

biologists to rethink some of the questions faced by their predecessors. But as a history of biology—one of whose tasks is to try to explain why the questions were answered the way they were—it will not bear serious scrutiny. Facile generalizations, startling omissions, factual errors, and antiquated prejudices severely limit its usefulness as a reliable guide to the history of its subject. The extracts are not documented and the "Bibliographical notes" (pp. 251–65) contain, without sufficient notice to the reader, many items that have been superseded. All in all, the author seems to be ignorant of the historian's responsibility to use primary sources and to weigh that evidence against the findings of later investigators.

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Blood

Platelets in Haemostasis. E. HAGEN, W. WECHSLER, F. ZILLIKEN, C. HAANEN, and J. JÜRGENS, