

fitted against the continental slope off Brittany and southern England. Accordingly, the Bay of Biscay would have been opened up by a late Mesozoic rotation of Spain and the coast of France would be defined for the first time. H. H. Hess (Princeton University) reviewed his many thoughts about active movement of the ocean floor and continental drift. Some geophysicists have recently considered drift untenable because they find the mantle under continents to be different from that under the ocean. Hess finds this objection not pertinent, for, by his mechanism, the mantle moves along with the continents.

Following Menard's lead in the Pacific several years ago, sea floor fracture zones are now being found all around the world. D. C. Krause (University of Rhode Island) described a possible fracture zone clear across the North Atlantic from Gibraltar to the northeastern United States through the Azores and the Kelvin Seamount Chain. Krause seems to be one of the new breed of marine geologists who is not constrained by the limitations of traditional land geology. Bolder solutions are being offered for seafloor tectonics of the virtually exposed (?) earth's mantle in contrast to the rather passive (?) sialic crust of the continents.

J. Wiseman (British Museum) described the petrology of St. Paul Rocks, a small ultrabasic exposure of the Mid-Atlantic Ridge. He believes the structures to be an outcropping of the earth's upper mantle and possibly the only nonallochthonous outcrop of the mantle known, thus making it of special interest to Moholers. He recognized four types of peridotites, which were formed in a 500° to 1000°C environment. The limits were based on the lack of serpentine and the presence of hornblende. Excepting a high K-content rock type, these ultrabasics seem to be tholeiite of the deep-sea type, that is, those which have undergone essentially no differentiation. Their partial melting would produce 1 part of tholeiitic basalt (pure mantle "broth") and 9 parts of dunite residue.

We were kept in the dark regarding B. C. Heezen's (Lamont Geological Observatory) "to be announced" paper, the last on the program. But the title, *Tephra and Thera*, would not have helped much anyway. From studying ash layers in deep sea cores in the eastern Mediterranean and by C¹⁴ dating, Heezen described a great eruption of the volcano Santorini (the

ancient Greek name of which is *Thera*) about 1400 B.C. which might explain the demise of the Minoan civilization on Crete. A 10-cm blanket of ash (tephra) supposedly would have fallen in amounts sufficient enough to poison the land. Crops could not have been grown for several years, thus forcing the Minoans to emigrate. Heezen also discussed the stagnation of the Mediterranean deep water 6000 to 8000 years ago.

A visit was paid R.R.S. *Discovery II*. This 3000-ton vessel of the National Institute of Oceanography replaced in 1963 R.R.S. *Discovery*, which had been decommissioned after 33 years of service. The new *Discovery* is a modern research vessel in all respects; she was designed especially for oceanographic work rather than being a conversion. A rather unusual facility is her central well into which sonars can be fitted and changed at sea without necessity of drydocking. Canada's fine new oceanographic research vessel, *Hudson*, was also available for inspection.

Marine geology and geophysics seem to remain peculiarly American disciplines. Our total effort must at least match that of the rest of the world combined. In this field at least, the countries which have done little work in the past (for example, the Mediterranean countries) show little sign of increasing their effort. The scientific gap in this case seems to be opening rather than closing. Heartening, however, is the surge of new interest displayed by the Canadians.

All aspects of the meeting were well organized. A single criticism might be the great variety of subject matter presented; this occurred because participants were given unrestricted freedom of choice of topics. Some of the papers seemed to go beyond the scope of marine geology and geophysics, even in its broadest sense. However, the principal objective of the meeting was certainly achieved—to bring together active researchers from many countries to discuss recent advances in the field. Most of us were pleased with the French scientists' continued acceptance of English as the lingua franca of science in spite of recent official pressure for the increased use of French.

The papers read, together with the ensuing discussions, will be published as volume 17 of the *Colston Papers* in the fall of this year.

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Forthcoming Events

July

12-14. **Biological Sciences Symp.**, 16th annual, Univ. of Michigan, Ann Arbor. (L. B. Mellett, Dept. of Pharmacology, Univ. of Michigan Medical School, Ann Arbor)

12-14. **Physiology and Biochemistry of Muscle as a Food**, symp., University of Wisconsin, Madison. (E. J. Briskey, College of Agriculture, Univ. of Wisconsin, Madison 53706)

12-15. **Japan Soc. of Constitutional and Diathetic Medicine**, congr., Kyoto, Japan. (The Society, Dept. of Pathology, Kyoto Univ., Kyoto)

12-15. **Nuclear and Space Radiation Effects**, annual conf., Univ. of Michigan, Ann Arbor. (S. C. Rogers, Radiation Effects Dept., 5312, Sandia Corp., Albuquerque, N.M.)

