- FENCHEL, T.M. & R.J. RIEDL. 1970. The sulfide system : a new biotic community underneath the oxidized layer of marine sand bottoms. Marine Biology 7 : 255-268.
- FIZE, A. 1964. Contribution à l'étude de la microfaune des sables littoraux du Golfe d'Aigues-Mortes. These No 291, Faculté des Sciences de Montpellier : 671-775.
- GERLACH, S.A. 1958. Ein neuer Vertreter der Gnathostomulida (Turbellaria ?) aus dem Meeressand der Malediven, Kieler Meeresforsch. 14 : 175-176.
- GRAEBNER, I. 1968a. Erste Befunde über die Feinstruktur der Exkretionszellen der Gnathostomulidae (Gnathostomula paradoxa. (Ax 1956) und Austrognathia riedli, (Sterrer 1965). Mikroskopie 23 : 277-292.
- GRAEBNER, I. 1968b. Ergebnisse einer elektronenmikroskopischen Untersuchung von Gnathostomuliden. Verhandlungen der Deutschen Zoologischen Gesellschaft in Innsbruck 1968 : 580-599.

- GRAEBNER, I. 1969. Vergleichende elektronenmikroskopische Untersuchung der Spermienmorphologie und Spermiogenese einiger Gnathostomula-Arten : *Gnathostomula paradoxa* (Ax 1956), *Gnathostomula axi* (Kirsteuer 1934), *Gnathostomula jenneri* (Riedl 1969). *Mikroskopie* 24 : 131-160.
- HENDELBERG, J. 1969. On the development of different types of spermatozoa from spermatids with two flagella in the Turbellaria with remarks on the ultrastructure of the flagella. *Zool. Bidrag Uppsala* 38 : 1-50.
- HENDELBERG, J. 1971. Spermatogenesis, sperm morphology and biology of fertilization in the Turbellaria. *Proc. of the L.H.Hyman Mem. Symposium.* (in press).
- KARLING, T.G. 1962. *Gnathostomula paradoxa* Ax, 1956 (*Gnathostomulida*) from the vicinity of Bergen, Norway. *Sarsia* 7 : 23-24.
- KARLING, T.G. 1963. Some Evolutionary Trends in Turbellarian Morphology. In : *The Lower Metazoa. Comparative Biol. & Phyl.* U. of Calif. Press, 1963. 478 pp. Dougherty, E.C. (editor).
- KIRSTEUER, E. 1964. Eine neue *Gnathostomulidae* aus der Mangroveregion des Archipels Los Roques, Venezuela. *Zool. Anz.* 172 : 436-440.
- KIRSTEUER, E. 1969a. On some species of *Gnathostomulida* from Bimini, Bahamas. *Amer. Mus. Novit.* 2356 : 1-21.
- KIRSTEUER, E. 1969b. *Gnathostomulida* - a new component of the benthic invertebrate fauna of Lagoons. *Mem. Symp. Intern. Lagunas Costeras, UNAM. UNESCO* : 537-544.
- KIRSTEUER, E. 1970. On some species of Meiobenthic worms of the Class *Gnathostomulida* from Barbados, West Indies, *Amer. Mus. Novitates.* 2432 : Sept.1970.
- MAMKAEV, YU. V. 1961. A new representative of the *Gnathostomulids* : *Gnathostomula murmanica* sp. n. *Doklady Akad. Naukr. SSSR.* 141 : 1501-1504. English translation : *Doklady Biol. Sci. Sect. Transl.* 141 : 115-117.
- OCHIETTI, S. & A.CAILLEUX. 1969. Comparaison des Conodontes et des machoires de *Gnathostomulides*. *C.R.Acad. Sc. Paris* 268 : 2664-2666.
- REISINGER, E. 1961. Morphologie der Coelenteraten, acoelomaten und pseudocoelomaten Würmer. *Fortschr. d. Zool.* 13 : 1-82.

