

Current Research

Marine Geology Research Program for 1972-73, Memorial University of Newfoundland, St. John's, Nfld. by ROGER M. SLATT:

The initiation of a marine sedimentology research program at Memorial University's Geology Department was reported in *Maritime Sediments* in 1972 (Slatt, 1972a). The purpose of the present report is to summarize research activities conducted since that time. Studies have been oriented towards gaining an understanding of Quaternary depositional history and sedimentary processes on the Labrador and Newfoundland shelves and of sedimentology and sedimentary geochemistry of bottom deposits in Newfoundland inlets.

Labrador continental shelf and upper slope - Textural and petrographic analysis of sediments from 21 piston cores obtained at 6 locations on the shelf and upper slope has shown that the sediments are reworked relict deposits that were glacially derived mainly from Labrador or the equivalent Precambrian rocks exposed on the inner shelf during intervals of Pleistocene lower sea level (Slatt and Lew, in press).

Newfoundland continental shelf - Over 350 surficial sediment samples have been obtained from the Grand Banks and elsewhere on the shelf. Textural and compositional analyses of these samples have revealed the following preliminary information. The sediments are mostly sands that have been reworked from Pleistocene glacial, fluvio-glacial, and littoral deposits. In the vicinity of the Avalon Peninsula, gravel extends seaward for about 35 km and probably marks the outer limit of late-Wisconsin ice. A belt of biogenic carbonate sediment trends northeasterly along the length of the central Grand Banks and may mark the late-Wisconsin shoreline. Research is underway which will lead to a more thorough evaluation of shelf sedimentary processes and Quaternary depositional history. The preliminary results are reported by Slatt (1973) and a more detailed account of shelf surficial deposits is in preparation.

Earlier research revealed the presence of residual glauconite on the northeast Newfoundland shelf (Slatt and others, 1972) and of relict littoral sands now under 90 metres of water on the northern Grand Banks (Slatt, 1972b).

Conception Bay, South East Newfoundland (sedimentology) - Conception Bay was chosen in 1972 as the first of a series of inlets to be investigated in order to gain an understanding of sedimentary processes in formerly glaciated inlets as well as to evaluate processes (including man's activities) which regulate bottom sediment geochemistry. Grain-size analysis of bottom sediments and subsequent comparison of textural types with the distribution of modal size classes has shown that they are palimpsest sediments. A model has been proposed for formation of the bottom sediments which probably is applicable to sediments in other formerly

glaciated inlets (Slatt, in preparation). Glacial drift that was deposited on the inlet floor during late-Wisconsin lower eustatic sea level was reworked into discrete particle populations during the Holocene transgression. Subsequent redeposition of the winnowed finer-grained populations either as distinct sedimentary units in deeper water or upon coarser lag deposits in shallower water has resulted in the formation of a variety of textural types.

Conception Bay, South East Newfoundland (sedimentary geochemistry) - Chemical and mineralogical analyses of bottom sediments was conducted to evaluate the variables that control sediment geochemistry, the extent of alteration of the bottom environment by man's activities, and if no evidence of alteration was obtained (as was expected), then to gather baseline geochemical data which could be utilized for a future comparative study in the event of increased urbanization and/or industrialization along the Conception Bay coast. The results have shown that sediment geochemistry is regulated in the following manner. Two primary variables of source and depositional environment control three secondary variables of organic matter content, mineralogy, and/or grain-size, which in turn control trace, minor and major element composition and sediment pH (Slatt, in preparation). Particular attention should be focused upon these variables when conducting similar studies elsewhere. No evidence was found that man's activities had significantly altered the bottom environment, therefore the concentrations of chemical species comprising the sediments are natural background levels which can be utilized in future comparative studies.

Hall's Bay, North Central Newfoundland - Sediment sampling was conducted in this inlet during the summer of 1973 and laboratory work is in progress. The purpose of this investigation is to gather baseline data which can be utilized for a comparative study of Bay of Exploits, North Central Newfoundland which is planned for summer of 1974. This latter inlet probably receives industrial and urban waste from the Exploits River. Hall's Bay, on the other hand, is thought to be unpolluted yet the size, physiography, and Quaternary depositional history of the two inlets are comparable. An understanding of bottom sediments in Hall's Bay should therefore provide an insight into the extent of alteration of the Bay of Exploits bottom environment by man's activities.