12-17. **Spectroscopy**, 12th intern. colloquium, University of Exeter, Exeter, England. (C. E. Arregger, 1 Lowther Gardens, Prince Consort Rd., London, S.W.7, England)

12-18. **Pure and Applied Chemistry**, 20th intern. congr., Moscow, U.S.S.R. (N. A. Kleimenov, Inst. of Chemical Physics, Acad. of Sciences, Vorobyevskoye chaussee 2-b, Moscow)

13-15. **Aerospace Vehicle Flight Control**, Soc. of Automotive Engineers/NASA conf., Los Angeles, Calif. (SAE, 485 Lexington Ave., New York 10017)

13-16. **Royal Medico-Psychological Assoc.**, annual, Glasgow, Scotland. (RMPA, 11 Chandos St., London W.1, England)

14-15. **Reinforced Plastics**, regional conf., Soc. of Plastics Engineers, Seattle, Wash. (J. B. Meyer, RETEC Registration, c/o J. B. Meyer Co., P.O.B. 6664, Seattle)

15-16. **Water Quality Management in River and Reservoir Systems**, seminar, Vanderbilt Univ., Nashville, Tenn. (W. H. Wisely, American Soc. of Civil Engineers, 345 East 47 St., New York 17)

15-18. **Properties and Applications of Low Temperature Plasma**, symp., Moscow, U.S.S.R. (E. S. Starkman, College of Engineering, Univ. of California, Berkeley)

15-21. **Education of Professional Physicists**, intern. conf., London, England. (Miss P. N. Boston, Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London, S.W.1)

18-24. **Dental**, 2nd intern. congr., Rio de Janeiro, Brazil. (P. F. Reis Filho, Associacao Brasileira de Odontologia, Rua da Baia 570, 5.º Andar, C. Postal 2357, Minas Gerais, Brazil)

18-24. **International Ophthalmic-Optical Congr.**, Dublin, Ireland. [E. Pemberton, Assoc. of Ophthalmic Opticians (Ireland), 11 Harrington St., Dublin]

19-21. **Surgery of the Hand**, 1st intern. congr., Rio de Janeiro, Brazil. (Sociedade Brasileira de Mão, Rio de Janeiro)

19-21. **Swine in Biomedical Research**, intern. symp., Richland, Wash. (L. K. Bustad, Biology Dept., Battelle-Northwest, P.O. Box 999, Richland 99352)

19-22. **Association of Food and Drug Officials of the U.S.**, 69th annual, New York, N.Y. (The Association, P.O. Box 9095, Austin, Tex.)

19-22. **Space**, 5th European symp., Munich, Germany. (Executive Secretary, British Interplanetary Soc., 12, Bessborough Gardens, London, S.W.1, England)

19-23. Study of **Nuclear Structure** with Neutrons, intern. conf., Antwerp, Belgium. (M. Neve de Mevergnies, Neutron Physics Dept., CEN-CSK, Mol, Belgium)

19-23. Society for **Analytical Chemistry**, conf., Nottingham, England. (C. A. Johnson, 14 Belgrave Sq., London, S.W.1, England)

20-23. American **Malacological** Union, Wagner College, New York, N.Y. (J. J. Parodiz, Carnegie Museum, Pittsburgh, Pa.)

21-31. **Mental Health**, 5th Caribbean conf., Fort-de-France, Martinique, French West Indies. (Caribbean Federation for Mental Health, Mme. Charles Saint-Cyr, Ravine Vilaine, Fort-de-France)

22-24. International Assoc. for **Dental Research**, 43rd general meeting, Toronto, Ont., Canada. (G. H. Rovelstad, U.S. Navy Dental School, Natl. Naval Medical Center, Bethesda, Md.)

22-26. **Rorschach and Projective Methods**, 6th intern. congr., Paris, France. (A. Morali-Daninos, 7 avenue Trudaine, Paris 9^e)

22-27. Thermodynamics of **Nuclear Materials and Atomic Transport in Solids**, Vienna, Austria. (C. E. Holley, Jr., Div. of Research and Laboratories, Intern. Atomic Energy Agency, Kärntnering 11, Vienna 1)

24-4 Sept. **Organism-Sediment Interrelationship**, NSF seminar, Bermuda Biological Station. (K. E. Chave, Marine Science Center, Lehigh Univ., Bethlehem, Pa. 18015)

25-28. American Assoc. of **Dental Schools**, Toronto, Canada. (C. V. Rault, Georgetown Univ., Washington, D.C.)

