

Meetings

Man-Made Lakes

The increasing number of large impoundments being made in many parts of the world and their accompanying problems, especially in tropical countries, led to the convening by the Ghana Academy of Sciences of an International Symposium on Man-Made Lakes. This symposium was held near Accra, Ghana, on 21–24 November 1966, in conjunction with the fourth meeting of the British Commonwealth Scientific Committee; it was attended by about 60 scientists from 12 countries in Europe, Africa, and North America as well as by representatives of the World Health Organization, the Food and Agriculture Organization and the International Biological Programme.

Many topics were discussed in a series of papers and discussion groups, but perhaps the most significant were those papers which presented particular problems in the tropics. The problems include the tendency of large lakes to stratify more or less permanently; the outbreaks of floating plants which have caused problems on some impoundments; the production of fish for human consumption; and the parasitic diseases associated with water.

A. G. Coche (F.A.O.) described physical and chemical studies on Lake Kariba made during almost oceanographical cruises along its axis, a technique which he advocates for use on large impoundments. Lake Kariba became thermally stratified as soon as it started to fill; this stratification resulted in deoxygenation and the production of hydrogen sulfide in the lower layers. The later studies showed that stability and the disappearance of the hydrogen sulfide occurred after a period of 6 years. The newly filled Volta Lake was also showing signs of stratification and deoxygenation in the lower layers, but the situation is unstable and can be broken down by persistent wind action (A. B. Viner, and S. Biswas, Ghana). Much of the time, however, the deeper

water is deoxygenated, thus restricting animals to the surface waters. R. S. A. Beauchamp (United Kingdom) pointed out that the great African lakes differ markedly from the great impoundments in that they have a relatively small supply of incoming water, thus their stratification is hardly disturbed by inflowing rivers. He discussed the puzzling question of why tropical lakes should become stratified, and suggested that it may be caused by nocturnal cooling very near the shore followed by small downward currents. In any event, once stratification occurs, the lower layers rapidly become deoxygenated. This may be particularly true in reservoirs; and two papers (F. W. Addo-Ashong, Ghana; S. A. Visser and A. M. A. Imevbore, Nigeria) dealt with the decay of wood and leaves respectively, making the point that both decay very slowly under water. Presumably, therefore, flooded forest areas will exert an oxygen demand for long periods and deoxygenation will occur rapidly even if stratification is unstable and often broken down.

Problems with *Salvinia* on Lake Kariba and *Eichhornia* on the Nile have focused attention on the importance of weeds on tropical man-made lakes, a subject which was reviewed by E. C. S. Little (United Kingdom). With this danger in mind, a party from the University of Ghana (Hall *et al.*) had surveyed parts of the Volta valley to determine if any possibly dangerous species were present. The water lettuce *Pistia* seemed the most likely to cause trouble. In fact, it did produce some large floating mats when the lake was filled. W. H. L. Allsopp (F.A.O.) reviewed work done in Guyana using manatees for weed control; he suggested that the native West African species might be encouraged by the lake. This species is now very rare. However, he stressed that it may not be as rare as is supposed because the animals are very difficult to observe. Unfortunately they are good to eat, and as was pointed

out by E. A. O. Asibey (Ghana), the local natives are great hunters and have apparently eaten most of the surprisingly large number of game animals which had been displaced by the rising water in Volta Lake.

Several papers dealt with fishery problems which are so important in developing countries. Early studies on the Volta Lake by several workers in Ghana (A. Lelek and A. A. Wuddah, F. M. K. Denyoh, T. Petr, and J. D. Reynolds) indicated that the distribution of fishes was changing. The peculiar elephant fish (Mormyridae) and some others were being replaced by Cichlidae, including the genus *Tilapia*, and Bagridae, but the occurrence of many species was still infrequent. The little pelagic hering *Microthrissa* is becoming quite abundant. It would seem then that adequate species of fish are present and that the lake will produce fish for human needs. Imevbore hoped that the somewhat similar Kainji Lake in Nigeria might ultimately produce as much as 10,000 tons of fish a year when it is filled. Preliminary studies on fish parasites both there (F. M. A. Ukoli, Nigeria) and in Volta Lake (S. V. Prah, Ghana) indicated that they were not likely to be of importance.

Two interesting reports from Lake Victoria indicated ways in which fish production in African lakes might be increased. The recent unprecedented high levels of the water had led to marked increases in the catches of *Tilapia esculenta*, a desirable food fish, because of the provision of nursery areas on the flooded land (R. L. Welcomme, Uganda). J. M. Gee (Uganda) reported on the controversial introduction of the Nile perch (*Lates*) into the lake. The perch population is thriving and feeding primarily on the trash fish, thus not harming the *Tilapia* fishery. Consequently, it may be considered another source of food from this lake and not be the disaster that some persons had feared.

