their failure to consider the mutual dependence of the percentage components of a relative analysis and other factors such as variation in the net pollen production of local versus regional vegetation that have long been recognized by palynologists.

From a purely mechanical standpoint, the abundant misspellings and typographic errors, a totally arbitrary use of the hyphen, and a concertina-like opening and closing of word-spacing make this a trying book to read. Fortunately, most of the better chapters are also the least flawed in this regard. This collection, despite its serious shortcomings, reaffirms the value of megafloras in biostratigraphy, while showing that most paleobotanists have a long way to go to reach the level of sophistication of their zoological compatriots in either biostratigraphy or paleoecology.

LEO J. HICKEY
Division of Paleobotany,
Smithsonian Institution,
Washington, D.C. 20560

Poriferans

Biologie des Spongaires. Sponge Biology. Papers from a colloquium, Paris, Dec. 1978. CLAUDE LÉVI and NICOLE BOURY-ESNAULT, Eds. Editions du Centre National de la Recherche Scientifique, Paris, 1979. 534 pp., illus. Paper, 185 F. Colloques Internationaux du CNRS, No. 291.

This volume contains the 61 papers presented at an international colloquium on the biology of sponges. The papers are grouped into seven sections: developmental biology, cytology and cellular relationships, cell recognition, ecology and physiological ecology, chemistry and biochemistry, microstructure and mineralogy of the skeletons of living and fossil forms, and systematics and evolution. In each section the first paper is a relatively long review, and those following it are generally quite short reports of recent research. The reviews are mostly broad in scope and often thought-provoking. Some of the reports are summaries of studies to be published more extensively elsewhere.

Collectively, these papers contain a wealth of information, many excellent scanning and transmission electron micrographs, and a most useful set of references. Unfortunately, subject and author indexes are not provided.

The complete volume probably will be most useful to sponge specialists and invertebrate zoologists, but there are many important papers that will be of interest to developmental biologists, physiologists, benthic ecologists, organic chemists, and paleontologists as well. This reviewer found the following contributions especially noteworthy.

There are three papers on the gemmules of freshwater sponges. Rozenfeld *et al.* have found evidence to support the idea that gemmulation is effected by the attraction of amoeboid cells toward a substance diffusing from forming aggregates of these cells. Papers by Ostrom and Simpson and by Harrison *et al.* report that gemmule hatching is associated with a transfer of soluble calcium to binding sites on the cells with the gemmule, with decreasing levels of cyclic AMP, with increasing levels of cyclic GMP, and with increasing ratios of cyclic GMP to cyclic AMP.

A particularly extensive and detailed review of the structure and development of both calcareous and siliceous spicules is presented by Jones, who also contributes a paper on the production and growth rates of calcareous spicules in *Sycon* as a function of calcium concentration.

A comparative study by Bergquist *et al.* on the morphology and behavior of larvae from 33 species belonging to six demosponge orders suggests that larval characteristics are often similar among related taxa and may be important in clarifying taxonomic relationships.

A study by Fell *et al.* on the sexual periodicity of postdormant and postlarval specimens of *Halichondria* provides further evidence that, at least in some sponges, sexual reproduction is under endogenous control.

Mackie reviews signal conduction and coordination and provides some new data on conduction velocities in the hexactinellid *Staurocalyptus*.

Several authors report important new findings regarding the structure of sponges. De Vos shows that the endopinacoderm of the inhalant canals of *Ephydatia* contain many porocytes, through which nutritive particles may pass directly into the cells of the mesohyl. Reiswig notes that the choanoderm of two hexactinellid species does not consist of separate choanocytes, as in other sponges, but sets of syncytia from which collar units project.

The phenomenon of cell recognition is well represented. Van de Vyver reviews the various mechanisms by which sponges can maintain their integrity when confronted with "foreign" cells—collagen-like barriers between the growing fronts of dissimilar sponges in nature, and adhesion-inhibitory factors, phagocytosis, and cytotoxicity in experimental cell aggregates and grafts. Six reports following this review are devoted to these matters.

An excellent long-term study on the growth and mortality of shallow-water Antarctic sponges is contributed by Dayton. Jackson and Palumbi show that sponges in cryptic, coral-reef environments regenerate more rapidly than co-occurring bryozoans and suggest that this ability permits them to better withstand partial predation and to dominate substrata even though the bryozoans have much higher recruitment rates and comparable growth rates. Tunnicliffe makes the rather surprising point that boring sponges may actually benefit the coral *Acropora cervicornis* by facilitating its fragmentation, which seems to be important for asexual reproduction, dispersal, and suppressing the growth of competitors.

Sponge chemistry and chemotaxonomy are well reviewed by Bergquist and further considered by Sodano, Faulkner *et al.*, and Castiello *et al.* It is interesting that some sponges produce unusual sterols via transformations of exogenous, dietary sterols and that the predators of such sponges can be identified by the presence of these sterols in their tissues.

Among the many papers devoted to fossil calcareous sponges and their living relatives, two are especially exciting. Hartman describes a new Bahamian sclerosponge that is similar to some Mesozoic stromatoporoids and helps in interpreting the structure of these ancient organisms. Vacelet gives a very detailed account of a living sphinctozoan, *Neocoelia crypta*, and concludes that these organisms, thought to be extinct since the Cretaceous, are sponges. He also proposes a new classification for those sponges that have calcareous skeletons not composed of spicules. In another paper, Vacelet describes the spermatogenesis and embryogenesis of *Neocoelia*, showing that this sphinctozoan is similar in these respects to demosponges.

JOHN J. GILBERT
Department of Biological Sciences,
Dartmouth College,
Hanover, New Hampshire 03755

Books Received

Adolescent-Parental Separation. Michael V. Bloom. Gardner Press, New York, 1980 (distributor, Halsted [Wiley], New York). 178 pp. $22.95.

Advances in Agronomy. Vol. 33. N. C. Brady, Ed. Academic Press, New York, 1980. xiv, 374 pp., illus. $41.50.

Advances in Catalysis. Vol. 29. D. D. Eley, Herman Pines, and Paul B. Weisz, Eds. Academic Press, New York, 1980. xvi, 368 pp., illus. $45.

Advances in Child Development and Behavior. Vol. 15. Hayne W. Reese and Lewis P. Lipsitt, Eds. Academic Press, New York, 1980. xii, 264 pp. $28.

Advances in Food Research. Vol. 26. C. O. Chich-

ester, E. M. Mrak, and G. F. Stewart, Eds. Academic Press, New York, 1980. viii, 316 pp., illus. $31.

Analysis of Welded Structures. Residual Stresses, Distortion, and Their Consequences. Koichi Masubuchi. Pergamon, New York, 1980. xii, 642 pp., illus. Cloth, $113; paper, $40. International Series on Materials Science and Technology, vol. 33.

Analytic Number Theory. An Introduction. Richard Bellman. Benjamin/Cummings, Reading, Mass., 1980. xviii, 196 pp., illus. $19.50.

Analytical Applications of FT-IR to Molecular and Biological Systems. James R. Durig, Ed. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). x, 608 pp., illus. $68.50. NATO Advanced Study Institutes Series C, vol. 57.

Analytical Methods for Pesticides and Plant Growth Regulators. Vol. 11, Updated General Techniques and Additional Pesticides. Gunter Zweig and Joseph Sherma, Eds. Academic Press, New York, 1980. xiv, 408 pp., illus. $46.

Analytical Profiles of Drug Substances. Vol. 9. Klaus Florey, Ed. Academic Press, New York, 1980. x, 618 pp., illus. $34.

Biochemistry. Lubert Stryer. Freeman, San Francisco, ed. 2, 1981. xx, 950 pp., illus. $29.95.

Biochemistry, Biophysics and Regulation of Cytochrome P-450. Jan-ÅkeGustafsson, Jan Carlstedt-Duke, AgnetaMode, and Joseph Rafter, Eds. Elsevier North-Holland, New York, 1980. xiv, 626 pp., illus. $79.50. Developments in Biochemistry, vol. 13.

Biochemistry of Ageing. M. S. Kanungo. Academic Press, New York, 1980. x, 282 pp., illus. $40.

Biological Chemistry. The Molecular Approach to Biological Systems. K. E. Suckling and C. J. Suckling. Cambridge University Press, New York, 1980. xii, 382 pp., illus. Cloth, $59.50; paper, $19.95.

Biological Monitoring of Fish. Charles H. Hocutt and Jay R. Stauffer, Jr., Eds. Lexington (Heath), Lexington, Mass., 1980. xiv, 418 pp., illus. $31.95.

Biological Recognition and Assembly. David S. Eisenberg, James A. Lake, and C. Fred Fox, Eds. Liss, New York, 1980. xiv, 356 pp., illus. $52. Progress in Clinical and Biological Research, vol. 40.

Biological Regulation and Development. Vol. 2, Molecular Organization and Cell Function. Robert F. Goldberger, Ed. Plenum, New York, 1980. xvi, 620 pp., illus. $49.50.

Biological Wastewater Treatment. Theory and Applications. C. P. Leslie Grady Jr., and Henry C. Lim. Dekker, New York, 1980. xvi, 964 pp., illus. $75. Pollution Engineering and Technology, 12.

The Biology and Management of Lobsters. J. Stanley Cobb and Bruce F. Phillips, Eds. Vol. 1, Physiology and Behavior. xvi, 462 pp., illus. $55. Vol. 2, Ecology and Management. xiv, 390 pp., illus. $45. Academic Press, New York, 1980.

Biology of Bone Marrow Transplantation. Robert Peter Gale and C. Fred Fox, Eds. Academic Press, New York, 1980. xx, 566 pp., illus. $40. ICN-UCLA Symposia on Molecular and Cellular Biology, vol. 27.

Biology of the Tapeworm *Hymenolepis diminuta*. Hisao P. Arai, Ed. Academic Press, New York, 1980. xii, 734 pp., illus. $45.

Biomimetic Chemistry. Papers from a symposium, Honolulu, Apr. 1979. David Dolphin, Charles McKenna, Yukito Murakami, and Iwao Tabushi, Eds. American Chemical Society, Washington, D.C., 1980. x, 438 pp., illus. $57. Advances in Chemistry Series, 191.

Biosynthesis, Modification, and Processing of Cellular and Viral Polyproteins. Gebhard Koch and Dietmar Richter, Eds. Academic Press, New York, 1980. xviii, 342 pp., illus. $29.

Bound for the Stars. Saul J. Adelman and Benjamin Adelman. Prentice-Hall, Englewood Cliffs, N.J., 1981. xiv, 336 pp., illus. Cloth, $17.95; paper, $8.95.

Chromosome Techniques. Theory and Practice. Arun Kumar Sharma and Archana Sharma. Butterworths, Boston, ed. 3, 1980. xii, 712 pp., illus. $135.

Citrus Nutrition and Quality. Papers from a symposium, Houston, Mar. 1980. Steven Nagy and John A. Attaway, Eds. American Chemical Society, Washington, D.C., 1980. viii, 456 pp., illus. $36.25. ACS Symposium Series, 143.

Classification and Ordination. Papers from a symposium, Nijmegen, The Netherlands, May 1979. Eddy van der Maarel, Ed. Junk, The Hague, 1980 (U.S. distributor, Kluwer Boston, Hingham, Mass.). x, 188 pp., illus. $76. Advances in Vegetation Science, 2.

Clinical Biochemistry of Domestic Animals. Jiro J. Kaneko, Ed. Academic Press, New York, ed. 3, 1980. xiv, 832 pp. $60.

Comprehensive Virology. Vol. 16, Virus-Host Interactions. Heinz Fraenkel-Conrat and Robert R. Wagner, Eds. Plenum, New York, 1980. xvi, 372 pp., illus. $39.50.

