

cause of the heavy silting of rivers, especially those that flowed across the Canterbury plain in South Island. This silting, if not stopped soon, threatened to wash Christchurch into the sea.

Initially deer were released by "acclimatization societies," whose aim was to turn New Zealand into a replica of England, with deer for the landed gentry to hunt. But deer became too successful, and by 1930 they were recognized as pests. The government then set about eradicating them. Government shooters were employed to wipe out deer in a well-planned—or so they thought—attack. The initial optimism regarding what was to be a short campaign was not seriously disturbed when it took a little longer. Twenty-five years later (1955), with no visible reduction in deer numbers on the important watersheds, the Forest Service took over responsibility. *They* knew about forests, and *they* would sort out the mess. Twenty-five years later deer were still present in large numbers.

Meanwhile, starting in the 1960's, two other processes began. First, scientific projects investigated plant communities, geology, and erosion rates in the mountains, with startling and uncomfortable results. Moas, large ostrich-like, flightless birds, lived in the forest until their extinction a few centuries ago. They fed on forest vegetation: for a long period of New Zealand history forests and herbivores coexisted. Geologists found that the Southern Alps are being uplifted at a rate of 50 centimeters a century. More important, they are being eroded 40 centimeters a century, and the greatest erosion rates are found where plant cover is greatest. The main erosion agent is simply rainfall. In 1977, a dry year, some rain gauges recorded 8.9 meters (350 inches) in the Southern Alps. But rainfall is much higher on the wooded western slopes of the range. Indeed, it is so high that no amount of vegetation would hold the rock and soil under this deluge. Erosion rates here were ten times higher than the world average for mountain country. Under these conditions, plant cover types and the presence of deer have effects so slight as to be virtually unmeasurable. Whatever the fate of Christchurch, it will not be determined by deer.

Second, deer became a commercial commodity. Initially private shooters had earned small sums by selling meat or skins, but in the late 1960's meat and antler velvet prices soared and larger commercial enterprises took off. These culminated in the use of efficient helicopter gunships that eventually cleared large

areas of high country. Then, in the 1970's, farmers developed domestic deer herds, and deer became more valuable alive than dead. The public image of deer, it seems, had accomplished an unexpected aboutface.

Caughley writes with penetrating insight and dry wit. Partly autobiographical, this is not so much a narrative as a personal commentary on events. Caughley's exasperation over stupid mistakes is reflected in the later chapters on politics and the law; these become rather embroiled in legal semantics. Overall this is an unusual, interesting, and amusing account, well written. There is also a more serious message; the story is a classic example of how people can be blinded by preconceptions. To quote Caughley: "The justification of deer control operations from 1933 to present was . . . based on an unfortunate fallacy, but the real damage was caused by that error evolving into a treasured axiom rather than into a testable hypothesis. Axioms die hard."

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Books Received

Accretion Tectonics in the Circum-Pacific Regions. M. Hashimoto and S. Uyeda, Eds. Terra, Tokyo, and Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). viii, 358 pp., illus. \$85. *Advances in Earth and Planetary Sciences.* From a seminar, Tomakomai, Japan, Sept. 1981.

The Acquired Immune Deficiency Syndrome and Infections of Homosexual Men. Pearl Ma and Donald Armstrong, Eds. Yorke, New York, 1984. xviii, 442 pp., illus. \$39.50.

Adaptive Behavior and Learning. J. E. R. Staddon. Cambridge University Press, New York, 1983. xiv, 555 pp., illus. \$59.50; paper, \$18.95.

The Analytic Art. Nine Studies in Algebra, Geometry and Trigonometry from the *Opus Restitutae Mathematicae Analyseos, seu Algrbrâ Novâ*. François Viète. Kent State University Press, Kent, Ohio, 1984. vi, 450 pp., illus. \$45. Translated by T. Richard Witmer.

Artificial Auditory Stimulation Theories. W. D. Keidel and P. Finkenzerler, Eds. Karger, Basel, 1984. viii, 151 pp., illus. \$75. *Advances in Audiology*, vol. 1. From a symposium, Erlangen, Germany, 1982.

Astrocytes. Normal, Reactive, and Neoplastic. Philip E. Duffy. Raven, New York, 1983. xii, 224 pp., illus. \$37.

Astronomy and Astrophysics Abstracts. Vol. 33, Literature 1983, Part 1. S. Böhme *et al.*, Eds. Published for Astronomisches Rechen-Institut by Springer-Verlag, New York, 1983. x, 815 pp. \$66.

Atherosclerosis. Mechanisms and Approaches to Therapy. Norman E. Miller, Ed. Raven, New York, 1983. xii, 225 pp., illus. \$45. From a symposium, London, April 1982.

Atherosclerosis Reviews. Vol. 11. Antonio M. Gotto and Rodolfo Paoletti, Eds. Raven, New York, 1983. xii, 252 pp., illus. \$47.

An Atlas of UV Spectra of Supernovae. P. Benvenuti *et al.* European Space Agency, Paris, 1983 (distributor, ESTEC, Noordwijk, Netherlands). 222 pp. Spiral bound, 140 F. ESA SP-1046.

Australia. A Natural History. Howard Ensign Evans and Mary Alice Evans. Smithsonian Institution Press, Washington, D.C., 1983. 208 pp., illus. \$39.95; paper, \$19.95.

Automatic Natural Language Parsing. Karen Sparck Jones and Yorick Wilks, Eds. Horwood, Chichester, England, and Halsted (Wiley), New

York, 1983. 208 pp., illus. \$44.95. Ellis Horwood Series in Artificial Intelligence. From a workshop, Colchester, England, April 1982.

Automation and Control in Transport. F. T. Barwell. 2nd ed. Pergamon, New York, 1983. xvi, 390 pp., illus. \$60.

Ball Courts and Ceremonial Plazas in the West Indies. Ricardo E. Alegría. Yale University Department of Anthropology, New Haven, Conn., 1983. x, 185 pp., illus. Paper, \$12.50. Yale University Publications in Anthropology, No. 79.

BASIC Programming. Donald D. Spencer. Scribner, New York, 1984. 224 pp., illus. Paper, \$9.95. Reprint, 1983 edition.

Becoming an OD Practitioner. Eric H. Nelson. Prentice-Hall, Englewood Cliffs, N.J., 1984. xviii, 280 pp. \$18.95.

Beijing/Shanghai Proceedings of an International Conference on Lasers. May 1980. China Academic Publishers and Wiley, New York, 1983. xxii, 909 pp., illus. \$95.

Bibliographic Atlas of Protein Spectra in the Ultraviolet and Visible Regions. Donald M. Kirschenbaum, Ed. IFI/Plenum, New York, 1984. xii, 523 pp. \$95.

A Bibliography of Canadian Climate, 1977-1981. Compiled by David W. Phillips. Atmospheric Environment Service, Environment Canada, Ottawa, 1983 (available from Canadian Government Publishing Centre, Ottawa). 169 pp. Paper, C\$6.

Bimetallic Catalysts. Discoveries, Concepts, and Applications. John H. Sinfelt. Wiley, New York, 1983. xii, 164 pp., illus. \$32.50. An Exxon Monograph.

Biological Factors in Learning. Michael D. Zeiler and Peter Harzem, Eds. Wiley, New York, 1983. x, 410 pp., illus. \$79.95. *Advances in Analysis of Behaviour*, vol. 3.

Biological Response Modifiers. Subcommittee Report. National Cancer Institute, Bethesda, Md., 1983 (available from the Superintendent of Documents, Washington, D.C.). xiv, 252 pp., illus. \$10. National Cancer Institute Monograph 63. NIH Publication no. 83-2606.

Biology and Ecology of Mangroves. H. J. Teas, Ed. Junk, The Hague, 1983 (U.S. distributor, Kluwer Boston, Hingham, Mass.). x, 188 pp., illus. \$64. *Tasks for Vegetation Science* 8. From a symposium, Port Moresby, Papua New Guinea, 1980.

Biotechnology. C. F. Phelps and P. H. Clarke, Eds. Biochemical Society, London, 1983. x, 247 pp., illus. \$57.50. *Biochemical Society Symposia*, No. 48. From a symposium, London, Dec. 1982.

Birds over America. Roger Tory Peterson. 2nd ed. Dodd, Mead, New York, 1984. xviii, 342 pp., illus. Paper, \$12.95. Reprint, 1964 edition.

Brain Peptides. Dorothy T. Krieger, Michael J. Brownstein, and Joseph B. Martin, Eds. Wiley-Interscience, New York, 1983. xiv, 1032 pp., illus. \$97.50.

Brewster and Wheatstone on Vision. Nicholas J. Wade, Ed. Published for the Experimental Psychology Society by Academic Press, New York, 1983. xiv, 358 pp., illus. \$39.

The Cambridge Deep-Sky Album. Celestial photography by Jack Newton. Text by Philip Teece. Cambridge University Press, New York, and AstroMedia, Milwaukee, 1983. 126 pp. \$19.95.

Cancer and Its Nutritional Therapies. Richard A. Passwater. 2nd ed. Keats, New Canaan, Conn., 1983. 266 pp. Paper, \$3.95.

Cancer Incidence in the USSR. N. P. Napalkov *et al.*, Eds. International Agency for Research on Cancer, Lyon, 1983 (U.S. distributor, WHO Publications Centre USA, Albany, N.Y.). 81 pp., illus. \$15. Supplement to *Cancer Incidence in Five Continents*, vol. 3.

Cancer Prevention in Clinical Medicine. Guy R. Newell, Ed. Raven, New York, 1983. xiv, 257 pp., illus. \$44.

Carbohydrate Metabolism of Tissues. Experimental and Comparative Studies. I. Krimpecher and Mária B. László. Akadémiai Kiadó, Budapest, 1983 (U.S. distributor, Heyden, Philadelphia). 215 pp., illus. \$28. Translated from the Hungarian.

Carbon Dioxide. Current Views and Developments in Energy-Climate Research. W. Bach *et al.*, Eds. Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). xviii, 525 pp., illus. \$72. From a course, Erice, Italy, July 1982.

Causal Quantum Theory. James Paul Wesley. Benjamin Wesley, Blumberg, Germany, 1983. xxiv, 405 pp., illus. Paper, \$24.

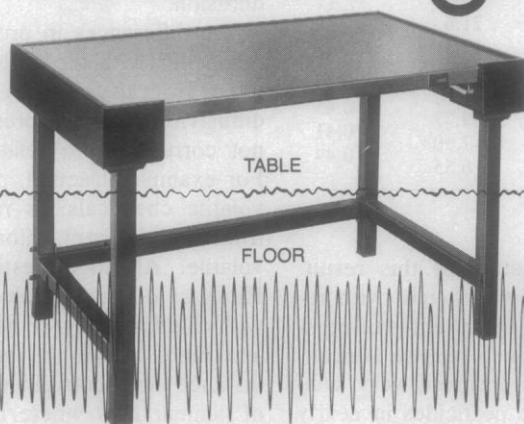
Cell Biology of the Secretory Process. M. Cantin, Ed. Karger, Basel, 1984. viii, 624 pp., illus. \$178.50.

Cell Locomotion in vitro. Techniques and Observations. C. A. Middleton and J. A. Sharp. Croom Helm, London, 1983. x, 163 pp., illus. £15.95. *Croom Helm Applied Biology Series*.

Cellular Oncology. New Approaches in Biology, Diagnosis, and Treatment. Peter J. Moloy and Garth L. Nicolson, Eds. Praeger, New York, 1983. xiv, (Continued on page 908)

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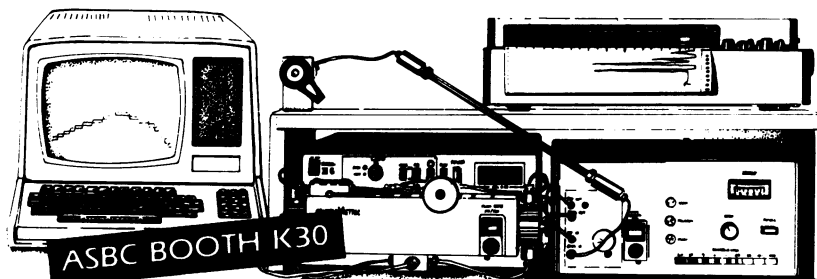
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BOOKS RECEIVED

(Continued from page 866)

306 pp., illus. \$35. Cancer Research Monographs, vol. 1. From a symposium. Long Beach, Calif., April 1982.

Cellular Responses to DNA Damage. Errol C. Friedberg and Bryn A. Bridges, Eds. Liss, New York, 1983. xxiv, 753 pp., illus. \$98. UCLA Symposium on Molecular and Cellular Biology. New Series, vol. 11. From a symposium. Keystone, Colo., April 1983.

Check-List of North American Birds. The Species of Birds of North America from the Arctic through Panama. Including the West Indies and Hawaiian Islands. Prepared by the Committee on Classification and Nomenclature of the American Ornithologists' Union. 6th ed. American Ornithologists' Union, Washington, D.C., 1983 (available from Frank R. Moore, Department of Biology, University of Southern Mississippi, Hattiesburg). xxx, 877 pp. \$35.

The Development of the U.S. Urban System. Vol. 2, Industrial Shifts, Implications. Edgar S. Dunn, Jr. Resources for the Future, Washington, D.C., 1983 (distributor, Johns Hopkins University Press, Baltimore). xvi, 266 pp. + plates. \$75.

Developmental Pharmacology. Stuart M. MacLeod, Allan B. Okey, and Stephen P. Spielberg, Eds. Liss, New York, 1983. xvi, 442 pp., illus. \$78. Progress in Clinical and Biological Research, vol. 135. From a symposium, Toronto, Oct. 1982.

Le Développement dans la Première Année. S. De Schonen, Ed. Presses Universitaires de France, Paris, 1983. 304 pp., illus. Paper, 145 F. Psychologie d'aujourd'hui. From a symposium, Grenoble, Oct. 1981.

Dictionary of Computers, Data Processing, and Telecommunications. Jerry M. Rosenberg. Wiley, New York, 1984. xiv, 614 pp. \$29.95.

Dictionary of Computing. Oxford University Press, New York, 1983. xii, 393 pp. \$24.95.

Dictionary of Petrology. S. I. Tomkeieff, E. K. Walton *et al.*, Eds. Wiley-Interscience, New York, 1983. xii, 680 pp. \$100.

Didactical Phenomenology of Mathematical Structures. Hans Freudenthal. Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). x, 595 pp., illus. \$93.50. Mathematics Education Library.

Difficult Decisions in Medical Ethics. The Fourth Volume in a Series on Ethics, Humanism, and Medicine. Doreen Ganos *et al.*, Eds. Liss, New York, 1983. xviii, 240 pp. \$38. Progress in Clinical and Biological Research, vol. 139. From two conferences, Ann Arbor, Mich., 1981 and 1982.

Digital Radiography. William R. Brody. Raven, New York, 1984. xiv, 225 pp., illus. \$33.

The Directory of Software Publishers. How and Where to Sell Your Program. Eric Balkan, Ed. Van Nostrand Reinhold, New York, 1983. x, 310 pp. \$25.50.

Discover Your VIC-20. A Beginner's Guide to Real Programming. Donald Kahn, Jr., and Nevin B. Scrimshaw. Birkhäuser, Boston, 1983. x, 94 pp., illus. Paper, \$10.95.

The Discoverers. Daniel J. Boorstin. Random, New York, 1983. xvi, 747 pp. \$25.

Disease Change and the Role of Medicine. The Navajo Experience. Stephen J. Kunitz. University of California Press, Berkeley, 1983. x, 227 pp. \$29.95. Comparative Studies of Health Systems and Medical Care.

Diseases of the Lymphatic System. Diagnosis and Therapy. David W. Molander, Ed. Springer-Verlag, New York, 1984. xviii, 340 pp., illus. \$68.

Dismantling the Universe. The Nature of Scientific Discovery. Richard Morris. Simon and Schuster, New York, 1983. 224 pp. \$14.95.

Dispersal and Distribution. Klaus Kubitzki, Ed. Verlag Paul Parey, Hamburg, 1983. 406 pp., illus. Paper, DM 108. Sonderbände des Naturwissenschaftlichen Vereins in Hamburg. 7. From a symposium, Hamburg, June 1982.

Disseminated Intravascular Coagulation. Takeshi Abe and Manabu Yamanaka, Eds. Karger, Basel, 1983. xiv, 355 pp., illus. \$118. Bibliotheca Haematologica, No. 49. From a symposium, Tokyo, Nov. 1981.

Disturbance and Ecosystems. Components of Response. H. A. Mooney and M. Godron, Eds. Springer-Verlag, New York, 1983. xvi, 292 pp., illus. \$49.50. Ecological Studies, vol. 44.

Diversity. Ruth Patrick, Ed. Hutchinson Ross, Stroudsburg, Pa., 1983 (distributor, Van Nostrand Reinhold, New York). xvi, 413 pp., illus. \$42.50. Benchmark Papers in Ecology, vol. 13.