- REMANE, A. 1958. Zur Verwandtschaft und Ableitung der niederen Metazoen. Verh. Dtsch. Zool. Ges. Graz 1957: 181-196.
- RIEDL, R. 1965. Vierzehn für die Adria neue Tiergruppen Bull. Sci. Conseil. Acad. RSF Yougoslavie, Section A-Zagreb 10 : 274.
- RIEDL, R. 1966. Faunistische Studien am Roten Meer im Winter 1961/62, III. Die Aufsammlungen in Suez und Al-Ghardaqa, nebst einigen Bemerkungen über Gnathostomulida. Zool. Jb. Syst. 93 : 139-157.
- RIEDL, R. 1969. Gnathostomulida from America. First record of the new phylum from North America. Science 163 : 445-452.
- RIEDL, R. 1970a. On Labidognathia longicollis, nov. gen., nov. spec. from the West Atlantic Coast (Gnathostomulida). Internat. Rev. der ges. Hydrobiol. 55 : 227-244.
- RIEDL, R. 1970b. Semaecognathia, a new genus of Gnathostomulida from the North American coast. Internat. Rev. der ges. Hydrobiol. 155 : 359-370.
- RIEDL, R. 1971a. On Onychognathia, a new genus of Gnathostomulida from the tropical and subtropical West Atlantic. Internat. Rev. der ges. Hydrobiol. (in press).
- RIEDL, R.J. 1971b. On the genus Gnathostomula (Gnathostomulida). Internat. Rev. der ges. Hydrobiol. (in press).
- RIEDL, R. & R. RIEGER. (1972). New characters observed on isolated jaws and basal plates of the family Gnathostomulidae). Mikroskopie (in press).
- RIEDL, R.J. & W. STERRER. 1970. Gnathostomulida. McGraw-Hill Encyclopedia of Science and Technology.
- RIEGER, R. & W. STERRER. 1972. Ultrastructural evidence against a platyhelminth relationship of Gnathostomulida. (in press).
- SALVINI PLAWEN, L. 1968. Neue Formen in marinen Mesopsanmon: Kamptozoa und Aculifera. Ann. Nat. Mus. Wien. 72 : 231-272.
- STEINBOCK, P. 1958a. Zur Phylogenei der Gastrotrichen. Verh. Dtsch. Zool. Ges. Graz 1957 : 128;169.
- STEINBOCK, O. 1958b. Schlusswort zur Diskussion Remane-Steinbock. Verh. Dtsch. Zool. Ges. Graz 1957 : 196-218.

- STERRER, W. 1965. *Gnathostomula axi* Kirsteuer und *Austrognathia* (ein weiteres *Gnathostomuliden*-Genus) aus der Nordadria. *Z. morph. Okol. Tiere* 55 : 783-795.
- STERRER, W. 1966a. *Gnathostomula paradoxa* Ax und Vertreter von *Pterognathia* (ein neues *Gnathostomuliden*-Genus) von der schwedischen Westküste. *Ark. f. Zool.* 18 : 405-412.
- STERRER, W. 1966b. Neue *Gnathostomulida*. *Veröff. Inst. Meeresforsch. Bremerhaven, Sonderband 2* : 201-207.
- STERRER, W. 1966c. New polyolithophorous marine Turbellaria. *Nature* 210 : 436.
- STERRER, W. 1969. Beiträge zur Kenntnis der *Gnathostomulida*. I. Anatomie und Morphologie des Genus *Pterognathia* Sterrer. *Ark. f. Zool.* 22 : 1-125.
- STERRER, W. 1970a. On some species of *Austrognatharia*, *Pterognathia* and *Haplognathia* nov. gen. from the North Carolina coast (*Gnathostomulida*). *Intern. Rev. der ges. Hydrobiol.* 55 : 371-385.
- STERRER, W. 1971a. *Agnathiella beckeri* nov. gen. nov. spec. from southern Florida : the first gnathostomulid without jaws. *Intern. Rev. der ges. Hydrobiol.* 56 : 215-225.
- STERRER, W. 1971b. On the biology of *Gnathostomulida*. *Proc. 3rd. Europ. Mar. Biol. Symposium Arcachon*° (in press).
- STERRER, W. 1970b. *Gnathostomulida*. In : R.Riedl : *Fauna and Flora der Adria*, 2. Auflage, P. Parey, Hamburg und Berlin.
- STERRER, W. 1971c. *Gnathostomulida*. In : A Manual for the study of Meiofauna, N.C.Hulings and J.S.Gray, editors. *Smithsonian Contributions to Zoology* 78 : 1-83.
- STERRER, W. 1971d. *Gnathostomulida* : problems and procedures. In *Proceedings of the first International Conference on Meiofauna*, N.C.Hulings, editorm *Smithsonian Contributions to Zoology* 76.
- STERRER, W. 1971e. *Gnathostomulida*. In : *Reproduction of Marine Invertebrates*. A.C.Giese and J.S.Pearse, editors. (in press).
- STERRER, W. 1972a. On *Nanognathia*, a new gnathostomulid genus from the east coast of the United States. *Internat. Rev. der ges. Hydrobiol.* (in press).

