pretation than, say, internal medicine or psychiatry. The method of investigation employed was participant-observation, that firsthand immersion in a social situation that seems on the surface to be natural and straightforward but is in fact devilishly complex and difficult to bring off. Bosk spent 18 months looking and listening, questioning and noting, becoming so far as possible a member of two surgical services at an elite teaching hospital. The time was well spent, since he is able to bring us an insider's view of the making of surgeons and at the same time illuminate more general sociological considerations of how control of performance is exercised and how professionals discipline themselves and others.

The main points of the book are that the training of a surgeon is conducted on both moral and technical themes, that the morality of aspirants is more critically interrogated by their teachers than is their technical facility, and that the social control exerted upon surgical practice is almost exclusively a matter internal to the surgical hierarchy.

The core of the analysis is directed to the several types of errors that surgeons in training (and in practice too) are seen to commit. These are characterized as technical, judgmental, normative, and quasi-normative. Technical errors are the expectable mistakes that occur in surgical procedures, such as an ineptly knotted suture; judgmental errors, again entirely expectable, involve choosing an incorrect operative strategy; normative errors, by far the most serious and heavily censured, are those that constitute a flouting of the code of responsible conduct by which surgeons live, such as neglecting a patient's needs in favor of one's own comfort and convenience or failing to report to a superior when a course of treatment has gone awry; quasi-normative errors occur when a house staffer willfully deviates from particular procedures favored by the attending surgeon under whom he or she is working. Since surgeons are self-regulating to an extraordinary degree, the committer of normative error is seen to be threatening the very moral foundation of the profession. Technical error can be corrected (usually) and is ordinarily forgiven; normative error may or may not be correctable, but it is not readily forgiven because it is thought to reside in the character of the individual, to be an enduring defect that will recurrently undermine the work of the surgical group. Bosk's title, Forgive and Remember, refers to the custom of "forgiving" technical and judgmental errors while at the same time "remembering" them in the event they come to constitute a pattern of technical incompetence. Through the use of rich quotations and astute observations, we are shown how the various errors occur and just what steps are taken in dealing with them; here surgery comes alive for the reader.

The surgeon's world presents itself as active (surgery is described as a "bodycontact sport"), fraught with technical and moral hazards, self-confident, somewhat arrogant and elitist, and in a certain sense precarious: fragile human beings doing God-like things. Bosk evinces a fine sympathy for the rigors of the role, a sympathy that far too many medical sociologists have forsworn. Of the book's many admirable features, none is more salient than the methodological appendix, "The field-worker and the surgeon." Here, in a candid report on his field experience, Bosk presents a fresh and instructive view of this type of investigation. It should be required reading for any aspiring or experienced social scientist.

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Books Received

Abdominal Organ Imaging. Marcus A. Rothschild. PSG Publishing Company, Littleton, Mass., 1979. xiv, 198 pp. illus. \$24.50

Acoustic Emission. A Bibliography with Abstracts. Thomas F. Drouillard. Frances J. Laner, Ed. IFI/Plenum, New York, 1979. xx, 788 pp. \$95. IFI Data Base Library.

Advances in Biochemical Engineering. Vol. 11, Microbiology: Theory and Application. T. K. Ghose, A. Fiechter, and N. Blakebrough, Eds. Springer-Verlag, New York, 1979. viii, 182 pp., illus. \$39.60.

Advances in Clinical Child Psychology. Vol. 2. Benjamin B. Lahey and Alan E. Kazdin, Eds. Plenum, New York, 1979. xvi, 292 pp. \$25.

Botanical Dermatology. Plants and Plant Products Injurious to the Skin. John Mitchell and Arthur Rook. Greengrass, Vancouver, B.C., Canada, 1979 (U.S. distributor, Lea and Febiger, Philadelphia). xiv, 788 pp. \$39.50.

The Built Environment. John Lenihan and William W. Fletcher, Eds. Academic Press, New York, 1978. xii, 172 pp., illus. \$17. Environment and Man, vol. 8.

The Calculation of Molecular Orbitals. John C. Slater. Wiley-Interscience, New York, 1979. viii, 104 pp. \$16.95.

A Double Image of the Double Helix. The Recombinant-DNA Debate. Clifford Grobstein. Freeman, San Francisco, 1979. xiv, 178 pp., illus. Cloth, \$11; paper, \$5.95. A Series of Books in Biology.

Dynamic Topology. Gordon Whyburn and Edwin Duda. Springer-Verlag, New York, 1979. xii, 154 pp. \$12. Undergraduate Texts in Mathematics.

The Ecology and Evolution of Animal Behav-

ior. Robert A. Wallace. Goodyear Publishing Company, Santa Monica, Calif., 1979. xx, 284 pp., illus. Paper, \$9.95. Abridgement of Animal Behavior: Its Development, Ecology, and Evolution (1979).

Fungal Genetics. J. R. S. Fincham, P. R. Day, and A. Radford. University of California Press, Berkeley, ed. 4, 1979. xvi, 636 pp., illus. \$55. Botanical Monographs, vol. 4.

Genetic Engineering. Principles and Methods. Vol. 1. Jane K. Setlow and Alexander Hollaender, Eds. Plenum, New York, 1979. viii, 270 pp., illus. \$29.50.

Genetic Mechanisms of Sexual Development. Proceedings of a symposium, Albany, N.Y., Nov. 1976. H. Lawrence Vallet and Ian H. Porter, Eds. Academic Press, New York, 1979. xiv, 498 pp., illus. \$23. Birth Defects Institute Symposia.

Genetics. John B. Jenkins. Houghton Mifflin, Boston, ed. 2, 1979. xviii, 772 pp., illus. \$18.95.

Human Variation and Human Microevolution. Jane H. Underwood. Prentice-Hall, Englewood Cliffs, N.J., 1979. viii, 246 pp., illus. Paper, \$8.50.

Humanhood. Essays in Biomedical Ethics. Joseph Fletcher. Prometheus Books, Buffalo, N.Y., 1979. xii, 204 pp. \$14.95.

Immunodiagnosis and Immunotherapy of Malignant Tumors. Relevance to Surgery. Papers from a workshop, Günzburg, Germany, Nov. 1977. H.-D. Flad, Ch. Herfarth, and M. Betzler, Eds. Springer-Verlag, New York, 1979. xii, 330 pp., illus. Paper, \$37.80.

Immunological Methods. Ivan Lefkovits and Benvenuto Pernis, Eds. Academic Press, New York, 1979. xxiv, 468 pp., illus. \$36.

Kiva, Cross, and Crown. The Pecos Indians and New Mexico, 1540-1840. John L. Kessell. National Park Service, Washington, D.C., 1979 (available from the Superintendent of Documents, Washington, D.C.). xii, 588 pp., illus. \$12.

Laboratory Handbook of Chromatographic and Allied Methods. O. Mikes, Ed. Translated from the Czech. R. A. Chalmers, Transl. Ed. Horwood, Chichester, England, and Halsted (Wiley), New York, 1979. 764 pp., illus. \$89.50. Ellis Horwood Series in Analytical Chemistry.

Laboratory Microbiology. L. Jack Bradshaw. Saunders, Philadelphia, ed. 3, 1979. x, 344 pp., illus. Paper, \$8.95.

Laboratory Studies of Chick, Pig, and Frog Embryos. Ray L. Watterson, Gary C. Schoenwolf, and Robert M. Sweeney. Burgess, Minneapolis, ed. 4, 1979. viii, 162 pp., illus. Paper, \$9.95.

Laser Art and Optical Transforms. T. Kallard. Optosonic Press, New York, 1979. x, 170 pp., illus. Paper, \$12.50.

Late Biological Effects of Ionizing Radiation. Proceedings of a symposium, Vienna, Mar. 1978. Vol. 2. International Atomic Energy Agency, Vienna, 1978 (U.S. distributor, Unipub, New York). xxii, 596 pp., illus. Paper, \$46. Proceedings Series.