Dizziness, Hearing Loss, and Tinnitus. The Essentials of Neurotology. Robert W. Baloh. Davis, Philadelphia, 1984. xviii, 197 pp., illus. \$35.

Dr. C. Wacko's Miracle Guide to Designing and Programming Your Own Atari Computer Arcade

Games. David L. Heller, John F. Johnson, and Robert Kurcina. Addison-Wesley, Reading, Mass., 1983. viii, 235 pp., illus., + disk. Spiral bound, \$24.95.

The Dynamic Earth. A *Scientific American* Book. Freeman, New York, 1983. viii, 116 pp., illus. Paper, \$13.95.

Dynamic Stratigraphy. An Introduction to Sedimentation and Stratigraphy. Robley K. Matthews. 2nd ed. Prentice-Hall, Englewood Cliffs, N.J., 1984. xxii, 489 pp., illus. \$32.95.

Dynamics of Molecular Liquids. Walter G. Rothchild. Wiley-Interscience, New York, 1984. xvi, 415 pp., illus. \$49.95.

Dynamics of Neurotransmitter Function. Israel Hanin, Ed. Raven, New York, 1984. xxiv, 376 pp., illus. \$65.

Early Proterozoic Geology of the Great Lakes Region. L. G. Medaris, Jr., Ed. Geological Society of America, Boulder, Colo., 1983. vi, 141 pp., illus. \$28. The Geological Society of America Memoir 160. From a symposium, Madison, Wis., May 1981.

Eating and Its Disorders. Albert J. Stunkard and Eliot Stellar, Eds. Raven, New York, 1983. xxii, 280 pp., illus. \$45. Research Publications, Association for Research in Nervous and Mental Disease, vol. 62.

Les Erablières Sucrères du Comté de L'Islet Etude Phyto-écologique. Rosaire Jean. Laboratoire d'Ecologie Forestière, Université Laval, Québec, 1982. x, 185 pp., illus. Paper, C\$10; to institutions, C\$20. Etudes Ecologiques, 7.

Fracture Mechanics Technology Applied to Material Evaluation and Structure Design. G. C. Sih, N. E. Ryan, and R. Jones, Eds. Nijhoff, The Hague, 1983 (U.S. distributor, Kluwer Boston, Hingham, Mass.). xx, 671 pp., illus. \$80. From a conference, Melbourne, Aug. 1982.

Freud's Rules of Dream Interpretation. Alexander Grinstein. International Universities Press, New York, 1984. xiv, 306 pp. \$25.

Fundamentals of Mathematics. H. Behnke *et al.*, Eds. MIT Press, Cambridge, Mass., 1984. Three volumes. Vol. 1, Foundations of Mathematics: The Real Number System and Algebra. x, 549 pp. Vol. 2, Geometry. xii, 685 pp., illus. Vol. 3, Analysis. xiv, 541 pp. Paper: each volume, \$15; the set, \$40. Translated from the German edition (1962) by S. H. Gould. Reprint, 1974 ed.

Fundamentals of Neuropsychopharmacology. Robert S. Feldman and Linda F. Quenzer. Sinauer, Sunderland, Mass., 1984. xx, 508 pp., illus. \$35.

Fundamentals of Nuclear Pharmacy. Gopal B. Saha. 2nd ed. Springer-Verlag, New York, 1984. xxii, 287 pp., illus. \$29.50.

The Genesis Connection. John L. Wiester. Nelson, Nashville, Tenn., 1983. 254 pp., illus. \$14.95.

Genetic Engineering of Plants. Agricultural Research Opportunities and Policy Concerns. National Academy Press, Washington, D.C., 1984. xii, 83 pp., illus. Paper, \$9.50.

Genetic Resources of Forage Plants. J. G. McIvor and R. A. Bray, Eds. CSIRO, East Melbourne, Australia, 1983 (U.S. distributor, ISBS, Beaverton, Ore.). x, 337 pp., illus. \$30. From a symposium.

Gerade und Ungerade. Die Asymmetrie des Gehirns und der Zeichensysteme. Vjaceslav Vsevolodovic Ivanov. Hirzel, Stuttgart, 1983. 221 pp., illus. Paper, DM 28. Translated from the Russian edition (Moscow, 1978) by Winfried Petri.

Geraghty & Miller's Groundwater Bibliography. Frits van der Leeden, Ed. 3rd ed. Water Information Center, Syosset, N.Y., 1983. x, 330 pp. Paper, \$18.

Ghosts in the Mind's Machine. Creating and Using Images in the Brain. Stephen Michael Kosslyn. Norton, New York, 1983. xviii, 249 pp., illus. \$19.95.

Glutamine, Glutamate, and GABA in the Central Nervous System. Leif Hertz *et al.*, Eds. Liss, New York, 1984. xiv, 705 pp., illus. \$86. Neurology and Neurobiology, vol. 7. From a symposium, Saskatoon, Saskatchewan, Canada, July 1983.

Group Theory in Spectroscopy. With Applications to Magnetic Circular Dichroism. Susan B. Piepho and Paul N. Schatz. Wiley-Interscience, New York, 1983. xxviii, 634 pp., illus. \$79.95. Wiley-Interscience Monographs in Chemical Physics.

A Guide to U.S. Government Scientific and Technical Resources. Rao Aluri and Judith Schiek Robinson. Libraries Unlimited, Littleton, Colo., 1983. 259 pp. \$23.50.

Handbook of Medical Library Practice. Vol. 2, Technical Services in Health Science Libraries. Louise Darling, David Bishop, and Lois Ann Colaianni, Eds. 4th ed. Medical Library Association, Chicago, 1983. xviii, 368 pp. \$27.50.

Handbook of Plant Cell Culture. Vol. 1, Techniques for Propagation and Breeding. David A. Evans *et al.*, Eds. Macmillan, New York, and Collier Macmillan, London, 1983. xiv, 970 pp., illus. \$49.50.

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University of Washington Press, Seattle, 1984. xxvi, 80 pp., illus. \$30; paper, \$9.95.

Health Risks. The Challenge of Informing the Public. Edward J. Burger, Jr. Media Institute, Washington, D.C., 1984. vi, 75 pp. Paper, \$10.

Heavy Metals in Natural Waters. Applied Monitoring and Impact Assessment. James W. Moore and S. Ramamoorthy, with E. E. Ballantyne. Springer-Verlag, New York, 1984. xii, 270 pp., illus. \$38. Springer Series on Environmental Management.

Human Fulfillment. A Self Study Course Providing Access to a General Synthesis. Joseph P. Reilly. Bionomic Publishers, Hayward, Calif., 1983. viii, 421 pp. \$16; paper, \$12.

The Legal Regime of Fisheries in the Caribbean Region. W. R. Edeson and J.-F. Pulvenis. Springer-Verlag, New York, 1983. x, 204 pp. Paper, \$16.50. Lecture Notes on Coastal and Estuarine Studies, 7.

Linear Statistical Analysis of Discrete Data. Mikel Aickin. Wiley, New York, 1983. xviii, 358 pp. \$36.95. Wiley Series in Probability and Mathematical Statistics.

Long-Acting Steroid Contraception. Daniel R. Mishell, Ed. Raven, New York, 1983. x, 206 pp., illus. \$34. Advances in Human Fertility and Reproductive Endocrinology, vol. 2.

Lord 5 Flower's Family. Rulers of Zaachila and Cuilapan. John Paddock. Vanderbilt University Anthropology Section, Nashville, Tenn., 1983. xx, 112 pp., illus. Paper, \$12.90. Vanderbilt University Publications in Anthropology, No. 29.

Low Light Level Detectors in Astronomy. M. J. Eccles, M. Elizabeth Sim, and K. P. Tritton. Cambridge University Press, New York, 1983. xii, 187 pp., illus. \$39.50. Cambridge Astrophysics Series.

The Making of Federal Coal Policy. Robert H. Nelson. Duke University Press, Durham, N.C., 1983. xii, 263 pp. \$32.50. Duke Press Policy Studies.

Man and the Marine Environment. Robert A. Ragotzke, Ed. CRC Press, Boca Raton, Fla., 1983. xiv, 180 pp., illus. \$66. CRC Series in Marine Science.

Marobo. Une Société Ema de Timor. Brigitte Renard-Clamagrand. Sela, Paris, 1982. 492 pp., illus. Paper, 240 F. Langues et Civilisations de l'Assie du Sud-est et du Monde Insulinidien, No. 12.

Martinus Willem Beijerinck. His Life and His Work. G. van Irterson, Jr., L. E. den Dooren de Jong, and A. J. Kluver. Science Tech, Madison, Wis., 1983. xxx, 181 pp. + plates. \$45. Reprint, 1940 ed.

Mass Transfer and Kinetics of Ion Exchange. Lorenzo Liberti and Friedrich G. Helfferich, Eds. Nijhoff, The Hague, 1983 (U.S. distributor, Kluwer Boston, Hingham, Mass.). viii, 459 pp., illus. \$60. NATO ASI Series E, No. 71. From an institute, Maratea, Italy, May 1982.

Mass Transfer with Chemical Reaction in Multiphase Systems. Erdogan Alper, Ed. Nijhoff, The Hague, 1983 (U.S. distributor, Kluwer Boston, Hingham, Mass.). Two volumes. Vol. 1, Two-Phase Systems. xii, 269 pp., illus. Vol. 2, Three-Phase Systems. x, 399 pp., illus. \$140. NATO ASI Series E, Nos. 72 and 73. From an institute, Cesme, Turkey, Aug. 1981.

Material Behavior under High Stress and Ultrahigh Loading Rates. John Mescall and Volker Weiss, Eds. Plenum, New York, 1983. x, 326 pp., illus. \$49.50. Sagamore Army Materials Research Conference Proceedings, 29. From a conference, Lake Placid, N.Y., July 1982.

Mathematics in Microbiology. M. Bazin, Ed. Academic Press, New York, 1983. xii, 307 pp., illus. \$65.

Mathématique et Physique. Séminaire de l'Ecole Normale Supérieure 1979-1982. Louis Boutet de Monvel, Adrien Douady, and Jean-Louis Verdier, Eds. Birkhäuser, Boston, 1983. x, 438 pp. \$37.95.

Measurement of Ion Transport and Metabolic Rate in Insects. Timothy J. Bradley and Thomas A. Miller, Eds. Springer-Verlag, New York, 1984. x, 236 pp., illus. \$39. Springer Series in Experimental Entomology.

Mechanics and Materials for Design. Nathan H. Cook. McGraw-Hill, New York, 1983. xiv, 479 pp., illus. \$31.95.

The Merck Index. An Encyclopedia of Chemicals, Drugs and Biologicals. Martha Windholz et al., Eds. 10th ed. Merck, Rahway, N.J., 1983. xviii, 1464 pp., illus., + appendices. \$28.50.

Mesoscale Meteorology. Theories, Observations and Models. Douglas K. Lilly and Tzvi Gal-Chen, Eds. Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). x, 781 pp., illus. \$88. NATO ASI Series C, vol. 114. From an institute, Bonas, France, July 1982.

Neurofilaments. Charles A. Marotta, Ed. University of Minnesota Press, Minneapolis, 1983. xii, 238 pp., illus. \$39.50. Publications in the Health Sciences.

Neuroreceptors in Health and Disease. J. Marwaha and W. J. Anderson, Eds. Karger, Basel, 1984. viii, 255 pp., illus. \$89.25. Monographs in Neural Sci-

ences, vol. 10. From a symposium, Terre Haute, Ind., Sept. 1982.

Neutron Scattering and Muon Spin Rotation. R. E. Lechner, D. Richter, and C. Riekel. Springer-Verlag, New York, 1983. x, 229 pp., illus. \$37. Springer Tracts in Modern Physics, vol. 101.

A New Approach to Scientific Computation. Ulrich W. Kulisch and Willard L. Miranker, Eds. Academic Press, New York, 1983. xvi, 384 pp. \$39. Notes and Reports in Computer Science and Applied Mathematics, 7. From a symposium, Yorktown Heights, N.Y., Aug. 1982.

The New Astronomy. Nigel Henbest and Michael Marten. Cambridge University Press, New York, 1983. 240 pp., illus. \$24.95.

New Directions in Tardive Dyskinesia Research. J. Bannet and R. H. Belmaker, Eds. Karger, Basel, 1983. vi, 222 pp., illus. \$75.50. Modern Problems of Pharmacopsychiatry, vol. 21.

1984 and Beyond. Nigel Calder. Viking, New York, 1984. 207 pp. + plates. \$14.95.

Non-Equilibrium Entropy and Irreversibility. Göran Lindblad. Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). x, 166 pp., illus. \$29.50. Mathematical Physics Studies, vol. 5.

Nonlinear Phenomena. K. B. Wolf, Ed. Springer-Verlag, New York, 1983. xii, 453 pp., illus. Paper, \$22.50. Lecture Notes in Physics, vol. 189. From a workshop, Oaxtepec, Mexico, Nov. 1982.

Nordic Conference on Surface Science. (Tampere, Finland, Aug. 1982.) M. Pessa and R. Nieminen, Eds. Royal Swedish Academy of Sciences, Stockholm, 1983. 211 pp., illus. Paper, \$69. *Physica Scripta*, vol. T4.

Normal and Neoplastic Hematopoiesis. David W. Golde and Paul A. Marks, Eds. Liss, New York, 1983. xx, 594 pp., illus. \$96. UCLA Symposia on Molecular and Cellular Biology, New Series, vol. 9. From a symposium, Steamboat Springs, Colo., March 1983.

Notes on Introductory Combinatorics. George Pólya, Robert E. Tarjan, and Donald R. Woods. Birkhäuser, Boston, 1983. x, 193 pp., illus. \$14.95; paper, \$9.95. Progress in Computer Science, No. 4.

Nuclear Magnetic Resonance Imaging. Basic Principles. Stuart W. Young. Raven, New York, 1984. xii, 163 pp., illus. \$19.

Origins and Development of Adaptation. Pitman, London, 1984 (U.S. distributor, CIBA Pharmaceuticals Co., West Caldwell, N.J.). viii, 273 pp., illus. \$35. Ciba Foundation Symposium 102. From a symposium, London, April 1983.

Origins of Human Ecology. Gerald L. Young, Ed. Hutchinson Ross, Stroudsburg, Pa., 1983 (distributor, Van Nostrand Reinhold, New York). xvi, 415 pp. \$48. Benchmark Papers in Ecology, vol. 12.

Our Threatened Climate. Ways of Averting the CO₂ Problem Through Rational Energy Use. Wilfried Bach. Reidel, Boston, 1984 (distributor, Kluwer Boston, Hingham, Mass.). xxiv, 369 pp., illus. \$29. Translated from the German edition (Karlsruhe, 1982) by Jill Jäger.

Paediatric Oncology. William Duncan, Ed. Springer-Verlag, New York, 1983. x, 118 pp., illus. \$35. Recent Results in Cancer Research, 88. From a symposium, London, Feb. 1982.

Palaeoclimatic Research and Models. A. Ghazi, Ed. Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). viii, 205 pp., illus. \$34.50. From a workshop, Brussels, Dec. 1982.

Parallel'nye Sistemy Obrabotki Informatsii. Materialy po Programnomu Obespecheniyu ES EVM. V. Z. Aladyev. Valgus, Tallinn, U.S.S.R., 1983. 376 pp. Paper, 3 rubles, 30 kopeks.

Parkinson-Specific Motor and Mental Disorders. Role of the Pallidum: Pathophysiological, Biochemical, and Therapeutic Aspects. R. G. Hassler and J. F. Christ, Eds. Raven, New York, 1983. xxxii, 579 pp., illus. \$80. Advances in Neurology, vol. 40. From a symposium, Frankfurt, Germany, June 1982.

Pathobiology of Marine Mammal Diseases. Edwin B. Howard, Ed. CRC Press, Boca Raton, Fla., 1983. Two volumes. vi, 238 pp., illus., and vi, 233 pp., illus. Each volume, \$68.

A Renewable Resource Economy. Robert D. Hamrin. Praeger, New York, 1983. xiv, 192 pp. \$21.95.

Representation Theory of Reductive Groups. P. C. Trombi, Ed. Birkhäuser, Boston, 1983. xii, 290 pp., illus. \$24.95. Progress in Mathematics, vol. 40. From a conference, Park City, Utah, April 1982.

Reproductive and Developmental Toxicity of Metals. Thomas W. Clarkson, Gunnar F. Nordberg, and Polly R. Sager, Eds. Plenum, New York, 1983. xviii, 845 pp., illus. \$115. From a meeting, Rochester, N.Y., May 1982.

Research Priorities for the Prevention of Blindness in Developing Countries. Helen Keller International, New York, 1983. xii, 100 pp. Paper.