25-29. Pacific **Dermatological** Assoc., Portland, Ore. (G. MacDonald, 4294 Orange St., Riverside, Calif.)

25-30. **Neurochemical**, intern. conf., Oxford, England. (J. N. Cummings, Dept. of Chemical Pathology, Natl. Hospital, Queen Sq., London, W.C.1, England)

25-30. International **Psycho-Analytical** Assoc., 24th congr., Amsterdam, Netherlands. (R. P. McKnight, Austin Riggs Center, Stockbridge, Mass.)

26-29. American Inst. of **Aeronautics and Astronautics**, 2nd annual, San Francisco, Calif. (D. L. Raymond, 1290 Sixth Ave., New York 10019)

26-30. Interpretation and Therapy of **Cardiac Arrhythmias**, conf., Hahnemann Medical College and Hospital, Philadelphia 2, Pa. (L. S. Dreifus, Dept. of Medicine, Hahnemann Medical College and Hospital, 230 North Broad St., Philadelphia)

27-29. **Positron Annihilation**, conf., Wayne State Univ., Detroit, Mich. (A. T. Stewart, Physics Dept., Univ. of North Carolina, Chapel Hill)

27-29. **Research Program Effectiveness**, Washington, D.C. (Secretary, Research Conf. Committee, Room 808, Old Post Office Bldg., 12th St. and Pennsylvania Ave., NW, Washington, D.C. 20368)

28-30. **Library Science**, symp., Syracuse Univ., Syracuse, N.Y. (D. Bergen, School of Library Science, Syracuse Univ., Syracuse 13210)

28-30. **Reactor Operating Experience**, Jackson Lake Lodge, Wyo. (F. Schroeder, Phillips Petroleum, Idaho Falls, Idaho)

28-30. **Reliability and Maintainability**, 4th annual conf., Los Angeles, Calif. (J. de S. Coutinho, 32 Dartmouth St., Garden City, N.Y.)

28-31. Spanish **Biochemists**, 3rd meeting, Oviedo, Spain. (J. R. Villanueva, Centro de Investigaciones Biológicas, Velázquez 138, Madrid 6, Spain)

29-2. **Microcalorimetry**, intern. symp., Marseille, France. [E. Calvert, Institut de Microcalorimétrie et de Thermogénèse, 26, rue du 1414 RIA (3^e), Marseille]

29-5. **Protozoology**, 2nd intern. conf., London, England. (R. S. Bray, London School of Hygiene and Tropical Medicine, Keppel St., London, W.C.1)

30-31. **Animal Reproduction**, 7th biennial symp., Michigan State Univ., East Lansing. (W. Hansel, Dept. of Animal Husbandry, Cornell Univ., Ithaca, N.Y.)

31-7. **Universala Medicina Esperanto-Asocio**, meeting, during the 50th intern. esperanto congr., Tokyo, Japan. (H. Shinoda, Kasumicho, Yamagata, Japan)

August

1-5. American Soc. of **Animal Science**, Michigan State Univ., East Lansing. (J. E. Oldfield, Dept. of Animal Science, Oregon State Univ., Corvallis)

1-8. **Chemistry**, 9th Latin American congr., San Juan, P.R. (Secretary, 9th Latin American Chemical Congr., Box 2647, Rio Piedras, P.R.)

2-4. Society for **Cryobiology**, 2nd annual, Madison, Wis. (G. Rapatz, American Foundation of Biological Research, RFD 1, Madison 53716)

2-5. **Comparative Endocrinologists**, 3rd European conf., Copenhagen, Denmark. (C. Barker-Jørgensen, Universitets Zoofysiologiske Laboratorium Juliane Maries Vej 32, Copenhagen Ø)

2-6. **High Pressure**, intern. conf., Saône et Loire, France. (B. Vodar, Centre National de la Recherche Scientifique, B.P. 30, Bellevue, Seine et Oise, France)

2-6. **Instrumentation Science**, 2nd research conf., Instrument Soc. of America, Geneva, N.Y. (K. B. Schnelle, Jr., ISA, 539 William Penn Pl., Pittsburgh, Pa.)