Computing in Crystallography. Papers from a school, Bangalore, India, Jan. 1980. R. Diamond, S. Ramaseshan, and K. Venkatesan, Eds. Published for the International Union of Crystallography of the Indian Academy of Sciences, Bangalore, 1980. Variously paged, illus. Cloth.

Contemporary Group Work. Charles D. Garvin. Prentice-Hall, Englewood Cliffs, N.J., 1981. xiv, 306 pp. $15.95.

Continued Fractions. Analytic Theory and Applications. William B. Jones and W. J. Thron. Addison-Wesley Advanced Book Program, Reading, Mass., 1980. xxx, 428 pp. $37.50. Encyclopedia of Mathematics and Its Applications, vol. 11.

Cosmos. Carl Sagan. Random House, New York, 1980. xvi, 366 pp., illus. $19.95.

Current Topics in Developmental Biology. A. A. Moscona and Alberto Monroy, Eds. Vol. 16, Neural Development. Part 2, Neural Development in Model Systems. R. Kevin Hunt, Ed. Academic Press, New York, 1980. xii, 410 pp., illus. $34.

Current Topics in Early Childhood Education. Vol. 3. Lilian G. Katz, Ed. Ablex, Norwood, N.J., 1980. vi, 186 pp. $13.50.

Cytotoxic and Complement Mediated Reactions. P. Kukor, P. Kallós, H. D. Schlumberger, and G. B. West, Eds. Karger, Basel, 1980. viii, 144 pp., illus. $39. PAR, Pseudo-Allergic Reactions, vol. 2.

The Dartmouth Time-Sharing System. Gordon M. Bull. Horwood, Chichester, England, and Halsted (Wiley), New York, 1980. 240 pp. $65.

Data-Processing in Phytosociology. Report on the Activities of the Working-Group for Data-Processing in Phytosociology of the International Society for Vegetation Science, 1969–1978. Eddy van der Maarel, László Orlóci, and Sandro Pignatti, Eds. Junk, The Hague, 1980 (U.S. distributor, Kluwer Boston, Hingham, Mass.). 226 pp., illus. $79. Advances in Vegetation Science 1.

DC and AC Circuits. Gordon Lancaster. Clarendon (Oxford University Press), New York, ed. 2, 1980. xii, 326 pp., illus. Cloth, $59; paper, $29.95.

Desertification in Extremely Arid Environments. Wolfgang Meckelein, Ed. Geographisches Institut der Universität Stuttgart, Stuttgart, 1980. 206 pp., illus. Paper, 36 DM. Stuttgarter Geographische Studien, Band 95.

Energy. Vol. 1, Demands, Resources, Impact, Technology, and Policy. S. S. Penner and L. Icerman. Addison-Wesley Advanced Book Program, Reading, Mass., ed. 2, 1981. xxii, 506 pp., illus. Cloth, $28.50; paper, $16.50.

Electrons in Solids. An Introductory Survey. Richard H. Bube. Academic Press, New York, 1980. xiv, 230 pp., illus. $25.

The Energy and Environment Checklist. An Annotated Bibliography of Resources. Betty Warren. Friends of the Earth, San Francisco, 1980. 228 pp. Paper, $5.95.

The Energy Factbook. Richard C. Dorf. McGraw-Hill, New York, 1981. x, 228 pp., illus. Cloth, $16.95; paper, $7.95.

Energy for the Year 2000. Richard Wilson, Ed. Plenum, New York, 1980. viii, 402 pp., illus. $42.50. Ettore Majorana International Science Series, Physical Sciences, vol. 6.

Energy Options. Real Economics and the Solar-Hydrogen System. J. O'M. Bockris. Halsted (Wiley), New York, 1980. xviii, 442 pp., illus. $32.95.

Energy Storage. A Vital Element in Mankind's Quest for Survival and Progress. Papers from a meeting, Dubrovnik, Yugoslavia, May 1979. Joseph Silverman, Ed. Pergamon, New York, 1980. xviii, 580 pp., illus. $100.

Energy Systems Analysis. R. Kavanagh, Ed. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). xvi, 678 pp., illus. $47.50.

Energy Tomorrow. Peter Harsany. Academic Publishing Company, Montreal, 1980. 174 pp. $15.95.

Engineering Materials. An Introduction to Their Properties and Applications. Michael F. Ashby and David R. H. Jones. Pergamon, New York, 1980. x, 278 pp., illus. Paper, $11. International Series on Materials Science and Technology, vol. 34.

Environment of Life. Kenneth E. Maxwell. Brooks-Cole, Monterey, Calif., ed. 3, 1980. xx, 614 pp., illus. Paper, $17.95.

Environmental Benefits and Costs of Solar Energy. Michael D. Yokell. Lexington (Heath), Lexington, Mass., 1980. xvi, 144 pp., illus. $16.95.

Environmental Chemicals, Enzyme Function and Human Disease. Excerpta Medica, Amsterdam, 1980 (U.S. distributor, Elsevier/North-Holland, New York). x, 380 pp., illus. $63.50. Ciba Foundation Symposium 76 (new series).

Environmental Chemistry. R. W. Raiswell, P. Brimblecombe, D. L. Dent, and P. S. Liss. Halsted (Wiley), New York, 1980. viii, 18 pp., illus. Paper, $14.95. Resource and Environmental Sciences Series.

Environmental Effects of Utilising More Coal. Proceedings of a conference, London, Dec. 1979. F. A. Robinson, Ed. Royal Society of Chemistry, London, 1980. viii, 204 pp., illus. Paper, £9.50. Special Publication No. 37.

Environmental Science. The Way the World Works. Bernard J. Nebel with editorial assistance by Edward J. Kormondy. Prentice-Hall, Englewood Cliffs, N.J., 1981. xviii, 716 pp., illus. $17.95.

Environmental Science in Perspective. Thomas G. Spiro and William M. Stigliani. State University of New York Press, Albany, 1980. x, 236 pp., illus. Paper, $6.95.

Environmental Toxicology. John H. Duffus. Halsted (Wiley), New York, 1980. viii, 164 pp., illus. $15.95.

Fiber Optics and Lightwave Communications Standard Dictionary. Martin H. Weik. Van Nostrand Reinhold, New York, 1981. xiv, 284 pp., illus. $18.50.

Fibrous Composites in Structural Design. Proceedings of a conference, San Diego, Nov. 1978. Edward M. Lenoe, Donald W. Oplinger, and John J. Burke, Eds. Plenum, New York, 1980. xiv, 874 pp., illus. $85.

Filamentary A15 Superconductors. Proceedings of a conference, Upton, N.Y., May 1980. Masaki Suenaga and Alan F. Clark, Eds. Plenum, New York, 1980. xvi, 368 pp., illus. $45. Cryogenic Materials Series.

Flavor Microbiology. Pinhas Z. Margalith. Thomas, Springfield, Ill., 1981. xiv, 310 pp., illus. $31.50.

Flowers of Greece and the Balkans. A Field Guide. Oleg Polunin. Oxford University Press, New York, 1980. xvi, 592 pp., illus. + plates. $125.

Foliage Plant Production. Jasper N. Joiner, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1981. xx, 614 pp., illus. $24.95.

Formal Language Theory. Perspectives and Open Problems. Ronald V. Book, Ed. Academic Press, New York, 1980. xiv, 454 pp., illus. $25.

From State Hospital to Psychiatric Center. The Implementation of Planned Organizational Change. Murray Levine. Lexington (Heath), Lexington, Mass., 1980. xx, 140 pp. $15.95.

Functional Integration. Theory and Applications. Proceedings of a colloquium, Louvain-la-Neuve, Belgium, Nov. 1979. Jean-Pierre Antoine and Enrique Tirapegui, Eds. Plenum, New York, 1980. x, 256 pp., illus. $42.50.

Fundamental Principles of General Relativity Theories. Local and Global Aspects of Gravitation and Cosmology. Hans-Jürgen Treder, Horst-Heino von Borzeszkowski, Alwyn van der Merwe, and Wolfgang Yourgrau. Plenum, New York, 1980. 216 pp. $27.50.

Fundamentals of Physics. David Halliday and Robert Resnick with the assistance of W. Farrell Edwards and John Merrill. Wiley, New York, ed. 2, 1981. xvi, 816 pp., illus. + appendix. $27.95.

Galapagos. Islands Lost in Time. Tui De Roy Moore. Viking, New York, 1980. 72 pp. + plates. $25. A Studio Book.

Gene Structure and Expression. Donald H. Dean, Lee F. Johnson, Paul C. Kimball, and Philip S. Perlman, Eds. Ohio State University Press, Columbus, 1980. viii, 362 pp., illus. $22.50. Ohio State University Biosciences Colloquia, No. 6.

Genetic Improvement of Crops. Emergent Techniques. Papers from a symposium, Minnesota, 1979. Irwin Rubenstein, Burle Gengenbach, Ronald L. Phillips, and C. Edward Green, Eds. University of Minnesota Press, Minneapolis, 1980. xii, 242 pp., illus. $22.50.

Genetics and Heterogeneity of Common Gastrointestinal Disorders. Jerome I. Rotter, I. Michael Samloff, and David L. Rimoin, Eds. Academic Press, New York, 1980. xx, 582 pp., illus. $35.

Hydrology and Quality of Water Resources. Mark J. Hammer and Kenneth A. MacKichan. Wiley, New York, 1981. x, 486 pp., illus. $19.95.

Hypothalamic Hormones. James R. Sowers, Ed. Dowden, Hutchinson and Ross, Stroudsburg, Pa., 1980 (distributor, Academic Press, New York). xx, 344 pp., illus. $40. Benchmark Papers in Human Physiology, vol. 14.

The IBP Survey of Conservation Sites. An Experimental Study. A. R. Clapham, Ed. Cambridge University Press, New York, 1980. xx, 344 pp., illus. $57.50. International Biological Programme 24.

Ideas in Soil and Plant Nutrition. Joe Traynor. Kovak, Bakersfield, Calif., 1980. iv, 120 pp. Paper, $5.

Ideology and Contemporary Sociological Theory. Graham C. Kinloch. Prentice-Hall, Englewood Cliffs, N.J., 1981. xiv, 194 pp. $15.95.

Imagery, Language and Cognition. Toward a Theory of Symbolic Activity in Human Problem-Solving. Geir Kaufmann. Universitetsforlaget, Oslo, Norway, 1980 (U.S. distributor, Columbia University Press, New York). 192 pp. Paper, $19.

Imaging for Medicine. Vol. 1, Nuclear Medicine, Ultrasonics, and Thermography. Sol Nudelman and Dennis D. Patton, Eds. Plenum, New York, 1980. xiv, 498 pp., illus. $49.50.

Immobilized Enzymes. An Introduction and Applications to Biotechnology. Michael D. Trevan. Wiley, New York, 1980. xiv, 138 pp., illus. $26.25.

(Continued on page 1067)

BOOKS RECEIVED

(Continued from page 1023)

Immobilized Enzymes in Analytical and Clinical Chemistry. Fundamentals and Applications. Peter W. Carr and Larry D. Bowers. Wiley-Interscience, New York, 1980. xx, 460 pp., illus. $45. Chemical Analysis, vol. 56.

The Immune Consequences of Thermal Injury. John L. Ninnemann. Williams and Wilkins, Baltimore, 1981. xvi, 270 pp., illus. $37.

Immunity and Atherosclerosis. P. Constantinides, F. Pratesi, C. Cavallero, and T. Di Perri, Eds. Academic Press, New York, 1980. x, 200 pp., illus. $33.50. Proceedings of the Serono Symposia, vol. 24.

Immunoglobulins. Characteristics and Uses of Intravenous Preparations. Barbara M. Alving and J. S. Finlayson, Eds. Food and Drug Administration, Bethesda, Md., 1980 (available from the Superintendent of Documents, Washington, D.C.). x, 246 pp., illus. $11. DHHS Publication No. (FDA)-80-9005.