Hall's Bay was the first inlet in which the Geology Department's 34-foot research vessel Elsie G. was used. The boat was equipped in the spring of 1973 with a Kelvin-Hughes Model MS-37 Echo Sounder and a standard hydrographic winch for grab and piston-core sampling.

Placentia Bay, South East Newfoundland - Bottom sediment sampling and echo-sounder profiling was conducted in summer of 1973 and laboratory work is in progress. The Placentia Bay area is about to support two oil refineries, so the

object of this investigation is mainly to gather baseline sedimentary geochemical data which can be utilized for a comparative study which will be conducted after the refineries begin operation. This is part of a larger investigation of the environment, flora, and fauna of the Placentia Bay area being conducted by several researchers at Memorial University.

In addition to the above activities, a study of the depositional history and source of Gulf of Alaska/Aleutian Trench sediments (DSDP Leg 18), being conducted jointly with D.J.W. Piper (Department of Geology, Dalhousie University), is nearing completion.

References cited

- SLATT, R.M., 1972a, Memorial University's Marine Geology research program. *Maritime Seds.*, v. 8, p. 36.
- _____, 1972b, Frosted beach-sand grains on the Newfoundland continental shelf. *Geol. Soc. America, Bull.*, v. 84, p. 1807-1812.
- _____, 1973, Eastern Newfoundland shelf surficial sediments: January-June, 1973 Progress Report. Unpub. Rept., 14 p.
- _____, HODGE, R.A.L., and UZUAKPUNWA, A.B., 1972, Glauconite in surficial sediments as an indicator of underlying Cretaceous/Tertiary bedrock on the northeast Newfoundland continental shelf. *Can. J. Earth Sci.*, v. 9, p. 1441-1446.
- _____, and LEW, A.B. (in press), Provenance of Quaternary sediments on the Labrador continental shelf and slope. *J. Sed. Petrol.*

Dalhousie University, Halifax, Nova Scotia by D.J.W. PIPER:

David J.W. Piper, collected six long piston cores from the continental slope off Nova Scotia and the Grand Banks, during a Bedford Institute HUDSON cruise in July 1972. The cores penetrate Holocene and Upper Pleistocene sediments. Details of core locations are:

Number	Latitude	Longitude	Depth (fm)	Length of Core (m)
72-021-1	41°24.24'N	59°34.79'W	2568	12.02
72-021-2	42°34.96'N	59°46.71'W	2171	11.63
72-021-3	42°58.31'N	59°55.06'W	1346	11.64
72-021-4	42°04.04'N	60°33.58'W	2209	11.82
72-021-6	41°20.8'N	51°30.0'W	2070	11.78
72-021-7	42°20.83'N	59°31.72'W	2342	10.45 (+5m suck in)

The cores are being studied in order to determine what sedimentary processes were responsible for sediment accumulation on the shelf. Mud turbidites of lower Holocene age have been found in one core. The Pleistocene cores are similar to those previously described

by D. Stanley and others; some contain sands.

B. von Borstel, is studying oil contamination in the beach sediments of McNabs Island, Halifax Harbour. The concentrations, penetration, and distribution of oil in the sands are being investigated as functions of grain size, mineralogy, and beach dynamics. The hydrocarbons are extracted with n-hexane and analyzed by fluorescence spectroscopy.

Significant quantities of oil in the sediment column are evident to a depth of one metre, although visual examination of the beach may not indicate oil pollution.

Lyndon Jensen is carrying out a study of the paleoenvironmental history of the essentially shallow marine Lower Devonian Torbrook Formation of northwest Nova Scotia. Paleontologic and trace fossil data is being integrated with detailed sedimentologic and stratigraphic information.

Abstracting Reports in MARITIME SEDIMENTS:

I have been appointed recently as an Abstractor of Maritime Sediments by the Directors of Geo Abstracts Ltd. (University of East Anglia, Norwich NOR 88C, England).

