

vania) examined, largely by nuclear magnetic resonance studies, the vital role of the essential metallic ion (most commonly manganese) in CO_2 fixation by the biotin carboxylases; they proposed a detailed mechanism for this role in these reactions.

The final session primarily concerned aspects of the currently unexplained finding that the P_{CO_2} of alveolar gas in the lungs may become greater than arterial P_{CO_2} . E. J. M. Campbell (Royal Postgraduate Medical School, London) described studies in man in which this inequality was found to increase as transient CO_2 exchange increased. G. Laszlo (Johns Hopkins) found that in perfused dog lungs alveolar P_{CO_2} remained equal to arterial P_{CO_2} if there was no net CO_2 exchange. However, G. Gurtner (State University of New York at Buffalo) reported that alveolar P_{CO_2} was greater than arterial P_{CO_2} under conditions where CO_2 exchange would have been expected to be minimal. He suggested that there is a higher $[\text{H}^+]$ near the wall of the pulmonary capillary, which leads to a greater local $[\text{H}_2\text{CO}_3]$ and raises the P_{CO_2} in the alveoli. No completely satisfactory explanation for these apparent violations of the generally accepted belief that CO_2 equilibrates between alveolar gas and end-capillary blood was presented.

This symposium was supported by the National Aeronautics and Space Administration and the National Heart Institute. The proceedings will be published this year by the Scientific and Technical Information Division of the former as NASA SP-188.

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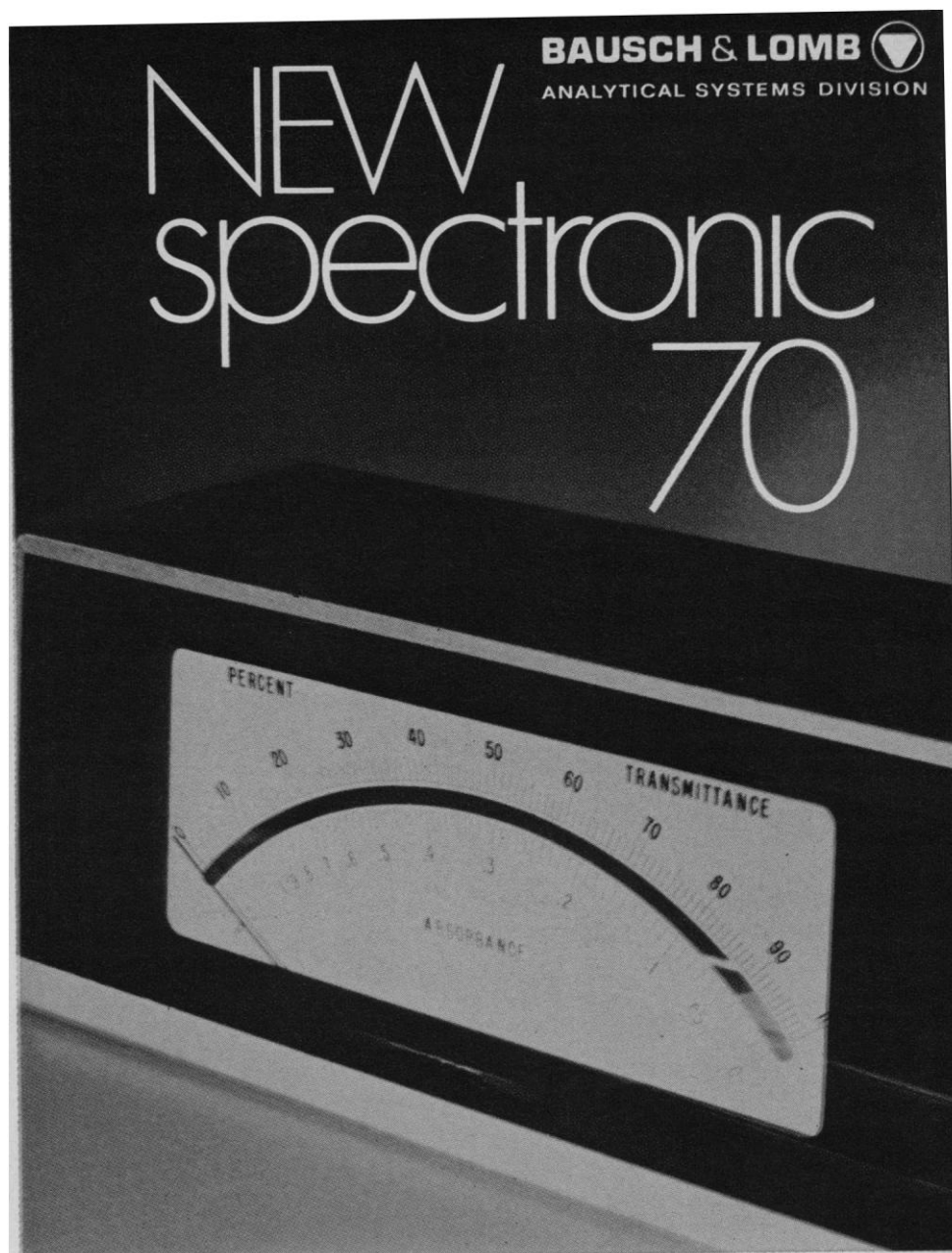
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Courses