- STERRER, W. 1972b. Systematics and evolution within the Gnathostomulida. Syst. Zool. (in press).
- STERRER, W. & R.J.RIEDL. 1970. Gnathostomulida. McGraw-Hill Yearbook of Science and Technology.
- SWEDMARK, B. 1964. The Interstitial fauna of marine sand. Biol. Reviews 39 : 1-42.
- SWEDMARK, B. & G.TEISSIER. 1967. Structure et adaptation d'*Halammohydra adherens*. Cahiers de Biol. Mar. 8 : 63-74.
- UHLIG, G. 1964. Eine einfache Methode zur Extraktion der vagilen, mesopsammalen Mikrofauna. Helgol. Wiss. Meeresunters. 11 : 170-185.
- UHLIG, G. 1968. Quantitative Methods in the study of Interstitial Fauna. Trans. of the Amer. Microsc. Soc. 87 (2) : 226-232.
- YOCHELSON, E.L. 1971. Phylum and Glass Nomenclature in Systematics. Systematic Zool. 20 (2) : 245-249.

RECENT LITERATURE

- ABRAHAMSEN, G. & L.STRAND. 1970. Statistical analysis of population density data of soil animals, with particular reference to Enchytraeidae (Oligochaeta). Oikos, 21 : 276-284.
- C.AMOROS & J.JUGET. 1970. Données préliminaires sur la fauna planctonique et bentique de deux étangs piscoles de la Dombes (Ain). - Annales Limnol. 6 : 215-227.
- A.DRASSY, I. 1970. Nematoden aus einigen Fluss-systemen Süd afrikas.- Opusc. Zool. Bpest. 10 : 179-219.
- ANDRASSY, I. 1970. Freilebende Nematoden aus Vietnam. - Opusc. Zool. Bpest. 10 : 5-31.
- ALTHERR, E. 1969. Contribution à la connaissance des Nématodes des grottes et des eaux interstitielles de Suisse. - Bull. Soc. Vand. Sc. Nat. 70, 331 pp. 255-267.
- ALTHERR, E. 1971. Contribution à la connaissance des nématodes cavernicoles de Rommanie. Bull. Soc. Vand. Sc. nat. 71, No.335 p. 23-46.

BAKER, J.E. 1971.
Seasonal effects of
oil pollution on salt
marsh vegetation.
Oikos, 22 : 106-110.

BARNETT, P.R.O. 1971.
Some changes in inter-
tidal sand communities
due to thermal pollution.
Proc. Roy. Soc. Lond.,
B, 177 : 353-364.

BATOOSINGH, E. &
E.H. ANTHONY. 1971.
Direct and indirect
observations of
bacteria on marine
pebbles. Canadian
Journal of Micro-
biology 17 (5) :
655-664.

BODIN, PH. 1971.a.
Catalogue des nouveaux
Copépodes Harpacti-
coides marins. Ad-
ditif no.1. Téthys,
2 (4) : 881-907.

BODIN, PH. 1971b.
Copépodes Harpacti-
coides marins des
environs de La Rochelle.
2. Espèces de la zone
intertidale d'Yves.
Téthys, 3(1), sous
presse.

BODIN, PH. 1971.?.
Copépodes Harpacti-
coides marins des
environs de La Rochelle.
3. Espèces de la zone
intertidale de Fouras-
Nord. Téthys, sous
presse.

BRATTEGARD, TORLEIV.
1970. Mysidacea from
shallow water in the
Bahamas and Southern
Florida, Part 2.
Sarsia 41 : 1-36.

BRATTEGARD, TORLEIV.
1970. Mysidacea from
shallow water in the
Caribbean Sea. Sarsia.
43 : 111-154.

