Earthquake Studies, U.S. Geological Survey) presented the closing lecture. He related how within 24 hours of the shock, Alaska geologists of the U.S. Geological Survey were on the scene in Anchorage and elsewhere; they were photographing and undertaking studies related to the cause and effect of the great cracks and earth slumps which combed the area. Most of the damage was found to be caused by landslides triggered by the earthquake. Gates described first some of the basic principles of Alaska's geology. He reminded the audience that the earth's crust is "restless" and is continually changing as a result of the stresses exerted from deep within the crust. Normally, the crust "flexes" and stretches to accommodate internal activity, but occasionally the stresses build up to enormous proportions. Then, a sudden "snap" of the earth's crust may relieve the geologic stress and at the same time cause vibrations that we call earthquakes. Gates stated that the earthquake serves as a reminder of the importance of applying geologic knowledge to construction plans involving earthquake-resistant structures. He emphasized the fact that earthquakes are a recurring phenomenon and that structures and public works must be built in a manner to minimize damage. It was stated also that the nature of the ground itself is of more importance in the design of earthquake-resistant structures than the distance to the epicenter. Basic to good design is adequate knowledge of the surface and subsurface conditions upon which the structures must be built.

Gates showed, by means of aerial photographs, the recurring nature of landslides in the Anchorage area. Some of these landslides are apparently of ancient origin. The unstable condition which caused the slumping is an unstable clay which underlies the area. All the landslides occurred in areas underlain at shallow depths by the "Bootlegger Cove Clay." Information on the distribution and physical properties of the clay ["Surficial geology of Anchorage and vicinity, Alaska," Robert D. Miller and Ernest Dobrovolny, *U.S. Geol. Surv. Bull. 1093* (1959)] had contained a warning (pp. 103–107) of the possibility of earthquake-triggering landslides in Anchorage and vicinity. Such slides on 27 March produced most of the damage.

Gates also announced that a newly published 35-page report, "Geological Survey Circular 49—Alaska's Good Friday Earthquake—March 27, 1964," by Arthur Grantz, George Plafker, and Reuben Kachadoorian, discusses in detail the causes, nature, and extent of damage of the quake. Geologic factors apparently played the chief role in determining the distribution of the damage. They controlled the distribution of fracturing, compaction, lurching, and landslides, and thereby the distribution of damage to structures. Structures in the area that were underlain by a thin layer of glacial outwash overlying the Bootlegger Cove Clay, or underlain by silt, were more severely hit than those underlain by a thicker layer of gravel.

Structures on bedrock were damaged less than those on unconsolidated deposits. As an example, at Whittier, large concrete buildings that were built on bedrock received less damage, even though they were closer to the epicenter, than the concrete structures of Anchorage which were built on outwash gravel and clay. Gates concluded that much has been learned from the earthquake that will be of value in designing and locating the new buildings and structures. Thus, he stated, geologic knowledge can be used to minimize loss of life and reduce damage to property.

This meeting was sponsored by the American Society of Photogrammetry, the American Congress on Surveying and Mapping, and the Eastern Section of the Seismological Society of America.

DAVID LANDEN
American Society of Photogrammetry, Falls Church, Virginia

Artificial Internal Organs

Topics covering all phases of artificial kidney design, maintenance, application, and results; extracorporeal circulatory machines and problems; transplantation of organs; implantation of artificial organs and cardiovascular prostheses; and basic problems of electrochemistry and stimulation of various intact organs were discussed at the annual meeting of the American Society for Artificial Internal Organs, Chicago, Illinois, 12–13 April 1964. Participants included representatives from England, France, Canada, Australia, Japan, and the United States.

Investigations of the basic aspects of dialyzers included better methods for evaluating dialyzer and membrane performance. Such studies were performed to find the optimum dialyzer design, mechanisms for improving solute transfer by improving fluid distribution within the dialyzer, and new materials for supporting membranes to increase efficiency of dialyzing fluid circulation. New synthetic membranes are more effective than the standard cellophane membrane.

Electrolyte changes in the blood and urine during open-heart surgery are made with no-blood prime and mannitol to reduce the hazards of blood transfusion. Studies of new machines and techniques and physiologic observations are extending our knowledge and application of extracorporeal circulation, and will aid in evaluating open-heart surgery and in assisting circulation.

Discussions on equipment, techniques, and artificial organs included: (i) new design of dialyzers, modification of the operational techniques for hemodialysis and cannula design, and methods of cannulation of blood vessels for purposes of hemodialysis; (ii) new designs and principles of implantable artificial hearts and a piezoelectric pump which may lead to the eventual development of a permanently implantable mechanical heart; and (iii) performance characteristics of artificial kidneys under various operational methods and clinical experience of various large centers with the use of hemodialysis for both acute and chronic renal failure.

Advances in the field of cardiovascular prostheses include new methods for replacement of arteries and heart valves, and study of the functional anatomy of the normal aortic valve. The antigenic influence of the thymus, kidney donor problems, and the place of hemodialysis in renal homotransplantation were stimulants for lively discussions.