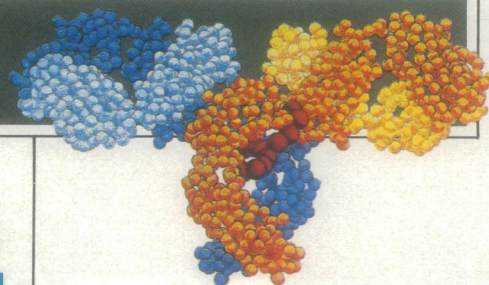
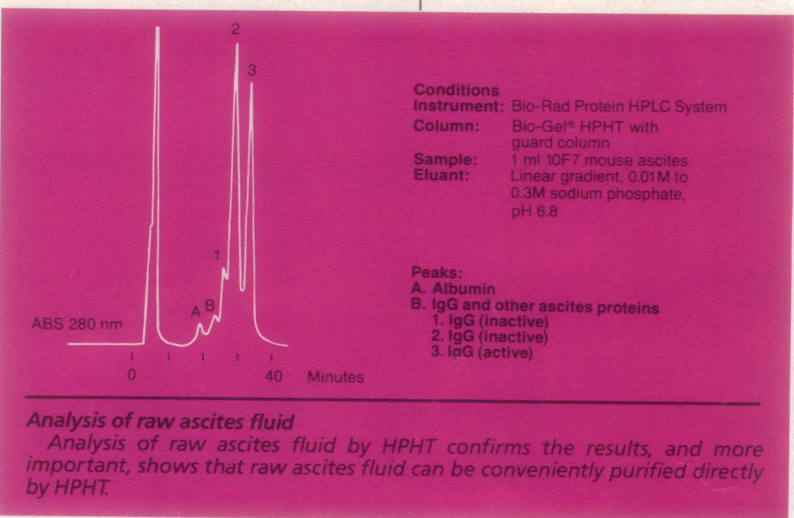
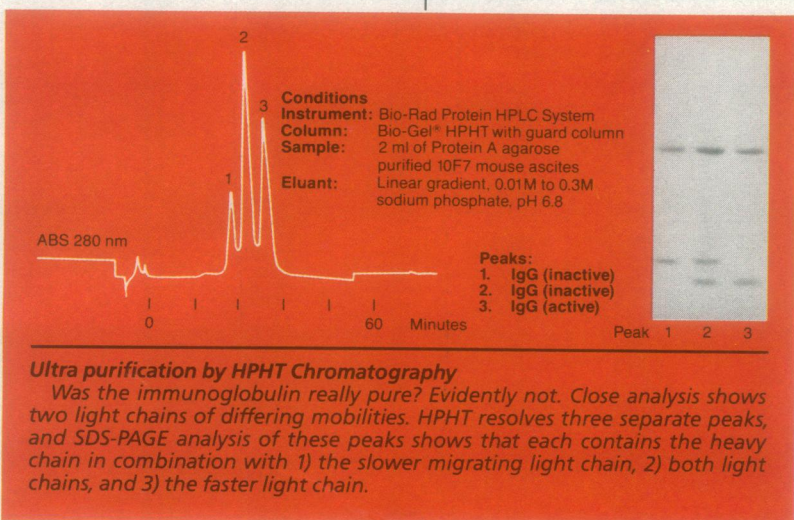
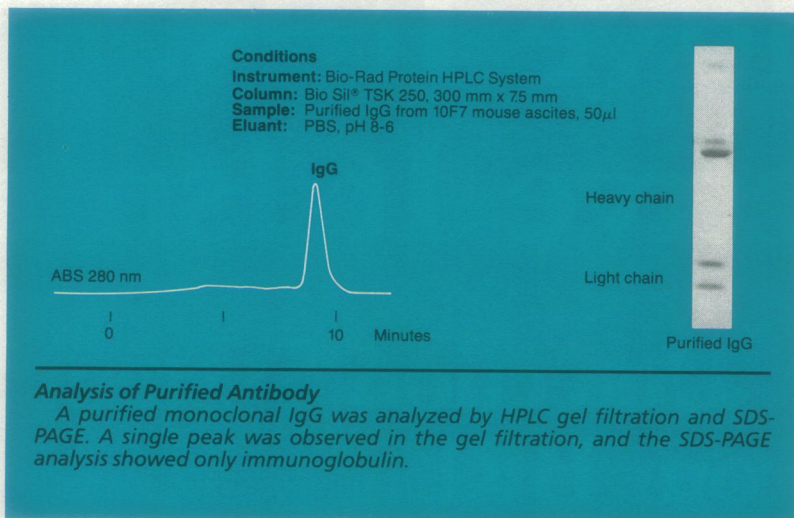
Retarded Action-at-a-Distance. G. Burniston Brown. Cortney, Luton, England, 1982. vi, 145 pp., illus. £9.95.

Reviews of Physiology, Biochemistry and Pharmacology. 98. R. H. Adrian et al., Eds. Springer-



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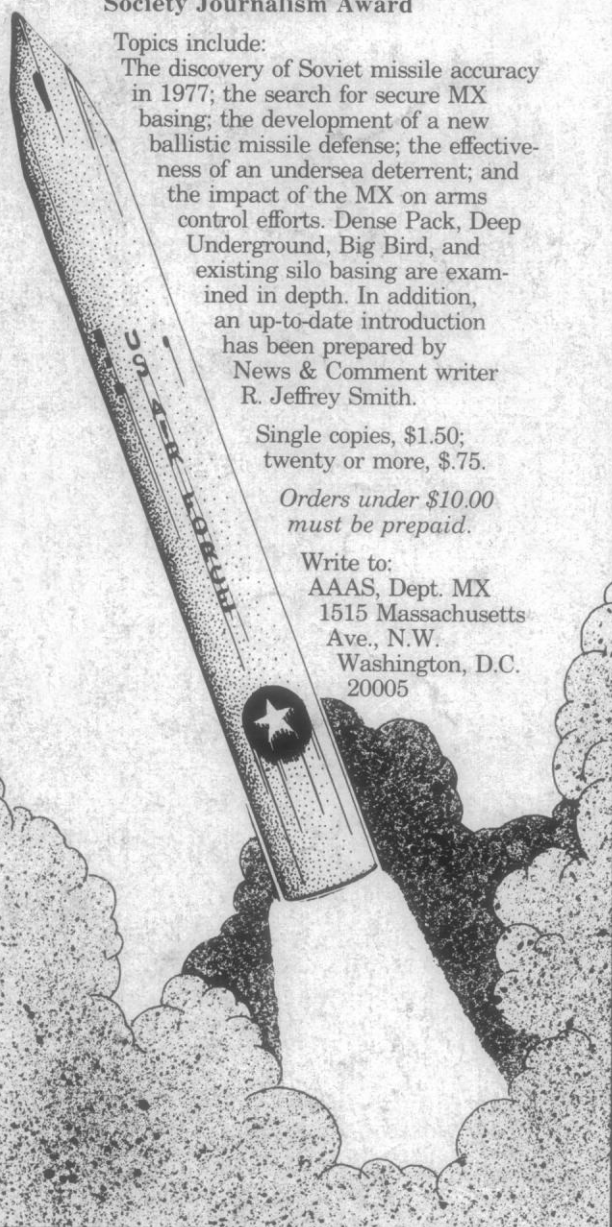
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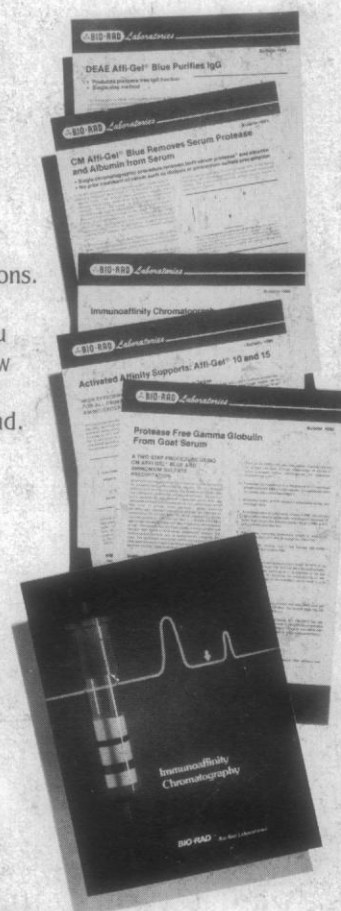
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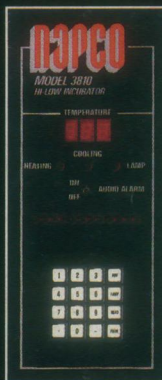
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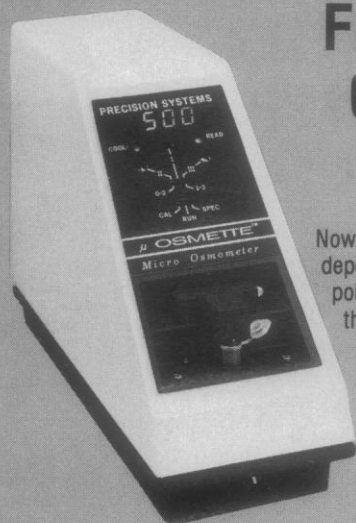
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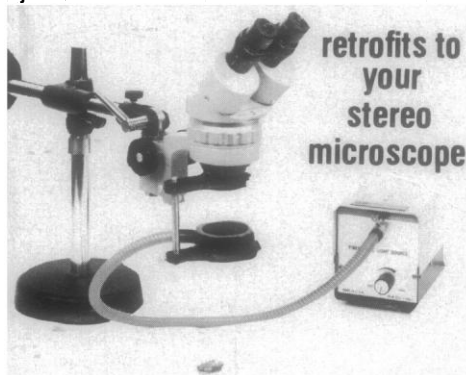
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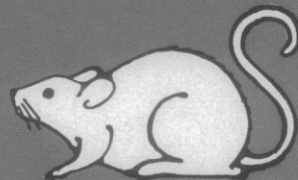
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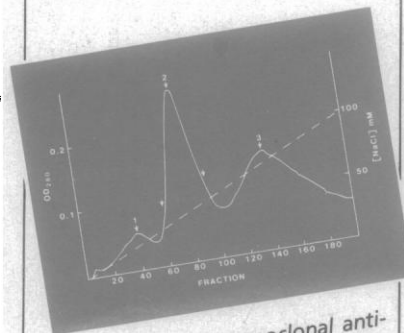


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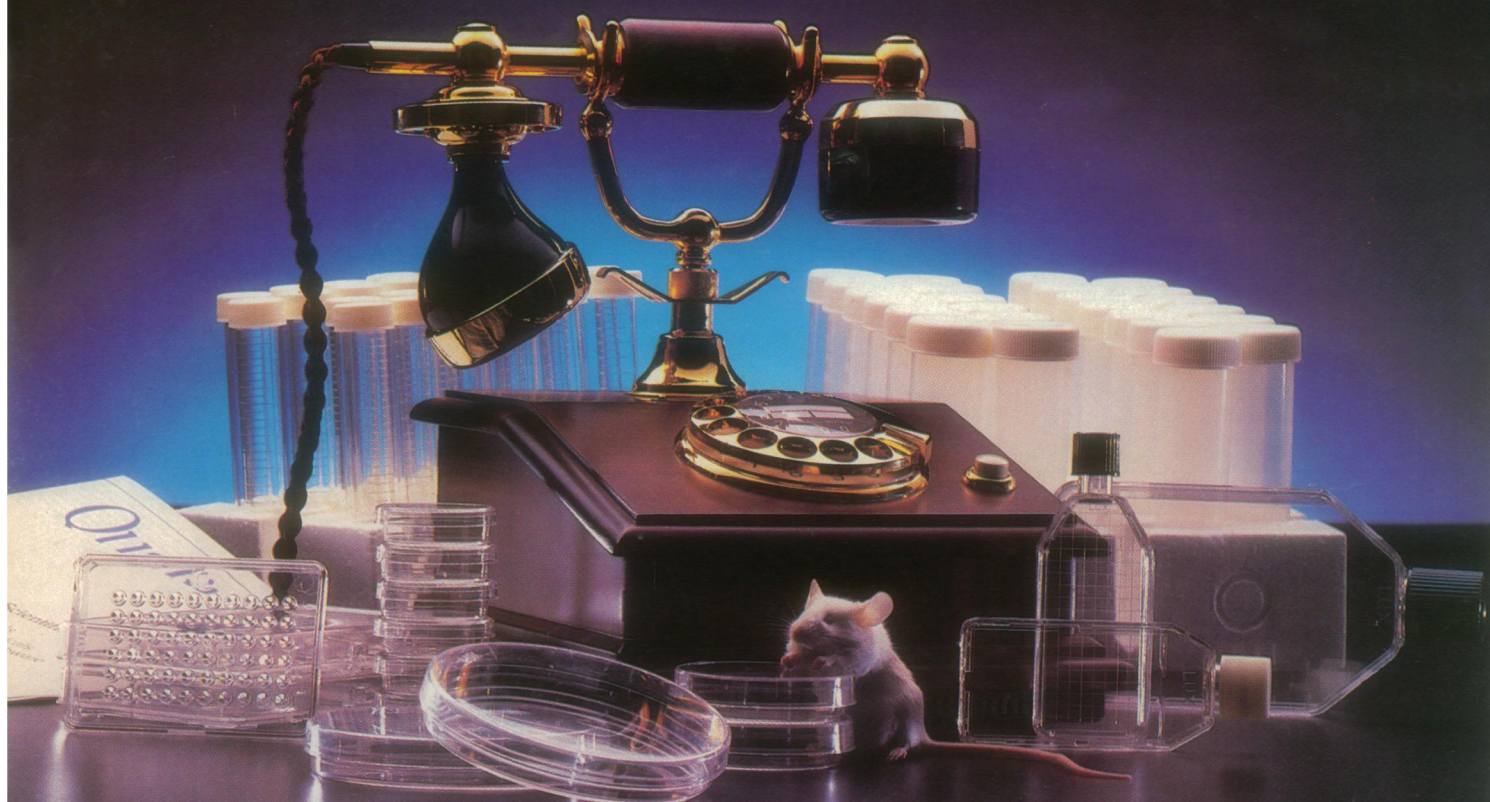
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The Robotics Primer. The What, Why, and How of Robots in the Workplace. Robert A. Ullrich. Prentice-Hall, Englewood Cliffs, N.J., 1983. xiv, 121 pp., illus. \$17.95; paper, \$8.95.

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The Science of Structure: Synergetics. Herman Haken. Van Nostrand Reinhold, New York, 1984. 255 pp., illus. \$35. Translated from the German edition (Stuttgart, 1981) by Fred Bradley.

Scientific and Technical Books and Serials in Print 1984. Bowker, New York, 1983. Three volumes. lxxviii, 3698 pp. \$110.

The Scientific Principles of Crop Protection. Hubert Martin and David Woodcock. 7th ed. Arnold, Baltimore, 1983. x, 486 pp., illus. \$72.50.

Scotland's Environment during the Last 30,000 Years. R. J. Price. Scottish Academic Press, Edinburgh, 1983 (U.S. distributor, Columbia University Press, New York). xii, 224 pp., illus. \$41.50.

Seals of the World. Judith E. King. 2nd ed. British Museum (Natural History), London, and Comstock (Cornell University Press), Ithaca, N.Y., 1983. 240 pp., illus. \$24.50.

The Secret of Life. Perspectivism in Science. Jerry I. Jacobson. Philosophical Library, New York, 1984. 121 pp., illus. \$10.

Sediment Diagenesis. A. Parker and B. W. Sellwood, Eds. Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). viii, 427 pp., illus. \$53.50. NATO ASI Series C, vol. 115. From an institute, Reading, U.K., July 1981.

Semiclassical Theories of Molecular Scattering. B. C. Eu. Springer-Verlag, New York, 1984. xii, 229 pp., illus. \$29. Springer Series in Chemical Physics, 26.

Solar Energy and the Arab World. H. Alawi et al., Eds. Pergamon, New York, 1983. xvi, 492 pp., illus. \$100. From a conference, Kuwait, Dec. 1983.

Special Topics in Endocrinology and Metabolism. Vol. 5. Margo P. Cohen and Piero P. Foà, Eds. Liss, New York, 1984. xvi, 309 pp., illus. \$48.

Statics and Dynamics of Nonlinear Systems. G. Benedek, H. Bilz, and R. Zeyher, Eds. Springer-Verlag, New York, 1983. viii, 311 pp., illus. \$27. Springer Series in Solid-State Sciences, vol. 47. From a workshop, Erice, Italy, July 1983.

Steroids and Endometrial Cancer. Valerio Maria Jasonni, Italo Nenci, and Carlo Flamigni, Eds. Raven, New York, 1983. xviii, 245 pp., illus. \$39. Progress in Cancer Research and Therapy, vol. 25. From a symposium, Bologna, Italy.

The Structural Hypothesis. An Evolutionary Perspective. Arnold Rothstein. International Universities Press, New York, 1984. viii, 194 pp. \$22.50.

Studies in Pure Mathematics. To the Memory of Paul Turán. Paul Erdős et al., Eds. Birkhäuser, Boston, 1983. 773 pp. \$49.95.