The Impact of Microprocessors on Industry, Education and Society. J. D. Morrison, Ed. Australian Academy of Science, Canberra, 1980. iv, 108 pp., illus. Paper, A$5.95. Forum Report No. 16.

Improving the Long-Term Effects of Psychotherapy. Models of Durable Outcome. Paul Karoly and John J. Steffen, Eds. Gardner Press, New York, 1980 (distributor, Halsted [Wiley], New York). xvi, 492 pp. $29.95.

Incomplete Block Designs. Peter W. M. John. Dekker, New York, 1980. viii, 102 pp. Paper, $17.50. Lecture Notes in Statistics, vol. 1.

Industrial Location and Air Quality Control. A Planning Approach. Jean-Michel Guldmann and Daniel Shefer. Wiley-Interscience, New York, 1980. xiv, 238 pp. $32.

Industrial Organic Chemicals in Perspective. Part 2, Technology, Formulation, and Use. Harold A. Wittcoff and Bryan G. Reuben. Wiley-Interscience, New York, 1980. xxiv, 502 pp., illus. $45.

In the Labyrinths of Language. A Mathematician's Journey. V. V. Nalimov. Translated from the Russian edition (1974). Robert G. Colodny, Ed. ISI Press, Philadelphia, 1981. xx, 246 pp. $22.50.

Matrix Derivatives. Gerald S. Rogers. Dekker, New York, 1980. viii, 210 pp. Paper, $27.50. Lecture Notes in Statistics, vol. 2.

Matter, Energy, and Life. An Introduction to Chemical Concepts. Jeffrey J. W. Baker and Garland E. Allen. Addison-Wesley, Reading, Mass., ed. 4, 1981. xiv, 242 pp., illus. Paper, $9.95.

Measurements and Instrumentation in Heat Engineering. V. P. Preobrazhensky. Translated from the Russian edition (1978) by Boris Kuznetsov. Mir, Moscow, 1980 (U.S. distributor, Imported Publications, Chicago). Two volumes, illus. 352 pp. and 344 pp. $18.

Mechanism, Mentalism, and Metamathematics. An Essay on Finitism. Judson Chambers Webb. Reidel, Boston, 1980 (distributor, Kluwer Boston, Hingham, Mass.). xiv, 278 pp. $28.95. Synthese Library, vol. 137.

Mechanisms of Cardiac Morphogenesis and Teratogenesis. Thomas Pexieder, Ed. Raven, New York, 1980. xvi, 512 pp., illus. $48. Perspectives in Cardiovascular Research, vol. 5.

Mechanisms of Saccharide Polymerization and Depolymerization. J. John Marshall, Ed. Academic Press, New York, 1980. xiv, 442 pp., illus. $32.

Mechanistic Studies of DNA Replication and Genetic Recombination. Bruce Alberts, Ed. Academic Press, New York, 1980. xxx, 1004 pp., illus. $48. ICN-UCLA Symposia on Molecular and Cellular Biology, vol. 19.

Medical Aspects of Dietary Fiber. Gene A. Spiller and Ruth McPherson Kay, Eds. Plenum, New York, 1980. xx, 300 pp., illus. $32.50.

Medical Hubris. A Reply to Ivan Illich. David F. Horrobin. Eden Press, St. Albans, Vt., 1980. x, 146 pp. Paper, $6.95. Reprint of the 1977 edition.

Meet Dr. Franklin. Roy N. Lokken, Ed. Franklin Institute Press, Philadelphia, ed. 2, 1981. viii, 288 pp. Paper, $20.

Membrane Structure and Function. Vol. 2. E. Edward Bittar, Ed. Wiley-Interscience, New York, 1980. x, 374 pp., illus. $42.50.

Metabolic Activities of the Lung. Excerpta Medica, Amsterdam, 1980 (U.S. distributor, Elsevier-North-Holland, New York). x, 402 pp., illus. $66.25. Ciba Foundation Symposium 78 (new series).

Metal Carcinogenesis Testing. Principles and In Vitro Methods. Max Costa. Humana Press, Clifton, N.J., 1980. xiv, 168 pp., illus. $29.50. Biological Methods.

Metallurgical Furnaces. V. A. Krivandin and B. L. Markov. Translated from the Russian edition (Moscow, 1980) by V. V. Afanasyev. Mir, Moscow, 1980 (U.S. distributor, Imported Publications, Chicago). 510 pp., illus. $11.50.

Methods for Evaluating Biological Nitrogen Fixation. F. J. Bergersen, Ed. Wiley-Interscience, New York, 1980. x, 702 pp., illus. $114.

Methods of Digital Holography. L. P. Yaroslavskii and N. S Merzlyakov. Translated from the Russian edition by Dave Parsons. Consultants Bureau (Plenum), New York, 1980. xii, 172 pp., illus. $45. The IBM Research Symposia Series.

Plastics. J. Harry DuBois and Frederick W. John. Van Nostrand Reinhold, New York, ed. 6, 1981. xiv, 462 pp., illus. $32.

Platelets. Cellular Response Mechanisms and Their Biological Significance. Proceedings of a workshop, Rehovot, Israel, Apr. 1980. A. Rotman, F. A. Meyer, C. Gitler, and A. Silberberg, Eds. Wiley-Interscience, New York, 1980. xii, 328 pp., illus. $52.50.

The Political Economy of Oil. Ferdinand E. Banks. Lexington (Heath), Lexington, Mass., 1980. xiv, 242 pp. $25.95.

The Politics of Land-Use Reform. Frank J. Popper. University of Wisconsin Press, Madison, 1981. xii, 322 pp. Cloth, $20; paper, $7.50.

Polymers in Nature. E. A. MacGregor and C. T. Greenwood. Wiley, New York, 1981. x, 392 pp., illus. $57.50.

The Poverty of Nations. The Political Economy of Hunger and Population. William W. Murdoch. Johns Hopkins University Press, Baltimore, 1980. xvi, 382 pp., illus. Cloth, $22.50; paper, $7.50.

Predation and Freshwater Communities. Thomas M. Zaret. Yale University Press, New Haven, Conn., 1980. xiv, 188 pp., illus. $15.

Preterm Birth and Psychological Development. Sarah L. Friedman and Marian Sigman, Eds. Academic Press, New York, 1981. xxii, 438 pp., illus. $34. Developmental Psychology Series.

Prevention in Childhood of Health Problems in Adult Life. Frank Falkner, Ed. World Health Organization, Geneva, 1980 (U.S. distributor, WHO Publications Centre USA, Albany, N.Y.). x, 136 pp. Paper, $10.80.

Prevention of Mental Retardation and Other Developmental Disabilities. Michael K. McCormack, Ed. Dekker, New York, 1980. xvi, 662 pp., illus. $49.75. Pediatric Habilitation, vol. 1.

Principles of Animal Virology. Wolfgang K. Joklik, Ed. Appleton-Century-Crofts, New York, 1980. x, 374 pp., illus. $21.95.

Principles of Desalination. K. S. Speigler and A. D. K. Laird, Eds. Academic Press, New York, ed. 2, 1980. Part A. xiv, 358 pp., illus. + index. $41. Part B. xii + pp. 359–822, illus. $52.

Principles of Genetics. Eldon J. Gardner and D. Peter Snustad. Wiley, New York, ed. 6, 1981. xii, 612 pp., illus. + appendices. $23.95.

Principles of Learning and Memory. B. R. Bugelski. Praeger, New York, 1980. xviii, 422 pp. $18.95.

Regional Silviculture of the United States. John W. Barrett, Ed. Wiley-Interscience, New York, ed. 2, 1980. xiv, 552 pp., illus. $31.50.

Religious Assortative Marriage in the United States. Robert Alan Johnson. Academic Press, New York, 1980. xxviii, 236 pp. $25. Studies in Population.

Remote Sensing of Atmospheres and Oceans. Adarsh Deepak, Ed. Academic Press, New York, 1980. xiv, 642 pp., illus. $45.

Revolutions and Reconstructions in the Philosophy of Science. Mary Hesse. Indiana University Press, Bloomington, 1980. xxvi, 272 pp. $22.50.

Riemann Surfaces. H. M. Farkas and I. Kra. Springer-Verlag, New York, 1980. xii, 338 pp. $29.80. Graduate Texts in Mathematics, 71.

Saline Environment. Physiological and Biochemical Adaptation in Halophilic Microorganisms. Papers from a symposium, Kobe, Japan, Aug. 1977. Hideki Morishita and Masamiki Masui, Eds. Organizing Committee of Japanese Conference on Halophilic Microbiology, Osaka, 1980 (U.S. distributor, ISBS, Forest Grove, Ore.). xii, 200 pp., illus. Paper, $20.

Syntax and Semantics. Vol. 13, Current Approaches to Syntax. Edith A. Moravcsik and Jessica R. Wirth, Eds. Academic Press, New York, 1980. xvi, 408 pp., illus. $32.

Teaching and Learning about Science and Society. John Ziman. Cambridge University Press, New York, 1980. x, 182 pp., illus. $22.50.

Technology and Values in American Civilization. A Guide to Information Sources. Stephen H. Cutcliffe, Judith A. Mistichelli, and Christine M. Roysdon. Gale, Detroit, 1980. xviii, 704 pp. $30. American Studies Information Guide Series, vol. 9.

Technology, Environment, and Human Values. Ian G. Barbour. Praeger, New York, 1980. xiv, 332 pp. Cloth, $24.95; paper, $9.95.

Télécommunications. Objectif 2000. Albert Glowinski. Dunod, Paris, 1980. xvi, 284 pp., illus. Paper, 68 F.

Women's Lives. New Theory, Research and Policy. Papers from a conference, Nov. 1979. Dorothy McGuigan, Ed. University of Michigan Center for Continuing Education of Women, Ann Arbor, 1980. xiv, 452 pp. Paper, $6.

Personnel Placement

SCIENCE publishes each Friday, except the last Friday of the year. Advertising closing for a particular Friday issue is Wednesday, 3 1/2 weeks **before.** Advertising is accepted only in writing; no abbreviations. Also, personnel advertising is accepted only with the understanding that the advertiser does not discriminate among applicants on the basis of race, sex, religion, age, color, national origin, or handicap.

POSITIONS WANTED: 40¢ per word, plus $4 for use of box number, per insertion. $10 minimum, per insertion. Prepayment required. This rate is available only to individuals seeking jobs.

DISPLAY (POSITIONS OPEN, COURSES, FELLOWSHIPS, MARKETPLACE, and so forth): $8 per millimeter; $200 minimum, per insertion (minimum charge covers 25 millimeters on a single column; 25 millimeters equals 10 lines of 50 spaces per line). No charge for use of box number. No agency commission for ads less than 103 millimeters (4 inches). No cash discount. Prepayment required for all foreign ads. Purchase orders and billing information required for all other advertising.