3-7. **Acta Endocrinologica**, 5th congr., Hamburg, Germany. (A. Jores, 2 Medizinische Klinik, Eppendorfer Krankenhaus, Hamburg 20)

3-7. **Poultry Science** Assoc., Univ. of Georgia, Athens. (C. B. Ryan, Texas A&M Univ., College Station 77843)

4-6. **Space and Ballistic Missile Technology**, 10th symp., U.S. Naval Training Center, San Diego, Calif. (C. T. Morrow, Aerospace Corp., Box 95085, Los Angeles, Calif. 90045)

4-7. **Genetics**, G. Mendel memorial symp., Brno, Czechoslovakia. (M. Sosna, G. Mendel Memorial Symp., Na cvicisti 2, Prague 6, Czechoslovakia)

5-12. **EEG and Neurophysiology**, 6th intern. congr., Vienna, Austria. (K. Pateisky, Wiener Medizinische Akademie, Alserstr. 4, Vienna 9)

8-11. **Heat Transfer**, 8th natl. conf., Los Angeles, Calif. (K. O. Beatti, Jr., Dept. of Chemical Engineering, North Carolina State College, Raleigh)

8-14. **Anatomists**, 8th intern. conf., Wiesbaden, Germany. (M. Watzka, Anatomisches Institut der Universität, Mainz, West Germany)

8-27. **Fracture Mechanics**, workshop, Denver Research Inst., Denver, Colo. (D. L. Wells, University Technology Corp., P.O. Box 7, Dayton, Ohio 45449)

9-11. **Mutation Process**, symp., Prague, Czechoslovakia. (M. Sosna, Na cvicisti 2, Prague 6)

9-13. **Meteor Orbits and Dust**, intern. symp. (invitation only), Cambridge, Mass. (G. S. Hawkins, Smithsonian Astrophysical Observatory, 60 Garden St., Cambridge 02138)

9-15. Nordic **Entomology** Congr., Oslo, Norway. (Norwegian Natl. Travel Office, 290 Madison Ave., New York 10017)

9-20. **Electromagnetic Measurements and Standards**, Natl. Bureau of Standards, Boulder, Colo. (Bureau of Continuation Education, University Memorial Center, Univ. of Colorado, Boulder)

10-20. **Theory of Groups**, intern. conf., Intern. Mathematical Union, Canberra, Australia. (L. G. Kovacs, Dept. of Mathematics, Australian Natl. Univ. Inst. of Advanced Studies, Box 4, G.P.O., Canberra)

11-13. **Calorimetry**, 20th conf., Ames, Iowa. (R. Hultgren, Univ. of California, Berkeley)

11-15. European **Malacological** Union, 2nd congr., Copenhagen, Denmark. (G. Høpner Peterson, c/o Zoologisk Museum, 5 Afdeling, Universitetsparken 15, Copenhagen)

12-21. **Veterinary Education**, 2nd intern., Copenhagen, Denmark. (Inter. Agency Liaison Branch, Office of the Director General, Food and Agriculture Organization, Via delle Terme di Caracalla, Rome, Italy)

14-20. Australian **Medical** Assoc., 2nd medical congr., Perth, Western Australia. (O. R. Corr, 8 King's Park Rd., West Perth, Western Australia)

14-20. **Molecular Spectroscopy**, 8th European congr., Copenhagen, Denmark. (The Congress, Universitetsparken 5, København Ø, Denmark)

14-6. **Digital Computers** for College Teachers of Science, Mathematics, and Engineering, Univ. of Southwestern Louisiana, Lafayette. (J. R. Oliver, Box 133, USL Station, Lafayette 70506)

14-19 Sept. International Assoc. for **Quaternary Research**, 7th congr., Boulder and Denver, Colo. Field conf., 14-29 Aug. and 5-19 Sept.; general assembly, 30 Aug.-5 Sept. (G. M. Richmond, Room 2462, Bldg. 25, Denver Federal Center, Denver 80225)

15-20. American Inst. of **Biological Sciences**, Urbana, Ill. (AIBS, 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

15-20. **Energetics**, American Soc. of Mechanical Engineers, conf., Rochester, N.Y. (ASME, 345 E. 47 St., New York 10017)

15-21. **Ophthalmology**, 8th Pan American congr., Rio de Janeiro, Brazil. (W. D. Estrada, Praca Cardea, Arcoverde 25, Copacabana, Rio de Janeiro)

16-18. **Guidance and Control**, conf., Minneapolis, Minn. (D. L. Mellen, Mail Station 677, Military Products Group, Aeronautical Div., Honeywell, Inc., Minneapolis 55440)