The tropical diseases associated with water had attracted the attention and concern of many workers associated with the Volta project. J. St. G. Warmann described how the gorge where the dam was to be built had been cleared of *Simulium damnosum*, the vector of onchocerciasis, in order to protect the construction crews. L. E. Obeng had surveyed streams around the lake and found a few *S. damnosum* in only one place. However, she and I. Paperna had been concerned also with the possibility that the lake might

become a focus for schistosomiasis. The vector, the snail *Bulinus*, was found in areas along the shore which had been cleared of bush and where aquatic plants were growing. Drifting mats of *Pistia* are spreading the snails about the lake. There would therefore seem to be some danger in this direction, and this is a problem which may present great difficulties.

The symposium was organized by Letitia E. Obeng, (director, Institute of Aquatic Biology of the Ghana Academy of Science) and J. Yanney Ewusie (secretary of the Academy). The delegates were given the opportunity to visit the dam at Akosombo and to travel some distance on the Volta Lake, which was almost full. They also visited the Institute of Aquatic Biology, the University of Ghana, and the University College of Cape Coast.

Proceedings will be published by the Academy.

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Calendar of Events

National Meetings

June

1-2. **Computer Applications in the Earth Sciences**, 2nd colloquium, Lawrence, Kan. (R. F. Treece, University Extension, Univ. of Kansas, Lawrence 66044)

1-2. **Industrial Water and Waste**, 7th conf., Austin, Tex. (J. F. Malina, Jr., 305 Engineering Lab. Bldg., Univ. of Texas, Austin 78712)

1-3. **Applied Diving Physiology**, Univ. of California, San Francisco Extension Center. (Letters and Science Extension, Univ. of California, Berkeley 94720)

2-3. **Equine Bone and Joint Diseases**, symp., Ithaca, N.Y. (H. F. Schryver, Dept. of Large Animal Medicine, New York State Veterinary College, Cornell Univ., Ithaca 14850)

4-6. **Commercial Chemical Development Assoc.**, mtg., Buck Hill Falls, Pa. (The Association, 100 Church St., New York 10007)

4-7. **Tissue Culture Assoc.**, annual mtg., Philadelphia, Pa. (L. Hayflick, Wistar Inst., 36th and Spruce Sts., Philadelphia 19104)

4-9. **American Water Works Assoc.**, annual conf., Atlantic City, N.J. (R. J. Faust, The Association, 2 Park Ave., New York 10017)

4-9. **Underwater Acoustics**, seminar, Pennsylvania State Univ., University Park. (Conf. Center, J. Orvis Keller Bldg., Pennsylvania State Univ., University Park 16802)

4-11. **Lubrication in Nuclear Applications**, symp., American Soc. of Mechanical Engineers, Miami Beach, Fla. (Meetings

Manager, The Society, 345 E. 47 St., New York 10017)

5. **Integrated Circuit Manufacturing**, symp., New York, N.Y. (Miss B. S. Hines, Registration Coordinator, 7830 Hasbrook Ave., Philadelphia, Pa. 19111)

5-7. The New Thrust Seaward, **Marine Technology Soc.**, annual conf. and exhibit, San Diego, Calif. (Conference Management Organization, Inc., Colonial Bldg., 105 N. Virginia Ave., Falls Church, Va. 22046)

5-7. **Recovery and Repair Mechanisms in Radiobiology**, Brookhaven Natl. Lab., Upton, N.Y. (D. G. Baker, Dept. of Biology, Brookhaven Natl. Lab., Upton)

5-8. **Society for Economic Botany**, 8th annual, Coral Gables, Fla. (Miss J. F. Morton, The Society, Morton Collectanea, Univ. of Miami, Box 8204, Coral Gables)

5-9. **American Board of Radiology**, annual mtg. and examination, Pittsburgh, Pa. (H. D. Kerr, Kahler Center Bldg., Rochester, Minn. 55901)

5-16. **Introduction to Modern Archives Administration**, 21st inst., Washington, D.C. (P. W. Howerton, American Univ., 2000 G St., NW, Washington 20010)

6-7. **Deposition of Thin Films by Sputtering**, 2nd symp., Rochester, N.Y. (R. D'Aprix, Sputtering Program, CVC, Dept. T, 1775 Mt. Read Blvd., Rochester 14603)

6-8. **Solid Propulsion**, 2nd conf., Anaheim, Calif. (Meetings Dept., American Inst. of Aeronautics and Astronautics, 1290 Sixth Ave., New York 10019)

6-9. **Laser Engineering and Applications**, conf., Washington, D.C. (L. Winner, 152 W. 42 St., New York 10036)

8-9. **Photographic Systems for Engineers**, seminar, Newton, Mass. (Soc. of Photographic Scientists and Engineers, 1330 Massachusetts Ave., NW, Washington, D.C. 20005)

8-9. **Post Irradiation Recovery Kinetics**, symp., Bethesda, Md. (M. F. Canning, Information Div., Technical Information and Services Dept., Armed Forces Radiobiology Research Inst., Defense Atomic Support Agency, Bethesda 20014)

