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AUSTRALIAN MARINE SCIENCE BULLETIN

No. 42

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50c.

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AUSTRALIAN MARINE SCIENCES ASSOCIATION

CONTENTS

EDITORIAL

Main message this issue is Annual Conference on Rottnest Island. Details are given herein. Papers are still required in all sections so please put something together and contact R. Lenanton.

An article all the way from Alaska this time. Surely local members must be shamed into putting pen to paper and describing their current research activities?

All copies of Handbook No. 2 are now with Pat Hutchings at the Australian Museum.

The Treasurer reminds some members that their subscriptions are still overdue. Please check that you are financial.

PROGRAMME FOR THE AMSA CONFERENCE

to be held at
ROTTNEST ISLAND, WESTERN AUSTRALIA,
from the 10th to 12th August, 1973.

TIME FRIDAY 10 AUGUST	SATURDAY 11 AUGUST	SUNDAY 12 AUGUST
9.00 - 10.45 Participants make their own way to Rottnest Island.	General papers and papers for AMSA prize (35 min. per paper)	General papers
10.45 - 11.15	Morning break	Morning break
11.15 - 1.00 Participants make their own way to Rottnest Island.	General papers and papers for AMSA prize (cont.)	Annual General Meeting
1.00 - 2.00 Lunch	Lunch	Lunch
2.00 - 3.45 Tour of the island, followed by a general paper on Rottnest Island. (Dr. E.P. Hodgkin)	Shark Bay Symposium (biology-geology) con-currently with specialist session on physics and mathematical topics.	Return trip either by boat (weather permitting) or charter plane via Cockburn Sound.
3.45 - 4.15 Afternoon Break	Afternoon Break	
4.15 - 5.25 Tour of Island (cont.)	Shark Bay Symposium and specialist session (cont.)	
5.25 - 7.00 Dinner	Conference Dinner and Presidential address.	
7.00 - 8.00 General paper Cockburn Sound (Dr. T. Meagher)		

Meal times at the Rottnest Island Hostel:

Breakfast:	8.00 - 9.00
Lunch:	1.00 - 2.00
Dinner:	6.00 - 7.00

Conference Location:

Rottnest Island has been selected as the location, to enable participants to remain together as a group throughout the duration of the Conference. This should encourage a greater exchange of ideas between the people in attendance.

It is hoped that all participants will take advantage of this situation, to remain at Rottnest for the 3-day duration of the Conference.

Accommodation:

Locality: Rottnest Island Hostel

Cost: Single $7.00/day. Double $8.00/day. An additional cost of approximately $6.00 per head will be required for those who wish to attend the Conference Dinner.

Transport to the Island:

Plane — Civil Air Services.
Ex Perth Airport: 8.00 am, 9.00 am, 10.00 am, (i.e. every hour depending on demand).
Cost — $12.50 return.

Boat — Ex Barrack St. Jetty, Perth 9.00 a.m.
Ex East St. Jetty, Fremantle 10.00 a.m.
Cost — $4.00 return.

Alternative return route Sunday, provided enough people are interested, will be Rottnest via Cockburn Sound to Perth Airport. Cost will be approximately $6.50 per person.

Registration:

If you wish to attend the Annual Conference, please complete the form on page 11 and return to:

Mr. R. Lenanton, W.A. Convenor,
C/- Western Australian Marine Research Laboratories
P.O. Box 20, NORTH BEACH W.A. 6020.

QUATERNARY SHORELINES COMMITTEE
OUTLINE OF FIELD EXCURSION — SHARK BAY

Carbonate Sedimentation, Diagenesis, Pleistocene and Holocene History, Gascoyne and Wooramel Deltas

DATES: Post-sessional A.N.Z.A.A.S.
MAXIMUM PARTY: 15
MINIMUM PARTY: 7

PROVISIONAL ITINERARY

DAY 1 :

Morning: Flight Perth to Carnarvon
Flight Carnarvon to Hamelin Pool airstrip Charter aircraft; en route aerial inspection of Gascoyne delta, Wooramel seagrass bank and Wooramel delta.
Lunch — Carbla Homestead

Afternoon: Inspection of stromatolites at Carbla Pt.

Accommodation: Carbla Homestead — Barbecue.

DAY 2: Day trip on R.V. "Uniwest" for Party 1 — ooid shoals, sublittoral platform sediments, seafloor cementation, Faure seagrass bank and channels.

Morning: Party 2. Carbla Pt locality — stromatolites, Pleistocene ooid shoals, Cretaceous bedrock, detrital dolomite, calcrete phenomena.

Afternoon: Goat Pt, Nilemah Flat localities — Pleistocene ooid shoals, calcrete soils, stromatolites, intraclast breccias and grainstones, evaporites.

Accommodation: Carbla Homestead — Dinner.

DAY 3: As for Day 2, parties change —
Party 2 on "Uniwest";
Party 1 on land inspection.

Accommodation: Carbla Homestead — Dinner.

DAY 4: Hutchison tidal flats: Gladstone tidal flats and Pleistocene facies; red alluvial sheets and the Wooramel river delta.

Accommodation: Carbla Homestead — Dinner.