For those readers and contributors unfamiliar with this publication, may I explain its mechanism by describing my specific role as I understand it. Firstly, I work on a voluntary basis being repaid in kind by receiving copies of Maritime Sediments sent to me through the Norwich office. I read through each Report and decide whether, or not, the material is appropriate for one of the six Geo Abstracts parts: namely, (A) Landforms and the Quaternary, (B) Biogeography and Climatology, (C) Economic Geography, (D) Social Geography and Cartography, (E) Sedimentology and (F) Regional and Community Planning.

Having decided that some, or all, of the Reports are relevant, I am instructed to write a citation (title, author(s), journal, volume, part, year, number of figures, tables, references and appendices) and abstract for each. A detailed set of "Notes for abstractors" asks me to keep the length of each abstract to less than 300 words (preferably 100-250) and to "convey the conclusions of (each) article". On completion I write my own name beneath each abstract so that on publication in Geo Abstracts it is clear that the material published reflects my interpretations which may, or may not, concur with those of the authors!

This seemingly simple job is, in practice, rather difficult because I have to make every effort to understand fully each Report, assess its scientific contribution, present a simple balanced precis of its contents, and intimate its conclusions. To achieve this I have to try and "project" myself into the mind of each author - often an impossible task! A further difficulty arises when I have to deal with

material outside my specialist realm as an estuarine and shallow-water Sedimentologist. However there is a contingency set aside for these cases whereby I have the option of arranging that it is covered by a specialist.

Perhaps one way in which my abstracts will differ from those that might have been written by the authors themselves is that I have to attempt to write a "mini-paper" so that Geo Abstracts readers, who may not be able to obtain copies of Maritime Sediments from their own libraries, may be able to decide rapidly whether they should obtain photo-copies through the services of lending-libraries, or preferably, subscribe to this excellent Information Journal.

Finally, and in my own defence, I must re-emphasize that I have undertaken this job on a voluntary basis to assist the dissemination of scientific knowledge, and that my own learning within the ever-widening scope of Sedimentology is necessarily limited. Should I misrepresent any author's work, then I apologize in advance, and hope that my contribution will be looked upon sympathetically before an irate author puts pen to a poisonous letter (my address is given below!).

Dr. Antony T. Buller,
Tay Estuary Research Centre,
(Dundee University),
Old Ferry Pier, Newport-on-Tay,
Fife DD6 8EX, U.K.

New Books

THE PERSIAN GULF: Holocene Carbonate Sedimentation and Diagenesis in a Shallow Epicontinental Sea, Edited by B.H. PURSER:

The subjects treated in this symposium include ecology, lithification, dolomitization, evaporite formation, and both local and regional aspects of sedimentation. Certain sedimentary aspects are evaluated by factor analysis. Isotopic and other geochemical analyses of tidal flat (sabkha) evaporites, together with electron microscope and micro-probe examination of oolitic and other sediments, provide new insights into the origin and diagenetic modification of these sediments.

Papers treating Arabian and Iranian sedimentation and diagenesis are grouped for the first time under a single cover, permitting the reader to appreciate the contrasting styles of sedimentation and diagenesis on the opposing sides of the Persian Gulf. This volume analyzes a modern carbonate basin whose sediment distribution and diagenesis differ in many respects from the classical Caribbean models.

Scientists interested in interpreting ancient carbonate epicontinental basins, especially those whose sedimentary and early diagenetic aspects have been influenced by arid, continental environments, will be stimulated by this volume. The book is richly

illustrated with some 150 figures and more than 100 photographs.

1973 47lp. 250 illus. 7 plates 3 maps
cloth \$29.70

THE MINOR STRUCTURES OF DEFORMED ROCKS: A Photographic Atlas, by Professor LIONEL E. WEISS, Department of Geology and Geophysics, University of California, Berkeley, California, U.S.A.:

The Atlas is a photographic survey of the types of minor structure frequently to be observed in deformed rocks.