The Legacy of Aging. Inheritance and Disinheritance in Social Perspective. Jeffrey P. Rosenfeld. Ablex Publishing Company, Norwood, N.J., 1979. xvi, 152 pp., illus. \$14.50.

Marketing of Animals and Their Products and Animal Health. Proceedings of a meeting, Washington, D.C., Apr. 1978. Pan American Health Organization, Washington, D.C., 1979. xviii, 168 pp., illus. Paper, \$5. Scientific Publication No. 374.

Markov Chain Models. Rarity and Ex-

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ponentiality. Julian Keilson. Springer-Verlag, New York, 1979. xiv, 184 pp. Paper, \$12. Applied Mathematical Sciences, vol. 28.

Marsh-Estuarine Systems Simulation. Papers from a symposium, Jan. 1977. Richard F. Dame, Ed. Published for the Belle W. Baruch Institute for Marine Biology and Coastal Research by University of South Carolina Press, Columbia, 1979. xii, 260 pp., illus. \$27.50. The Belle W. Baruch Library in Marine Science, No. 8.

Nuclear Physics in Retrospect. Proceedings of a Symposium on the 1930s. Minneapolis, May 1977. Roger H. Stuewer, Ed. University of Minnesota Press, Minneapolis, 1979. xviii, 340 pp., illus. \$25.

Numerical Solution of Differential Equations. Isaac Fried. Academic Press, New York, 1979. xvi, 262 pp., illus. \$23.50. Computer Science and Applied Mathematics.

Ocean Acoustics. J. A. DeSanto, Ed. Springer-Verlag, New York, 1979. xii, 288 pp., illus. \$37.40. Topics in Current Physics, vol. 8.

Psychosocial Determinants of Fertility and Contraception in Venezuela. Snehendu B. Kar and Ramón González-Cerrutti. Pan American Health Organization, Washington, D.C., 1978. viii, 150 pp. Paper, \$3. Scientific Publication No. 365.

Pulverized-Coal Combustion and Gasification. Theory and Applications for Continuous Flow Processes. L. Douglas Smoot and David T. Pratt, Eds. Plenum, New York, 1979. xviii, 334 pp., illus. \$39.50.

Refrigeration and Air-Conditioning. Air-Conditioning and Refrigeration Institute. Prentice-Hall, Englewood Cliffs, N.J., 1979. xii, 864 pp., illus. \$25.

Research Problems in Zooarchaeology. Papers from a meeting, London, Sept. 1976. D. R. Brothwell, K. D. Thomas, and Juliet Clutton-Brock, Eds. Institute of Archaeology, London, 1978. x, 146 pp., illus. Paper, £4.50. Institute of Archaeology Occasional Publication No. 3.

Science and the Second Renaissance of Europe. A. Danzin. Published for the Commission of the European Communities by Pergamon, New York, 1979. xiv, 126 pp., illus. Paper, \$16.

Science of the Times, 2. Arleen Keylin, Ed. Times Books (New York Times), New York, 1979. xvi, 304 pp., illus. \$14.95. Reprinted from the New York Times.

Scientific Foundations of Clinical Biochemistry. Vol. 1, Analytical Aspects. David L. Williams, Ronald F. Nunn, and Vincent Marks, Eds. Heinemann, London, 1978 (U.S. distributor, Year Book Medical Publishers, Chicago). xii, 490 pp., illus. \$55.

Teaching Medical Anthropology. Model Courses for Graduate and Undergraduate Instruction. Harry F. Todd, Jr., and Julio L. Ruffini, Eds. Society for Medical Anthropology, Washington, D.C., 1979 (distributor, American Anthropological Association, Washington, D.C.). 108 pp. Paper, \$5. Society for Medical Anthropology Special Publication No. 1.

Virus-Transformed Cell Membranes. Claude Nicolau, Ed. Academic Press, New York, 1978. xviii, 408 pp., illus. \$43.50.

York, 1978. xviii, 408 pp., illus. \$43.50. The War Game. A Critique of Military Problem Solving. Garry D. Brewer and Martin Shubik. Harvard University Press, Cambridge, Mass., 1979. xx, 386 pp. \$18.50.

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