DAY 5: Journey by road to Disappointment Loop — traverse Peron Sandstone dune terrain, Tamala Eolianite.

Afternoon: Pleistocene calcrete soils and marine horizons, tidal flats.

Accommodation: Under canvas at Disappointment Loop — barbecue supper.

DAY 6: Inspection of Edel Province tidal flats, soils, calcrete, dolomite, evaporites.

Accommodation: at camp, Disappointment Loop.

DAY 7:

Morning: Flight from Carrang airstrip to Carnarvon — aerial inspection of Edel Province inlets and Peron Peninsula, en route.
Flight out of Carnarvon to destination.

Dr. B. Logan, Dept. of Geology,
West Australian University.

KNOW YOUR COUNCILLORS

Patricia Hutchings

Assistant Curator of Marine Invertebrates, Australian Museum.

Graduated in Zoology from London University and then did a Ph.D. at University of Newcastle-upon-Tyne, U.K., on the Reproductive Biology of Polychaetes. Since appointment to the Australian Museum in October, 1970, has been studying systematics and ecology of polychaetes, especially interested in those of mangroves and weed beds and those living in coral reefs.

Commodore A.H. Cooper, R.A.N. (Retd.) — Manager

Born 29th April, 1920.
Went to sea in the R.A.N. January, 1938.
Promoted Lieutenant, April, 1941.
Entered Hydrographic Surveying Service, October, 1943.
Surveyed in New Guinea, Australia and east coast of England
Commanded HMAS *Karangi* and in charge of survey, 1950.
Commanded HMAS *Warrego* 1952.
Promoted Commander and Charge Grade Surveyor, 1953.
Two and a half years in charge of Australian Surveys.
1957 — Hydrographer, R.A.N. for two years.
1960 — Promoted Captain.
1962 — Hydrographer, R.A.N. for four years.
1966 — Command, H.M.S. *Vidal* in charge of surveys South America, West Indies, North Atlantic and west coast of Scotland.
1967 — Posted Assistant Hydrographer, London.
1968 — Re-posted Hydrographer, R.A.N. for one year.
1969 — Commanded H.M.A.S. *Stalwart*.
1970 — Promoted Commodore.
1971 — Retired from R.A.N. and joined Australian Maritime Surveys. In charge of bathymetric survey of continental shelf off southern Queensland for Commonwealth Division of National Mapping.

Attended International Hydrographic Bureau Conference, Monaco, in 1962 and 1967.
Member — Institution of Surveyors, Australia
Australian Institute of Cartographers
Deep Sea Mining Committee,
International Law Society, Australia.
Publications — Articles on surveying in various journals including International Hydrographic Review.
Diagram of correction of Astrolabe sights (Admiralty 1951).

Scoresby Shepherd

Graduated LL.B. (1957) and B.A. (1958, with emphasis in Classics and Mathematics).

Practised law from 1958 until 1968, of which two years were engaged as Law Lecturer at the South Australian Institute of Technology. During that period was appointed as Honorary Research Worker at the South Australian Museum with particular interest in Echinoderms. Four taxonomic papers on asteroids were published from 1965-1968.

In 1968 was appointed in the Department of Fisheries as Senior Fisheries Officer and since that date has worked on life history studies upon southern Australian abalone (Genus *Haliotis*).

Has also pursued an interest in the algal ecology of southern Australia. This has resulted in expeditions to Lady Julia Percy I. (1968) Pearson I. (1969) St. Francis Isles (1971) and Bruny I., Tasmania (1972) and Gabo I. (1973), supported variously by the Department of Fisheries and/or Royal Society of South Australia.

Some of the results of these studies are published.

Dr. Peter Young

Dr. P.C. Young was born in Surrey, England on 9th February, 1940. He attended the Department of Zoology and Applied Entomology, Imperial College, London University, and in 1962 was awarded the associateship of the Royal College of Science and a B.Sc. (Honors) in Zoology.

He was lured to the antipodes by the siren call of the Great Barrier Reef where he worked as a Research Fellow of the University of Queensland and studied the taxonomy and functional morphology of monogenean parasites of marine fishes.

This resulted in a Ph.D. and a desire to return to cold climates. In 1966 he joined the National Environment Research Council in Britain as Senior Scientific Officer and mounted an assault upon the scourge of the British cod fishing industry — the dreaded cod-worm. A study of this confirmed that it was marine mammals that really counted and considerable nostalgic months were spent in a rubber boat floating off the Shetlands, Orkneys and Hebrides

investigating the parasites of gestating grey seals. He then graduated onto whales and dissected these for parasites at some depth.

After a while the smell got the better of him, so he returned to the tropics and in 1970 he joined CSIRO Division of Fisheries and Oceanography where was made Project Leader of the East Coast Prawn Project. Now he leads a team of seven scientists in a mangrove swamp somewhere in Queensland investigating the ecology and population dynamics of the Eastern King Prawn.

Ronald Patrick Kenny

AGE: 47 years

PRESENT APPOINTMENT:
Associate Professor of Zoology,
James Cook University of North Queensland.

FIELD OF INTEREST:
Intertidal ecology and physiological tolerance of intertidal and estuarine organisms.