Surface Coatings. Vol. 1. Raw Materials and Their Usage. By the Oil and Colour Chemists' Association, Australia. Chapman and Hall, London, 1983 (U.S. distributor, Methuen, New York). viii, 408 pp., illus. \$56.

Synergetics of the Brain. E. Başar et al., Eds.

Springer-Verlag, New York, 1983. viii, 377 pp., illus. \$34. Springer Series in Synergetics, vol. 23. From a symposium, Schloss Elmau, Bavaria, May 1983.

The Synergism Hypothesis. A Theory of Progressive Evolution. Peter A. Corning. McGraw-Hill, New York, 1983. xviii, 493 pp., illus. Paper, \$12.95.

Systems of Microdifferential Equations. Masaki Kashiwara. Birkhäuser, Boston, 1983. xvi, 159 pp., illus. \$16.95. Progress in Mathematics, vol. 34. Translated from the French edition (1979) by Teresa Monteiro Fernandes.

Techniques in Molecular Biology. John M. Walker and Wim Gaastra, Eds. Macmillan, New York, 1983. 333 pp., illus. \$29.95.

Telecommunications in the Information Age. A Nontechnical Primer on the New Technologies. Loy A. Singleton. Ballinger (Harper and Row), Cambridge, Mass., 1984. x, 241 pp. \$19.95.

Testing Scientific Theories. John Earman, Ed. University of Minnesota Press, Minneapolis, 1983. viii, 485 pp. \$39.50; paper, \$16.95. Minnesota Studies in the Philosophy of Science, vol. 10.

Théorèmes de Bertini et Applications. Jean-Pierre Jouanolou. Birkhäuser, Boston, 1983. vi, 135 pp. \$12.95. Progress in Mathematics, vol. 42.

Theory Testing in Organizational Behavior. The Variant Approach. Fred Dansereau, Joseph A. Alutto, and Francis J. Yammarino, with MacDonald Dumas. Prentice-Hall, Englewood Cliffs, N.J., 1984. xii, 418 pp., illus. \$28.95.

Time and Timelessness. Or, The Varieties of Temporal Experience (A Psychoanalytic Inquiry). Peter Hartocollis. International Universities Press, New York, 1984. viii, 261 pp. \$25.

Transition Metal Carbene Complexes. Karl Heinz Dötz et al., Verlag Chemie, Deerfield Beach, Fla., 1983. xiv, 264 pp., illus.

Transmural Plasma Flow in Atherogenesis. Harry Jellinek, Zoltán Detre, and Béla Veress. Akadémiai Kiadó, Budapest, 1983. 190 pp., illus. \$25.

Treatment of Hemifacial Microsomia. Egil P. Harvold, Karin Vargervik, and George Chierici, Eds. Liss, New York, 1983. xii, 247 pp., illus. \$48.

Tree-Line Ecology. Pierre Morisset and Serge Payette, Eds. Centre d'Etudes Nordiques, Université Laval, Québec, 1983. viii, 188 pp., illus. Paper, \$15. Collection Nordica, No. 47. From a conference, Kuujuaarapik, Québec, June 1981.

The Troubled Crusade. American Education, 1945-1980. Diane Ravitch. Basic Books, New York, 1983. xiv, 384 pp. \$19.95.

Understanding Computers. Donald D. Spencer. Scribner, New York, 1984. 400 pp., illus. Paper, \$13.95. Reprint, 1982 ed.

U.S. Interests and Global Natural Resources. Energy, Minerals, Food. Emery N. Castle and Kent A. Price, Eds. Resources for the Future, Washington, D.C., 1983 (distributor, Johns Hopkins University Press, Baltimore). xviii, 147 pp., illus. \$18; paper, \$6.95. Based on a forum, Washington, D.C., Oct. 1982.

U.S. International Broadcasting and National Security. James L. Tyson. Ramapo Press, New York, 1983. xiv, 153 pp. Paper, \$7.95.

The Units of Language Acquisition. Ann M. Peters. Cambridge University Press, New York, 1983. xii, 131 pp. \$32.50; paper, \$12.95. Cambridge Monographs and Texts in Applied Psycholinguistics.

Urologic Cancer. A Multidisciplinary Perspective. Marc B. Garnick and Jerome P. Richie, Eds. Plenum, New York, 1983. xii, 275 pp., illus. \$35.

The Use of Scientific Evidence in Litigation. Michael J. Saks and Richard Van Duizend. National Center for State Courts, Williamsburg, Va., 1983. vi, 153 pp. Paper, \$8.

Values and Scientists. John A. White. University Press of America, Lanham, Md., 1983. x, 75 pp. \$18; paper, \$7.25.

Varicocele and Male Infertility II. M. Glezerman and E. W. Jecht, Eds. Springer-Verlag, New York, 1984. xii, 122 pp., illus. Paper, \$15. From a symposium, Tel Aviv.

Vasomotion and Quantitative Capillaroscopy. K. Messmer and F. Hammersen, Eds. Karger, Basel, 1983. viii, 151 pp., illus. Paper, \$49.25. Progress in Applied Microcirculation, vol. 3. From a symposium, Konstanz/Bodensee, Germany, July 1983.

Victims of the Environment. Loss from Natural Hazards in the United States, 1970-1980. Peter H. Rossi et al. Plenum, New York, 1983. xviii, 238 pp. \$24.50.

Viral Hepatitis. Standardization in Immunoprophylaxis of Infections by Hepatitis Viruses. Karger, Basel, 1983. xviii, 585 pp., illus. Paper, \$81. Developments in Biological Standardization, vol. 54. From a symposium, Athens, Nov. 1982.

What Computers Can Do. Donald D. Spencer. 2nd ed. Scribner, New York, 1984. 368 pp., illus. Paper, \$12.95. Reprint, 1982 edition.

Why Economics Is Not Yet a Science. Alfred S. Eichner, Ed. Sharpe, Armond, N.Y., 1984. xiv, 249 pp. \$25; paper, \$13.95.

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TENURE: Indefinite with Australian government superannuation benefits available.

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**The Acting Chief
CSIRO Division of Fisheries Research
P.O. Box 21
Cronulla, New South Wales 2230
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A\$24,344-A\$35,806

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**The Chief
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Bio-Rad Laboratories

POSITIONS OPEN

The University of Michigan Medical School, Department of Surgery, has one opening for ASSISTANT/ASSOCIATE PROFESSOR OF SURGERY in the Section of Pediatric Surgery; fully trained pediatric surgeon who has completed 2 years of formal residency in pediatric surgery. Must be Board-certified in surgery and Board-eligible or -certified in pediatric surgery. Adequate academic background for appointment as assistant/associate professor in surgery. Capable of clinical and laboratory research and clinical teaching. Direct inquiries to: Arnold G. Coran, M.D., Professor and Head, Section of Pediatric Surgery, F7516 Mott Children's Hospital, Ann Arbor, Mich. 48109. A nondiscriminatory, Affirmative Action Employer. PCN 135.

CHIEF OF CHILD PSYCHIATRY, University of Michigan. Must have documented track record in research, teaching, clinical leadership, and administration. Academic title commensurate with background at associate or full professor level. Boards in child as well as general psychiatry desirable. Should have demonstrable skills in biomedical and psychosocial areas. Please reply with curriculum vitae, bibliography, and names of three academicians who will support your candidacy to: Albert J. Silverman, M.D., Chairman, Search Committee, Department of Psychiatry, University of Michigan, Box 053—Mental Health Research Institute, Ann Arbor, Michigan 48109. The University of Michigan is an Affirmative Action Employer.

The Department of Psychiatry of the University of Michigan has a tenure-track faculty (instructor to professor) position as **CHIEF, PSYCHIATRIC EMERGENCY SERVICE**. Duties include direction of a psychiatric emergency program involving walk-in patients, consultation to medical/surgical emergency room, administrative responsibilities for support staff, liaison with community mental health system, and supervision of psychiatric residents and medical students working in the emergency room. Requires interest and demonstrated abilities in crisis intervention, emergency evaluations, teaching, and supervision. Research background desired. Board-certification in psychiatry or eligibility to take Boards is a requirement. Salary range dependent on academic rank. Please send curriculum vitae to: Robert O. Friedel, M.D., Chairman, Department of Psychiatry, Box 56, University of Michigan Hospital, 1405 East Ann Street, Ann Arbor, Michigan 48109.

The University of Michigan is an Affirmative Action Employer.

FACULTY POSITION IN PHARMACOLOGY UNIVERSITY OF CALIFORNIA, IRVINE

Applications are invited for a tenured or tenure-track faculty position in pharmacology. We are especially interested in candidates with a background in cardiovascular pharmacology, but qualified candidates in any area of molecular pharmacology will be considered. A Ph.D. in pharmacology or related area, or an 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 30 June 1984 to:

Dr. Larry Stein, Chairman
Department of Pharmacology
College of Medicine
University of California
Irvine, California 92717

The University of California is an Affirmative Action Employer.

The University of Michigan Medical School, Department of Radiation Therapy, is interested in recruiting **RADIOBIOLOGISTS** at the Ph.D. level. Candidates should have experience in basic techniques of radiobiology research, including standard cell culture techniques and/or animal tumor models. Experience in teaching radiobiology to residents and technologists is highly desirable. A strong research background is essential. Address inquiries, including curriculum vitae, to: Allen Lichter, M.D., Chairman, Department of Radiation Therapy, The University of Michigan Medical School, Room X3003, Box 56, Ann Arbor, Mich. 48109. The University of Michigan is a nondiscriminatory, Affirmative Action Employer.

RESEARCH INVESTIGATOR position available to examine growth and differentiation of human tumor cells in semi-solid media and on organ-specific matrices. Studies aimed at investigating clonal heterogeneity, differentiation, and drug sensitivity/resistance. Ph.D. in cell biology and experience in cytogenetics, pharmacology, hybridomas, or protein chemistry highly desirable. Box 132, SCIENCE.



SYNERGEN, INC.

Synergen, Inc., a leading biotechnology company, has openings for well qualified scientists in the following areas:

Biochemistry/Molecular Biology

To assist in the development of proprietary biocatalytic systems, we seek individuals who can combine biochemical techniques with genetics or molecular biology to construct and analyze novel microbial strains.

Fermentation Science

To develop and operate a state-of-the-art fermentation optimization laboratory, we are seeking individuals familiar with engineering aspects of bioprocess design.

Virologists

To join our basic research team investigating the role of eukaryotic viruses in human and animal health. We are particularly interested in scientists with experience in retroviral systems.

SYNERGEN, located in Boulder, Colorado, offers the opportunity to pursue scientific careers in a stimulating, intellectual and physical environment. We seek recent Ph.D.s with post-doctoral experience and more senior people interested in becoming part of a rapidly expanding science-based company. We offer competitive salaries, generous benefits and the financial stability required for future development. Applicants are requested to send their CV along with a bibliography, reprints or preprints and the names of three references to:

Director of Personnel
Synergen, Inc.
1885 33rd. Street
Boulder, Colorado 80301

SR. SCIENTIST/ SCIENTIST

Cetus Corporation, a leader in the field of biotechnology, is currently seeking qualified Ph.D.'s for our Molecular Cloning Department. Candidates should have a minimum of three years' postdoctoral experience in the area of gene expression in mammalian cells and the construction of expression vectors. Job #83159

RESEARCH ASSOCIATE/ RESEARCH ASSISTANT (2)

These positions assist in research directed towards the isolation and characterization of mammalian genes and their products. Requires M.S. or B.S. and 3+ years of experience in molecular biology. Experience in mRNA isolation, characterization and cDNA cloning desirable. Job #83158/83106 respectively.

This is an opportunity to join a dynamic company that encourages professional growth. Send resume to:

Cetus Corporation
Job #
1400 Fifty-third Street
Emeryville, CA 94608



An equal opportunity employer m/f/handicapped

SEARCH REOPENED—POSITION DESCRIPTION MODIFIED ASSOCIATE DIRECTOR MICHIGAN AGRICULTURAL EXPERIMENT STATION

Position description: The associate director will provide additional leadership and be responsible to the director for shared decision-making associated with the overall administration of the Michigan Agricultural Experiment Station (AES). Responsibilities include interacting with department chairpersons in the research planning, budgeting, and evaluation process; coordination of AES programs with agricultural and natural resources clientele groups; administration of state, regional and Hatch research projects; management of special AES projects; and liaison with the Michigan State University Vice President for Research and Graduate Studies. The associate director will serve as acting director in the director's absence.

Michigan Agricultural Experiment Station: The Michigan Agricultural Experiment Station is responsible for administering publicly supported research in agriculture and natural resources in Michigan. As a research organization, the station administers a budget of almost \$30 million through 29 departments and institutes in five colleges (Agriculture and Natural Resources, Natural Science, Human Ecology, Veterinary Medicine, and Social Science). Over 300 scientists, 500 graduate students and 14 outlying field stations receive support from the Agricultural Experiment Station. The AES management team consists of a director, associate director, administrative associate, three secretaries, and a director of land management who is responsible for the outlying field stations.

Qualification: A Ph.D. degree in some field of agriculture, natural resources, or closely related area with at least 5 years of experience and a proven record of research productivity and accomplishment as evidenced by publications in refereed scientific journals and success in securing grants and/or other outside sources of funding. Demonstrated interest and potential for administration is essential. Proven successful administrative experience is desirable.

Rank: Faculty appointment with tenure will be available in an appropriate academic department.

Salary: Commensurate with qualifications and experience—\$50,000 minimum.

Date available: Immediately.

Application deadline: 30 June 1984 or until a suitable candidate is identified.

Application and nomination procedures: Both nominations and applications are encouraged. Letters of nomination should include a brief statement of the nominee's background and qualifications. Applications should include a cover letter and detailed résumé. All information should be sent to:

Dr. Bernard D. Knezek, Acting Associate Director
Michigan Agricultural Experiment Station
109 Agriculture Hall, Michigan State University
East Lansing, Michigan 48824
Telephone: 517-355-0123

An Equal Opportunity Employer

ATHEROSCLEROSIS RESEARCH

The Du Pont Company is expanding its life science research at its Experimental Station in Wilmington, Delaware. The recently established Cardiovascular Science Research group within Du Pont's Central Research and Development Department has positions available for principal investigators in Atherosclerosis. Candidates should have relevant postdoctoral experience in:

- Arterial Wall Biochemistry
- Lipoprotein Metabolism
- Vascular Pathology — or — Cell Biology
Related to Cardiovascular Research

The successful candidates will be expected to participate in an interactive research effort and to establish an independent program in their own areas of expertise.

Du Pont provides excellent compensation and benefits plus outstanding research facilities. Qualified candidates should send their curriculum vitae, names of three references and a short statement of research interests and experience, to: Dr. S.T. Toy, Room X40929, Employee Relations Dept., Du Pont Co., Wilmington, DE 19898.



Equal Opportunity
Employer M/F

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POSITIONS OPEN

ASSISTANT PROFESSOR OF BIOLOGY. Three openings starting in September. One tenure-track eligible position in biochemistry and cell biology; involvement in general biology is also required. Two reappointable positions for individuals who will teach developmental, invertebrate, and general biology. Enthusiasm for undergraduate teaching, a commitment to research, and a Ph.D. are required. Send curriculum vitae, statement of teaching and research interests, and the names of three references to: **Dr. Kenneth Wittig, Biology Department, Siena College, Loudonville (Albany), N.Y. 12211.**

ASSOCIATE PROFESSOR in Residence, Department of Radiology, University of California, San Francisco (UCSF), School of Medicine: Perform research on the basic mechanisms of RF detection in magnetic resonance imaging and/or the behavior of relaxation times in biological materials. Requirements are a Ph.D. in the basic sciences and a proven record of related research and teaching in a university/medical setting. *An Equal Opportunity/Affirmative Action Employer. Minorities, women, and handicapped are encouraged to apply.* Send curriculum vitae, reprints, and the names of three references to: **Dr. Leon Kaufman, Chairman, Search Committee, S-358, Department of Radiology, UCSF, San Francisco, California 94143.** Position is open until filled.