BRATTEGARD, TORLEIV.
1970. Leptostraca from
shallow water in the
Bahamas and Southern
Florida. Sarsia 44 : 1-8.

BRYAN, G.W. 1971.
The effects of heavy
metals (other than
mercury) on marine and
estuarine organisms.
Proc. Roy. Soc. Lond.
B., 177 : 389-410.

CALABRESE, A. 1970.
The pH tolerance of
embryos and larvae of
the coot clam, Mulina
lateralis. Veliger 13:
122-126.

CLOGSTON, F.L. 1965.
Post-embryonic develop-
ment of species of harpac-
ticoid copepods from the
Pacific coast of the U.S.
and an application of
developmental patterns to
their systematics. Ph.D.
Thesis, Univ. of Washing-
ton, 246 pp.

COULL, B.C. 1971.
Meiobenthic Harpacti-
coida (Crustacea,
Copepoda) from the
North Carolina conti-
nental shelf. Cahiers
Biol. Marine, 12(2) :
195-237.

CRISP, D.J. &
WILLIAMS, R. 1971.
Direct measurement
of pore-size distri-
bution on artificial
and natural deposits
and prediction of
pore space accessible
to interstitial
organisms. Mar. Biol.
10 : 214-226.

DINET, A. 1971.
Copépodes Harpacti-
coides d'un sable fin
organogène des environs
de Marseille. Téthys,
2 (3) : 747-762.

DINET, A. 1971.
Etude écologie du
peuplement de Copé-
podes Harpacticoides
d'un sable fin organo-
gène des environs de
Marseille. Thèse de
doctorat de 3^o cycle
d'Océanographie.

DYER, K.R. 1970.
Grain size parameters
for sandy-gravels.
J. Sedim. Petrol. 40:
616-620.

X ELLIOTT, J.M. 1971.
Some methods for the
statistical analysis
of samples of benthic
invertebrates. Fresh-
water Biol. Ass. Sci.
Public., 25 : 1.144.
(v. useful. ed.)

*I ordered
this*

FINCHAM, A.A. 1970.
Rhythmic behaviour of the
intertidal amphipod
Bathyporeia pelagica.
J. mar. Biol. Ass. U.K.
50 : 1057-1068.

FLANNAGAN, J.F. 1970.
Efficiencies of various
grabs and corers in
sampling freshwater
benthos. J. Fish. Res.
Bd. Canada, 27 :
1691-1700.

GALIANO, M.H. 1970.
Contribuicao para o
conhecimento da fauna
interstitial em Portugal.
Publicacoes Inst. Zool.
Dr. Augusto Nobre Fac.
Cienc. Porto 110 : 206pp.

GERLACH, S.A. U M. SCHRAGE.
1971. Life cycles in marine
meiobenthos. Experiments
at various temperatures
with Monhystera disjuncta
and Theristus pertenuis
(Nematoda). Marine Biology
9 : 274-280.

X GALLOP, J.D., J.M. Robertson, ?
L.E. STREEBIN, 1970.

A comparison of
macroscopic and
microscopic indicators
of pollution. Proc.
Oklahoma Acad. Sci.,
50 : 49-56.

GAMBLE, J.C. 1971.
The responses of the
marine amphipods
Corophium arenarium
and C. volutator to
gradients and to
choices of different
oxygen concentrations.
J. Exp. Biol. 54 :
275-290.

GANNING, B. & F. WULFF.
1970. Measurement of
community metabolism
in some Baltic
brackish water rock-
pools by means of
diel oxygen curves.
Oikos, 21 : 292-298.

X GARGAS, E. 1970.
Measurements of
primary productivity,
dark fixation and
vertical distribution
of the microbenthic
algae in the Øresund
Ophelia, 8 : 231-253.

GREEN, R.H. &
R.D. HOBSON. 1970.
Spatial and temporal
structure emphasis on
Gemma gemma (Pelecypoda:
Mollusca). Ecology,
51 : 999-1011.

GREENFIELD, L.J.,
R.D. HAMILTON &
C. WEINER. 1970.
Nondestructive deter-
mination of protein,
total amino acids, and
ammonia in marine sedi-
ments. Bull. Mar. Sci.
20 : 289-304.