Tropical Geography, 15 April–15 June. This course will be conducted in Costa Rica and will hinge on the use of geographical methods in a tropical context. Included in the course will be "Geography of Costa Rica" and "Forests and related resources in the tropics," which will place greatest stress on forest management and utilization. Following an orientation program in San Jose, students will be given increasing opportunities for individual work in any of the major areas of geographic inquiry. They will thus work in rotating pairs during the first 6 weeks and individually in the last 2 weeks, when they will undertake independent research on a topic of their choosing. The Organi-

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zation for Tropical Studies, Inc., which offers this course, was established to foster education and research directed toward the expansion of knowledge of tropical environments. The program is made possible largely through grant funds from the National Science Foundation. Students pay no tuition and are provided with living expenses and round-trip transportation to Costa Rica. Enrollment is limited and selection is competitive. Information on course and application forms should be available in all departments offering graduate programs in geography. *Deadline for applications: 15 December.* (Organization for Tropical Studies, North American Office, P.O. Box 8092, University of Miami, Coral Gables, Florida 33124)

Biomedical and Clinical Applications of Gas Chromatography, St. Louis, Mo., 5-8 November. The main subject areas are special requirements for biomedical gas chromatography; injector, column, and detector technology and performance; automated gas chromatography in routine analysis and radio-gas chromatography of labeled substances; state-of-the-art of the gas chromatographic analysis of fatty acids, amino acids, steroids, urinary acids, carbohydrates, lipids, terpenes, and others, including sample preparation and formation of volatile derivatives; selection of equipment, setting up, operation, and economics of a biomedical gas chromatography laboratory. (Dr. Ram L. Levy, Division of Continuing Education, Box 1048, Washington University, St. Louis, Mo. 63130)

Electronic Methods of Precision Positioning at Sea, Los Angeles, Calif., 10-14 November. Intended for civil, petroleum, electronic, and ocean engineers, oceanographers, marine geologists, hydrographers, and scientists. The purpose of the course is to describe positioning systems available to those working in the sea: theory, operation, methods, and expected performance and to aid those with marine engineering problems in selecting navigation systems best suited to their needs. *Fee: \$275.* (P.O. Box 24902, Engineering and Physical Sciences Extension, University Extension, University of California, Los Angeles 90024)

Use of Operational Amplifiers in Instrumentation, Washington, D.C., 10-12 November. Fundamentals will be stressed in order to develop the student's ability to use operational amplifiers in his work and to learn that these useful devices are easy to use and can be practically applied even though the user has little or no knowledge of electronics. *Fee: \$85.* (Dr. Richard G. McKee, McKee-Pederson Instruments, P.O. Box 323, Danville, California 94526)