Emphasis is placed upon structures such as foliations, lineations, folds and boudins which are both of common occurrence and of use to the field geologist in his attempts to understand the structure and evolution of a deformed geologic body. The photographs have been collected by the author during twenty years of field work in many different regions, and have been chosen to illustrate as clearly as possible the characteristics and variety commonly observed in such minor structures. A short text and a descriptive caption accompany each photograph, with some general statements about the significance of each of the broad classes of structure illustrated.

With 203 plates. VII, 431 pp., 1972,
Cloth DM 94,-; US \$29.80, ISBN 0-387-05828-1.
Fields of Interest: Geology, Field and
Structural Geology, Geophysics.

Published by Springer-Verlag, New York
Inc., 175 Fifth Avenue, New York, N.Y., 10010.

DATING METHODS IN ARCHAEOLOGY by JOSEPH W. MICHELS,
Department of Anthropology, The Pennsylvania State University, University Park, Pennsylvania:

This volume offers an up-to-date, comprehensive treatment of the principal methods, techniques, and strategies of archaeological dating. The author takes the reader step by step from the initial phase of sample recovery to the final determination of age, covering such basic techniques as archaeological phasing relative dating, and chronometric dating. He presents a detailed description of each method or technique - covering the underlying scientific principles, laboratory procedures, instrumentation, and archaeological applications. He reviews the assets and liabilities of each method, and shows the reader how to determine the accuracy and reliability of his results. Each chapter includes an extensive list of references for the reader who wishes to delve further into a particular method.

This volume will serve as a valuable text for courses in archaeological dating and methods, as well as an ancillary text for courses in anthropology, ancient history, art history, the classics, and geology. Amateur archaeologists throughout the world will find it a most useful handbook.

February, 1973 240pp. \$6.95

Published by the Seminar Press, New York and London, 111 Fifth Avenue, New York, N.Y., 10003.

Note: Other books in the STUDIES OF ARCHAEOLOGY SERIES published by the Seminar Press include:

AN ARCHAEOLOGICAL PERSPECTIVE, by LEWIS R. BINFORD, Department of Anthropology, University of New Mexico, Albuquerque, New Mexico. 1972, 480 pp., \$11.95.

PUBLIC ARCHAEOLOGY by CHARLES R. MCGIMSEY III, Arkansas Archeological Survey, University of Arkansas Museum, Fayetteville, Arkansas. 1972, 282 pp., \$9.50.

THE AZTECS, MAYA, AND THEIR PREDECESSORS: Archaeology of Mesoamerica by MURIEL PORTER WEAVER, Hunter College. A Volume in the Studies in Archeology Series, 1972, 347 pp., 8½" x 11", \$11.95.

Forthcoming...

LAND SNAILS IN ARCHAEOLOGY: With Special Reference to the British Isles by JOHN E. EVANS, Department of Archaeology, University College, Cardiff, Wales. February 1973, 448 pp., \$22.50. The result of five year's research, this volume shows how studies of land snails may be used to determine the environment of ancient man.

SKINS, LEATHERS AND PARCHMENTS IN ARCHAEOLOGY by R. REED, 1973, about 300 pp., in preparation. Demonstrates an original approach for using both physical and chemical techniques to study ancient writing materials.

CARBON-14 DATING by R. BURLEIGH, 1973, about 250 pp., in preparation. This is a vital reference work on radio-carbon dating and its discrepancies. It should prove invaluable to post-graduate students and research workers in archaeology and biology.

SOIL SCIENCE IN ARCHAEOLOGY by S. LIMPREY, 1973, about 250 pp., in preparation. What is soil? How is it classified, mapped, and studied in the context of archaeological field work? The author outlines the present methods of research and solves many problems which are commonly experienced by specialists today.

METHODS OF PHYSICAL EXAMINATION IN ARCHAEOLOGY by M.S. TITE, January 1973, 440 pp., \$19.00. Magnetic dating, chemical analysis, microscopy, radioactivity, and ceramic technology are topics discussed in this important text.

ORES IN SEDIMENTS, Edited by G.C. AMSTUTZ and A.J. BERNARD:

A symposium from the VIII International Sedimentological Congress, Heidelberg, August 31-September 3, 1971. Sponsored by the Society of Geology Applied to Mineral Deposits (SGA) and the International Association of

Sedimentology.