BIOGRAPHY:
Born, Perth, Western Australia.
Educated Inglewood State School; Perth Modern School; University of Western Australia
Degrees: B.Sc. (Western Australia) M.Sc. (Queensland) Ph.D. (Queensland — still to be conferred, but announced November 1972).
Previous positions, etc. —

Demonstrator, Zoology Department University of Western Australia. 1947.

Biologist, Antarctic Division, Department of External Affairs, 1948-1951; including one year at Macquarie Island and visits to Heard and Kerguelen Islands.

Demonstrator/Senior Demonstrator, Zoology Department, University of Queensland, 1952-1958; including research surveys of Queensland coast and visits to island research stations.

Instructor, Zoology Department, Duke University North Carolina 1959-1960; including research visits to Beaufort, Woods Hole, Virginia Key and Ocean Springs Marine Labs.

Lecturer/Senior Lecturer, Zoology Department James Cook University (previously Townsville College), 1961-1972.

While on leave from James Cook, Visiting Research Fellow, Oregon State University Marine Lab., 1967; Visiting Research Fellow (Ford Foundation), Universidad Central, Caracas Venezuela, 1968.

GENERAL COMMENTS:
Married; two children, interested in jazz; Played hockey and tennis (in younger days). Major hobby — painting; studied at East Sydney Tech., (two years part-time); Brisbane Tech. (three years part-time); privately with Molvig (drawing), Hole (water colour), Churcher (painting); President Townsville Art Society.

PUBLICATIONS:

ENDEAN, R., KENNY, R., and STEPHENSON, W. 1956. The ecology and distribution of intertidal organisms on the rocky shores of the Queensland mainland. Aust. J. Mar. Freshw. Res. 7; 88-146.

ENDEAN, R., STEPHENSON, W., and KENNY, R. 1956. The ecology and distribution of intertidal organisms on certain islands off the Queensland coast. Aust. J. Mar. Freshw. Res., 7; 317-342.

KENNY, R. 1958. Temperature tolerance of the chiton *Clavarizona hirtosa* (Blainville). J. Roy. Soc. W. Aust., 41; 93-101.

KENNY, R. 1959. A new Australian record of an Ascothoracid parasite. Aust. J. Sci., 21; 221.

KENNY, R. 1960. Some opisthobranch molluscs from Queensland (Faunistic records from Queensland, pt. 6). Paps. Univ. Qld. Dept. Zool. 1; 223-228.

KENNY, R., and HAYSOM, N. 1962. Ecology of rocky shore organisms at Macquarie Island. Pacific Sci., 16; 245-263.

HINES, J., and KENNY, R. 1967. The growth of *Arachnoides placenta* (L.) (Echninoidea). Pacific Sci., 21; 230-235.

KENNY, R. 1967. The breathing pattern of the Dugong. Aust. J. Sci., 29; 372-373.

KENNY, R. 1969. Growth and asexual reproduction of the starfish *Nepanthia belcheri* (Perrier). Pacific Sci., 23; 51-55.

KENNY, R. 1969. Growth characteristics of *Acmaea persona* Eschscholtz. Veliger, 11; 336-339.

KENNY, R. 1969. The effects of temperature, salinity and substrate on distribution of *Clymenella torquata* (Leidy), Polychaeta. Ecology, 50; 624-631.

KENNY, R. 1969. Temperature tolerance of the polychaete worms *Diopatra cuprea* and *Clymenella torquata*. Marine Biology, 4; 219-223.

KENNY, R. 1970. A second collection of opisthobranch moluscs from Queensland (Queensland faunistic records, pt. 9). Paps. Univ. Qld. Dept. Zool., 3; 83-96.

In preparation (with co-authors) — ecology and distribution of north Queensland sandy beach fauna.

Subject of master's thesis — Southern elephant seal.

Subject of doctorate thesis — Physiological ecology of intertidal limpets.

Other publications — occasional short stories and art reviews in "little" magazines.

Brian John Noye

DEGREES etc.:
Ph.D., B.Sc., A.U.A., Dip.Ed., F.R.Met. Soc.

PRESENT POSITION:
Senior Lecturer in Applied Mathematics, University of Adelaide.

BACKGROUND:
13 years teaching mathematics and science in S.A. secondary schools, followed by
9 years of lecturing combined with some scientific research in the S.A. Institute of Technology, Flinders University and Adelaide University.

RESEARCH INTERESTS:
Physical oceanography and limnology i.e. application of mathematical methods and time series analysis to model waves, tides and currents in oceans and lakes. While at Flinders University (1966-67) prepared a series of computing programs for the calculation of tidal constants from tide records and the prediction of tides from these constants, plus multiple spectral analysies of numbers of related time series, in particular of wave records.

Has 34 publications which range through an analysis of ocean tanker trials, a treatise on the frequency response of tide-wells, numerical simulation of tidal propagation and storm surges in Australian gulfs, the study of wind tides and seiches in shallow lakes to limnological studies of the Coorong in S.A.

Roger David Braddock

AGE: 30 years

DEGREES:

Obtained an honours degree in mathematics at Adelaide University in 1965. Doctorate was awarded by Flinders University in 1969. The thesis was entitled 'Optimal Problems in Physical Oceanography', and involved a mathematical treatment of various optimization problems such as water wave propagation and reflection; and ship navigation.