Forthcoming Events

October

23-25. **American Astronautical Soc.**, Las Cruces, N.M. (J. Penwarden, New Mexico State Univ., Las Cruces)

24-26. **Orton Soc.**, 20th annual, New York, N.Y. (V. A. Graff, The Society, 15 Claremont Ave., New York 10027)

25-29. **American Soc. of Anesthesiologists**, San Francisco, Calif. (W. S. Marinko, 515 Busse Highway, Park Ridge, Ill. 60608)

25-31. **American Assoc. of Medical Record Librarians**, New York, N.Y. (M. Waterstraat, The Association, 211 E. Chicago Ave., Chicago, Ill. 60611)

26-30. **Society for Industrial and Applied Mathematics**, Anaheim, Calif. (R. K. Windsor, 33 S. 17 St., Philadelphia, Pa. 19103)

27-29. **Interscience Conf. on Antimicrobial Agents and Chemotherapy**, 9th, Washington, D.C. (R. W. Sarber, American Soc. for Microbiology, 1913 Eye St., NW, Washington, D.C. 20006)

25-26. **International Soc. for Homotoxicology and Antihomotoxicological Therapy Symp.**, Baden-Baden, Germany. (F. Doerper, Bertholdstr. 7, 757 Baden-Baden)

27-30. **National Powerplant Mtg.**, Cleveland, Ohio. (W. I. Marble, 2 Pennsylvania Plaza, New York 10001)

27-30. **National Safety Congr. and Exposition**, Chicago, Ill. (H. W. Champlin, The Congress, 425 N. Michigan Ave., Chicago 60611)

29-31. **Symposium on Pharmacology of Selected Drugs Used in Dermatology: Principles of Action and Uses**, New York, N.Y. (P. Merwin, New York Univ. Medical Center, 550 First Ave., New York 10016)

30-3. **Association of American Medical Colleges**, Cincinnati, Ohio. (D. E. Mattson, Div. of Educational Measurement and Research, AAMC, 2530 Ridge Ave., Evanston, Ill. 60201)

31-2. **American Soc. of Criminology**, Columbus, Ohio. (R. M. Susman, ASC, 800 Fourth St., SW, S-610, Washington, D.C. 20024)

November

2-5. **Atherosclerosis**, 2nd intern. symp., Chicago, Ill. (L. N. Katz, Chicago Heart Assoc., 22 W. Madison St., Chicago 60602)

2-7. **Society of Cosmetic Chemists**, Harriman, N.Y. (A. R. Korte, 521 W. 57 St., New York 10019)

3-4. **Institute of Navigation**, San Diego, Calif. (R. E. Freeman, Inst. of Navigation, Suite 912, 711 14th St., NW, Washington, D.C. 20005)

3-4. **Veterinarians**, 45th annual conf., Columbia, Mo. (F. McCulloch, School of Veterinary Medicine, Univ. of Missouri, Columbia 65201)

3-5. **Engineering Science in Biomedicine**, 7th annual, St. Louis, Mo. (E. Y. Rodin, Dept. of Applied Mathematics and Computer Science, Box 1176, Washington Univ., St. Louis 63130)

3-6. **National Bureau of Standards, 3rd Materials Research Symp.**, Gaithersburg, Md. (R. R. Stromberg, A-307, Polymers Bldg., NBS, Washington, D.C. 20234)

3-7. **American Soc. of Parasitologists**, Washington, D.C. (D. V. Moore, Dept. of Microbiology, Univ. of Texas, Southwestern Medical School, Dallas 75235)

4-7. **Acoustical Soc. of America**, San Diego, Calif. (B. H. Goodfriend, 335 E. 45 St., New York 10017)

5-7. **Pittsburgh Diffraction Conf.**, 27th, Pittsburgh, Pa. (J. H. Scott, U.S. Steel Research Center, Monroeville, Pa. 15146)