HAMILTON, A.L.,
W. BURTON & J.F. FLANNAGAN.
1970. A multiple corer
for sampling profundal
benthos. J. Fish. Res.
Bd. Canada. 27 : 1867-1869.

HAMMOND, R.A. 1970.
The burrowing of
Priapulus caudatus.
J. Zool. Lond., 162 :
469-480.

HAMMOND, R.A. 1970.
The surface of
Priapulus caudatus
(Lamarck, 1816). Z.
morph. Tiere. 68 :
255-268.

HARGRAVE, B.T. 1970.
The utilization of
benthic microflora by
Hyalella azteca
(Amphipoda). J. Anim.
Ecol., 39 : 427-438.

HODGES, G.F. 1970.
A submersible self-
contained water quality
meter. Proc. 13th Conf.
Great Lakes Res., 1970:
1004-1014.

JANSEN, K.P. 1970.
Effect of temperature
and salinity on survival
and reproduction in
Baltic populations of
Sphaeroma hookeri Leach
1814 and S. rugicauda
Leach, 1814 (Isopoda).
Ophelia, 7 : 177-184.

JANSSON, A.-M. 1970.
Production studies
in the Cladophora
belt. Thal. Jugoslavica.
6 : 143-155.

JEBRAM, D. 1970.
Preliminary experi-
ments with bryozoa
in a simple apparatus
for producing continuous
water currents.
Helgo. wiss. Meeresunters.
20 : 278-292.

JOINSTON, R. 1970.
The decomposition of
crude oil residues in
sand columns. J. mar.
Biol. Ass. U.K. 50:
925-938.

JUGET, I. 1969.
Description de quelques
formes rares ou nouvelles
de nématodes libres du
bassin du Léman. Bull.
Soc. vaud. Sci. nat. 70:
141-173.

INGLIS, W.G. 1970.
Cytholaimidae (Nematoda)
from the coast of western
Australia. Records South
Austr. Mus. 16, 5 : 1-13.

JUGET, M.J. 1961. Le
milieu interstitiel des
sables submergés lacustres.
Compt. rend. séances Acad.
Sci. 253 pp. 2392-2394.

HUGHES, R.N. &
M.L.H. THOMAS. 1971.
Classification and
ordination of benthic
samples from Bedeque Bay,
an estuary in Prince
Edward Island, Canada.
Mar. Biol. 10 : 227-235.

HUGHES, R.N. &
M.L.H. THOMAS. The
classification and
ordination of shallow-
water benthic samples from
Prince Edward Island,
Canada. J. exp. mar.
Biol. Ecol. 7 : 1-40.

KHERA S. 1971.
Nematodes from the Banks
of still and running
waters. VII. Family
Monhysteridae. Nemato-
logica 16 : 492-502.

KRISTENSEN, J.H. 1970.
Fauna associated with the
sipunculid Phascolion
strombi (Montagu),
especially the parasitic
gastropod Menestho diaphana
(Jeffreys). Ophelia 7:
257-276.

LAMOTTE, M. 1969.
Le cheminement vers la
compréhension du
problème de l'espèce
Bull. Soc. Zool. France,
94 (4) : 507-516.

LAZZARETTO-COLOMBERA, I.
1970. Effetti della
diluizione su alcuni
parametri di popola-
zione in razze Geogra-
piche del Copepoda
Tisbe holothuriae Humes
(Harpacticoida). Archo
Oceanogr. Limnol., 16 :
263-274.

LESHNIOWSKY, W.O.,
P.R.DUGAN, R.M.PFISTER,
J.I.FREA & C.I.RANDLES.
1970. Adsorption of
chlorinated hydrocarbon
pesticides by microbial
floc and lake sediment
and its ecological impli-
cations. Proc. 13th
Conf. Great Lakes Res.,
1970 : 611-618.

LORENZEN, S. 1971.
Ixonema sordidum gen. n.
sp. n. (Micro=laimidae,
Nematode) aus sublitoralem
Grobsand bei Helgoland.
Marine Biology 8 :
267-269.

MCCLEAN, R.F. 1970.
Variations in grain
size and sorting on two
Fraikoura Beaches. New
Zeal. J. Mar. Freshw.
Res. 4 : 141-64.