RESEARCH INTERESTS:

Main interests are the mathematical problems associated with Tsunami generation, propagation and beach run up. (A Tsunami is an earthquake generated water wave occurring mostly in the Pacific Ocean). Also interested in other water wave phenomena, ocean currents and physical oceanography.

PRESENT POSITION:

Lecturer, Department of Mathematics,
University of Queensland, St. Lucia, Qld. 4067.
Appointed a member of the Tsunami Research Committee of the International Union of Geodesy and Geophysics in 1969.
Elected to the A.M.S.A. Council, August 1972.

Alistair John Gilmour

Date and Place of Birth:

July 28th 1938; Downpatrick, Co Down, North Ireland. British, Married.

Educated:

Bangor Grammar School, Bangor, Northern Ireland; Queen's University Belfast, Northern Ireland.
1960 Bachelor of Science, majoring in zoology.
1961 Honours, specializing in marine benthic ecology.
1969 Monash University, Melbourne, Vic. Ph.D. submitted, entitled "The Ecology of the King George Whiting *Sillaginodes punctatus* (C & V) in Westernport Bay, Vic."

Career:

1961 December, arrived in Australia to join the Dept. of Fisheries and Wildlife. Research Officer, working on fishery problems in Westernport Bay, Victoria.
1964 Mid, carried out a pilot benthic survey off Crib Point Westernport Bay, in advance of the development of an oil terminal. 1965 first quarter, carried out a full scale survey in the same area during construction of terminal and associated refinery (BP Refinery Westernport Pty. Ltd.) A grant from the refinery. Company enabled this project to be started and supported for two years.
1965 Last quarter, presented evidence to State Development Committee of Inquiry on the future development of Westernport in which guide-lines for the prevention of pollution in the area were recommended. (Fisheries Contribution No. 20).
1966 Mainly involved in developing computer programs for processing fisheries data, continued development of Westernport studies.
1967. Appointed Senior Research Officer; preliminary planning for Port Phillip Bay Environmental Study.
1968 Visited W.A. and S.A. to collect fish blood for serum protein analysis. Planning for, and first cruise of, Port Phillip Bay Environmental Study.
1969 Appointed Officer in Charge, Marine Pollution Studies; attended symposium on conservation of the Australian Costline and gave paper at Conservation Trust Pollution Symposium, Hobart, Tasmania; visited N.S.W. to study problems of steel mills effluent disposal.

Membership of Committees etc.

Westernport Water Pollution (Observer); Co-ordinating Committee, Environmental Study of Port Phillip Bay (Observer); Technical Committee, Environmental Study of Port Phillip Bay.

Membership Scientific Bodies etc.

Australian Marine Sciences Association - Member of Council since 1965, State Convenor Royal Society of Victoria; Australian Conservation Foundation; Australian Water and Waste Water Association; International Association for Water Pollution Research (individual member) Intercol

Current Interests:

As officer in Charge, Marine Pollution Studies, involved in the planning and organisation of two research programs:

1. Westernport Bay, with one biologist
2. Port Phillip Bay, with six graduates working in benthic ecology (3), fish ecology; phytoplankton and biometrics (including data processing).

Total staff in the group is 29 including the eight graduates.

Also included in the Port Phillip Bay Environmental Study are two university groups; one graduate student at Monash University, Dept. of Zoology (zooplankton) and one at University of Melbourne, Botany School (phytobenthos). Physico-chemical studies, including land use and pollutional loading, are provided by the staff of the Melbourne and Metropolitan Board of Works who have sponsored the study to date.

These studies are listed in the IBP Index of National Projects, Section PM, 1969 as Australia, PM/5.

Broad interests are in developing marine pollution studies as a component of resource management; in developing the use of biological measurements for such purposes and in developing the use of systems analysis in these areas.

Objective of Study Tour:

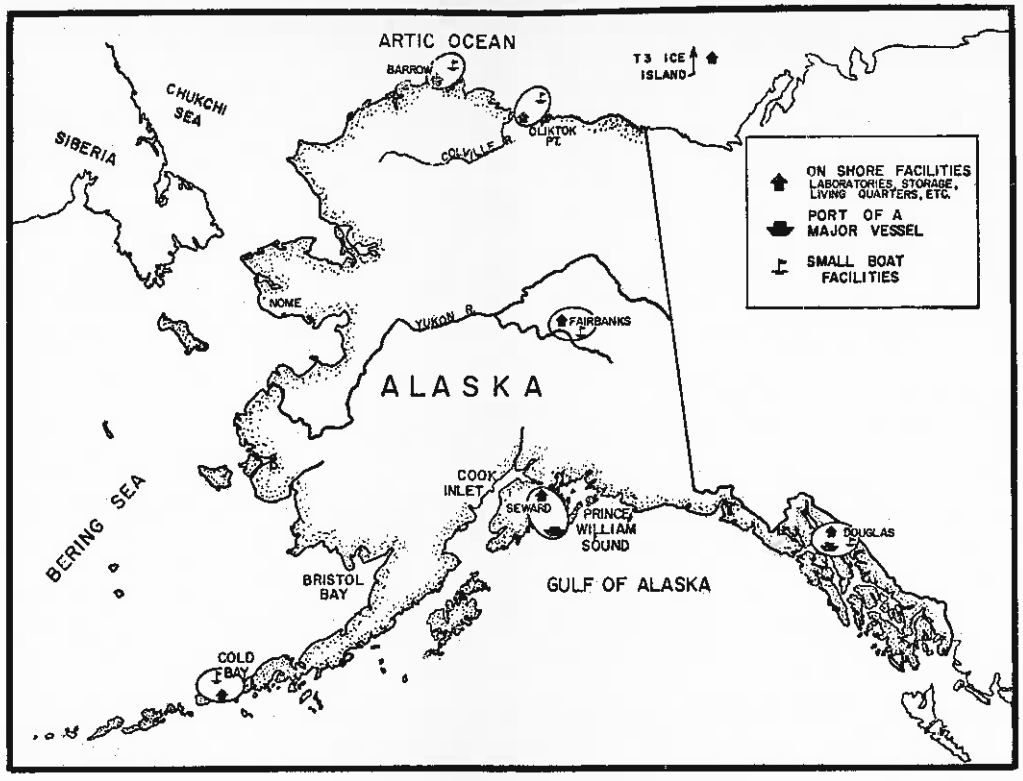
1. To attend, by invitation, the FAO Technical Conference on Marine Pollution as a rapporteur for Section I "Marine Pollution in the World To-day" and to present a paper on the current situation in Australia.
2. To study methodology and current concepts in research on the biology of marine pollution in various countries and to establish contact with workers in this field.
3. To visit laboratories working on aspects of pollution and and estuarine resource management of particular relevance to our work in Australia.
4. To visit and establish contact with workers using the systems analysis approach to resource management in particular estuarine and biological simulation models.

Address:

Officer-in-Charge, Marine Pollution Studies,
Fisheries and Wildlife Department,
605 Flinders St. Extension,
MELBOURNE, 3000, Victoria, Australia.
Cables: 'FISHWILD" MELBOURNE.
Telephone: 62-3612

MARINE SCIENCE AT UNIVERSITY OF ALASKA

David Heggie



LOCATION OF BOAT AND SHORE FACILITIES OF THE INSTITUTE OF MARINE SCIENCE

The Institute of Marine Science is located on the University of Alaska campus at Fairbanks, 400 miles in any direction to the nearest ocean. The Institute was established in 1961 and has an academic faculty of approximately 30 persons along with graduate students, technicians, and administrative personnel.

Coastal laboratory facilities are maintained at Seward, Barrow and Cold Bay as shown on the accompanying figure.

Seward on the Kenai peninsula is the home base for the Institute's main research vessel the R.V. Acona. The ship carries a crew of six and can accommodate nine scientists. It is used mainly for coastal oceanographic work, particularly in Prince William Sound, the fiords of southern and south-central Alaska, the Aleutian Island chain and during summer months the Bering Sea.

The Acona is capable of spending up to three weeks at sea and is equipped along with standard oceanographic equipment, a Bissett Berman S.T.D. probe and a satellite navigation system.

Interdisciplinary research is carried out between chemical, physical, biological and geological oceanography. Some projects that are currently being pursued are:

Studies of phytoplankton and zooplankton dynamics in the near shore Arctic Ocean environment;
Ecology of eelgrass communities in Alaska;
Dynamics of silicon in marine productivity;
Dynamics of the nitrogen cycle in the sea;
Phosphorus cycling;
Sedimentological and geochemical studies of the Alaskan arctic shoreline;
Sedimentological and carbonate geochemistry of Alaskan fiords;
Water circulation studies in Prince William Sound;
Water mass formation in the Gulf of Alaska;
Fate of crude oil in estuarine and oceanic waters;
Trace metal analyses by atomic absorption and electrochemical methods, studies of carbon dioxide in surface waters and the atmosphere.

The work that I have been involved with, was a recently completed study of the distribution of gases in sediments of several Alaskan aquatic environments. The areas that I looked at were a freshwater lake near Fairbanks, a coastal lagoon that supports large eelgrass communities and several fiords. I was able to identify processes occurring in the sediments such as denitrification and methane production and make some inferences about physical mixing within the sediments and the transport of gases by eelgrass plants between sediments and overlying waters.

My current work is concerned with the exchange of water between the Gulf of Alaska and a fiord estuary Resurrection Bay. The work is part of a program to look at the pathways of trace metals in their transport from rivers through the estuarine zone to the continental shelf. I am at present working on a method to look at the concentration of Cu, Pb and Zn by anodic stripping voltammetry.

The fiord is being sampled monthly and measurements taken of temperature, salinity, oxygen, nitrate, nitrite, phosphate, silicate and titration alkalinity at several stations as general hydrographic data. Trace metal analyses will be concentrated at two stations, one at the mouth of the fiord to document changes in coastal source water and the other at the head of the fiord. The latter station is in a deep inner basin that is partially separated from the coastal water by a sill located midway along the length of the fiord.