Send copy for all **Positions Wanted** ads and **Display** ads less than 1/6 page in size (125 millimeters) to:

SCIENCE, Room 207
1515 Massachusetts Ave., NW
Washington, D.C. 20005
Telephone: 202-467-4456

Send copy for **Display** ads 1/6 page and larger to:

Scherago Associates, Inc.
1515 Broadway
New York, N.Y. 10036
Telephone: 212-730-1050

Blind ad replies should be addressed as follows:

Box (give number)
SCIENCE
1515 Massachusetts Ave., NW
Washington, D.C. 20005

POSITIONS WANTED

Biochemist. Ph.D. 1979. Broad research background. Cancer research, polyamines, glycolipids, protein purification, tissue culture, radiometric enzyme assays. Publications. Seeks postdoctoral research position. Box 128, SCIENCE. 5/29; 6/12

Biologist. Ph.D. Multidisciplinary background in marine sciences. Administrative, teaching, and research experience. Grants and publications. Seeks university administrative/teaching position. Box 122, SCIENCE. X

Biostatistician. Ph.D. 1981. Dissertation in discriminant analysis. Publications in cardiovascular shock, groundwater modeling. Extensive programming experience. Seeks challenging position in applied statistics or biomedical research in United States or abroad. Box 129, SCIENCE. X

Electron Microscopist. Wishes to relocate to San Francisco–Palo Alto area; 20 years of experience with TEM of plants, animal central nervous system, and insect embryos. Also SEM. B.S. in chemistry. Prefers managing service or teaching facility in hospital, university, or industry. Available 1 September 1981. Box 130, SCIENCE. 5/29; 6/5, 12, 19

Marine Biochemical/Physiological Ecologist. Research assistant professor at medical school seeks research/teaching position in liberal arts institution. Postdoctoral research, teaching experience, grants, publications. Box 110, SCIENCE. X

Microbiologist. Ph.D. 1978. Specialized in microbial physiology, extensive knowledge of fermentation technology and enzymology. Two years of postdoctoral experience in a genetic manipulation, biochemical and transport studies. Experience in spectroscopy, gel filtration, and immunological techniques. Publications. Desires challenging position in research, industry, or academia. 49E Briarwood Lane, Branford, Connecticut 06405. Telephone: 203-488-1803. X

Research Biologist—Program Manager. Ph.D. Seeks position planning and managing corporate aquatic research: microbiology/energy/pollution/aquaculture. Box 123, SCIENCE. X

POSITIONS WANTED

Pesticide Residue Chemist/Agronomist—Ph.D. Experience includes pesticide residue analysis of feed, animal tissue, soil and water; adsorption and characterization studies of agricultural wastes by soils; and analysis of priority pollutants. Experience in GC, GPC, AA, NMR, and wet analysis. Seeks industrial/academic position. Box 107, SCIENCE.
5/29; 6/12, 26

Toxicologist. Ph.D. More than 12 years of industrial experience in the safety and efficacy evaluation of cosmetics, OTC drugs, and household products. Board-certified. Experienced in domestic and international regulatory affairs. Expert in coordinating toxicological findings with legal, marketing, government, and trade groups. Seeks relevant senior position, preferably in Europe with multinational firm. Box 131, SCIENCE. X

Toxicologist. Ph.D., N.R.C.C. Extensive teaching, research, laboratory, and administrative experience. Familiar with all modern laboratory procedures and equipment. Strong interest in environmental toxicology. Associate director or laboratory director position desired in industry or hospital setting. Box 132, SCIENCE. 5/29; 6/5

POSITIONS OPEN

ASSISTANT PROFESSOR, tenure track, medical school Department of Physiology; to work in a Respiratory Physiology Group in an area related to cellular physiology or cellular biophysics of the lung or respiratory system. Applicants should have training in enzymology with experience in oxygenases and free radical chemistry. Send curriculum vitae and names of three references to: **Dr. R. E. Forster, Chairman, Department of Physiology, University of Pennsylvania, School of Medicine, Philadelphia, Pa. 19104.** *An Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR

The Department of Parasitology and Laboratory Practice at the University of North Carolina at Chapel Hill invites applications for a tenure-track position at the rank of assistant professor. This position is for a bioorganic chemist interested in trypanosome infections. This individual must be experienced in both gas chromatographic and liquid chromatographic procedures, preferably with expertise in both NMR and mass spectral techniques. Candidates for this position must have strong research interests and be capable of teaching in their area of specialty. Ph.D. is required and postdoctoral experience is preferred. Applicants should submit curriculum vitae, including an outline of research objectives, a bibliography, copies of representative publications, and three letters of recommendation, to: **Dr. John R. Seed, Department of Parasitology and Laboratory Practice, University of North Carolina at Chapel Hill, School of Public Health, Rosenau Hall 201H, Chapel Hill, North Carolina 27514.** Applications should be received prior to 1 August 1981.

The University of North Carolina is an Equal Opportunity/Affirmative Action Employer.

ASSISTANT PROFESSOR (IN RESIDENCE)
DEPARTMENT OF ORAL BIOLOGY
THE UNIVERSITY OF CONNECTICUT HEALTH CENTER

A clinical center in the chemical senses, combining clinical studies in olfaction and taste with basic research in neuroanatomy, neurophysiology, and psychophysics is recruiting a faculty member for a key position in gustatory neuroanatomy. Independent laboratory fully funded by NIH grant. Proposed project uses modern and classical approaches of neuroanatomy to analyze the synaptic organization of the gustatory nerve endings and their target cells in the CNS as well as some of their trophic properties. Collaboration with sensory physiologists and neuroanatomists. Opportunity to participate in a departmental Ph.D. program and an institutional Ph.D. program in neuroscience. Strong interdisciplinary faculty in the communicative and sensory sciences. State-of-the-art facilities and opportunity for advancement, competitive salary. Background in general neuroanatomical research required with future commitment to gustatory research. Send curriculum vitae and references to: **Dr. G. A. Rodan, Head, Department of Oral Biology, The University of Connecticut Health Center, Farmington, Conn. 06032.** *University of Connecticut Health Center is an Affirmative Action/Equal Opportunity Employer. Women, minorities, and handicapped persons are encouraged to apply.*

POSITIONS OPEN

Search for **ASSISTANT PROFESSOR OF THE HISTORY OF MEDICINE AND SCIENCE** at Harvard University; joint appointment in the Department of Social Medicine (Faculty of Medicine) and the Department of the History of Science (Faculty of Arts and Sciences) to begin 1 September 1981. Candidates should be able to teach aspects of the history of medicine in this century (for example, the history of biomedical sciences with particular emphasis on social context and implications for clinical practice). Preparation must include professional training in both history and biological science and evidence of scholarly research. Initial appointment for 3 years; reappointment possible. Send curriculum vitae and names for reference to: **Leon Eisenberg, M.D., Chairman, Department of Social Medicine and Health Policy, Harvard Medical School, 25 Shattuck Street, Boston, Massachusetts 02115.** *Harvard University is an Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR IN PHARMACOLOGY

The Department of Pharmacology, Columbia University, seeks applications for an assistant professorship from those with at least 2 years of postdoctoral experience and skilled in the use of voltage-clamp and patch-clamp techniques to study electrical activity of cardiac cells. Applicants should demonstrate ability to conduct independent research and a high likelihood of obtaining grant support for research and salary. Duties will include participation in instructional programs for medical and dental students and Ph.D. candidates. Salary commensurate with experience.

Candidates should submit curriculum vitae and the names of three references to: **Dr. Brian F. Hoffman, Chairman, Department of Pharmacology, College of Physicians and Surgeons, 630 West 168 Street, New York, N.Y. 10032.** *Columbia University is an Affirmative Action/Equal Opportunity Employer.*

ASSISTANT PROFESSOR OF PHARMACOLOGY. Applications are being solicited for a 12-month, tenure-track position at the assistant professor level in pharmacology. The successful applicant will have an earned doctorate in pharmacology and have the potential to develop an independent research program. A significant portion of time will be spent teaching pharmacology to second-year medical students. Experience in educational activities is, therefore, desirable. Interested individuals are asked to submit curriculum vitae and three letters of reference to: **Dr. Alvin S. Levine, Assistant Dean and Director, Terre Haute Center for Medical Education, Indiana University School of Medicine, 135 Holmstedt Hall, Terre Haute, Ind. 47809.** *Indiana University is an Equal Opportunity/Affirmative Action Employer.*

ASSOCIATE DIRECTOR
Materials and Electronics Research

Position available as Associate Director of Materials and Electronics Research in the Division of Applied Sciences at Harvard University. Working with the faculty directors of the Materials Research Laboratory and the Joint Services Electronics Program, responsibilities include assisting in the allocation of research funds (about $1.5 million per year) and monitoring their expenditure, and planning and managing the continued upgrading and modernization of central facilities instrumentation and services. Potential exists for carrying out research involving the application of modern instrumental techniques to the preparation, characterization, and property measurement of materials. A Ph.D. in physics, materials science, or chemistry and experience in the application of advanced instrumental techniques to the study of materials necessary. Salary range: from $22,000, depending on experience. Send curriculum vitae and names of three references to: **Associate Dean Peter S. McKinney, Division of Applied Sciences, Harvard University, Cambridge, Mass. 02138.**

BIOTECHNOLOGY

Biochemists, cell physiologists, geneticists, immunologists, and **scientists** with experience in working with viral or protozoan pathogens are being actively recruited by Codon. Experience using recombinant DNA techniques preferred but not required.

Codon's new Genetic Engineering Laboratories, located just south of San Francisco, are offering employment opportunities at several levels.

Send résumé in confidence to:

Codon
430 Valley Drive
Brisbane, Calif. 94005

POSITIONS OPEN

BIOGEOCHEMIST OR ORGANIC GEOCHEMIST. Research assistant professor with interest in organic matter cycling in coastal sediment systems as part of interdisciplinary group. Academic year appointment with opportunity for renewal of funding. Résumé, names of three references, and letter of research interests by 1 July to: **L. Mayer, Ira C. Darling Center, University of Maine at Orono, Walpole, Maine 04573.**

MARINE ECOLOGIST, with interest in herbivore-plant interactions, to investigate fragmentation of macro-algae as a source of particulate organic matter to the benthos. Academic year appointment at research assistant professor level, with opportunity for reappointment. Résumé, names of three references, and letter of research interests by 1 July to: **L. Watling, Ira C. Darling Center, University of Maine at Orono, Walpole, Maine 04573.**

Equal Opportunity/Affirmative Action Employer

BIOLOGICAL NMR SPECTROSCOPIST

The Purdue Biological Nuclear Magnetic Resoannce Laboratory is seeking an **OPERATIONS MANAGER** for its regional facility. Qualifications should include a Ph.D. or equivalent achievement with experience in NMR spectroscopy of biological or organic systems using high-field superconducting solenoid spectrometers, NMR electronics, and computer programming. Duties include routine scheduling and maintenance of spectrometers, assisting users in designing and carrying out experiments, and instrument development. Independent as well as collaborative research will be encouraged. The salary will be based on the level of experience. Write, enclosing curriculum vitae, a summary of research interests, and the names of three references, to: **Dr. Robert E. Santini, Department of Chemistry, Purdue University, West Lafayette, Indiana 47907.** *Purdue University is an Equal Opportunity/Affirmative Action Employer.*

BIOLOGY. Keuka College, an independent liberal arts college for women in Finger Lakes area of New York, has tentative opening for tenure-track teaching position in zoology starting fall 1981. Teaching areas are cell biology, parasitology, and developmental zoology. Ph.D. preferred. Rank and salary based on qualifications. Send résumé and three letters of recommendation to: **Dr. James E. White, Biology Search Committee, Keuka College, Keuka Park, N.Y. 14478.** *Equal Opportunity/Affirmative Action Employer.*

BIOORGANIC/ORGANIC CHEMIST. Exceptional opportunity for innovative chemist creative at the laboratory bench, with ability to solve complex problems at interface of modern biology and chemistry. Will be responsible for chemical aspects of development of new immunodiagnostic products with novel enzyme substrates at new laboratory being established in Cambridge, Mass. Please submit résumés in confidence to: **Personnel Office, 300 (BT) Howard Street, Framingham, Mass. 01701. BIOLOGICAL TECHNOLOGY CORPORATION.** *An Equal Opportunity Employer.*

CHAIRPERSON, Food Science and Human Nutrition Department—Candidates must have a doctorate and a record of excellence in teaching, administration, research, and leadership in some aspect of food science and/or nutrition. Position available 1 October 1981. More information is available upon request. Submit credentials, curriculum vitae, and three letters of reference by 1 August 1981 to: **Dr. Charles M. Stine, Chairperson, Search Committee, Food Science and Human Nutrition, Michigan State University, 302 Food Science Building, East Lansing, Mich. 48824.** *An Affirmative Action/Equal Opportunity Institution.*

FACULTY POSITIONS IN PHARMACOLOGY
UNIVERSITY OF CALIFORNIA, IRVINE

Applications are invited for two tenure-track or tenured faculty positions in cardiovascular pharmacology and neuropharmacology. Candidates should be outstanding scholars and investigators with research interests at the molecular level and with demonstrated commitment to medical and graduate education. A Ph.D. in pharmacology, biochemistry, or a related area, or M.D. is required. Level of appointment and salary will be commensurate with achievement and experience.

Curriculum vitae, references, and a summary of research interests should be sent before 15 July 1981 to: **Dr. Larry Stein, Chairman, Department of Pharmacology, College of Medicine, University of California, Irvine, California 92717.** *The University of California is an Equal Opportunity Employer.*

The Associated Universities, Inc. Council for Research Planning in Biological Sciences and the University of California announce a Symposium

GENETIC TOXICOLOGY
An Agricultural Perspective
November 1-5, 1981

on the Davis Campus of the University of California

This symposium will examine the status of knowledge, promising research advances and types of studies needed to answer the following: Is there evidence of mutagen and carcinogen problems in agriculture? What genotoxic hazards arise from naturally occurring and anthropogenic agents in agriculture? What are the best techniques for detecting and evaluating genotoxic hazards to human health arising from agricultural practices? What research and training priorities can be identified to protect occupational and environmental health with particular reference to agricultural regions?

ORGANIZING COMMITTEE: Alexander Hollaender (chairman), Associated Universities, Inc.; Richard Hill, Environmental Protection Agency; Gordon Newell, National Academy of Sciences; Verne Ray, Pfizer, Inc.; Gerald Still, U.S. Department of Agriculture; Raymond Valentine, University of California at Davis; Michael Waters, Environmental Protection Agency; Avril Woodhead, Brookhaven National Laboratory.

To receive program and registration information, write: Raymond A. Fleck, Food Protection and Toxicology Center, University of California, Davis CA 95616 or call (916) 752-1142.

SQUIBB

MOLECULAR BIOLOGIST/ GENETICIST

The Microbiology Department of our World Headquarters in Princeton, N.J., offers a unique career opportunity for an individual with experience in genetic and recombinant DNA techniques - specialization in yeast research desirable. Main functions of this position will entail setting up and directing a group of scientists involved with specific aspects of antimicrobial research. The successful candidate will be expected to encompass close interface with biologist, chemists and biochemists involving various aspects of this program.

Requirements for this position include a PhD or equivalent in one of the Life Sciences with 5 plus years experience in genetics and/or molecular biology.

We offer an excellent salary and benefits package fully attuned to the importance of this position. Qualified candidates should send their resume including salary requirements in complete confidence to: **Carol A. Morgan, Department RS, E.R. SQUIBB & SONS, INC., P.O. BOX 4000, Princeton, N.J. 08540.** Equal Opportunity Employer, M/F/H/V.

PLANT BIOLOGY

Zoecon Corporation is seeking a number of scientists as part of a major expansion of its research program in Plant Biology.

These individuals will join a substantial basic research effort focused on problems of agronomic importance. Current research includes studies on morphogenesis from cell culture, the molecular basis of cytoplasmic male sterility, and the biochemical bases of stress tolerance. Additions to the program will expand upon and complement these areas, and will be integrated with ongoing breeding research in our Seed Division.

Individuals with expertise in the following scientific disciplines are encouraged to apply:

- **Plant Physiologists/Biochemists**
- **Plant Pathologists**
- **Cell Biologists/Somatic Cell Geneticists**
- **Plant Geneticists/Breeders**

Applicants should, at a minimum, hold a PhD degree and have demonstrated research ability. The successful candidate will be expected to design, initiate and implement a productive research program.

Zoecon is a division of Occidental Petroleum Corporation with substantial domestic and international operations. Zoecon's headquarters and research facilities are located in the Stanford University Industrial Park in close proximity to San Francisco.

Please submit, not later than 8/1/81, a curriculum vitae, a statement of research interests and the names of three references, in confidence, to:

K.M. Holm
Manager, Employee Relations
Zoecon Corporation
975 California Avenue
Palo Alto, CA 94304, U.S.A.

An equal opportunity employer.

zoecon®

POSITIONS OPEN

DIRECTOR, MENTAL RETARDATION RESEARCH CENTER/UNIVERSITY AFFILIATED FACILITY

The University of Wisconsin–Madison is seeking applications for director of the Harry A. Waisman Center of Mental Retardation and Human Development. Applicants must have the following qualifications: eligibility for a tenured faculty appointment in a university academic department; an established record of scholarship in a field relevant to mental retardation including biomedical, social, behavioral, or educational aspects of human development; and administrative experience in research and training programs and familiarity with interdisciplinary training operations. Experience with relevant federal and state funding sources is desirable.

Salary range: appropriate to qualifications. Deadline: 15 June 1981, or until qualified candidate is found.

Write for position description or send résumé to: **Professor Wilson B. Thiede, Search Committee, Room 269, Waisman Center, University of Wisconsin–Madison, 1500 Highland Avenue, Madison, Wisconsin 53706; telephone: 608-263-5911.** Résumé should address items in position description including educational and professional experiences, bibliography of significant publications, names and addresses of persons familiar with most significant professional experiences, and any other relevant information.

The University of Wisconsin is an Equal Opportunity/Affirmative Action Employer.

FACULTY POSITION IN VIRAL ONCOLOGY

Applications are invited for a faculty position at the University of Pennsylvania School of Veterinary Medicine. The position is to conduct research primarily on the bovine leukemia virus system. The appointee will be expected to develop an active and independent research program in coordination with the ongoing studies in the Leukemia Unit. Candidates should have a strong background and experience both in the molecular and biological aspects of RNA tumor viruses. Minimum qualifications are a Ph.D., D.V.M., or M.D. Rank and salary will depend on qualification and experience. The position is available immediately. Applicants should submit curriculum vitae, copies of representative publications, and the names of three referees to:

Dr. Jorge F. Ferrer
Chief, Comparative Leukemia Studies Unit
University of Pennsylvania
School of Veterinary Medicine
New Bolton Center
Kennett Square, Pa. 19348

The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer.

FACULTY POSITION open in Department of Biology in anticipation of expansion in the areas of physiology and biochemistry. Duties will also include teaching courses for both majors and nonscience students in parasitology and laboratory in general zoology. Ph.D. preferred. Rank and salary in accordance with qualifications. Send curriculum vitae to: **M. Segina, Chair, Department of Biology, Hartwick College, Oneonta, N.Y. 13820.** *An Equal Opportunity Employer.*

MIT OCEAN ENGINEERING DEPARTMENT HEAD

The Massachusetts Institute of Technology (MIT), Department of Ocean Engineering, is seeking to fill the position of head of the department. This department is involved in a broad program of ocean-related activities and includes the country's oldest school of naval architecture and marine engineering. The position would be at the professor level. The department head has administrative responsibility for all academic and research activities in ocean engineering.

The candidate must have recognized stature in ocean engineering and a level of professional accomplishment expected of an appointment at the professor level. In addition, the candidate should have the leadership and administrative abilities required to lead the department, which has 24 faculty members and about 150 graduate students and 30 undergraduate students.

Curriculum vitae should be sent no later than 12 June 1981 to: **Dr. Robert C. Seamans, Jr., Dean of Engineering, Room 1-206, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, Massachusetts 02139.**

MIT is an Equal Opportunity Educator and Employer and encourages applications from women and minorities.

POSITIONS OPEN

FACULTY POSITION—Assistant or associate professorship. The primary qualification is the potential and desire to develop a strong research program. Specific areas of interest include the chemical nature of receptors and the molecular genetics of drug production (for example, antibiotics). A Ph.D. in biochemistry, biological sciences, or pharmacal sciences is required and postdoctoral experience is desirable. The successful applicant will be expected to participate in the teaching of departmental biochemistry courses at the undergraduate and graduate levels. This is a tenure-track position with the potential for a joint appointment in the Purdue University Biochemistry Program. Candidates should provide curriculum vitae, three letters of recommendation, and a description of research interests by 1 August 1981 to: **Dr. S. R. Byrn, Department of Medicinal Chemistry and Pharmacognosy, Purdue University, West Lafayette, Ind. 47907.** *Purdue University is an Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITION IN INTERNAL MEDICINE. Faculty position in internal medicine is available on or before August 1981 at the research instructor level. Applicants should have a Ph.D. in biochemistry and experience working with apolipoproteins from animals and man and lipoproteins: electroimmunoassay, isoelectric focusing; preparation of antibodies to lipoproteins and apolipoproteins. Interested persons should send their curriculum vitae by 15 June 1981 to: **Dr. Kern Wildenthal, The University of Texas Health Science Center at Dallas, 5323 Harry Hines Boulevard, Dallas, Texas 75235.** *University of Texas Health Science Center at Dallas is an Equal Opportunity/Affirmative Action Employer, M/F/H.*

Tufts University School of Veterinary Medicine, Department of Environmental Studies, is seeking applicants and nominations for a **FACULTY POSITION IN WILDLIFE MEDICINE.** The ideal candidate will have a D.V.M. or equivalent; be Board-eligible or Board-certified in internal medicine or surgery; and have a strong research record, enthusiasm for teaching, experience with a variety of wildlife species, and demonstrated ability to communicate and cooperate with professional wildlife managers and ecologists.

The successful candidate will play a key role in development of the Wildlife Health Resources Center to be located at the 634-acre Grafton campus, staff a wildlife clinic for the treatment and rehabilitation of native wildlife, conduct research as part of a team (including a veterinary pathologist) on wildlife issues, develop progressive teaching programs in wildlife medicine, and provide continuing education to veterinary and lay wildlife rehabilitators throughout New England. The individual chosen to fill this position will be a professional with creativity, vision, drive, and diplomacy.

Applicants should submit curriculum vitae; names, addresses, and telephone numbers of several references; and a brief statement on the role of veterinary medicine in wildlife ecology. Mail applications to: **Albert M. Jonas, D.V.M., Acting Chairperson, Department of Environmental Studies, Tufts University School of Veterinary Medicine, 203 Harrison Avenue, Boston, Massachusetts 02111.**

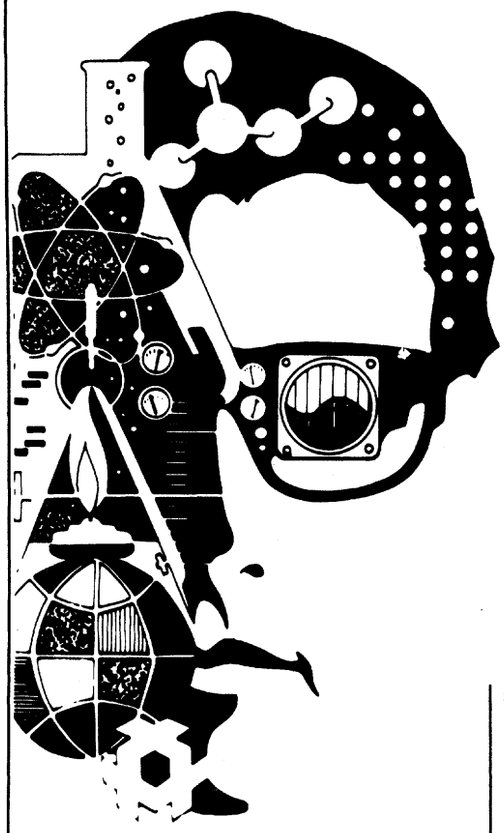
Salary and rank commensurate with experience.