Reports on peritoneal dialysis dealt with improved cannulae, cannulations, and techniques. Presentations on other methods of dialysis included reports on new techniques for dextran filtration of uremic blood, electrodialysis of blood, cross-circulation, parabiotic dialysis, and intestinal perfusion.

Investigations of the effects of dialysis, not concerned with renal failure, included changes in brain urea and water content, studies of endogenous and exogenous metabolites and poisons, of barbiturates, and of radioactive strontium.

Sessions on cardiovascular electrochemistry and electrostimulation of organs dealt with basic studies of electrocardiograms, ionic architecture at

the vascular wall interface, chronic implantation of intracardiac exploring electrodes, new apparatus for electrostimulation, effects of continuous electrostimulation of nerves, and a new concept of carotid sinus stimulation for the treatment of hypertension.

The entire proceedings of the meeting will be reported in the official publication of the society, *Transactions of the American Society for Artificial Internal Organs*, and will be available in June 1964. Copies may be obtained from the editor, George Schreiner, Department of Medicine, Georgetown University Hospital, Washington 7, D.C.

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Forthcoming Events

July

14–17. **Western Resources** Conf., Boulder, Colo. (Bureau of Continuation Education, 352 Chemistry Bldg., Univ. of Colorado, Boulder)

14–19. **Sociology**, 7th Latin American congr., Bogotá, Colombia. (C. E. Angulo, Facultad de Sociologia, Universidad Nacional de Colombia, Bogotá)

15–19. **Pleistocene Geomorphology**, symp., Cambridge, England. (T. H. Elkins, Royal Geographical Soc., Kensington Gore, London, S.W.7, England)

16–24. **British Medical Assoc.**, annual, Manchester, England. (D. Gullick, BMA, Tavistock Sq., London, W.C.1, England)

16–24. **Organic Photochemistry**, intern. symp., Strasbourg, France. (G. S. Hammond, Gates and Crellin Laboratories of Chemistry, California Inst. of Technology, Pasadena)

18–22. International Union of **Biological Sciences**, 15th general, Prague, Czechoslovakia. (G. L. Stebbins, Dept. of Genetics, Univ. of California, Davis)

19–24. American **Veterinary Medical** Assoc., 101st annual, Chicago, Ill. (AVMA, 600 South Michigan Ave., Chicago 5)

19–25. **Polarography**, 3rd intern. congr., Southampton, England. (D. A. Pantony, Dept. of Metallurgy, Royal School of Mines, Prince Consort Rd., London, S.W.1, England)

19–26. Comparative **Endocrinology**, 4th intern. symp., Paris, France. (L. Gallien, Laboratoire d'Embryologie, Faculte des Sciences de Paris, 9 quai St.-Bernard, Paris 5°)

20–22. **Magnetic Resonance** in Biological Systems, Boston, Mass. (R. G. Shulman, Bell Telephone Laboratories, Murray Hill, N.J.)

20–23. New Mexico Acad. of **General Practice**, Ruidoso. (H. L. Douglas, Box 767, Tatum, N.M.)

20–24. International **Diabetes** Federation, 5th congr., Toronto, Ont., Canada. (H. Best, Organizing Council, 477 Mt. Pleasant Rd., Toronto 7)

20–24. **Nuclear Radiation** Effects, technical conf., Seattle, Wash. (Inst. of Electrical and Electronics Engineers, Box A, Lenox Hill Station, New York, N.Y.)

20–24. **Organic Reaction Mechanism**, intern. symp. Cork, Ireland. (General Secretary, Chemical Soc., Burlington House, London, W.1, England)

20–24. **Semiconductor Physics**, intern. conf., Paris, France. (M. Balkanski, Laboratoire de Physique, Ecole Normale Supérieure, 24, rue Lhomond, Paris 5°)

20–25. **Catalysis**, 3rd intern. conf., Amsterdam, Netherlands. (D. M. Brouwer, c/o Badhuisweg 3, P.O. Box 3003, Amsterdam-N, Netherlands)

21–23. Physiology and Experimental Psychology of **Color Vision**, Ciba Foundation symp., London, England. (Ciba Foundation, 41 Portland Pl., London, W.1)

21–24. American **Malacological** Union, New Orleans, La. (M. C. Teskey, Rt. 2, Box 318, Marinette, Wis.)

21–28. International **Geographical** Union, 20th intern. congr., London, England. (T. H. Elkins, Royal Geographical Soc., Kensington Gore, London, S.W.7)

25–1. **Religion and Science**, 11th conf., Star Island, Portsmouth, N.H. (Religion and Science, 280 Newton St., Brookline, Mass. 02146)

26–29. **Photobiology**, 4th intern. congr., Oxford, England. (Blandford Site, Whiteknights Park, Reading, England)

26–31. American **Crystallographic** Assoc., Bozeman, Mont. (B. Post, Brooklyn Polytechnic Inst., Brooklyn, N.Y.)