Applications are invited for a temporary position in the **DEPARTMENT OF BIOLOGY.** One-year sabbatical leave replacement position to teach animal ecology, participate in the general ecology program, and conduct research in animal ecology. Applicant with background in herpetology welcome. This is a 10-month position (August 1984 to May 1985); salary depends on qualifications (range: \$17,438 to \$18,074). Minimum qualifications include Ph.D. Submit curriculum vitae, transcripts and three letters of reference by 10 June 1984 to: **Chairman, Animal Ecologist Search Committee, Department of Biology, University of Nevada Reno, Reno, Nev. 89557.** *The University of Nevada is an Equal Opportunity/Affirmative Action Employer.*

SRI INTERNATIONAL (formerly Stanford Research Institute) has an immediate position for a **BIOPHYSICIST/MICROBIOLOGIST** or **BIOCHEMIST** experienced in most of the following methodologies: cell culture, radioactive tracers, enzyme activity, spectrofluorometry, gel electrophoresis, and microscopy. Postdoctoral experience preferred. SRI is a non-profit, research, development, and consulting organization located on the San Francisco peninsula. Please send résumé and names of three references to: **Michael Patrick, Professional Staffing, Department 521, Room EL102, SRI INTERNATIONAL, 333 Ravenswood Avenue, Menlo Park, Calif. 94025.** *An Equal Opportunity Employer.*

CHAIRPERSON, DEPARTMENT OF PSYCHIATRY. Louisiana State University School of Medicine in Shreveport is seeking an individual with demonstrated ability in research, teaching, and clinical psychiatry to head an academic department with an approved residency training program in a growing medical center. Inquiries should be accompanied by curriculum vitae and the names of three references who may be contacted for reference letters and should be addressed to: **Gwendolyn R. Hogan, M.D., Department of Neurology, Louisiana State University Medical Center, P.O. Box 33932, Shreveport, La. 71130.** *Louisiana State University is an Affirmative Action/Equal Opportunity Employer.*

FACULTY POSITIONS IN MOLECULAR VIROLOGY

Applications are invited for a senior and a junior tenure-track faculty position in the Department of Microbiology. Candidates should have made significant accomplishments in research and should be prepared to maintain an active, independent research program in molecular virology. Teaching responsibilities are limited and include participation in courses for graduate and professional students. The department provides a stimulating scientific environment, and administers seven NIH institutional fellowship programs that will be available to provide stipend support for predoctoral and postdoctoral students.

Applicants should submit curriculum vitae, a statement of research plans, and arrange for three letters of recommendation to be sent to: **Virology Search Committee, Department of Microbiology, University of Alabama in Birmingham, Birmingham, Alabama 35294.**

An Equal Opportunity/Affirmative Action Employer

POSITIONS OPEN

CHAIRPERSON DEPARTMENT OF ANATOMY

Applications and nominations are invited for the position of Professor and Chairperson, Department of Anatomy, University of South Carolina (USC) School of Medicine, Columbia, South Carolina. Candidates should have a record of scholarly activity, including excellence in teaching, preferably in gross anatomy, active research interests, and administrative and leadership skills. Applications and nominations will be accepted until 30 June 1984. Please submit to: **O'Neill Barrett, Jr., M.D., Chairman, Anatomy Search Committee, USC School of Medicine, c/o Richland Memorial Hospital, ACC#2, Columbia, S.C. 29203.** *An Equal Opportunity/Affirmative Action Employer.*

TENURE RANKS IN CHEMICAL ENGINEERING

Positions at associate and full professor level. Require proven scholarship thoroughly imbedded in chemical engineering. Prefer specialization to reinforce department's traditional strengths: process analysis, polymer science, bioengineering, electrochemistry. Appointees must demonstrate strong potential for further growth. Respond by 1 July to: **Search Committee, Chemical Engineering, 351 Engineering Terrace,**

**COLUMBIA UNIVERSITY
New York, N.Y. 10027**

An Affirmative Action/Equal Opportunity Employer

CHEMIST

BIOCHEMIST/ORGANIC CHEMIST: Excellent R & D opportunity for a **biochemist/organic chemist** with experience in the immunoassay industry. **BioDiagnostics**, a well-financed start-up company located in Arlington, Texas, is involved in the proprietary development of **fluoroimmunoassays**. Requirements: advanced degree in biochemistry or organic chemistry plus experience with protein modification, organic syntheses, protein purification, and characterization techniques. Competitive compensation plus possible equity position. Send brief work history and résumé to: **BioDiagnostics, Inc., 2100 Road to Six Flags East, Arlington, Tex. 76011-5195.** *Equal Opportunity Employer.*

DENTIST/NEUROBIOLOGIST NORTH CAROLINA

Full-time faculty position for a dentist (D.D.S. or D.M.D.) with a Ph.D. in neurobiology or related field. Tenure-track position. Candidates are required to have at least two years of postdoctoral research experience and North Carolina licensure or eligibility. Responsibilities include teaching in predoctoral and graduate programs, and the establishment and conducting of a research program in dentally related psychophysical testing. Salary commensurate with qualifications and experience. *Affirmative Action/Equal Opportunity Employer. Minorities and women are encouraged to identify themselves voluntarily.* Send application and résumé by 1 July 1984 to: **Dr. Matthew T. Wood, University of North Carolina School of Dentistry, Chapel Hill, N.C. 27514.**

DEPARTMENT HEAD. Individual will be responsible for all teaching, research, and extension programs and activities in crop science, soil science, and weed science in the Department of Crop and Soil Sciences at New Mexico State University (NMSU). A Ph.D. in agronomy, crop science, soil science, or a related area is required. Application deadline is 30 June 1984 or as soon as a suitable candidate is found. Contact: **P. J. Wierenga, Chairman, Search Committee, Department of Crop and Soil Sciences, New Mexico State University, Las Cruces, N.M. 88003.** Telephone: 505-646-2028 or 505-646-3406.

NMSU is an Equal Opportunity/Affirmative Action Employer.

The University of Michigan Medical School, Department of Internal Medicine, Division of Hematology/Oncology, has several academic positions available for **HEMATOLOGISTS, ONCOLOGISTS, OR HEMATOLOGISTS/ONCOLOGISTS.** Candidates should have an interest in basic research or clinical research. The program has 18 faculty with both university hospital and VAMC components. Candidate should have an M.D. and be Board-certified in internal medicine. Please send curriculum vitae and letter outlining research interests to: **Max Wicha, M.D., Simpson Memorial Institute, 102 Observatory Drive, Ann Arbor, Michigan 48109-0010.** *The University of Michigan is a non-discriminatory, Affirmative Action Employer.* 352, 353, 354.

POSITIONS OPEN

FACULTY POSITIONS IN MOLECULAR GENETICS

Applications are invited for a senior and a junior tenure-track faculty position in the Department of Microbiology. Candidates should have made significant accomplishments in research and should be prepared to maintain an active, independent research program in molecular genetics. It is anticipated that at least one of the positions will be filled by a person working in the prokaryotic area. Teaching responsibilities are limited, and include participation in courses for graduate and professional students. The department provides a stimulating scientific environment, and administers several NIH institutional fellowship programs that will be available to provide stipend support for predoctoral and postdoctoral students.

Applicants should submit curriculum vitae, a statement of research plans, and the names of three people from whom letters of recommendation can be requested. Applications should be sent to: **Gillian Air, Chairman, Molecular Genetics Search Committee, Department of Microbiology, University of Alabama in Birmingham, Birmingham, Alabama 35294.**

An Equal Opportunity/Affirmative Action Employer

FACULTY POSITION IN PATHOLOGY

The Uniformed Services University School of Medicine invites applications for a tenure-track faculty appointment in the Department of Pathology at the level of associate professor or assistant professor. The level of appointment and salary will be commensurate with training and experience. The appointment will commence 1 October 1984. Candidates should have M.D., Ph.D., or related professional degrees, appropriate postdoctoral training or experience, teaching abilities, and demonstrated excellence in research. Interested candidates should submit curriculum vitae, bibliography, and names of three professional references by 15 June 1984 to: **Dr. Robert M. Friedman, Chairman, Department of Pathology, c/o Civilian Personnel, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, Md. 20814.** *The Uniformed Services University is an Equal Opportunity/Affirmative Action Employer.*

THE HEBREW UNIVERSITY HADASSAH MEDICAL SCHOOL JERUSALEM Faculty Positions

The Faculty of Medicine invites applications for two tenure-track faculty positions and for Allon Fellowship candidates leading to tenure-track positions in any field of basic medical sciences. Ph.D. and/or M.D. degree and postdoctoral training are required. Excellence in research and teaching will be of prime importance in the decisions of the Search Committee. Candidates are expected to develop independent research. Curriculum vitae, list of publications, research plans, and three letters of recommendation should reach: **Mrs. D. Abramson, Office of the Dean, P.O. Box 1172, Jerusalem 91010, Israel,** not later than 30 September 1984.

FACULTY POSITION

The Department of Microbiology and Immunology, University of North Dakota School of Medicine, invites applications for a tenure-track faculty position at the assistant or associate professor level. Ph.D., M.D., or equivalent degree and at least two years of postdoctoral experience. Preference given to persons with demonstrated teaching and research capability in microbiology. Must be capable of establishing an independent research program in microbial genetics or molecular biology and have an interest in teaching. Position available on 1 July 1984. Submit an outline of research and teaching interests, curriculum vitae and bibliography, and three letters of reference to: **Dr. John W. Vennes, Chairperson, Department of Microbiology and Immunology, School of Medicine, University of North Dakota, Grand Forks, N.D. 58202.** *An Equal Opportunity/Affirmative Action Employer.*

INSECTICIDE TOXICOLOGY: Postdoctoral research position available on or after 1 July 1984 to study interactions of pyrethroid insecticides with neuroreceptor systems from mammals and insects. Ph.D. in toxicology, pharmacology, or related field required; experience in radioligand assay procedures desirable. Salary range: \$16,000 to \$19,500. Send curriculum vitae and names of three references to: **Dr. D. M. Soderlund, Department of Entomology, New York State Agricultural Experiment Station, Geneva, N.Y. 14456.** Telephone: 315-787-2364.

SENIOR SCIENTIST

Institute for Advanced
Biomedical Research

Oregon Health Sciences University
Portland, Oregon

The Oregon Health Sciences University announces the opening of three to four intermediate- to senior-level scientist positions to staff its new Institute for Advanced Biomedical Research. The Institute will be characterized by an emphasis on the techniques of molecular biology, immunocytochemistry, and protein chemistry applied to the nervous and endocrine systems. Dr. Edward Herbert, director of the Institute, is seeking an early expression of interest from notable scientists with demonstrated excellence in investigation in these general areas.

The facility housing the Institute is expected to be available for occupancy by mid-1986. It is an 80,000-square-foot facility to be fitted with the most modern equipment available. It is located on the campus of Oregon's academic health center in Portland. Applications are being taken now for one intermediate to senior level scientist position in the area of structure and immunocytochemistry of neuropeptides, until 30 June 1984. Recruitment for other senior level positions will be received but not processed actively at this time.

Requirements for the positions include terminal degree, with appropriate postdoctoral emphasis, a productive publication record, a commitment to excellence in biomedical sciences, and demonstrated potential for highest level achievement.

Indications of interest or applications should be sent to:

Dr. Edward Herbert, Director (L101)
Institute for Advanced Biomedical Research
Oregon Health Sciences University
3181 Southwest Sam Jackson Park Road
Portland, Oregon 97201

The Oregon Health Sciences University is an Equal Opportunity Employer.

Senior Plant Molecular Biologist

This company, an established leader in pharmaceutical and agricultural research, is seeking a Ph.D. for the Molecular and Cell Biology Research Division. A plant molecular biologist who has a background in plant biology specializing in gene structure and function in plants is required. Applicant must have at least two years of post doctoral research experience, including studies on the expression of cloned plant genes transferred to heterologous plant cells.

Activities in this position focus on the genetic engineering of crop plants. These activities include isolating genes of agricultural importance, modifying them for suitable expression and introducing them into plant cells. The person filling this position will direct a laboratory which includes associate (BS/MS) level scientists. This company offers an excellent compensation program and opportunities for professional growth. Qualified individuals should send their resume in confidence to:

Indiana State Employment Service
10 N. Senate Avenue
Indianapolis, IN 46204
Attn: W. F. Shepherd

Please be sure to include your Social Security number and refer to our identification number 3005014.

Salary: \$2700/mo.

Entrepreneurial Research Associates/Scientists

Be part of a solid "Start-up" venture

Come join Genencor—an exciting company chartered by Genentech and Corning to advance the science of biotechnology!

■ ENZYMOLOGY/MICROBIOLOGY OPPORTUNITIES

- Characterization, purification, modification and assay of enzymes.
- Elaboration, propagation and preliminary identification of new micro-organisms.
- Strain improvements, media development work with fungal and bacterial cultures.
- Optimization of fermentations, both fungal and bacterial.
- Design, conduct, analyze experiments relating to fermentations of bacterial and fungal cultures. Maintain and schedule fermentation recovery equipment.

BS/MS in biological science, enzymology, microbiology and/or organic chemistry required.

■ BIOCHEMICAL ENGINEERING OPPORTUNITIES

- Obtain & analyze engineering data for process development. Carry out fermentation experiments at laboratory and pilot scale.
- Provide computer system support for R&D. Develop S/W for data acquisition and analysis, process monitoring and control.
- Assist in development of new methodologies for large scale protein recovery. Enzyme assay, electrophoresis, chromatography.

BS/MS in biological science, chemical engineering, protein biochemistry or biochemical engineering required.

Act now and become a key contributor to a vigorous young firm that offers the freedom, the commitment and the opportunity to succeed. Send resume, in confidence, to D. Clark, Human Resources, Genencor, 180 Kimball Way, So. San Francisco, CA 94080. An equal opportunity employer.

GENENCOR



KING ABDULAZIZ UNIVERSITY
FACULTY OF METEOROLOGY AND ENVIRONMENTAL STUDIES
JEDDAH, SAUDI ARABIA

King Abdulaziz University is now accepting applications for faculty positions in the Faculty of Meteorology and Environmental Studies, for the academic year 1984-1985.

Positions available in:

- | | |
|--------------------------------------|-----------------------------------|
| 1. Air Pollution — Environmental | 6. Meteorology — Dynamics |
| 2. Water Pollution — Chemical | 7. Meteorology — Synoptics |
| 3. Noise Pollution | 8. Meteorology — Weather Analysis |
| 4. Biochemistry — Ecological Studies | 9. Meteorology — Clouds Physics |
| 5. Meteorology — Physics | |

Ph.D.s required.

Salaries will be based on years of experience and degrees.

One year contracts renewable upon mutual agreement.

Benefits:

- | | |
|-------------------------|--------------------------|
| 60 days annual vacation | Furniture allowance |
| 4 roundtrip air-tickets | Transportation allowance |
| Housing allowance | |

Interested academics are kindly requested to send their letter of applications indicating the position applied for, along with resume (including lists of publication and references), photocopies of their academic degrees and specialized experience certificates:

Dean
Faculty of Meteorology and Environmental Studies
King Abdulaziz University
P.O. Box 9034
Jeddah, Saudi Arabia

A second copy of the above information should also be sent to:

King Abdulaziz University Office
c/o Saudi Arabian Educational Mission
2425 West Loop South, Suite 654
Houston, Texas 77027

POSITIONS OPEN

IMMUNOLOGIST, RESEARCH ASSISTANT PROFESSOR

Research faculty position in Comprehensive Cancer Center and Division of Hematology-Oncology at the University of Alabama in Birmingham. Candidates must have a Ph.D. in immunology with postdoctoral experience preferred. Backgrounds in immunology, immunohematology, and protein chemistry are preferred. The project concerns basic studies on Fc receptor interaction with Ig and characterization of autoantibodies using monoclonal antibody techniques to study mechanisms of platelet and red cell destruction in human immune cytopenias. Send letter of interest and curriculum vitae to: **Albert F. LoBuglio, M.D., Director, Comprehensive Cancer Center, University of Alabama in Birmingham, University Station, Birmingham, Alabama 35294. An Equal Opportunity/Affirmative Action Employer.**

LABORATORY MANAGER (College of Arts and Sciences). B.S. in science, postbaccalaureate laboratory experience, training and/or experience in the use of computers, supervisory experience, familiarity with electronics and instrumentation. Application deadline: 15 June 1984, or until filled. Send résumé and three references to: **Personnel Department, University of Alaska, Anchorage, 3211 Providence Drive, Anchorage, Alaska 99508. An Equal Opportunity/Affirmative Action Employer.**

MOLECULAR BIOLOGIST

We have an opening for a molecular biologist who has skill and experience in developing instrumentation for protein and nucleic acid chemistry. We should like applicants to have a Ph.D., recent laboratory experience, and a proven record of accomplishment. Familiarity with Hoefer instruments would be helpful.