LOCAL EVENTS

The International Association of the Physical Sciences of the Ocean announces the First Special Assembly to be held jointly with the First Special Assembly of the International Association of Meteorology and Atmospheric Physics in Melbourne, Australia from 14-25 January 1974.

The Special Assembly will emphasize Air-Sea Boundary Layer behaviour, but will include all aspects of physical oceanography.

Sponsored by the
AUSTRALIAN ACADEMY OF SCIENCE

PROVISIONAL OUTLINE OF IAPSO AND JOINT IAMAP/IAPSO SCIENTIFIC PROGRAMME

IAMAP/IAPSO IAPSO

Monday 14
Registration. Plenary session with Presidential Addresses. Keynote "frontier" addresses. *Air-surface interation (AS); Clouds and radiation (CR); Oceanography (O).*

Tuesday 15
AS1: Sea-Surface temperature

Wednesday 16
Excursion

Thursday 17
AS2: Mesoscale air-sea

Friday 18
Keynote "frontier" addresses;
Upper atmosphere (UA); Pollution, radiation, climate (PRC); Marine pollution (MP); AS 3: Large scale air-sea.
Scientific session (contributed papers)

Saturday 19
AS 3: continued;
AS 4: Fluxes near the surface. Scientific session (contributed papers)

Monday 21
Keynote "frontier" addresses;
Surface biometeorology (SB) GARP: Large scale ocean experiments (OE); AS: continued.
Scientific session (contributed papers).

Tuesday 22
GARP 1. Ocean Waves (OW); OW 1: Surface waves.

Wednesday 23
GARP 2 OW 2: Internal waves.

Thursday 24
GARP 3 OW3: Long waves, Circulation.

Friday 25
GARP 4 OE 1: Ocean Experiments.

In addition IAMAP plans a third stream including sessions on (i) clouds and radiation, (ii) the upper atmosphere, (iii) surface biometeorology, (iv) pollution, radiation and climate, (v) scientific sessions for contributed papers. These sessions will be open to both IAMAP and IAPSO participants. Some additional IAPSO sessions are under consideration.

IAPSO Executive Committee
Professor Henri Lacombe, President; Professor A.S. Monin, Vice President; Professor Kozo Yoshida, Vice-President; Dr. Eugene Lafond, Secretary; Dr. B.L.K. Somayajulu, Deputy Secretary; Dr. H.L. Grant; Professor K. Grasshoff; Professor E.S.W. Simpson; Admiral Moreira Da Silva.

Australian National Committee for the Physical Sciences of the Ocean:
Professor B.R. Morton, Chairman, Dr. C.H.B. Priestley, Dr. J.R.M. Radok, Mr. D.J. Rochford.

Joint Assembly Local Organising Committee:
Dr. G.B. Tucker, Chairman; Mr. T.T. Gibson, Mr. F.T. Hannan, Dr. J.B. Hinwood, Professor B.R. Morton, Dr. C. H.B. Priestley, Mr. E.K. Webb, Mr. K.J. Wickham.

ADDRESSES FOR CORRESPONDENCE:

Correspondence concerning the scientific programme and the submission of papers should be addressed to the IAPSO Secretary: Dr. Eugene Lafond, Naval Undersea Center, SAN DIEGO, CALIFORNIA 92132, U.S.A.

Correspondence concerning local Assembly arrangements, and travel and accommodation matters, should be addressed to the Assembly organizers in Melbourne, as follows:
The Secretary,
Joint IAMAP/IAPSO Assembly Organizing Committee,
C/- Commonwealth Meteorology Research Centre,
G.P.O. Box 5089 AA, MELBOURNE, VICTORIA 3001,
AUSTRALIA.

NEW BOOKS

ESTUARINE and COASTAL MARINE SCIENCE

edited by
N.C. Flemming, National Institute of Oceanography, Godalming, Surrey, England;
B.H. Ketchum, Woods Hole Oceanographic Institute, Massachusetts, U.S.A.
and E. Naylor, Marine Biological Station (University of Liverpool), Port Erin, Isle of Man, U.K.

EDITORIAL BOARD: A.M. Adye (U.K.), A.J. Bowen (U.K.), J.D. Burton (U.K.), L. CABIOCH (France), R.M. Cassie (New Zealand), V.N. Caston (U.K.), R.B. Clark (U.K.), R. Cloet (U.K.), L.E. Cronin (U.S.A.), L. Draper (U.K.), M.R. Droop (U.K.), K.O. Emery (U.S.A.), C.C. Hemmings (U.K.), N.I. Hendy (U.K.), C. Kidson (U.K.), O. Kinne (Germany), R.B. Krone (U.S.A.), W. Macnae (S. Africa), J. Onoszko (Poland), M. Rattray, Jr. (U.S.A.), G.A. Riley (Canada), J.P. Riley (U.K.), Sir F. Russell (U.K.), J.H. Steele (U.K.), R.L. Wiegel (U.S.A.), E.J.F. Wood (U.S.A.), J.D. Woods (U.K.).

Subscription: Volume 1, 1973: UK £10.60, overseas £12.10 including postage.
Publication: January, April, July, October.