Tufts University is an Equal Opportunity/Affirmative Action Employer.

LABORATORY TECHNICIAN
Electron Microscopy

A position is available 1 July 1981 for a person skilled in procedures for TEM; both thin-section and darkroom techniques desirable. Salary: $16,373 to $17,476 (plus $520 in 3 months), depending upon experience; 85 percent tuition reimbursement. Send résumé to: **Personnel Department, New York Blood Center, 310 East 67 Street, New York, N.Y. 10021.** *An Equal Opportunity Employer.*

POSTDOCTORAL POSITION/RESEARCH ASSOCIATE POSITION in experimental immunopathology available summer 1981. Areas of research include in vivo and in vitro studies of inflammation associated with tissue damage, using experimental models of environmental lung disease as model systems. Emphasis is placed on both humoral and cellular immune effector systems, including their pharmacologic regulation. Interested individuals are asked to send a résumé, a brief statement of interests and goals, and the names of two references to: **Dr. William F. Willoughby, Department of Pathology, The Johns Hopkins Hospital, Baltimore, Md. 21205.**



Innovative Approaches to Energy R&D Management

GRI is an independent, scientific organization which plans, funds and manages a comprehensive R&D program for the benefit of the gas consumer. Our goals are to assist all segments of the gas industry and the manufacturers of gas-using equipment in providing reliable, efficient, and environmentally acceptable gas service.

BASIC RESEARCH: GASEOUS FUELS

Our Basic Research contracts in 1981 total $6 million. Project managers are needed in the areas of thermophysical properties of natural gas mixtures, electrochemistry, surface science, and biological production of fuel gases. A Ph.D. or equivalent is required for all positions. Prior project management experience is desired; strong communications skills are essential.

PIPING CONSTRUCTION, MAINTENANCE & MATERIALS

Fresh, creative approaches in technical management of projects which focus on pipe location techniques (radars, antennae, proximity locators); piping construction involving materials/coatings assessments, and fracture resistance properties of plastic pipe materials. M.S.,Physics or related engineering applications discipline, and a creative non gas research background preferred.

We offer talented individuals the opportunity for professional contribution and career accomplishment within an organization that stands at the crossroads of change in newly developed technologies, cost efficient consumer strategies, and commercialization opportunities to meet the expected high demand for natural gas and other energy alternatives. Direct formal inquires to: **J.R. QUILLINAN.**

GRI®
gas research institute

GAS RESEARCH INSTITUTE
8600 West Bryn Mawr Avenue, Dept. S-121
Chicago, IL 60631
equal opportunity employer m/f/h

POSITIONS OPEN

IMMUNOLOGIST WITH INTEREST IN AGING. Ph.D. or M.D. Assistant professor faculty position available at the Sanders-Brown Research Center on Aging, University of Kentucky Medical Center. Commitment to high-quality research essential. Send curriculum vitae to: **W. R. Markesbery, M.D., 101 Sanders-Brown Building, University of Kentucky Medical Center, Lexington, Ky. 40536.**

MANAGER OF LABORATORY ANIMAL FACILITY. The Institute for Cancer Research, Philadelphia, Pa., the research division of the Fox Chase Cancer Center, is seeking an individual to serve as manager of the Laboratory Animal Facility (LAS). The LAS consists of an on-site building primarily devoted to investigator stock mice, rats, guinea pigs, and rabbits, and an off-site breeding colony for specific pathogen-free mice. Over 100,000 mice of 27 different inbred strains were produced last year. The LAS staff totals 26 individuals. The primary responsibilities of the LAS manager will be the management of operations with regard to personnel deployment, animal health, genetic integrity of stock strains, and maintenance of animal production. A knowledge of animal genetics, microbiology, small animal pathology, and veterinary medicine is essential to the performance of these tasks. Experience in group management is highly desirable. The development of individual research interests is not required, but may be done within the context of the above primary responsibilities. Salary will be commensurate with training and experience. *The Fox Chase Cancer Center is an Equal Opportunity/Affirmative Action Employer.* Send detailed résumé and the names of three references to: **M. T. Dixon, Personnel Office, The FOX CHASE CANCER CENTER, 7701 Burholme Avenue, Philadelphia, Pa. 19111.**

MARINE BIOLOGIST
INSTRUMENTAL CHEMIST

Stockton State College announces the following faculty openings, beginning in September 1981:

Visiting Faculty Position in Marine Biology, to teach introduction to marine biology, ichthyology, and vertebrate zoology, plus courses in Stockton's General Education Program. A broad background with marine or estuarine fishes is desirable. (This is a 1-year, leave-replacement position.)

Visiting Faculty Position in Instrumental Chemistry, to teach general chemistry courses plus courses in Stockton's General Education Program. Background and interest in instrumental chemistry are desirable. (This is a 1-year position with possible extension.)

An M.S. or Ph.D. degree is required; rank and salary are commensurate with experience. Commitment to undergraduate education is essential. All faculty teach courses in general education and sponsor undergraduate student projects. Stockton is interdisciplinary in style and is located in coastal southern New Jersey near the Pine Barrens and Atlantic City.

As an Affirmative Action Employer, we encourage women and members of minority groups to apply. Screening begins 15 June. Send résumé, three letters of reference, and a brief statement of interests as soon as possible to: **Edward Paul, Dean, Faculty of Natural Sciences and Mathematics, Box 7440, Stockton State College, Pomona, New Jersey 08240.**

MOLECULAR BIOLOGIST to work on the genetics and regulation of nitrogen fixation in *Azotobacter vinelandii* as part of an ongoing team effort, primarily concerned with understanding the mechanism of the process. Send résumé and other relevant information to: **Dr. William E. Newton, C. F. Kettering Research Laboratory, Yellow Springs, Ohio 45387.**

PHYSIOLOGIST
University of California, Irvine (UCI)

Director, Neonatal Physiology Research Laboratory, UCI Medical Center. Department of Pediatrics faculty position at the assistant/associate level. Requirements: Ph.D., published clinical or laboratory research in the field of cardiopulmonary physiology, with special emphasis on both invasive and noninvasive techniques; background in systemic and tissue oxygenation; microcirculation/skin physiology related to dermal heat and mass transport; electrochemical sensors and transcutaneous gas monitoring. Responsibilities include directing ongoing research program, teaching, administration, and writing of grant proposals and scientific papers. Send résumé and names/addresses of three references to: **Robert F. Huxtable, M.D., Department of Pediatrics, University of California Irvine Medical Center, 101 City Drive South, Orange, Calif. 92668.** *An Affirmative Action Employer.* Closes 26 June 1981.

POSITIONS OPEN

MEDICAL DEAN

THE AMERICAN UNIVERSITY OF THE CARIBBEAN (AUC), School of Medicine, located in Montserrat, British West Indies, seeks an M.D. or a Ph.D. with proven administrative and academic track record in providing direction and leadership to faculty and administrative personnel in the development, implementation, and assessment of a quality educational program. For consideration, submit résumé and salary requirement to: **Selection Committee, AUC U.S. Office, 200 Northwest 37 Avenue, Miami, Fla. 33125.**

MESSENGER RNA PROCESSING
AND NUCLEAR STRUCTURE

NIH-funded postdoctoral positions are available in the laboratory of Dr. Thoru Pederson to participate in ongoing studies of mRNA processing and nuclear RNP complexes (hnRNP and snRNP) in a variety of eukaryotic systems. Candidates are sought with experience in DNA and RNA sequencing, nucleic acid enzymology, and antibody purification. The Cell Biology Group of the Worcester Foundation is a vigorous research department focusing on eukaryotic gene structure and expression, the cytoskeleton, membrane biology, and virology. There are excellent opportunities for intra- and interlaboratory collaborations. The institute is situated on a wooded, semi-rural campus, 40 miles west of Boston. Applicants should send curriculum vitae and the names of three references to: **Dr. Thoru Pederson, c/o Personnel Office, Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, Mass. 01545.**

An Equal Opportunity/Affirmative Action Employer

MOLECULAR BIOLOGY. Tenure-track assistant professor for Ph.D. in biochemistry or molecular biology. Evidence of research activity and productivity is necessary. A strong commitment to research is expected. Teaching involves both medical and graduate students. Send curriculum vitae and a brief statement of research plans, and have three letters of recommendation sent by 1 July 1981 to: **Dr. Guilford Rudolph, Head, Department of Biochemistry, Louisiana State University Medical Center, Box 33932, Shreveport, La. 71130.** *Equal Opportunity Employer.*

POSTDOCTORAL ASSOCIATE—Immediate opening for qualified candidate with Ph.D. in biology or biochemistry. Minimum of 3 years of experience in blood formation. Cell work needed. Must be able to work independently. Duties include basic research into the biology of gene expression and cell development. Salary: $16,000 per year. Contact: **Burvin Hardy, Philadelphia Job Bank, 1709 South Broad Street, Philadelphia, Pa. 19148.** *Equal Opportunity Employer.*

POSTDOCTORAL ASSOCIATES FOR RESEARCH IN MEMBRANE BIOCHEMISTRY AND TUMOR BIOLOGY

Positions available for candidates with recent doctorate in chemistry, biochemistry, biophysics, or related areas. Problems under study include: (i) the role of membranes in the synthesis and assembly of capsular polymers and complex glycoconjugates; (ii) the conformation and dynamics of glycosyl carrier lipids in membranes; and (iii) the role of tumor-associated cell surface antigens in immunoresistance. Applicants should have knowledge and experience in biophysical techniques (NMR, EPR, and fluorescence), polyisoprenoid chemistry, carbohydrate/glycoprotein chemistry, or immunochemical and membrane isolation procedures. Send curriculum vitae and names of three references to: **Dr. Frederic A. Troy, Department of Biological Chemistry, University of California, School of Medicine, Davis, Calif. 95616.**

POSTDOCTORAL FELLOW. Research in genetics and molecular biology of *B. subtilis* phages. Part of a vigorous and growing group of molecular biologists. Opportunity for recombinant DNA experience. Minimum: 2 years; possibility of long-term position with increased responsibilities. Send curriculum vitae and names of three references to: **Charles Stewart, Department of Biology, Rice University, Houston, Texas 77001.** *Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

POSTDOCTORAL POSITION available immediately for study of membrane transport in bacterial and animal cells. Areas of interest include genetic, biochemical, and physiological approaches to analysis of ion-coupled transport, including ATPases and substrate cotransport. Send letter with curriculum vitae and names of references to: **Peter C. Maloney, Department of Physiology, Johns Hopkins Medical School, Baltimore, Maryland 21205.**

POSTDOCTORAL POSITION immediately available for studies on regulation of tumor cell differentiation. Background in cell culture required. Experience in membrane biochemistry and/or monoclonal antibodies desirable. Applicants please contact: **Dr. Susan Friedman, Oncology Research Group, Faculty of Medicine, University of Calgary, Calgary, Alberta, Canada T2N 1N4.**

POSTDOCTORAL POSITION (Research Associate II) available in September 1981. Individual will supervise two laboratory research aides and will coordinate the research activities of nutrition research group consisting of six to eight persons. In addition, will be responsible for developing and conducting a research program in the area of the nutritional role and bioavailability of food selenium. Salary: $15,000 per annum, minimum. Send curriculum vitae and have two letters of reference sent to: **Dr. G. F. Combs, Jr., Department of Poultry and Avian Science, Cornell University, Ithaca, New York 14853.** *Cornell University is an Equal Opportunity/Affirmative Action Employer. Minorities, women, and the handicapped are encouraged to apply.* Deadline: 1 July 1981.

POSTDOCTORAL POSITION available immediately in biochemical toxicology to study the metabolism and toxicity of halogenated aliphatic hydrocarbons. Candidates must have a Ph.D. in pharmacology, biochemistry, or medicinal chemistry. Send curriculum vitae and three letters of reference to: **Professor M. W. Anders, Department of Pharmacology, 3-260 Millard Hall, University of Minnesota, 435 Delaware Street, SE, Minneapolis, Minnesota 55455.** *The University of Minnesota is an Equal Opportunity Educator and Employer and specifically invites and encourages applications from women and minorities.*

POSTDOCTORAL POSITION available 1 July to study membrane transport and biochemical pharmacology of cancer chemotherapeutic agents by mammalian cells. Recent Ph.D. in biochemistry desirable. Attempts will be made to apply these studies at a clinical level. Salary: $14,000 to $17,000, depending on qualifications. Send curriculum vitae to: **Dr. G. J. Goldenberg, Director, Manitoba Institute of Cell Biology, 700 Bannatyne Avenue, Winnipeg, Manitoba, Canada R3E 0V9.**

POSTDOCTORAL PROJECT ASSOCIATE

Position available immediately at High Voltage Electron Microscope Facility, University of Wisconsin, Madison. (i) Ph.D. in biological sciences with special interest in immunocytochemistry, to develop methods for selective contrasting of specific cellular components in whole mounts and thick sections, or (ii) Ph.D. in physics or engineering interested in instrumental development, biological electron microscopy. Appointment is for 1 year, renewable up to 3 years. Submit curriculum vitae and three letters of recommendation to: **Hans Ris, High Voltage Electron Microscope Facility, University of Wisconsin, Animal Science Building, Madison, Wis. 53706.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE to study regulation of ferritin gene expression and mechanism of ferritin induction by iron. Applicants should have a strong background in biochemistry or molecular biology, preferably with experience in cloning DNA and in RNA and protein synthesis. Available immediately for 2 years. Salary range: up to $20,000. Please send curriculum vitae and names of three references to: **Dr. Jim Drysdale, Associate Professor, Department of Biochemistry and Pharmacology, Tufts University, 136 Harrison Avenue, Boston, Mass. 02111.** *Tufts University is an Equal Opportunity Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE—Position available July to August 1981, for Ph.D. or M.D. to study the role of extracellular matrix components in cell growth and differentiation. Send curriculum vitae and three letters of reference to: **Dr. M. Wicha, Department of Oncology, Simpson Memorial Institute, University of Michigan, 102 Observatory, Ann Arbor, Michigan 48109.** *An Equal Opportunity/Affirmative Action Employer.*

GERTRUD–HAGMANN–STIFTUNG

für Malignom–Forschung

has been established in Basle, Switzerland for the support of scientists performing basic or clinical research in oncology. Conditions for applicants are as follows:

1. Applicants must have obtained the doctoral degree either in Science or in Medicine.
2. They must have performed basic or clinical studies in biology or medicine at least two years prior to the application.
3. A funded scientist has to carry out his studies either in Austria, the Federal Republic of Germany or Switzerland.
4. He must be free of routine service or teaching obligations.

The stipend is sFr. 50'000.- per annum and shall provide the living expenses for the successful applicants.
Payment will be three-monthly in advance for two years. Reapplication is possible.

The Foundation will be gratified to receive applications of qualified female candidates.

Applications should be submitted within two months of this announcement to the president Rainer Hagmann, M.D., Gertrud-Hagmann-Stiftung für Maligmomforschung, Hauptstr. 14, CH 4514 Lommiswil, Switzerland, and include the name and address of the applicant, a curriculum vitae, a complete list of publications including three copies of the most important papers, further a detailed description of the research project with references to previous works, the address of the institution where the investigation should be carried out with written consent of its director, specifying the time, when research should be started.

The council of the Foundation, with Prof. G. Nagel, M.D., Director of Oncology at the University of Göttingen, and Prof. G. Hartmann, Director at the Institute for Biochemistry at the University of München, serving as members, will notify the applicants of its decision within three months after the closing date of applications.

DEVELOPMENT MANAGER

CETUS CORP., a leader in biotechnology, is seeking a Development Manager for biological products.

Candidates will have 5–10 years experience with a relevant pharmaceutical industry in a production/development capacity and be conversant with GLP, GMP, and FDA regulations as relating to production, packaging, etc. A strong technical background is required, preferably with knowledge and experience in the purification of biologicals, specifically interferon. Please send resume and salary expectations in confidence to:

cetus
Box DMS
600 Bancroft Way
Berkeley, CA 94710
EOE/MFH

cetus

OPPORTUNITIES IN MODERN BIOTECHNOLOGY APPLIED TO AGRICULTURE

CETUS MADISON CORPORATION, a newly formed subsidiary of Cetus Corporation, will focus on a variety of research programs involving interdisciplinary efforts in molecular genetics, agronomy, chemistry, horticulture, microbiology, plant pathology, plant cell culture, and natural products biochemistry.

These programs will relate to long-term commercial objectives that should benefit agriculture. The initial group will eventually consist of 25 Ph.D. scientists together with appropriate support staff.

Please address your resume, in confidence, to:

Winston J. Brill
CETUS MADISON
P.O. Box 4440
Madison, WI 53711
EOE/MFH

SR. RESEARCH BIOCHEMIST/ MICROBIOLOGIST

Merck Sharp & Dohme Research Laboratories, a recognized leader in the development of pharmaceutical and biological products, is currently seeking a biochemist or microbiologist to join a multidisciplinary team of scientists engaged in the development of new approaches to the treatment of infectious diseases.

The successful candidate should have a Ph.D. or equivalent with two or more years of post-doctoral experience with state of the art knowledge of analytical biochemical methodology. Familiarity with microbial and mammalian metabolism is highly desirable. The skills and willingness to adopt the latest analytical procedures to the analysis of antibiotic absorption, metabolism and disposition is essential.

Salary, benefits and career growth are excellent. Interested candidates should please send their resume and salary requirements in confidence to: Mrs. S. R. Jenkins, Dept. S-3,

MERCK & CO., INC.
P.O. Box 2000, Rahway, N.J. 07065
An Equal Opportunity Employer, M/F

AAAS Memberships and Subscriptions

- Whenever you write us about your membership or subscription, please attach a **Science** address label to ensure prompt service.
- **Mail to:** Membership and Subscription Records, AAAS, 1515 Massachusetts Ave., NW, Washington, D.C. 20005.

☐ **Change of Address:** Please provide 6 weeks' notice. Paste an address label from a recent issue in the space provided. Print new address below.

☐ **Query:** If you have a question, place your address label here and attach this form to your letter.

- **To join or subscribe:** Mail this form with your payment, mark the appropriate boxes, and print your name and address in the space below. (For renewals, attach label.)

ATTACH LABEL HERE

☐ **Membership rates** (individual only)
☐ $38 USA ☐ $62 Canada, PUAS ☐ $65 Foreign
☐ $93 air-surface delivery via Holland

☐ **Subscriber rates**
☐ $76 USA ☐ $100 Canada, PUAS ☐ $103 Foreign
☐ $131 air-surface delivery via Holland

☐ Payment enclosed ☐ Bill me later

Name Please print

Address

City State Zip **MW05**

POSITIONS OPEN

POSTDOCTORAL-REPRODUCTIVE BIOLOGY

We seek a person with a Ph.D. in vertebrate reproductive biology for a challenging program in fertilization and early embryonic development in mammals. Skill in handling preimplantation mammalian embryos would be desirable; facility with micromanipulation and manufacture of micropipettes would be helpful. Solid academic credentials are essential. This position must be filled by 1 August. Please send curriculum vitae, transcripts of coursework, and three letters of recommendation to: **G. E. Seidel, Jr., Animal Reproduction Laboratory, Colorado State University, Fort Collins, Colo. 80523.** *Colorado State University is an Equal Opportunity/Affirmative Action Employer. Equal Opportunity Office: 314 Student Service Building.*

POSTDOCTORAL RESEARCH APPOINTMENT

Available 1 July 1981 for a Ph.D. with background in nucleic acid biochemistry. Knowledge of molecular cloning, fingerprint analysis, and nucleic acid sequences desirable. Research will involve investigation of hnRNA and snRNA in nuclear matrix and the role of nuclear proteins in hnRNA-snRNA interaction. Send curriculum vitae and three references to: **A. O. Pogo, M.D., Head, Laboratory of Cell Biology, The Kimball Research Institute of THE NEW YORK BLOOD CENTER, 310 East 67 Street, New York, N.Y. 10021.** *An Equal Opportunity Employer, M/F.*

POSTDOCTORAL RESEARCH ASSOCIATE. Two-year position available for individual interested in nuclear cytoplasmic interactions occurring during embryogenesis. Studies concerned with isolation and storage of insect germ plasm. Experience with nuclear transplantation, cell culture, or cell separation techniques preferred. Salary $17,000 to $18,000. Send résumé to: **Dr. J. D. Brammer, Zoology Department, North Dakota State University, Fargo, N.D. 58105.** Closing date: 15 June 1981. *Equal Opportunity Employer.*

POSTDOCTORAL TRAINING POSITION—Electrophysiological and biophysical approaches toward cellular cardiac function. Applicants (M.D. or Ph.D.) should send curriculum vitae to: **Dr. Alan R. Freeman, Chairman, Department of Physiology, Temple University School of Medicine, Philadelphia, Pa. 19140.** *Equal Opportunity/Affirmative Action Employer.*

The Department of Neurology, Memorial Sloan-Kettering Cancer Center, is seeking a fully trained **RADIOCHEMIST** to produce short-lived cyclotron and generator-produced radionuclides for use in positron emission tomography (PET). The applicant should be well versed in both physical and organic chemistry; experience in "hot atom" chemistry is also desirable. Further, the applicant must demonstrate his/her ability to mount an effective PET radiochemistry program and eventually to attract outside grant support. Academic appointments and salary are negotiable. For further information, contact: **Dr. Jerome B. Posner, Chairman, Department of Neurology, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, N.Y. 10021. Telephone: 212-794-7047.** *Equal Opportunity Employer, M/F.*

RESEARCH ASSOCIATE. A full-time position to study myelinogenesis. Biochemistry Ph.D. Experience in primary brain cell culture, immunocytochemistry, enzymology, protein purification, separation techniques; $15,000. Send curriculum vitae and three references to: **Dr. S. E. Pfeiffer, L-2034 Microbiology, University of Connecticut Medical School, Farmington, Conn. 06032.** *University of Connecticut is an Affirmative Action/Equal Opportunity Employer. Women, minorities, and handicapped persons are encouraged to apply.*

RESEARCH SCIENTISTS in PROTEIN CHEMISTRY and ORGANIC CHEMISTRY—The Sidney Farber Cancer Institute, affiliated with Harvard Medical School, announces openings for research scientists experienced in organic chemistry and protein chemistry, including protein purification and covalent derivatization. Applicants should have postdoctoral experience in protein chemistry and biochemistry. Appointees will join a team involved in research and development of immunotoxins as reagents for treatment of human cancers. Appointments will be on the research ladder at a level equivalent to an instructor or assistant professor. Applicants should arrange for curriculum vitae and three letters of recommendation to be sent to: **Dr. Barbara H. Sanford, Director for Research, Sidney Farber Cancer Institute, 44 Binney Street, Boston, Mass. 02115.** *An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL RESEARCH ASSOCIATES to study the role of calmodulin in cell functions. Specific projects include: (i) adenylate cyclase and phosphodiesterase, (ii) prostaglandin metabolism and enzymology, (iii) calmodulin-binding proteins, and (iv) immunocytochemistry. Successful applicants may begin immediately. Send curriculum vitae and three letters of reference to: **Dr. Wai Yiu Cheung, Department of Biochemistry, St. Jude Children's Research Hospital, Memphis, Tennessee 38101.**