HOEFER SCIENTIFIC INSTRUMENTS is a leading designer and manufacturer of instrumentation for biochemical research. We offer excellent working conditions and generous employee benefits. We are located in San Francisco. To apply, please send your résumé and a cover letter to: **Dr. David Hawley, HOEFER SCIENTIFIC INSTRUMENTS, P.O. Box 77387, San Francisco, Calif. 94107.**

MOLECULAR BIOLOGIST: To develop and implement sales of molecular biology and pharmacological products to the medical research community, primarily in Bethesda, Maryland. To uncover and fulfill customer needs involved in molecular biology and immunology research including providing technical support in recombinant DNA technology including DNA sequencing. Responsible also for support in transcription and translation systems. Required: Advanced degree in biochemistry, knowledge of structural chemistry, and experience with DNA repair processes. Salary: \$24,000 per year. Qualified applicants contact: **The Maryland State Job Service, 1123 North Eutaw Street, Baltimore, Maryland 21201. Job Reference Number: 0481346.**

NEUROLOGIST with training in behavior and higher cortical function is sought by Tulane University School of Medicine, Department of Psychiatry and Neurology. There are excellent opportunities for research and leadership in a combined training program. Applications and curriculum vitae must be received by 30 June 1984. Mail to: **Joseph B. Green, M.D., Chairman, Department of Psychiatry and Neurology, Tulane Medical School, 1430 Tulane Avenue, New Orleans, La. 70112. An Affirmative Action/Equal Opportunity Employer. Qualified women and minority candidates are encouraged to apply.**

NMR INSTRUMENTATION SPECIALIST DUKE UNIVERSITY MEDICAL CENTER

Position available in the Diagnostic Physics Section of the Radiology Department for instrumentation support of nuclear magnetic resonance imaging and spectroscopy. Successful candidate must have knowledge of the physics of NMR, digital systems, and programming details. He/she will work with state-of-the-art equipment developing an instrument for animal imaging and spectroscopy. Master's degree desired but will consider bachelor's degree in engineering, physics, or related field. Salary commensurate with experience. Send curriculum vitae to: **Dr. G. Allen Johnson, Director of Diagnostic Physics, Box 3332, Duke University Medical Center, Durham, N.C. 27710. Equal Opportunity Employer.**

POSITIONS OPEN

NEUROBIOLOGIST

The Department of Anatomy and Cell Biology, University of Cincinnati, College of Medicine, invites applications for a position at the assistant/associate professor level. Candidates are expected to establish a productive research program in cellular, molecular, or development neurobiology. The candidate should have 2 to 3 years of postdoctoral experience.

Dr. Robert R. Cardell
Professor and Chairman
Department of Anatomy and Cell Biology
University of Cincinnati Medical College
231 Bethesda Avenue, ML Number 521
Cincinnati, Ohio 45267-0521
An Equal Opportunity Employer

PHARMACOLOGIST. Emory University has a new position at assistant professor or associate professor rank which requires doctoral or equivalent degree; for assistant professor at least one year of postdoctoral research experience and potential to develop independent research program; for associate professor five or more years of experience in research and teaching in pharmacology or related discipline, evidence of excellent independent research, and current grant support. Strong commitment to research and teaching essential. Molecular, cellular, or neurophysiological research approaches to pharmacological problems preferred. Starting date negotiable. Curriculum vitae, description of career goals, proposed research program, and three letters of recommendation must be received by 15 August 1984. Address to: **Dr. Neil C. Moran, Chairman, Department of Pharmacology, Emory University, Atlanta, Ga. 30322.**

An Affirmative Action/Equal Opportunity Employer

PLANT DEVELOPMENTAL BIOLOGY FACULTY POSITION

The Department of Plant Biology, University of Illinois at Urbana-Champaign, invites applications for a tenure-track position at the assistant professor level for appointment by 21 August 1985 or earlier. Applicants should have a Ph.D., with research experience in the control of plant cell growth and differentiation. The appointee will be expected to conduct research in the above area and to contribute to the graduate and undergraduate teaching programs. His or her interests should complement those of the existing members of the plant physiology and molecular biology programs in the department. Salary is open, depending on the applicant's qualifications.

Applicants should send curriculum vitae, a summary of research interests, and at least three letters of reference to: **Dr. Colin A. Wraight, Search Committee Chairman, Department of Plant Biology, University of Illinois, 505 South Goodwin, Urbana, Illinois 61801. Telephone 217-333-3245 or 333-3261.** In order to ensure full consideration, applications must be received by 31 August 1984. *The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

POSITRON EMISSION TOMOGRAPHY (PET): Unusual career opportunity for academically oriented physicist with research interest in PET instrumentation and image reconstruction/quantitation. Excellent computing and image processing facilities, full-time hardware and software support. Background in medical physics helpful but not essential. Competitive salary, excellent benefits. For more information, write to: **D. A. Rottenberg, M.D., Department of Neurology, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, N.Y. 10021, or telephone: 212-794-7045. Equal Opportunity Employer.**

POSTDOCTORAL POSITION available 1 July 1984 for a Ph.D. trained in one of the following disciplines: biochemistry, microbiology, molecular biology, or biochemical pharmacology. The fellow will pursue the cloning, structure, and regulation of the mammalian gene(s) encoding DNA polymerase alpha. Experience with immunologic techniques, tissue culture, and recombinant DNA technology—including cDNA cloning of low abundance mRNA—is preferred. Salary will be competitive and commensurate with experience. Send curriculum vitae and three references to:

Dr. Neal C. Brown, Professor and Chairman
Department of Pharmacology
University of Massachusetts Medical School (UMMS)
55 Lake Avenue North
Worcester, Mass. 01605

UMMS is an Affirmative Action/Equal Opportunity Employer.

POSITIONS OPEN

POSTDOCTORAL ASSOCIATE. Department of Human Genetics. To investigate the role of cations in cellular differentiation and cell cycle, leading to establishing the role of sodium hydrogen antiporter. Requires Ph.D. in biochemistry or cell biology in addition to prior experience in the implantation of membrane protein into liposomes and assays of its function as well as in cell culture, membrane fluidity, and cation transport. Full-time position with annual salary of \$16,000. Interested applicants should submit their résumés to: **Box 134, SCIENCE.**

POSTDOCTORAL POSITION—TUMOR VIROLOGY

Available immediately to study roles of SV40 T Ag and the associated p53 host tumor antigen in oncogenic transformation, studies especially involving biochemical and protein chemical techniques. Send curriculum vitae and names of three references to: **Dr. Robert Carroll, Department of Pathology, New York University Medical School, 550 First Avenue, New York, N.Y. 10016.**

POSTDOCTORAL POSITIONS AVAILABLE

In the laboratories of a group of investigators interested in understanding biological regulatory processes at a molecular level.

Melanie H. Cobb, Ph.D. Mechanisms of insulin action; roles of protein kinases.

Alfred G. Gilman, M.D., Ph.D. Role of G proteins in the regulation of adenylate cyclase.

Joel M. Goodman, Ph.D. Yeast peroxisomes as a model of protein sorting and organellar biogenesis.

David Jameson, Ph.D. Energetics and dynamics of protein-protein and protein-ligand interactions.

James Kenyon, Ph.D. Regulation of ion channels in cardiac cells.

Marc C. Mumby, Ph.D. Monoclonal antibodies as probes of protein phosphorylation/dephosphorylation in cardiac muscle.

Elliott M. Ross, Ph.D. Effector protein interactions in reconstituted liposomes; adenylate cyclase regulation.

Paul C. Sternweis, Ph.D. Characterization and reconstitution of hormone receptors and related GTP-binding proteins.

James T. Stull, Ph.D. Biochemical mechanisms regulating muscle contraction, myosin phosphorylation and calmodulin-dependent myosin light chain kinase.

Contact: **Postdoctoral Training Program, Department of Pharmacology, University of Texas Health Science Center, 5323 Harry Hines Boulevard, Dallas, Texas 75235. An Equal Opportunity Employer.**

POSTDOCTORAL POSITION. Nanosecond time-resolved fluorescence investigation of protein-stereoid interaction. Background in physical chemistry/biochemistry with computer experience is desirable. Send résumé with names of references to: **Dr. J. B. A. Ross, Department of Biochemistry, THE MOUNT SINAI SCHOOL OF MEDICINE, One Gustave L. Levy Place, New York, N.Y. 10029. An Equal Opportunity Employer.**

POSTDOCTORAL POSITION is available from 1 August 1984 to join a group conducting light and electron microscopic immunocytochemical analysis of methyl-mercury effects on the cytoskeleton in cultured neuronal cells. Background in tissue culture, electron microscopy, immunocytochemistry desirable. Position tenable for up to two years; salary range: \$18,000 to \$20,000. *In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents.* Applications, including curriculum vitae, representative reprints, and the names of three references, should be sent to: **Dr. David L. Brown, Department of Biology, University of Ottawa, Ottawa, Ontario, Canada K1N 6N5.**

POSTDOCTORAL POSITION AVAILABLE IMMEDIATELY to study the control of cell surface differentiation. Studies include the expression of cell surface acetylcholine receptors and membrane cytoskeletal interactions in cultured muscle cells. Applicants should have a strong background in biochemistry, cell biology, or pharmacology. Experience in cell culture would be helpful. Competitive salary. Send curriculum vitae, statement of research interests, and references to: **Dr. J. Prives, Department of Anatomical Sciences, Health Sciences Center, State University of New York (SUNY), Stony Brook, Stony Brook, N.Y. 11794-8081. SUNY, Stony Brook, is an Affirmative Action/Equal Opportunity Employer. AK number 92-84.**

Biotechnology Protein Chemist, PhD

ANGENICS, INC., is a rapidly growing Cambridge company developing analytical immunoassay systems for agricultural and medical applications using monoclonal antibody-based technology.

We have an immediate opening for a Protein Chemist with a PhD in Biochemistry or a related field plus demonstrated expertise in protein characterization and derivatization. A minimum of 2 years' post doctoral experience is required. Responsibilities will include developing and directing a resource center for protein chemistry within the research group, in addition to directing new product development.

Angenics offers a competitive salary and benefits package and the opportunity to interact with stimulating colleagues and consultants while participating in the success of a young company.

Please submit resume and salary history, in confidence, to: Ms. Margaret Walsh, ANGENICS, INC., 100 Inman Street, Cambridge, MA 02139.

An Equal Opportunity Employer

ANGENICS

Molecular Biologist

Becton Dickinson's commitment to new product research and development and our billion dollar resources have given us an unmatched reputation in the field. Our team approach to project management is a key factor in our success. If you are interested in working on cooperative ventures where your work and ideas will be recognized, investigate this position.

You will be involved in application of recombinant DNA/Genetic Engineering techniques to the expression of heterologous proteins and subsequent isolation/purification of these proteins in prokaryotic and/or eukaryotic systems for use in diagnostic reagents. Your background must include a M.S. in Molecular Biology or Microbiology and demonstrated laboratory experience in cloning/expression systems. A background in protein chemistry/purification will be an advantage. Our team approach requires independent thought and allows you to be directly involved in the planning and interpretation of experiments.

This position offers an excellent opportunity to grow and advance within a dedicated group of professionals. For immediate consideration, send your resume to: Ms. Joy Meinl, Manager, Human Resources, Becton Dickinson and Company, Charles & Chase Streets, Baltimore, MD 21201. An equal opportunity/affirmative action employer.

Caring for people is our business

BECTON DICKINSON

DIRECTOR, NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

NATIONAL INSTITUTES OF HEALTH
PUBLIC HEALTH SERVICE
DEPARTMENT OF HEALTH AND HUMAN SERVICES

The National Institutes of Health invites nominations and applications for the position of Director, National Institute of Allergy and Infectious Diseases (NIAID). This Institute conducts, fosters, and supports research and research training on the prevention, management, and cure of infectious and immunological diseases. Programs encompass intramural laboratory research and extramural (grants and contracts) activities in infectious and immunological diseases and disorders.

This is a Civil Service position in the Senior Executive Service (SES), with an authorized salary range from \$58,938 to \$66,000 per annum depending on qualifications. Candidates may be eligible for Physicians Comparability Allowance up to \$10,000 per year. Alternately, candidates may be eligible for appointment in the Commissioned Corps of the U.S. Public Health Service.

The mandatory professional qualifications are: (1) meet the minimum educational requirements for Medical Officer, GS-602, or Health Scientist, GS-601, for equivalent combination of experience and training; and (2) have research experience and knowledge of research programs in one or more areas related to infectious and immunological diseases and disorders. In addition, candidates must possess managerial/executive qualifications that demonstrate competence to assume leadership responsibilities in: (1) assuring that key national and agency goals are considered in making program decisions; (2) establishing effective external communications by being a representative spokesperson for the organization; (3) developing policy, establishing long-term and short-term goals and priorities; (4) obtaining and allocating the resources necessary to support program implementation; (5) assuring

that people are appropriately employed and dealt with in a fair and equitable manner; and (6) assuring that programs are being executed and adjusted as necessary, and that the appropriate results are being achieved.

Candidates who meet the mandatory requirements will be further evaluated by the Search Committee on the following factors: communications and inter-personal skills; training and education; honors and awards; and the degree to which they exceed the minimally qualified level of the mandatory managerial/executive qualifications. Information on any of the above requirements may be obtained by calling Mrs. Helen Stafford at (301) 496-4197.

Applications (Personal Qualifications Statement, SF-171) are to be sent to Helen C. Stafford, Executive Secretary, Search Committee for Director, NIAID, National Institutes of Health, Building 1, Room 19, Bethesda, Maryland 20205. A current curriculum vitae and bibliography must accompany all applications. Applications of women and/or minority group members are especially solicited.

ALL QUALIFIED CANDIDATES WILL RECEIVE CONSIDERATION WITHOUT REGARD TO RACE, RELIGION, COLOR, SEX, AGE, NATIONAL ORIGIN, LAWFUL POLITICAL AFFILIATION, MARITAL STATUS, UNION MEMBERSHIP, OR ANY NONDISQUALIFYING PHYSICAL OR MENTAL HANDICAP.

OPENING DATE: 5/25/84 CLOSING DATE: 6/30/84
(All applications must be postmarked before closing date)

NIH IS AN EQUAL OPPORTUNITY EMPLOYER

POSITIONS OPEN

POSTDOCTORAL POSITIONS IN MOLECULAR NEUROBIOLOGY available immediately. Research projects involve the analysis of gene expression in brain and cells of neuroectodermal origin using recombinant DNA technology. Applicants should have a strong background in molecular biology or biochemistry. Experience in cell culture would be helpful. Send curriculum vitae and three references to: **Dr. B. B. Kaplan, Program Director, WESTERN PSYCHIATRIC INSTITUTE AND CLINIC, 3811 O'Hara Street, Pittsburgh, Pa. 15213. The University of Pittsburgh is an Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION in neuroimmunology available 1 July 1984 for research on the genetic control of autoimmune disease using the experimental allergic encephalomyelitis (EAE) model [*J. Exp. Med.* 153:61 (1981)]. Salary: \$16,000 to \$18,000 commensurate with experience. Send curriculum vitae and names of three references to: **Dr. Caroline C. Whitacre, Department of Medicine, Division of Immunology, N-268 Wiseman Hall, 400 West 12 Avenue, Ohio State University, Columbus, Ohio 43210.**

POSTDOCTORAL POSITION available immediately for research in high density lipoprotein structure and function. Strong background in biochemistry and some experience in enzymology and/or lipid biochemistry are required. Send curriculum vitae and three letters of reference to: **Dr. Ana Jonas, Department of Biochemistry, University of Illinois, 506 South Mathews Avenue, Urbana, Ill. 61801. Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION available to study the molecular mechanism of peptide action. Experience in hormone action, calcium as a second messenger, radioligand assays desirable. Salary: NIH scale. Send curriculum vitae, statement of prior activities and interest, and names of three references to: **Dr. P. Michael Conn, Professor and Chairman, Department of Pharmacology, College of Medicine, 2-512 BSB, University of Iowa, Iowa City, Iowa 52242. The University of Iowa is an Affirmative Action/Equal Opportunity Employer.**

BIOANALYTICAL CHEMIST

Bioanalytical Chemist—Ph.D. with 2-5 years experience in analytical chemistry to join Drug Metabolism section.

Will develop methodology to determine concentration of potential candidates isolated from biological fluids, validate assay procedures, make pharmacokinetic interpretations, confirm identity of component, utilize computers for data reduction. Candidate must have supervisory experience and be able to communicate ideas, as well as write reports clearly and concisely.

Stuart Pharmaceuticals' modern laboratories are located in suburban Wilmington, Delaware. Salary/benefits are competitive and include tax-sheltered investment program.

P.J. Peters
Employee Relations



STUART PHARMACEUTICALS
Division of ICI Americas Inc.
Wilmington, DE 19897

An Equal Opportunity Employer M/F

POSITIONS OPEN

POSTDOCTORAL POSITION ECOLOGICAL MODELLING

Two-year postdoctoral position in a desert ecosystem research group focusing on decomposition and nutrient cycling processes. Work will involve developing models of these processes and synthesis of existing data sets. Starting date: 15 July 1984. Send curriculum vitae, applications, and names and addresses of three references to: **Dr. W. G. Whitford, Department of Biology, New Mexico State University, Las Cruces, N.M. 88001. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION IN NEUROANATOMY available immediately to study the action of cholinergic poisons on the central nervous system and effectiveness of potential antidotes. Major experimental techniques include the [¹⁴C]-2-deoxyglucose procedure for mapping brain regional glucose use and quantitative autoradiography for muscarinic and nicotinic cholinergic receptors. Applicants should have research experience in neurobiology. Send curriculum vitae and summary of research experience with names of three references to: **Dr. Fred Samson, Director MRRC, University of Kansas Medical Center, 39th and Rainbow, Kansas City, Kans. 66103. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION— NEUROBIOLOGY

Available immediately for studying neuronal cell surface molecules. Candidate will join a laboratory using in vivo and in vitro methods to investigate the role of glycoproteins, proteoglycans, and gangliosides in neuronal differentiation and neural development. Ph.D. required, preferably with specialization in any or all of the following areas: biochemistry, cell biology, cell culture, neuroanatomy, histology, immunology, and molecular biology.