X MCINTYRE, A.D. 1970.
International Biological
Programme Section PM,
Bibliography on Methods
of Studying the Marine
Benthos, FAO Fish.
Tech. Paper No.98.

NAGABHUSHANAM, A.K. &
G. CH. RAO. 1969.
Preliminary observations
on a collection of shore-
fauna of the Orissa Coast.
India. Proc. Zool. Soc.
Calcutta 22 : 67-82.

X NARANG, H.K. 1971.
The excretory system of
nematodes : structure and
ultrastructure of the ex-
cretory system of Enoplus
brevis. Nematologica 16:
517-522.

X OLIFF, W.D., B.D.GARDNER,
W.D.TURNER & J.B.SHARP.
1970. The chemistry of
the interstitial water as
a measure of conditions
in a sandy beach. Water
Res., 4 : 179-188.

O'SULLIVAN, A.J. 1971.
Ecological effects of
sewage discharge in the
marine environment. Proc.
Roy. Soc. Lond., B. 177:
331-351.

PALLERES, R.E. 1969.
Catalogo preliminar
de los Copepodos Harpac-
ticoides marinos del
Atlantico sur y sector
atlantico del Antartico
con bibliographia
basica. CIBIMA, contr.
no.49 : 63 pp.

PALLARES, R.E. 1970.
Copepodos marinos de la
Ria Deseado (Santa Cruz,
Argentina). Contribucion
sistemico-ecologica.
III. Physics, XXX (80) :
255-282.

PEARSON, T.H. 1970.
The benthic ecology of
Loch Linnhe and Loch Eil
a sea-loch system on the
west coast of Scotland.
1. The physical environ-
ment and distribution of
the macrobenthic fauna.
J. exp. mar. Biol. Ecol.,
5 : 1.34.

POR, F.D. & G.EITAN. 1970.
The invertebrate zoobenthos
of Lake Tiberias II.
Quantitative data (level
bottoms). Is. J. Zool.,
19 : 125-134.

PREECE, G.S. 1970.
Salinity and survival
in Bathyporeia pilosa
Lindström and B. pelagica
(Bak.) J. exp. mar.
Biol. Ecol., 5 : 234-245.

PRESTON, A. & P.C.WOOD.
1971. Monitoring the
marine environment. Proc.
Roy. Soc. Lond. B. 177 :
451-462.

RADU, V.GH. &
T. POPOVICI. 1967.
Contributii la studial
nematodelor libere din
sol. (1) Fam. Monochidae
(Enoplidae). Stud. Univ.
Babes-Bolyai Ser. Biol.
12 (1) : 97-100.

RAO, G. CH. 1969.
The marine interstitial
fauna inhabiting the
beach sands of Orissa
coast. J. Zool. Soc.
India 21 : 89-104.

RAO, G., CH. 1970.
On some interstitial
fauna in the marine
sands on Indian coast.
Curr. Sci., 39 : 504-507.

RENAUD-MORNANT, J. 1970.
Campagne d'essais du
"Jean Charcot" (3-8 decembre
1968). 7. Meiobenthos. I.
Donnees generales. Bull.
Mus. Hist. nat., Paris.
42 : 745-753.

RIEDL, R.J. & J.A.OTT.
1970. A suction-corer
to yield electric poten-
tials in coastal sediment
layers. Senckenbergiana
Maritima, 2 : 67-84.

ROGGEN, D.R. 1971.
Striated muscles in the
pharynx of *Enoplus*
communis. *Nematologica*
16 : 603-605.

RUPPERT, E.E. 1970.
On *Pseudostomella*
Swedmark, 1956 with
descriptions of
P. plumosa nov. spec.,
P. cataphracta nov.
spec., and a form of
P. roscovita Swedmark
1956 from the west
coast Atlantic. *Cah.*
Biol. mar., 11 : 121-143.

REMMERT, H. 1970.
Über die Wirkung
industrieller Abwasser
auf Tiere des marinen
Supralitorals. *Oecologia*
5 158-164.

SCHUSTER, R.O. &
A.A. GRIGARICK. 1970.
Tardigrada of Santa
Cruz Island, California.
The Pan-Pacific Entomol.
46 : 184-193.