Brackish areas (estuaries, lagoons and inland seas) and inland saline waters are regions common to both the marine and freshwater sciences, yet in reality they are embraced by neither. Hence they have been allotted only marginal coverage in most publications. Similarly, oceanography's traditional concern has been with the deep ocean, while civil hydraulic engineering has involved study of beaches out to a depth of about ten metres.

Therefore, until now, the whole range of phenomena in water between the depths of ten and two hundred metres has suffered a corresponding neglect.

This new journal is devoted to a multi-disciplinary analysis of coastal and brackish-water phenomena from inland saline waters and from the edge of the Continental Shelf to the upper limits of tidal or spray action.

Subjects examined include zoology, botany, geology, sedimentology, physiography, chemistry, physical oceanography and meteorology of these areas. It is intended that one paper in each issue will deal with the technical, economic or administrative implications of exploitation and conservation.

The aim of *Estuarine and Coastal Marine Science* is to present papers of the highest academic standard on all subjects appertaining to coastal and brackish-water zones, taking into account especially those aspects of the subject which are peculiar to these regions, or are closely linked to other related phenomena.

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SCIENTISTS AND THE SEA 1650-1900

A Study of Marine Science

Margaret Deacon,
Science Studies Unit,
University of Edinburgh,
Scotland

1971, xvi + 446pp., £5.50

'From Aristotle to the scientists of the Challenger expedition is a remarkable voyage. However, it is a journey made easy and enjoyable by Margaret Deacon through a wise choice of observation 'stations'. *Scientists and the Sea 1650-1900*, which must be among the first to trace the history of oceanography from the remote beginnings of the ancient world to its final establishment as a science, is at once a work of scholarship and an essay of tremendous interest to anyone concerned with the marine sciences.'

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Appendices. Select bibliography. Index of persons. Subject index.

MARINE PHYSICS

R.E. Craig
Department of Agriculture and Fisheries for Scotland,
Marine Laboratory, Torry, Aberdeen, Scotland

December 1972, viii 84pp., £1.90

Drawing upon his extremely varied experience of marine science, the author has selected those physical topics most important for engineers and physicists whose interests reach out into the hydrosphere and who may be seeking a general background for their own specialized research.

Processes such as density currents, diffusion and the transfer of momentum from the atmosphere to the ocean are considered individually and then an assessment is made of their combined effect in the complex situation of the real sea. There follows an elementary analysis of wave characteristics and a detailed qualitative description of the tides. Finally there are chapters on aspects of undersea optics and acoustics, and an appendix which brings together useful reference data.

The volume builds from basic principles an understanding of physical mechanisms at work in the sea, presenting ideas without pursuing them to a point where the results can only be demonstrated by employing high-level mathematics.

The author has written for undergraduate and graduate students and research workers in engineering and physics, and all branches of marine science. It will also be of value to fisheries institutes, schools of navigation and university departments of geography and meteorology.

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NEW JOURNAL ANNOUNCEMENT

Crane, Russak & Company, Inc. 52 Vanderbilt Avenue, New York, N.Y. 10017 (212) 889-1403

JOURNAL ON COASTAL ZONE MANAGEMENT DUE FOR 1973 QUARTERLY PUBLICATION

Will deal with Social, Political, Technical & Legal Aspects of Subject.

Crane, Russak will begin publication of a new journal, COASTAL ZONE MANAGEMENT JOURNAL: Environment, Resources, and Law, as a quarterly, early in 1973. The start of publication of the new journal closely follows the recent signing into law of The Coastal Zone Management Act of 1972 by President Nixon.

Marc J. Hershman of the Louisiana State University Law Center has been named Editor-in-Chief, and will head a distinguished interdisciplinary board of editors influential in the social, political, technical, and legal aspects of coastal zone management in North America.

Mr. Hershman is research director of Coastal Resources Law, Sea Grant Legal Program at LSU Law

Center, and executive director of the Louisiana Advisory Commission on Coastal and Marine Resources. He is also a consultant to governmental agencies on coastal zone and environmental problems and a member of the Pennsylvania Bar Association.

Although the Coastal Zone Management Act of 1972 was just signed into law on October 27, the subject of coastal zone management has been developing for a number of years and constitutes a well-defined group of concerned individuals in universities, government, as well as the private sector.

The Coastal Zone Management Act of 1972 calls for the establishment of a comprehensive national program for the management, beneficial use, protection and development of the nation's coastal zones. The new *Coastal Zone Management Journal* will provide the forum for a full discussion of all the issues dealing with the various interdisciplinary aspects of the Act.

Some themes to be covered in early issues of the *Journal* will be human elements of coastal zone management matrices as tools for coastal zone management, laws implementing coastal zone management, and the "coastal zone laboratory" as an R&D institution for coastal management.

The new journal will appeal to a wide cross-section of industry as well as all levels of government involved in the coastal zone management effort. Institutions and individuals associated with the Sea Grant Program will find *Coastal Zone Management Journal* an essential source of information, as will law schools and legal firms.

The subscription price for 1973 will be $26.00 postpaid. The four quarterly issues will total approximately 400 pages.