8-10. **Fourth Pacific Northwest Plastics Workshop**, Spokane, Wash. (R. Raff, Research Div., College of Engineering, Washington State Univ., Pullman 99163)

11-14. **Apollo and Beyond**, American Astronautical Soc., Huntsville, Ala. (S. S. Hu, Northrop Space Labs., P.O. Box 1484, Huntsville)

11-15. **American Nuclear Soc.**, 12th annual, San Diego, Calif. (J. E. Wilkins, Jr., General Atomic, P.O. Box 608, San Diego 92112)

11-15. **Industrial Pharmaceutical Research**, 9th annual natl. conf., Land O' Lakes, Wis. (A. P. Lemberger, Extension Services in Pharmacy, 190 Pharmacy Bldg., Univ. of Wisconsin, Madison 53706)

11-16. **Air Pollution Control Assoc.**, 60th annual mtg., Cleveland, Ohio. (Seward Covert & Associates, 1059 Leader Bldg., Cleveland 44114)

11-16. **Medical Library Assoc.**, annual mtg., Miami, Fla. (The Association, 919 N. Michigan Ave., Chicago, Ill.)

12-14. **American Neurological Assoc.**, 92nd annual mtg., Atlantic City, N.J. (M. D. Yahr, The Association, 710 W. 168 St., New York 10032)

12-15. **Society for Industrial and Applied Mathematics**, Washington, D.C. (W.

J. Jameson, Jr., Collins Radio Co., 120-09, Cedar Rapids, Iowa 52406)

12-16. **American Osteopathic Academy of Orthopedics**, 7th annual instructional course, Vienna, Austria. (P. H. Lewis, 1930 Chestnut St., St. Joseph, Mo. 64501)

12-16. **Technical and Industrial Communication**, 10th annual inst., Fort Collins, Colo. (Director, The Institute, Colorado State Univ., Fort Collins 80521)

13-14. **Electroexplosive Devices**, 5th symp., Philadelphia, Pa. (G. Cohn, Senior Staff Engineer, Franklin Inst. Research Lab., Philadelphia 19103)

13-15. **American Astronomical Soc.**, Yerkes Observatory, Williams Bay, Wis. (G. C. McVittie, Univ. of Illinois Observatory, Urbana 61803)

13-16. **Conjugate Point Symp.**, Boulder, Colo. (Aeronomy Lab. 540.03, Environmental Science Services Administration, Inst. for Telecommunication Sciences and Aeronomy, Boulder 80302)

13-16. **Vacuum Metallurgical Conf.**, 10th annual, New York, N.Y. (E. L. Foster, Materials Engineering Dept., Battelle Memorial Inst., 505 King Ave., Columbus, Ohio)

14-15. **Plastics for Tooling**, 9th seminar, Lafayette, Ind. (Soc. of Plastics Industry, 250 Park Ave., New York 10017)

14-16. **Densitometry**, seminar, Chicago, Ill. (B. Kettinger, News Service Office, P.O. Box 3404, Rochester Inst. of Technology, Rochester, N.Y. 14614)

14-17. **Modern Computer Analysis of Complex Social Science Data Bases**, Council of Social Science Data Archives, annual mtg., Los Angeles, Calif. (W. A. Glaser, Bureau of Applied Social Research, 605 W. 115 St., New York 10025)

14-17. **Speech-Analyzing Aids for the Deaf**, conf., Washington, D.C. (J. M. Pickett, Hearing and Speech Center, Gallaudet College, Washington, D.C.)

15-16. **American Rheumatism Assoc.**, New York, N.Y. (Miss M. Walsh, The Association, 1212 Ave. of the Americas, New York)

15-16. **Soil, Water and Suburbia**, Dept. of Agriculture and Dept. of Housing and Urban Development, Washington, D.C. (S. Kasper, Room 1201, Dept. of Housing and Urban Development, 1430 K St., NW, Washington, D.C.)

15-17. **American Assoc. of Physics Teachers**, summer mtg., Canton, N.Y. (A. B. Arons, Physics Dept., Amherst College, Amherst, Mass.)

15-17. **Symposium on High Energy Radiation Therapy Dosimetry**, American Assoc. of Physicists in Medicine, New York, N.Y. (L. H. Lanzl, Dept. of Radiology, Univ. of Chicago, 950 E. 59 St., Chicago, Ill. 60637)

15-18. **American Therapeutic Soc.**, mtg., Atlantic City, N.J. (A. F. Kreglow, 1801 Eye St., NW, Washington, D.C.)

15-19. **American College of Chest Physicians**, Atlantic City, N.J. (M. Kornfeld, 112 E. Chestnut St., Chicago, Ill. 60611)

16-17. **American Geriatrics Soc.**, Atlantic City, N.J. (E. Henderson, Executive Director, The Society, 10 Columbus Circle, Room 1495, New York 10019)

17. **Academy of Tuberculosis Physicians**, Atlantic City, N.J. (G. P. Bailey, 1295 Clermont, Denver, Colo.)

17-18. **Academy of Psychosomatic**