X SERBAN, M. 1968.
Description de l'espece
Paramesochra pontica
Serban (Copepoda
Harpacticoida) de la
nappe phréatique de la
cote d'Agigea, Mer
Noire. Lucrarile sesiunii
stiintifice a Statii
Zoologice Marine "Prof. I.
oan Borcea" Agigea, Univ.
de Jassy, "A. I. Cuza".
1968 : 203-208.

SHELTON, R.G.J. 1971.
Effects of oil and oil
dispersants on the marine
environment. *Proc. Roy.*
Soc. Lond. B., 177 :
411-422.

SMITH, L. & A.M.

X STEPHENSON. 1971.
The hypodermis of
Enoplus brevis and
other related nematodes;
no structural evidence
for a peripheral nerve
net. *Nematologica* 16 :
572-576.

SNOW, N.B. & P.J. LeB.
WILLIAMS. 1971. A
simple method to determine
the O:N ratio of small
marine animals. *J. Mar.*
Biol. Ass. U.K., 51 :
105;109.

SPRINGETT, J.A.
J.E. BRITTAIN,
B.P. SPRINGETT. 1970.
Vertical movement of
Enchytraeidae (oligo-
chaeta) in Moorland
soils. *Oikos*, 21 : 16,21.

STEPHENSON, W. &
WILLIAMS, W.T. 1971.
A study of the benthos
of soft bottoms, Sek
Harbour, New Guinea
using numerical analyses.
Aust. J. mar. Freshw.
Res. 22 : 11-34.

TARZWELL, C.M. 1971.
Bioassays to determine
allowable waste concentra-
tions in the aquatic
environment. Proc. Roy.
Soc. Lond. B., 177 :
279-286.

THONG, C.H.S. 1971.
Five species of
Mononchidae (Nematoda)
from Signapore Island.
Nematologica 16 :
470-476.

TIMM, R.W. 1970.
A revision of the
nematode order Desmos-
colecida, Filipjev 1929.
Univ. Calif. Publs.
Zool. 93 : 115 pp.

TIMM, R.W. 1971.
Antartic soil and
freshwater nematodes
from the Mc Murdo
Sound Region. Proc.
Helmint. Soc. Wash.
38 : 42-52.

TREVALLION, A.,
A.D. ANSELL, P. SIVADAS,
& B. NARAYANAN. 1970.
A preliminary account
of two sandy beaches
in South west India.
Mar. Biol., 6 : 268-79.

USHER, M.B. 1971.
Properties of the
aggregations of soil
arthropods, particularly
Mesostigmata (Acarina).
Oikos 22 : 43-49.

VIGLIERCHIO, D.R. &
R.N. JOHNSON. 1971.
On the maintenance of
Deontostoma californicum.
S. Nematol. 3 : 86-88.

VITIELLO, P. 1971.
Nématodes nouveaux des
vases terrigènes cotières
des cotes provençales.
Tethys 2 : 4 : 859-876.

WARWICK, R.M. 1970.
Two new species of free-
living marine nematodes
from the Northumberland
coast. J. nat. Hist. 4 :
593-598.

WARWICK, R.M. &
J.B. BUCHANAN. 1971.
The meiofauna off the
coast of Northumberland.
II. Seasonal stability
of the nematodes population.
J. mar. biol. Ass. U.K. 51
p. 355-362.

WARWICK, R.M. 1971.
Nematode associations
in the Exe estuary. J. mar.
biol. Ass. U.K. 51 :
439-454.

WARWICK, R.M. 1971.
The Cyatholaimidae
(Nematoda, Chromadoroidea)
off the coast of Northum-
berland. Cahiers de Biol.
marine 12 : 95-110.

WAUTIER, J. &
J. Juget. 1969.
La fauna benthique
et la spéciation
dans les lacs subalpins.
Bull. Soc. zool. Fr. 94 :
277-284.

X WELLERSHAUS, ST. 1970.
On the taxonomy of some
Copépoda in Cochin
Backwater (a south
Indian estuary). Veröff.
Inst. Meeresforsch.
Bremerh. 12 : 463-490.

WOODHEAD, D.S. 1971.
The biological effects
of radioactive waste.
Proc. Roy. Soc. Lond.
B., 177 : 423-437.