26–31. **Mineralogical** Soc. of America, Bozeman, Mont. (G. Switzer, MSA, U.S. Natl. Museum, Washington, D.C. 20560)

26–31. **Pharmacology**, Teachers' Seminar, Univ. of Connecticut, Storrs. (M. H. Malone, School of Pharmacy, Univ. of Connecticut, Storrs)

26–1. **Biochemistry**, 6th intern. congr., New York, N.Y. (R. A. Harte, 6th Intern. Biochemistry Congr., 9650 Wisconsin Ave., NW, Washington, D.C. 20014)

27–28. International **Cartographic** Assoc., 2nd general assembly, London, England. (D. E. Imhof, Kartographisches Institut, Eidgenössische Technische Hochschule, Zurich, Switzerland)

27–30. Technical Assoc. of the **Pulp and Paper Industry**, engineering conf., Seattle, Wash. (TAPPI, 360 Lexington Ave., New York, N.Y. 10017)

27–31. American **Dietetic** Assoc., 47th annual, Portland, Ore. (ADA, 620 N. Michigan Ave., Chicago, Ill. 60611)

27–21. **Engineering Foundation** Research Confs. Andover, N.H. (United Engineering Center, 345 E. 47 St., New York 17)

30–1. International Soc. for **Human and Animal Mycology**, 3rd, Edinburgh, Scotland. (R. Vanbreuseghem, Inst. of Tropical Medicine, 155 rue National, Antwerp, Belgium)

August

2–3. **Ophthalmic Biochemistry**, first intern. conf., Woods Hole, Mass. (S. Lerman, Univ. of Rochester, Rochester, N.Y.)

2–4. American Assoc. of **Colleges of Pharmacy**, New York, N.Y. (C. W. Bliven, 1507 M St., NW, Washington, D.C. 20005)

2–7. American **Pharmaceutical** Assoc., 111th annual, New York, N.Y. (G. B. Griffenhagen, Div. of Communications, 2215 Constitution Ave., NW, Washington, D.C.)

2–8. **Applied Psychology**, 15th intern. conf., Ljubljana, Yugoslavia. (B. Petz, Inst. of Psychology of Zagreb, Djure Salaja b.b., Zagreb, Yugoslavia)

2–8. **Reactivity of Solids**, 5th intern. symp., Munich, Germany. (B. Stuke, Physikalische-Chemisches Institut, Sophienstr. 11, Munich)

3–5. Compounds of Interest in **Nuclear Reactor Technology**, intern. symp., Boulder, Colo. (J. T. Waber, Los Alamos Scientific Laboratories, P.O. Box 1663, Los Alamos, N.M. 87544)

3–7. Instrument Soc. of America, **instrumentation** conf., Geneva, N.Y. (H. S. Kindler, 530 William Penn Place, Pittsburgh, Pa.)

3–7. World Federation for **Mental Health**, 17th annual, Bern, Switzerland. (F. Cloutier, 1, rue Gevray, Geneva, Switzerland)

3–8. International **Years of the Quiet Sun**, regional symp., Buenos Aires, Argentina. (J. G. Roederer, Facultad de Ciencias, Perú 272, Buenos Aires)

3–10. **Anthropologists and Ethnologists**, 7th world conf., Moscow, U.S.S.R. (American Anthropological Assoc., 1530 P St., NW, Washington, D.C. 20005)

3–12. **Botanical** Congr., 10th intern., Edinburgh, Scotland. (Miss S. C. Penny, 5 Hope Park Sq., Edinburgh 8)

4–7. **Poultry Science** Assoc., annual, Minneapolis, Minn. (E. L. Johnson, Dept. of Poultry Science, Univ. of Minnesota, St. Paul 55101)

4–17. Methods of **Hydrological Forecasting**, 3rd inter-regional seminar, World Meteorological Organization/UN Economic Commission for Asia and the Far East, Bangkok, Thailand. (WMO, Secretariat, Geneva, Switzerland)

5–7. Sonic Investigations on **Internal Damping in Solids**, symp., London, England (Administration Assistant, Institute of Physics and the Physical Society, 47 Belgrave Square, London, S.W.1)

5–12. **Atmospheric Radiation**, symp., World Meteorological Organization/ Intern. Union of Geodesy and Geophysics, Leningrad, U.S.S.R. (Secretariat, WMO, Geneva, Switzerland)

5–15. **High Energy Physics**, 12th intern. conf., Dubna, U.S.S.R. (M. L. Goldberger, Commission on High Energy Nuclear Physics, IUPAC, Princeton Univ., Princeton, N.J. 08540)

6–11. American **Podiatry** Assoc., New York, N.Y. (F. A. Kalbacher, American Podiatry Assoc., 3301 16th St., NW, Washington, D.C. 20010)

7–14. Scientific Study on **Mental Retardation**, intern. congr., Copenhagen, Denmark. (A. Dupont, Statens Andssvageforsorg, Nyropsgade 28.2, Copenhagen 5)

9–12. **Heat Transfer**, 7th natl. conf., Cleveland, Ohio. (W. Chenoweth, American Inst. of Chemical Engineers, 345 E. 47 St., New York 17)