The symposium report "Ores in Sediments" contains some 20 papers on problems of diagenetic history, sedimentary fabrics and paleogeographic extent of metallic and non-metallic deposits in sediments. It is a real milestone in the development of modern theories on mineral deposits in that it maps progress made since the start of the new trend in the early sixties. In addition to a wealth of new observations, almost all contributions propose criteria for the successful exploration of deposits in sediments. The book will be welcome to practically all mining companies and institutions dealing with mineral exploration and research, because 80% of all metal reserves and most non-metallic ore deposits are stratabound deposits.

With 184 figures. VIII, 350 pp., 1973, DM48,-; US \$15.30, ISBN 3-540-05712-9.

Published by Springer-Verlag, New York Inc., 175 Fifth Avenue, New York, N.Y., 10010.

STONE: PROPERTIES, DURABILITY IN MAN'S ENVIRONMENT by E.M. WINKLER, Notre Dame, Indiana:

Surveys the important stone properties, both physical and chemical, and pertinent to the architect's, engineer's and stone producer's needs. Emphasis is placed on the chemical characteristics of the pollutants in air and waters and their interaction with stone which accelerates the process of stone decay, often many times faster than in rural locations in quarry or rock cut.

Graphs and diagrams, the scientist's language, analyze and quantify the natural processes which lead to stone decay: simplification of the graphs enhances their legibility to the student of geology, environmental science, engineering, also to the museum curator and conservator who deals with stone monuments.

Brief summaries accompany each chapter for better clarity and understanding to persons lacking a scientific background; the book should thus become accessible and provide information to the stone producer and consumer for a better understanding of his product stone.

1973 XIII 230p. 150 illus. cloth \$33.70 Applied Mineralogy, Volume 4. Published by Springer-Verlag, New York Inc., 175 Fifth Avenue, New York, N.Y., 10010.

HURONIAN STRATIGRAPHY AND SEDIMENTATION, Edited by G.M. YOUNG:

This is Special Paper Number 12 of the Geological Association of Canada. The contents include the following:

1. Introduction by Grant M. Young
2. Nipissing diabase of the southern province, Ontario by K.D. Card and E.F. Pattison
3. The Huronian Supergroup, a Paleoproterozoic

- succession showing evidence of atmospheric evolution by Stuart M. Roscoe
4. Stratigraphy, petrography and paleocurrent analysis of the Aphebian clastic Formation of the Mistassini-Otish Basin by E.H. Chown and J.L. Caty
 5. Stratigraphy and depositional environments of Upper Huronian rocks of the Rawhide Lake-Flack Lake Area, Ontario by John Wood
 6. Tillites and aluminous quartzites as possible time markers for Middle Precambrian (Aphebian) rocks of North America by Grant M. Young
 7. The Proterozoic sedimentary rocks north and northeast of Sudbury, Ontario by H.D. Meyn
 8. Lower Huronian stratigraphy in Hyman and Drury Townships, Sudbury District by F.Q. Barnes and E.J. Lalonde
 9. Paleogeography of the Mississagi Formation and Lower Huronian cyclicity by P.A. Palonen
 10. A review of recently acquired geological data, Blind River-Elliott Lake Area by James A. Robertson
 11. Clastic dykes at Whitefish Falls, Ontario and the base of the Huronian Gowganda Formation by F.W. Chandler
 12. Stratigraphic framework of Middle Precambrian rocks in Minnesota by G.B. Morey
 13. The Penokean Orogeny in Northern Michigan by W.F. Cannon

Price of single copy to members before Nov. 1, 1973 is \$10.00; price to members after Nov. 1, 1973 is \$12.00. Price to non-members is \$14.00. Copies may be obtained from:

The Geological Association of Canada
Publication, Business & Economic
Service Ltd., 111 Peter Street,
Toronto 2B, Ontario, Canada.