Full financial support available. Send curriculum vitae and three letters of reference to:

Dr. William B. Stallcup
Molecular Neurobiology Laboratory

**THE SALK INSTITUTE
FOR BIOLOGICAL STUDIES**
P.O. Box 85800
San Diego, Calif. 92138

Equal Opportunity Employer, M/F/H/V

POSTDOCTORAL POSITION in cellular and molecular biology at University of California-affiliated multidisciplinary cardiovascular disease research laboratory. Studies include lipoprotein and receptor biochemistry and physiology. Seeking candidates with strong background in membrane biology, immunochemical, or molecular biology. Send résumé and names of references to: **Personnel Director, Gladstone Foundation Laboratories for Cardiovascular Disease, Box 40608, San Francisco, Calif. 94140-0608.**

POSTDOCTORAL POSITION IN FOREST SOILS. Research into the mechanisms causing changes in soil nitrogen and carbon pools following tree harvest. Background in field sampling, soil nitrogen, and organic matter desired. Please send curriculum vitae and three letters of recommendation to: **Dr. Douglas Ryan, Dartmouth College, Environmental Studies Program, Nathan Smith Laboratory, Hanover, N.H. 03755. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL RESEARCH ASSOCIATE available immediately in the Department of Anesthesiology, University of Utah. Area of study involves the effects of anesthetics on polymeric materials using DSC thermal analysis, Raman scattering and modern spectroscopy as well as x-ray diffraction. A Ph.D. in materials science and engineering with a strong background in polymer physics is desirable, \$14,000 per year, 40 hours per week. Send three letters of recommendation and résumé to: **Job Service, P.O. Box 11750, Salt Lake City, Utah 84147. Telephone: 801-533-2400. Job Order Number 23555. Equal Opportunity/Affirmative Action Employer. Closing date: 15 June 1984.**

POSITIONS OPEN

POSTDOCTORAL POSITION (research associate) available to study the binding of amphiphilic environmental chemicals to biological and model membranes and the relationship of binding to membrane activity. Requires Ph.D. in biochemistry or other area of relevant training. Research background in membranes, binding studies, and liposome preparation highly preferred. Salary range: \$15,500 to \$17,000. Send résumé and three letters of recommendation before 15 June 1984 to: **Dr. Terry L. Miller, Department of Agricultural Chemistry, Oregon State University, Corvallis, Ore. 97331. An Equal Opportunity/Affirmative Action Employer; complies with Section 504 of the Rehabilitation Act of 1973.**

TWO POSTDOCTORAL POSITIONS available 1 July 1984 to study: (i) the mechanism of biosynthesis of cell surface polysaccharides, and (ii) the mechanism of protein secretion in Gram-negative bacteria. Candidates with a strong background in biochemistry and molecular biology are encouraged to apply. Send curriculum vitae and the names of three references to: **Dr. Paul D. Rick (position i), or Dr. Henry C. Wu (position ii), Department of Microbiology, c/o Personnel Division, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, Md. 20814. Curriculum vitae will not be returned. Affirmative Action/Equal Opportunity Employer.**

POSTDOCTORAL POSITION available for individual to carry out in vitro mutagenesis of cloned, selectable mammalian genes and to characterize their expression after transfection into cultured cells. Molecular genetic experience desirable. Send curriculum vitae and names of three references to: **Dr. Peter J. Stambrook, Department of Anatomy and Cell Biology, University of Cincinnati Medical Center, Cincinnati, Ohio 45267-0521.**

Ph.D.—A POSTDOCTORAL POSITION for a Ph.D. with training in membrane protein chemistry and immunochemistry is available immediately in the Division of Immunohematology at **MONTEFIORE MEDICAL CENTER, Bronx, N.Y.** Salary negotiable. For further information, contact: **Dr. Parviz Lalezari, telephone: 212-920-4785 or 920-5106. Equal Opportunity Employer, M/F.**

POSTDOCTORAL/RESEARCH ASSOCIATE POSITION available for cellular neurophysiologist with interests in examining properties of mammalian CNS neurons in slice and dissociated cell preparations. Work will include use of standard techniques for intracellular recording and labeling, and application of patch-voltage clamp techniques. Experience with these methods and a strong background in biophysics important. Neuroanatomic training useful but not essential. Experiments will be performed in well-equipped laboratory where there are significant opportunities for interactions with neuroscience group which has interests in development, actions of transmitters, and cellular mechanisms of epileptogenesis. Salary appropriate to background and experience. Applicants should send curriculum vitae and names of three referees to: **David A. Prince, Department of Neurology, Stanford University Medical Center, Stanford, Calif. 94305. Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL RESEARCH ASSOCIATE CNS MECHANISMS IN MAMMALIAN RESPIRATION

Position available to work on neuronal connectivity and neuroanatomy related to brain stem and spinal cord organization in respiration. Applicants must hold a Ph.D. and/or M.D. and have extensive training in neurophysiology and/or neuroanatomy. Send curriculum vitae and names of three references to: **Dr. Albert J. Berger, Department of Physiology and Biophysics SJ-40, University of Washington, Seattle, Wash. 98195. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL RESEARCH POSITIONS: Visual neuroscience, visual-auditory integration.

Two related studies of single-unit responses in striate cortex of behaving monkeys. One will focus on color-coded cells with special interaction of stimulus movements and eye movements. The other will investigate auditory influences on visual cortex, with emphasis on spatial correspondence of visual and auditory maps, nonlinear intermodality interactions, and influence of eye movements. Two-year commitment. Preferred starting date between 1 January and 1 March 1985. Send curriculum vitae and names of three or more references to: **Dr. Max Snodderly or Dr. Peter Hartline, Eye Research Institute, 20 Stanford Street, Boston, Mass. 02114.**

**THE INTERNATIONAL CENTRE OF
INSECT PHYSIOLOGY AND ECOLOGY
P.O. BOX 30772, NAIROBI, KENYA**

Applications are invited from suitably qualified candidates for the following position tenable at the ICIPE Centre, Nairobi.

POSTDOCTORAL RESEARCH FELLOW—REF: SCI/84/5

Qualifications and Experience: Candidates must have a Ph.D. in microbiology and relevant research experience in identification and culturing *fungi* and *bacteria*, microbial biochemistry, mutation/cloning studies and general microbial genetics.

Duties and Responsibilities: The Centre has about 40 senior scientists and other professional staff engaged in a sharply focussed programme of research and training, supported by a variety of donor agencies. The successful candidate will be required to work alongside a small team of these scientists, under the supervision of Head of Unit, investigating the possible use of microorganisms associated with higher African termites, for improved lignocellulose bioconversion into fermentable sugars for biogas and ethanol production. He will primarily be responsible for the culturing and identification of bacteria and fungi implicated in lignocellulose degradation, as well as carry out mutation breeding studies aimed at identifying strains of native isolates, with improved capabilities for lignocellulose trials of bioconversion processes.

Salary is negotiable and includes attractive benefits.

Applications giving detailed information on general education, professional qualifications, experience, marital status, age, present employment (including salary), names and addresses of four referees (one being personal), and photocopies of relevant certificates (which will not be returned) should be addressed to:

**The Administrative Manager
ICIPE Research Center
P.O. Box 30772
NAIROBI**

To reach him not later than 15th June, 1984

**SENIOR RESEARCH
MICROBIOLOGIST**

The Lilly Research Laboratories, an established leader in pharmaceutical research, seeks a Senior Research Microbiologist for its Microbiological and Fermentation Products Research Division. Applicants must have a doctoral degree and a strong background in clinical microbiology and infectious disease research. Postdoctoral studies or employment experience in pathogenic mechanisms, experimental chemotherapy, pharmacokinetics and drug-host-parasite interrelationships is essential. The Senior Scientist will participate in research programs designed to discover and evaluate new and novel chemotherapeutic agents for use in human medicine.

Qualified candidates should send their curriculum vitae to:

**John W. Crooks, Manager
College Relations (SRM)
Eli Lilly and Company
307 East McCarty Street
Indianapolis, Indiana 46285**



An Equal Opportunity Employer M/F

**PHARMACOLOGISTS/BIOCHEMIST
PHARMACEUTICALS R&D**

U.S. subsidiary of ICI (England) who introduced the first beta blocker, clofibrate, halothane, tamoxifen, chlorhexidine, and atenolol. Expanded program activity in these laboratories has created the following openings:

RENAL

- Ph.D. in renal pharmacology or physiology with experience in renal techniques in large animals, with special emphasis on the regulation and control of renal hemodynamics. Training in microsphere and micropuncture techniques is highly desirable.
- BS/MS in biological sciences or related discipline to work in in-vitro tests using isolated tissues for characterization of pharmacological activity of compounds. Familiarity with solute and electrolyte transport and membrane pharmacology/physiology desirable. In-vitro experiences in epithelial tissues preferred.

BIOCHEMIST/BIOCHEMICAL PHARMACOLOGIST

- MS/BS in biology or biochemistry with 2-5 years of laboratory experience in general biochemical methodology including enzyme assay and protein purification. Some experience in ELISA and/or RIA techniques would be highly beneficial. Experience in handling laboratory animals required.

Stuart Pharmaceuticals, Biomedical Research facilities are located in suburban Wilmington, DE and provides excellent work environment and career growth and benefits package.



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Division of ICI Americas Inc.
Wilmington, DE 19897
An Equal Opportunity Employer M/F

Protein Separation Chemist

Bio-Response is a new and unique biotechnology company located in the San Francisco Bay area. We are committed to a large scale production of medically and commercially significant polypeptides from mammalian cell culture for our clients as well as from our own cell lines.

We are seeking a senior protein chemist to direct and expand our expertise into the area of protein purification. This person will be responsible for concentration, purification, and characterization of monoclonal antibodies, enzymes, hormones, lymphokines, and other proteins produced in our patented MCT* system. In addition, the successful candidate will contribute to process and product development with other Bio-Response scientists.

The position requires a Ph.D. with at least 3-5 years of additional and relevant experience. Preference will be given to individuals with strong backgrounds in the design and implementation of immunoaffinity protocols. Other desirable qualifications include: experience with industrial scale protein purification, state of the art methods for protein analysis, and familiarity with FDA guidelines.

Bio-Response offers a stimulating scientific environment, competitive salaries, and excellent benefits.

Please send resume and salary history (in confidence) to:

**Maureen Costello, Ph.D.
Bio-Response, Inc.
1978 West Winton Avenue
Hayward, CA 94545**

*Trademark of Bio-Response, Inc.

POSITIONS OPEN

POSTDOCTORAL RESEARCH ASSOCIATE available immediately for Ph.D. in biochemistry/toxicology to study the effects of environmental pollutants on the endothelial cell function. Background in lung biochemistry, isolated perfused lung system, and histopathology is desired. Salary: \$16,000 to \$19,000 per year. Send curriculum vitae and three letters of reference to: **Dr. J. M. Patel, Division of Pulmonary Medicine, Box J-225 JHMC, University of Florida, Gainesville, Fla. 32610.**

POSTDOCTORAL RESEARCH ASSOCIATE position available to work on a project aimed at localizing the testis germ cell adenylate cyclase in specific spermatogenic cells and at exploring the mode of its regulation. Research experience with cell separation procedures preferable. Send curriculum vitae and names of three references to: **Dr. Theodor Braun, Department of Physiology, Northwestern University Medical Center, Chicago, Illinois 60611.**

POSTDOCTORAL RESEARCH ASSOCIATE—position available to investigate the biochemical mechanisms underlying low Ca^{2+} -stimulated secretion from parathyroid cells. Studies are aimed at understanding the detection and transduction of the low Ca^{2+} stimulus, and involve the use of isolated cells, radioimmunoassays, and cell permeabilization techniques. Salary and duration negotiable. Send curriculum vitae to: **Dr. A. Scarpa, University of Pennsylvania, 501-B Richards Building, Philadelphia, Pa. 19104.**

PROTEIN CHEMIST

A position is available for a protein chemist to establish and supervise a protein-nucleic acid facility in the Howard Hughes Medical Institute (HHMI) Laboratory at the Johns Hopkins University School of Medicine. Applicants with a Ph.D. degree in chemistry or biochemistry and experience in the analysis, synthesis, and biochemistry of polypeptides are invited to submit curriculum vitae (with a brief description of research experience and the names of three individuals who may be contacted for letters of recommendation) to: **Dr. Daniel Nathans, Howard Hughes Medical Institute Laboratory, Department of Molecular Biology and Genetics, Johns Hopkins University School of Medicine, 725 North Wolfe Street, Baltimore, Md. 21205. HHMI is an Equal Opportunity/Affirmative Action Employer.**

The Department of Land, Air and Water Resources, **UNIVERSITY OF CALIFORNIA, DAVIS**, announces a position in the area of **REGIONAL SCALE METEOROLOGY**. Tenure-track (11 months plus 1 month paid vacation) position will be divided 38 percent teaching and 62 percent research. The appointment will be at the assistant professor level. **QUALIFICATIONS:** A Ph.D. in atmospheric science or a closely related discipline, with a specialization in regional scale meteorology. Applicants should have teaching and research interests in the quantitative aspects of meteorological processes occurring on the meso- and regional-scales (10 km to 1000 km) of atmospheric motion. The appointee will develop a research program that may involve any of several subspecialties and application areas but the analysis and modeling of wind fields in complex terrain would be expected to be a prominent part of the program. Teaching will include a graduate course in meso-scale meteorology and both graduate and undergraduate courses in general areas of atmospheric science, and advising duties.

APPLICANTS: Applicants should submit curriculum vitae, transcripts, statement of research and teaching interests and background in each, copies of publications and manuscripts, and the names and addresses of at least three references to: **L. O. Myrup, Chair, Search Committee, Department of Land, Air and Water Resources, 265 Hoagland Hall, University of California, Davis, Calif. 95616**, no later than 15 August 1984.

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

RESEARCH ASSISTANT/ASSOCIATE

Position available immediately, to perform protoplast isolation, culture, and fusion experiments with selected red seaweeds. Broad experience in protoplast, cell and tissue culture techniques in either land plants or algae necessary. Ph.D. and/or broad training in plant physiology/molecular biology preferred. Experience in algal physiology desirable but not necessary. Salary range: \$16,000 to \$20,000. Send résumé and list of references by 8 June to: **Donald Cheney, Biology Department, Northeastern University, Boston, Mass. 02115. Northeastern is an Equal Opportunity/Affirmative Action/Title IX University.**

POSITIONS OPEN

The **DEPARTMENT OF RADIATION THERAPY** at The University of Texas Medical Branch (UTMB) at Galveston, Texas, has one opening for 1 July 1984 at the PGY2 level or above for training in radiation therapy. Please direct all inquiries to: **Dr. N. Rangala, Department of Radiation Therapy, The University of Texas Medical Branch, Room 197 McCullough, Route G-11, Galveston, Texas 77550. Telephone: 409-761-2531. UTMB is an Equal Opportunity Employer.**

RESEARCH ASSISTANT PROFESSOR: Pulmonary Division, Duke University Medical Center, needs connective tissue biochemist to join well-funded group using multidisciplinary approach to study mechanisms influencing lung growth, injury, and repair. Must have research experience in collagen, fibronectin, or glycosaminoglycan biochemistry. Expertise in ELISA, protein purification, tissue culture, and immunocytochemistry preferred. Successful applicants will be eligible for promotion and salary increase, but must be willing to make long-term commitment. Send résumé and references to: **Lyn A. Thet, M.D., Pulmonary Division, Box 3177, Duke University Medical Center, Durham, N.C. 27710. Affirmative Action/Equal Opportunity Employer.**

RESEARCH ASSOCIATE POSITION AVAILABLE. Research program is in the area of molecular basis of calcium action, especially the mechanism of action of the calmodulin family of proteins. Background in molecular biology or biochemistry preferred, but motivation and ability to interact with a multidisciplinary group more important. Send curriculum vitae and names of two references to: **D. Martin Watterson, Department of Pharmacology and Howard Hughes Medical Institute, 723 Light Hall, Vanderbilt University, Nashville, Tenn. 37232.**