THE SUN BENEATH THE SEA

Jacques Piccard

A surging river rushes out of the Gulf of Mexico bringing warmth and life-sustaining temperatures to the coasts of North America and Europe. Called the Gulf Stream, this current is not merely one flood of water but several swirling, colliding, meandering torrents tumbling northward. In 1969, the submarine *Ben Franklin* settled beneath the waters off Palm Beach, Florida, and for the next thirty days its crew of six men, led by ocean explorer Jacques Piccard, drifted silently with the current for 1,500 miles, observing the mysterious depths as men had never been able to do before.

This is the official account of the Gulf Stream Drift. The *Ben Franklin*, a large yellow and white research submarine, was pushed along by the Gulf Stream, expending practically no electrical energy except for the powerful searchlights used from time to time to illuminate the surroundings. Being completely silent, and apparently motionless to the fish which were also drifting in the current, Dr. Piccard and his crew in no way disturbed the environment or frightened the sea life away. They were part of the ideal research platform for making observations and listening to the infinite variety of noises in the sea.

Among the principal observations described by Dr. Piccard are the speed of the current, the attack of swordfish, the *Ben franklin's* expulsion from the Gulf Stream, and the underwater waves.

This exploration of the Gulf Stream during the month-long night was one of the several major advances that suggest 1969 will loom large in the history of oceanography.

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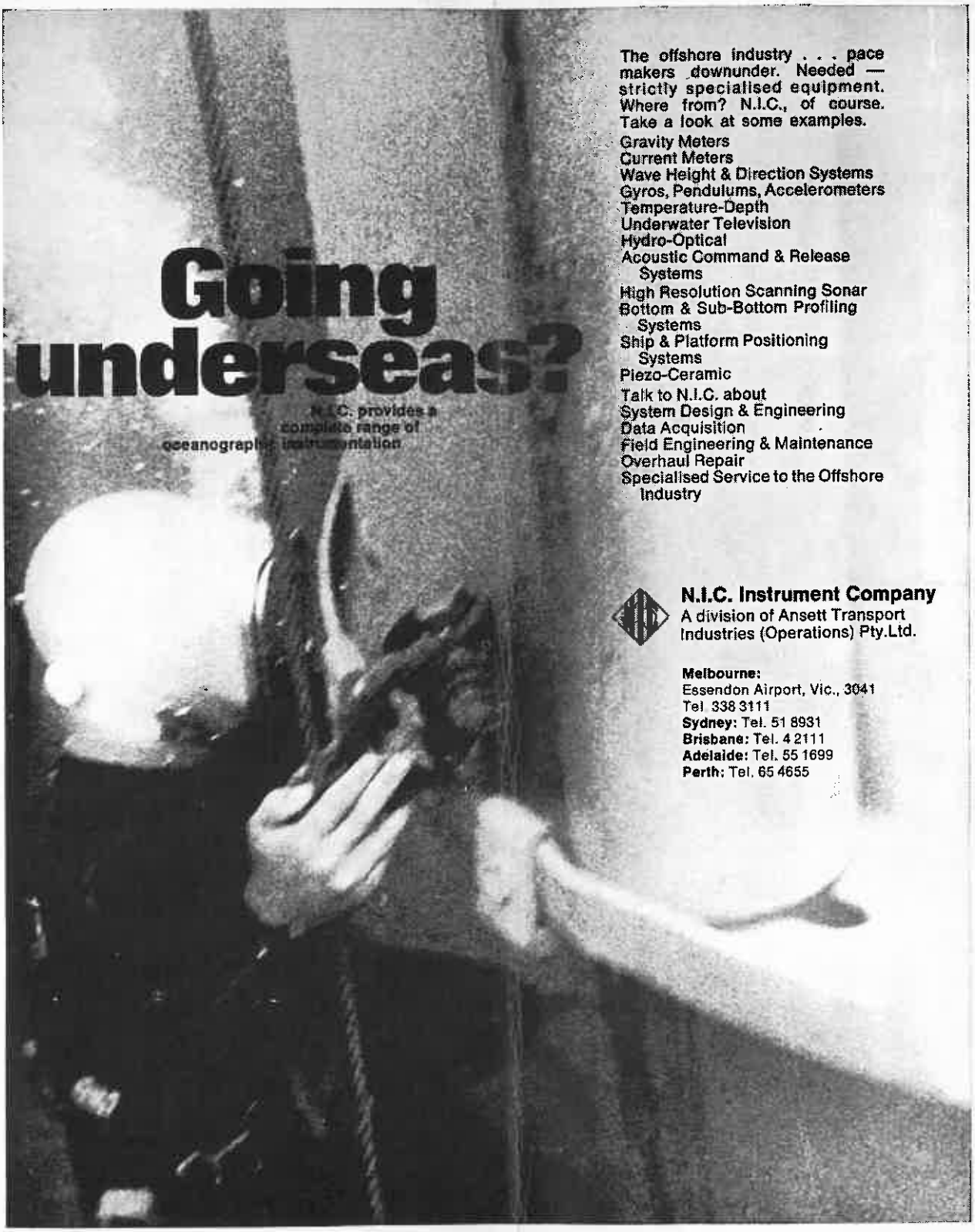

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