Publications and Reports (Geological Survey of
Canada, Ottawa, Ontario, Canada)

- Bulletin 215 (\$5.00) - Brachiopods of the Arisaig Group (Silurian-Lower Devonian) of Nova Scotia, by Charles W. Harper, Jr., 1973, 163 pp., figs., 28 plates.
- Paper 72-17 (no charge) - Canada Centre for Inland Waters - Scientific Series No. 10, Environment Canada. Report on the surficial sediment distribution of the Great Lakes, Park I - Lake Ontario, by R.L. Thomas, A.L.W. Kemp and C.F.M. Lewis.
- Paper 71-34 (\$2.00) - Quaternary geology of southwest New Brunswick with particular reference to Fredericton area, by N.R. Gadd, 31 p., illus., tables, figs. Map 12-1971 and two figures folded in pocket.
- Paper 71-47 (\$2.00) - Deglaciation of southern Quebec, by N.R. Gadd, B.C. McDonald and W.W. Shilts, 19 p., table, figs. Map 10-1971 folded in pocket.
- Paper 73-1, Part B (\$2.00) - Report of Activities, Part B: November 1972 to March 1973, 216 p., illus., tables, figs.

Paper 73-14 (\$3.00) - Canadian Centre for Geoscience Data - Computer-based storage and retrieval of geoscience information: Bibliography 1970-1972, by C.F. Burk, Jr., 38 pages.

Paper 73-27 (\$2.00) - Raw materials of Canada's mineral industry, by R.J. Traill, 80 pages. This report (a revision of Paper 62-2) comprises short descriptive notes on many of the more important minerals, ores, fuels and rocks that are the raw materials of the mineral industry of Canada. They are described under 76 product headings, in alphabetical order from "Abrasives" to "Zirconium".

Paper 73-21 (\$2.00) - Field and laboratory methods used by the Geological Survey of Canada in geochemical surveys. No. 12 - Mercury in ores, rocks, soils, sediments and water, by I.R. Jonasson, J.J. Lynch and L.J. Trip, 22 p., tables, figs.

Map 1366A (\$2.00) - Surficial deposits of Prince Edward Island, by V.K. Prest, 1973. Scale 1 inch to 2 miles. Reverse side includes a map of glacial indicators and data on postglacial marine overlap and peat development. Extensive descriptive notes are provided. Published to mark the P.E.I. Centennial.

Open File 168 - A field technique for sieving coarse granular material, by D.E. Lawrence and D.F. Van Dine. This 14-page report describes a technique developed to permit rapid and fairly accurate grain size analysis of coarse granular material (4.75-75 mm) during a granular resource inventory in the Mackenzie Valley. Copies are available from the Publications Distribution Office, Geological Survey of Canada, Ottawa K1A 0E8. Price \$0.50.

Reprint (Paper 72-30, \$1.50) - "Standard samples" of silicate rocks and minerals - A review and compilation by Sydney Abbey, 13 p., tables. Reprinted 1973.

Reprint (Misc. Report No. 8, Vol. III, \$1.50) - Rock and mineral collecting in Canada: New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland; by Ann P. Sabina. 106 pages, illus., location maps. Revised 1972.

Biennial Review (\$8.00) - Bedford Institute of Oceanography Biennial Review 1971/72, 366 p. The Bedford Institute of Oceanography at Dartmouth, Nova Scotia, is a Government of Canada establishment whose staff undertake scientific research and surveys in the marine environment. It comprises (1) the Atlantic Geoscience Centre, which is part of the Geological Survey of Canada, (2) the Atlantic Oceanographic Laboratory of the Department of the Environment, and (3) the Marine Ecology Laboratory, also of the Department of the Environment. The review, which contains

many photographs and illustrations, reports on the various projects undertaken at the Institute. Six essays discuss important topics in the marine sciences field and highlight Institute activities in these areas. No free distribution from Ottawa. Please make your request direct to the Bedford Institute of Oceanography, P. O. Box 1006, Dartmouth, Nova Scotia, Canada.

Natural Environment Research Council, Institute of Oceanographic Sciences, Beadon Road, Tauton, Somerset (Formerly the Unit of Coastal Sedimentation), September, 1973:

The following reports are currently available. New titles are marked with an asterisk.