NATIONAL SCIENCE FOUNDATION (NSF)

NSF, Division of Astronomical Sciences, invites applications for the position of **PROGRAM DIRECTOR** for the Stars and Stellar Evolution Program in the Astronomy Research Section. The position will be filled on a 1- or 2-year rotational appointment at the EC-13/14/EP level (equivalent to the GS-13/14/15), $32,048 to $50,112.50 per annum. Candidates should have a Ph.D. degree in astronomy and/or astrophysics; at least 5 years of research experience beyond the Ph.D.; and a record of productive research in observational and/or theoretical stellar astronomy and astrophysics. A program director is responsible for the review, recommendation, and processing of proposals for grants in the above subarea of the discipline. Letters of application accompanied by curriculum vitae and a list of at least three references should be sent to: **The National Science Foundation, Personnel Administration Branch, Room 212, 1800 G Street, NW, Washington, D.C. 20550, attention: E. Paul Broglio, EX 81-28.** Position will remain open until filled. For further information, **telephone: Dr. W. E. Howard at 202-357-9488 or Dr. M. L. Aizenman at 202-357-7622.** *The National Science Foundation is an Equal Opportunity Employer.*

RESEARCH ASSOCIATE. This position will be available 1 September 1981 and involves the collaborative involvement in multidisciplinary projects that center on the molecular basis of synapse formation and the identification and characterization of synapse specific molecules in the mammalian CNS. Knowledge of subcellular fractionation, synaptic ultrastructure and biochemistry and immunology are desirable. Candidates must have completed their Ph.D. Initial appointment will be for 1 year, with possible extension. Salary range will be $14,000 to $17,000, dependent on postdoctoral experience. Review of applications will begin immediately. Applicants should submit curriculum vitae, a description of research interests, and arrange for three letters of reference to be forwarded to: **Paul Kelly, Division of Biology, Kansas State University, Manhattan, Kans. 66506.**

Kansas State University is an Equal Opportunity/Affirmative Action Employer

RESEARCH ASSOCIATE

Postdoctoral position available to work on the pathophysiology of African trypanosomiasis. Ph.D. required and experience in biochemistry is essential. Knowledge of gas chromatographic and HPLC technologies preferred but not required. Send curriculum vitae and the names of three references to: **Dr. John R. Seed, Department of Parasitology and Laboratory Practice, University of North Carolina at Chapel Hill, School of Public Health, Rosenau Hall 201H, Chapel Hill, North Carolina 27514.** Applications should be received prior to 1 August 1981.

The University of North Carolina is an Equal Opportunity/Affirmative Action Employer.

The Massachusetts Institute of Technology (MIT), Biology Department, has an opening for a **RESEARCH SCIENTIST**. Will carry out semi-independent work in the area of the biochemistry of gene expression in eukaryotes. Studies include enzyme purification, cloning of eukaryotic genes, propagation and isolation of mammalian (adeno and SV40) and bacterial (ϕX174, fd, P22) viruses and physical chemical analysis of nucleic acids. Requirements include a Ph.D. in biochemistry and at least 1½ years of postdoctoral experience in biochemistry or molecular biology of mammalian DNA viruses. Must be familiar with such techniques as RNA-DNA hybridization, finger printing, autoradiography, gel electrophoretic and sequence analysis of transcription and replication products. Must have experience using the following equipment: ultracentrifuges, sonicators, high-voltage electrophoretic equipment, scintillation counters, freeze dryers, and French press. Salary range is $16,500 to $20,000 per year for 35-hour week. Please submit résumé (including Job Number R427) to: **Professor Malcolm Gefter, Room 56-703, Department of Biology, Massachusetts Institute of Technology, Cambridge, Mass. 02139.** *MIT is an Equal Opportunity/Affirmative Action Employer.*

RESEARCH ASSOCIATE—OPHTHALMOLOGY. Ph.D. physical chemist with strong background in optical spectroscopy of nucleic acids and glycosaminoglycans. Minimum of 4 years of postdoctoral research and extensive publication list required. Successful candidate expected to develop and fund research program on molecular structure of eye connective tissue. Résumé, names of three references, and reprints of representative publications to: **Box 18, Ophthalmology Research, College of Physicians and Surgeons, Columbia University, 630 West 168 Street, New York, N.Y. 10032.** *Columbia University is an Affirmative Action/Equal Opportunity Employer.*

RESEARCH SCIENTIST needed for the field testing and development of new medical instrumentation. The position involves travel. The applicant should have some familiarity with instrumentation as well as a Ph.D. in biochemistry, biophysics, or a related biomedical area, and an undergraduate degree in physics or chemistry. Evidence of research capability in the form of publications or publication preprints is strongly desirable. Competitive salary.

DMG Corporation
Telephone: 516-694-2929
Box 127, SCIENCE

FELLOWSHIPS

POSTDOCTORAL FELLOWSHIP. Two-year postdoctoral fellowship for research training in neuroendocrinology related to visual system. For U.S. citizens or permanent residents with Ph.D. or M.D. in scientific discipline related to endocrinology with research experience in radioimmunoassay techniques. Excellent collaboration with Endocrinology Division. Supported by NIH training grant. Send curriculum vitae to: **Bernard Schwartz, M.D., Ph.D., Chairman and Professor, Department of Ophthalmology, Tufts–New England Medical Center, 171 Harrison Avenue, Boston, Mass. 02111.** *An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL FELLOWSHIP IN ENDOCRINOLOGY AND METABOLISM

NIH-supported positions available July 1982 (one for 1981). One to three years of training in basic or clinical research in areas of secretion and action of pancreatic and gut hormones, diabetes mellitus, hypothalamic-pituitary-gonadal system, adrenal cortex, renin-angiotensin-aldosterone system; growth hormone structure-function relationship; collaboration with departments of Physiology and Biochemistry available. Applicants should have M.D. or Ph.D. and must have U.S. citizenship or immigration visa. For M.D.'s, includes training in clinical endocrinology and metabolism. Also, one institutionally funded position for M.D. at Wayne County General Hospital (WCGH), a major teaching hospital of the University of Michigan. WCGH provides clinical training and research opportunities in thyroid, diabetes, and catecholamine areas (U.S. citizenship not required). Contact with curriculum vitae: **S. S. Fajans, M.D., Division of Endocrinology and Metabolism, University Hospital, Ann Arbor, Michigan 48109. Telephone: 313-764-4165.** *An Equal Opportunity/Affirmative Action Institution.*

POSTDOCTORAL FELLOWSHIP IN CELLULAR NEUROBIOLOGY. NIH training fellowship for work on the cellular neurobiology of the lamprey central nervous system. Stipend: $13,380 and up, depending on experience. Send curriculum vitae and letters of reference to:

Warren O. Wickelgren, Ph.D.
Department of Physiology, C240
University of Colorado Medical School
4200 East Ninth Avenue
Denver, Colorado 80262

An Equal Opportunity/Affirmative Action Employer

FELLOWSHIPS

GRADUATE FELLOWSHIPS available in INSTITUTE FOR RESOURCES MANAGEMENT, a jointly operated program by the campuses of Washington State University and the University of Idaho.

For further information and application materials, contact either:

Chair, Environmental Science and Regional Planning Program
305 Troy Hall
Washington State University
Pullman, Wash. 99164

OR

Dean
The Graduate School
111 Morrill Hall
University of Idaho
Moscow, Idaho 83843

Equal Opportunity Employers

Senior Researcher

General Foods Technical Center, located in Tarrytown, New York is looking for a Senior Researcher to carry out innovative fermentations of food ingredients from benchtop to plant implementation.

A Ph.D. in fermentation, biochemical engineering or biochemistry is preferred. The successful candidate will have 5-10 years of experience in industrial fermentation at the bench, pilot plant and plant scale levels. Knowledge of fermentation processing, processing techniques, field optimization and end products is essential. A familiarity with fermentor designs and instrumentation to monitor parameters would be helpful.

Please send resume and salary requirements in confidence to:

Personnel Associate — GG

GENERAL FOODS CORPORATION
TECHNICAL CENTER
555 South Broadway, Tarrytown, N.Y. 10591
An Equal Opportunity Employer M/F/Hc.

NOMINATIONS INVITED FOR THE 1981 BROOKDALE AWARDS FOR RESEARCH IN GERONTOLOGY

The Gerontological Society of America is pleased to announce the 1981 Brookdale Awards for Research in Gerontology. Two awards will be made: one in biological and clinical research and the other in social and behavioral research. The amount of each award will be $20,000.

Criteria for Eligibility

The nominees must be citizens of the United States and have been recognized both nationally and internationally for their distinguished scholarly and scientific contributions to research in gerontology.

Nominations

1) Nominations may be made by members and fellows of either The Gerontological Society of America or of the professional society of the nominee's own discipline. Each nomination must be endorsed by three additional persons, one of whom must be a member or fellow of The Gerontological Society of America.

2) Nominations must be made in the form of a letter setting out in detail the significance of the work upon which the nomination is based. Accompanying the nomination must be three letters of endorsement, curriculum vitae, a bibliography, and reprints of three articles published in refereed journals and/or other relevant publications. Eleven copies of all these materials must be submitted.

Screening and Selection

1) **Screening**: The Screening Committee will consist of representatives of the four sections of The Gerontological Society of America as well as representatives of other organizations related to aging. The chair of the Screening Committee will be appointed by the president of The Gerontological Society of America.

2) **Selection**: The recipients of the awards will be announced by the Awards Committee chair. The awards will be conferred at a ceremony at the Annual Scientific Meeting of The Gerontological Society of America in Toronto, Canada, 8 to 12 November 1981.

Deadline for Receipt of Nominations

Nominations must be postmarked no later than 12 August 1981. Send to:

Chairperson, Brookdale Awards Screening Committee
The Gerontological Society of America
Suite 305, 1835 K Street, NW
Washington, D.C. 20006

INDOOR AIR QUALITY SCIENTIST

The Lawrence Berkeley Laboratory, a major multi-purpose laboratory operated by the University of California for the U.S. Department of Energy, is seeking an individual to direct research projects including laboratory experiments and field monitoring of indoor pollutants and the development of contaminant control strategies and techniques. Assist in the technical management of a large number of professionals working in indoor air quality. Responsible for the design and coordination of experiments and development of proposals.

The position requires significant research experience applicable to indoor air pollution, and the successful candidate must have substantial background in technical management and supervising professionals. Prefer a Ph.D. in Science or Engineering with a strong background in chemistry or physical measurements.

To apply, send TWO resumes, including salary history, to: **Employment Office, LAWRENCE BERKELEY LABORATORY, One Cyclotron Road, Berkeley, CA 94720.** An equal opportunity employer, M/F/H.

LAWRENCE BERKELEY LABORATORY

CHEMISTRY/BIOLOGY ASSISTANT

The Upjohn Company has an opening for a biology or chemistry assistant in the area of Cancer Research. This individual will assist a research scientist in the design and performance of studies concerning the disposition, metabolisms, pharmacokinetics, and therapeutic and toxicologic evaluations of antitumor agents in experimental animals. The position will also involve assay development and quantitative analysis of drugs in biofluids.

An M.S. in Analytical Chemistry or Biomedical Science, or a B.S. in one of these fields plus a minimum of two years' directly related experience in animal experimentation or analytical chemistry are required.

Kalamazoo is a mid-sized Southwestern Michigan community offering an excellent mix of cultural/recreational opportunities including lakes, nearby colleges, and a four-season climate. The Upjohn Company offers an excellent salary, benefits, and relocation plans.

For confidential consideration, please send your resume to:

Lance D. Williams
5044-41-1
Professional and Supervisory Employment

Upjohn

THE UPJOHN COMPANY
7000 Portage Road
Kalamazoo, Michigan 49001

An Equal Opportunity Employer M/F