RESEARCH/INSTRUCTOR FELLOWSHIP IN EVOLUTIONARY BIOLOGY

The Biology Department at Rice University announces the creation of the Huxley Research Instructorship in Biology in honor of Julian Huxley, first member of the department, on the occasion of the dedication of the Huxley Archives at Rice. This is a 1-year appointment, renewable for a second year, for teaching and research in evolutionary biology. The candidate will be expected to have recently completed a Ph.D. Possible areas of interest will include evolution of sociality in insects, plant ecology, biochemical evolution, physiological adaptation, population dynamics, or other topics which complement present faculty interests. Duties will include an opportunity to do some teaching related to one's specialty and collaborative research with faculty in the department. Stipend is \$18,000 per year. The position carries allowances for research and travel to one national meeting. Applications, including curriculum vitae, a summary of research and teaching interests, and at least three letters of reference, are to be sent to: **Dr. Ronald L. Sass, Department of Biology, Rice University, Houston, Texas 77251; telephone: 713-527-4066.** Application deadline is 1 July 1984. *Rice University is an Equal Opportunity/Affirmative Action Employer.*

Position available: The Department of Urology at the College of Physicians and Surgeons at Columbia University has secured funding for the **MICHAEL CHERNOW RESEARCH SCHOLAR** position in cancer research. Candidates should be qualified in molecular biology as applied to urologic oncogenesis and should have demonstrated capacity for independent investigation. Candidates must achieve joint appointment in an appropriate basic science department in the University at the level of assistant or associate professor. Send curriculum vitae and letters of reference to: **Carl A. Olsson, M.D., Professor and Chairman, Department of Urology, Box 44, College of Physicians & Surgeons, 630 West 168 Street, New York, N.Y. 10032. Columbia University is an Affirmative Action/Equal Opportunity Employer.**

SCIENTIFIC DIRECTOR position in a biotechnology firm responsible for ten research scientists in the area of plant biology to conduct basic research in molecular biology, biochemistry, and genetics. Position is full-time; \$6,000 to \$6,500 per month. The candidate must have outstanding scientific credentials. Minimum requirements include a Ph.D. in molecular biology, with research experience in bacterial molecular genetics, plant molecular biology with an operating knowledge of plant pathology, 5 years or more of experience beyond the Ph.D. degree, and a good publication record. Send curriculum vitae, reprints, a statement of research goals, and three professional references to: **Box 129, SCIENCE.**

POSITIONS OPEN

POSTDOCTORAL FELLOW to join our investigation of gene structure and cellular factors which determine developmental and hormonal control of specific eukaryote gene transcription. Send curriculum vitae to: **Dr. Philip Feigelson, Department of Biochemistry, Institute of Cancer Research, Columbia University, 701 West 168 Street, New York, N.Y. 10032; or telephone: 212-694-6916.**

POSTDOCTORAL POSITION available immediately for study of viral assembly mechanisms, DNA packaging studied through the mechanism of action of purified T4 phage DNA packaging components, and prokaryotic molecular biology. Applicants should have experience in biochemistry, molecular genetics, or recombinant DNA techniques. Send curriculum vitae, reference letters, and availability date to: **Dr. L. W. Black, Department of Biochemistry, University of Maryland Medical School, Baltimore, Maryland 21201. An Affirmative Action/Equal Opportunity Employer.**

POSTDOCTORAL RESEARCH ASSOCIATE position available 1 July 1984 to study ultrastructural localization and role of calcium-binding proteins in tooth formation and intestinal and renal calcium transport. Experience with TEM-prep methods and EM-immunolocalization desirable. Send curriculum vitae and names of three references to: **Dr. A. N. Taylor, Department of Microscopic Anatomy, Baylor College of Dentistry, 3302 Gaston Avenue, Dallas, Texas 75246. Affirmative Action/Equal Opportunity Employer.**

RESEARCH ASSOCIATE to conduct independent research in the control of gene expression in eukaryotes with emphasis on the role of zinc and other metals on chromatin structure and function. The work involves isolation and characterization of nuclei, chromatin, DNA, histones, nonhistone proteins, and nucleic acid polymerases.

Requirements include Ph.D. in biochemistry, 4 years of related research experience, and strong background in biochemical techniques basic to the isolation of nuclei; purification of chromatin proteins and enzymes, for example DNA dependent RNA polymerases, histones and non-histone proteins; ion filtration; affinity and high-pressure liquid chromatography; the use of antibodies for the purification and identification of these proteins; flameless atomic absorption spectroscopy; electronic, circular dichroic, magnetic circular dichroic spectroscopic methods; analytical ultracentrifugation; cloning, specifically isolation of mRNA, the development of a cDNA library, the use of phage DNA inserts, cloning of *E. coli* and *S. cerevisiae* and characterization of the clones, the isolation of DNA, the use of restriction endonucleases, and the sequencing of DNA. Excellent writing skills.

Salary: \$25,920 per year; 35 hours per week.

Send résumé only to: **Robert Willis, Job Order Number 4371, Division of Employment Security, Hurley Building, Government Center, Boston, Mass. 02114.**

SENIOR RESEARCH SCIENTIST position, group head of our Bacterial Genetics Division for biotechnology firm. Responsible for research of the genetics of bacterial pathogens. Position is full-time; \$3,500 to \$4,000 per month. The candidate must have outstanding scientific credentials. Minimum requirements include a Ph.D. in microbial genetics, 3 or more years of experience beyond the Ph.D. degree, and a good publication record. Send curriculum vitae, reprints, a statement of research goals, and three professional references to: **Box 130, SCIENCE.**

SENIOR RESEARCH SCIENTIST to direct our molecular biology of photosynthesis program. Position is full-time; \$3,500 to \$4,000 per month. The candidate must have outstanding scientific credentials. Minimum requirements include a Ph.D. in molecular biology, at least 3 years of experience in the area of plant molecular biology beyond the Ph.D. degree, and a good publication record. Send résumé, reprints, a statement of research goals, and three professional references to: **Box 131, SCIENCE.**

VIROLOGIST

Leading medical diagnostic company seeking a **manager of virology**. Responsibilities include directing research activities leading to the development of new products. Must be familiar with propagation, purification, and characterization techniques. Looking for a strong leader, good communicator, and organizer. Good location, salary, and fringe benefits. Send résumé to: **Box 133, SCIENCE.**

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Hoffmann-La Roche, a leader in the pharmaceutical industry, is seeking applicants for the position of Research Associate in the Department of Chemotherapy. The successful applicant will join an interdisciplinary research team working in the rational design of new antibiotics.

Responsibilities include genetic manipulations of antibiotic targets and genetic analysis of mechanisms of resistance. The position requires a Ph. D. in Molecular Biology or related field with training in recombinant DNA techniques. Postdoctoral experience is a plus. Knowledge of mechanisms of antibiotic action is desirable but not essential.

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Please send resume to: **James G. Christenson, Ph.D., Associate Director, Department of Chemotherapy.**



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The candidate will be involved in an emerging natural products program and should possess an interest in microbial screening as well as experience in growing and developing microorganisms. A strong background in biochemistry and knowledge of classical genetic technology would be desirable. This individual will be in charge of experimental fermentation studies and the development of innovative screening approaches for the discovery of antimicrobial agents.

If interested, send resume including salary history in strict confidence to Personnel Manager.

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POSITIONS OPEN

RESEARCH ASSOCIATE: Postdoctoral position available immediately to study mechanisms of insulin modulation of hexose transport in isolated cardiomyocytes. A strong background in cell physiology or biochemistry is desirable. Please send curriculum vitae, summary of research, and three references to: **Dr. Michael F. Shanahan, Department of Physiology, University of Wisconsin, 1300 University Avenue, Madison, Wis. 53706.**

RESEARCH ASSOCIATE IN PHYSICS

Investigations of crystal growth dynamics and interface instabilities using laser light scattering techniques and videomicroscope computer image analysis. Background in laser techniques or crystal growth is desirable. Initial 1 year appointment at \$18,000 renewable for additional 1 or 2 years.

Send résumé and names of three references to: **Professor H. Z. Cummins, Physics Department, City College—City University of New York, New York, N.Y. 10031.** Application deadline: 15 June 1984. *Equal Opportunity/Affirmative Action Employer.*

SCIENTIFIC DIRECTOR FOR BIOMEDICAL TECHNOLOGY COMPANY—Applications are invited for scientific director for emerging high tech company. The director will have complete responsibility for developing therapeutic and diagnostic reagents. Candidates should have a Ph.D. in biochemistry with experience in immunology, molecular biology (recombinant DNA), and protein purification. The successful candidate will also be experienced in effective management of personnel. Please send résumé, bibliography, and a summary of your research interests and accomplishments to: **Box 128, SCIENCE.**

SENIOR FACULTY POSITION. Mental Retardation Research Center, University of California, Los Angeles (UCLA). A hard-money opening exists for Coordinator of the Developmental Biology Group of the UCLA Mental Retardation Research Center. Candidates with very strong backgrounds in developmental biology of the central nervous system, including genetics, molecular biology, immunology, or pharmacology, are invited to apply. Appointment will be made at the senior professor level. Very competitive compensation dependent upon clinical qualification, if any. Excellent laboratory facilities. Write: **N. A. Buchwald, Director, Mental Retardation Research Center, 760 Westwood Plaza, Los Angeles, Calif. 90024.** *UCLA is an Equal Opportunity/Affirmative Action Employer.*

Positions are now being offered by the Preparatory Offices of the Institute of Biomedical Science (IBMS) and the Central Laboratory for Molecular Biology (CLMB), Academia Sinica, Taiwan, for **SENIOR AND JUNIOR SCIENTISTS** in the following basic and clinical science areas: biochemical and molecular genetics, epidemiology, immunology, microbiology and cell biology, pathology, pharmacology, physiology, structural biology, and virology. Full operation is expected in 1986. Address inquiries to: **IBMS-CLMB Joint Recruitment Committee, Box 190, The Johns Hopkins University, 615 North Wolfe Street, Baltimore, Maryland 21205.** Also, during the FASEB/ASBC/AAI meeting to be held in St. Louis from 4 to 7 June 1984, an interview/inquiry is available through the Placement Services with Dr. Ru-Chih C. Huang or Dr. Pien-Chien Huang.

UNIVERSITY OF CALIFORNIA, BERKELEY. The Department of Psychology invites applications for a **SENIOR POSITION** pending final budgetary approval, at the rank of professor beginning either January or July 1985. The appointment will be made to an individual whose work is central to cognitive psychology. Interested applicants should send by 15 August 1984 complete curriculum vitae and the names of three to five references to: **Dr. Donald A. Riley, Department of Psychology, University of California, Berkeley, California 94720.** *The University of California is an Equal Opportunity/Affirmative Action Employer.*

PROGRAMS

CAREER CHANGE OPPORTUNITY

This unique program offers the candidate with an earned doctorate in the sciences the opportunity to obtain a doctor of optometry (O.D.) degree in two calendar years. Employment opportunities exist in private practice, industry, education, and research. Contact: **The Dean of Admissions, The New England College of Optometry, Room 502, 424 Beacon Street, Boston, Mass. 02115.**

FELLOWSHIPS

POSTDOCTORAL FELLOWSHIP ON NUTRITION AND CANCER

(Available 1 July 1984)

Overall project examines the basic biology and therapeutic responsiveness of multicellular tumor spheroids (MTS) derived from selected types of human malignancies, with emphasis on the mechanisms involved. Candidate will study both the endogenous biochemistry of MTS as well as their responsiveness to alteration of their nutritional environment, with the goal being to identify tumor specific growth control mechanisms. Experience in cell biology/biochemistry desirable. Send résumé and two letters of reference to: **Dr. John M. Yuhas, Department of Radiation Therapy, University of Pennsylvania, 3400 Spruce Street, Philadelphia, Pa. 19104.** Telephone: 215-898-4988.

LUCILLE P. MARKEY PREDOCTORAL FELLOWSHIPS \$9,000 to \$12,000 plus tuition and fees

Two fellowships are available in 1984 in the Department of Physiology and Biophysics and two in the Department of Pharmacology, at the University of Miami School of Medicine, for Ph.D. studies in the following fields: membrane biology and biophysics; neurophysiology; muscle biology; cardiovascular pharmacology; neuropharmacology; developmental neurobiology; and cell-to-cell communication. Applications are sought from highly qualified individuals with backgrounds in the physical, biological, or engineering sciences. Stipend dependent on qualifications. In reply, send undergraduate records, GRE scores, and a letter giving your scientific interests, and arrange for three letters of recommendation.

For consideration in Physiology and Biophysics, write to: **Dr. S. J. Socolar, P.O. Box 016430, Miami, Fla. 33101.** Telephone: 305-547-6821.

For consideration in Pharmacology, write to: **Dr. A. H. Caswell, P.O. Box 016189, Miami, Fla. 33101.** Telephone: 305-547-6643. *The University of Miami is an Affirmative Action/Equal Opportunity Educator and Employer.*

IMMUNODIAGNOSTICS Becton Dickinson Postdoctoral Fellowships

TWO POSTDOCTORAL POSITIONS available fall 1984 to participate in a research program leading to new and novel diagnostics applications of rDNA technology.

- **Molecular Biologist.** Experience in rDNA technology with skills in plasmid and DNA fragment preparation and purification, hybridization techniques, and enzymes used to manipulate and modify nucleic acids.
- **Organic Chemist.** Experience in organic synthesis and well developed skills in chromatography (HPLC and TLC) and spectroscopy (NMR, UV-Vis, and IR). Knowledge in protein chemistry and nucleic acid beneficial.

These are one-year fellowships that may be renewable for a second year. First year salary is \$23,000 plus a \$2,000 relocation allowance. Send curriculum vitae, a description of your research interests, and the names of three references to: **Dr. Daniel B. Wagner, Becton Dickinson and Company Research Center, P.O. Box 12016, Research Triangle Park, North Carolina 27709.**

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POSTDOCTORAL FELLOWSHIP IN BIOCHEMICAL PHARMACOLOGY

Postdoctoral fellowship available to study purine, purine analogue, and nucleic acid metabolism in pathogenic protozoans, principally leishmania, trypanosomes, and giardia. Investigation includes metabolic pathways, enzymology, and effects of purine analogues on RNA and DNA metabolism. Applicant should have working knowledge of biochemistry and molecular biology, as well as the analytical techniques used in a biochemistry laboratory. Please send curriculum vitae to: **J. J. Marr, M.D., University of Colorado Health Sciences Center, Division of Infectious Diseases, Box B-168, 4200 East 9 Avenue, Denver, Colo. 80262.**

The University of Colorado is an Equal Opportunity Employer.

POSTDOCTORAL FELLOWSHIP position available immediately to work on identification and functional analysis of BCG induced inflammatory response. Salary: \$17,000 per year. Send curriculum vitae and three references to: **Dr. Timothy L. Ratliff, Department of Surgery, The Jewish Hospital of St. Louis, 216 South Kingshighway, St. Louis, Mo. 63110.** *An Equal Opportunity Employer.*

COLLOQUIUM

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Vista International Hotel, New York City
5 November 1984

Call For Abstracts

This one-day colloquium will feature seven invited speakers eminent in the field of biological sciences. The program will emphasize research in receptors with one presentation on oncogene research. An important aspect of the meeting will be posters presented by members of the Academy. Members are cordially invited to submit abstracts to the Organizing Committee of the Colloquium for consideration. Members may also sponsor presentations by nonmembers. Those whose abstracts are accepted will be invited to display their posters and to submit a short manuscript. After review, a selected number of these short manuscripts, as well as those of the invited speakers, will be published as a volume of the *ANNALS* of The New York Academy of Sciences. Completed abstract forms are due 15 July.

Plenary Speaker:
Solomon H. Snyder

Johns Hopkins University School of Medicine
Drug and Neurotransmitter Receptors in the Brain

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Ph.D. in Pharmacokinetics with 2-5 years experience preferred in a pharmaceutical industry or university. In this position, part of your responsibilities will include conducting research studies with controlled-release systems.

Manager, Clinical Research.

Ph.D. or Pharm.D. Clinical Research — bronchopulmonary and/or cardiovascular experience desired. Will write clinical protocols, monitor phase II-IV clinical studies, liaison with FDA.

Manufacturing Manager.

BS Engineering/Pharmacy with 3-5 years solid dosage pharmaceutical manufacturing experience. Will be engaged in granulation, coating, blending, fluid bed, processes, compression and encapsulation.

Clinical Research Associate.

A Ph.D. or M.D. Pharmaceutical degree required. Will assist in the conduct of clinical studies. The main therapeutic areas to be covered are cardiovascular and bronchopulmonary.

Research Scientist.

You will require a Ph.D. in Chemistry, Pharmaceutical Chemistry, or Analytical Chemistry with 1-5 years experience in Analytical, GC, HPLC, and familiarity with microcomputers and statistics preferred. Will develop sensitive analytical methods for the analysis of drugs and metabolites in biological fluids.

Pilot Plant Supervisor.

BA/BS with minimum 2 years experience in Industrial pharmaceutical production or pilot plant. Will be involved in general chromatographic techniques utilizing large-scale columns; IEF techniques, protein polymerization and other protein biochemical procedures. Familiarity with GMP essential.

Adhesives Chemist/Engineer.

BS in Science/Polymers with minimum 1 year experience in Packaging, Adhesives, Coating, Paper or Bound Converting.

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