BLACKLEY, M.W.L., 1972: Tracer experiments in the Taw-Torridge estuary with particular reference to Braunton Burrows N.N.R., by M.W.L. Blackley, A.P. Carr and R. Gleason. UCS/72/22.

* HAMMOND, F., 1973: A solution for the four colour conjecture. UCS/73/5. Obtainable from the author on request.

HOOPER, D.J., 1971: Decca Hi-Fix: an analysis of chain performance from monitor records: preliminary report. UCS/71/3.

_____, 1972: Automated hydrography. UCS/72/21.

_____, 1972: The navigational contribution to the Anglo-Dutch Sandettie Survey 1971. UCS/72/20.

_____, 1972: A survey position-fixing system for the Unit of Coastal Sedimentation: a desk study. UCS/72/26.

KIRBY, R., 1971: Sandettie/Fairy Bank gap survey cruise report, 1971. UCS/71/1.

_____, 1972: Sandettie/Fairy Bank Gap survey, cruise report. UCS/72/27.

_____, 1972: UCS Vibrocoring: with evaluations of the Marex, Zenkovich, Geodoff and IGS Vibrocoringers. UCS/72/10.

_____, 1973: A field numbering system for marine sediment samples, by D.E.C. Whiteway and R. Kirby. UCS/73/4 - supersedes 72/4.

MOORE, E.J., 1972: Feasibility study for u/w photogrammetry. UCS/72/8.

_____, 1972: NERC remote sensing flights, South Harris: UCS report on multispectral photography. UCS/72/13.

WHITEWAY, D.E.C., 1973: Computer-based storage and retrieval of physical marine data: a proposed system for coastal oceanography. UCS/73/3 - supersedes 71/2.

The following recent publications have been noted:

CARR, A.P. and BLACKLEY, M.W.L., 1973: Investigations bearing on the age and development of Chesil Beach, Dorset, and the associate area. Trans. Inst. Brit. Geographers, 58, March 1973, pp. 99-111.

_____, 1972: Aspects of spit development and decay: the estuary of the River Ore, Suffolk. Field Studies, 3, (4) Sept. 1972, pp. 633-653.

DYER, K.R., 1972: Bed shear stress and the sedimentation of sandy gravels. Marine Geology, 13, (2), Sept. 1972, pp. M31-M36.

GLEASON, R. and HARDCASTLE, P.J., 1973: The significance of eave parameters in the sorting of beach pebbles. Estuarine and Coastal Marine Sciences, 1 (1), 1973, pp. 11-18.

HAILS, J.R., 1971: Holocene evolution of a portion of the North Carolina coast: discussion. Geological Society of America Bulletin, 82, December 1971, pp. 3525-3526.

_____, 1971: Regional distortions along the southeastern United States coast, by J.H. Hoyt and J.R. Hails. Quaternaria, XV, 1971, pp. 51-64.

_____, 1972: The nature and occurrence of heavy minerals in Pleistocene and Holocene sediments of the Lower Georgia coastal plain, by J.R. Hails and J.H. Hoyt. J. Sed. Pet., 42, (3), 1972, pp. 646-666.

KELLAND, N.C., 1972: Assessment trials of underwater acoustic triangulation equipment. Int. J. Nautical Archaeology and Underwater Exploration, 2, (1), 1973, pp. 163-176.

_____, 1972: Mosaics from high resolution side-scan sonar, by N.C. Kelland and J.C. Hopkins. Offshore Services, October 1972, pp. 34-35.

_____, and HAILS, J.R., 1972: Bedrock morphology and structures within overlying sediments, Start Bay, Southwest England, determined by continuous seismic profiling, side-scan sonar and core sampling. Marine Geology, 13, (2), Sept. 1972, pp. M19-M26.

KIRBY, R., 1973: The U.C.S. grain-size comparator disc. Marine Geology, 14, (3), 1973, pp. M11-M14.

LANGHORNE, D.N., 1973: A sandwave field in the outer Thames Estuary, Great Britain. Marine Geology, 14, (2), February 1973, pp. 129-143.

SEWARD-THOMPSON, B.L., 1973: A proposed method of geographical indexing of marine data. Underwater Journal, 5, (1), February 1973, pp. 18-22.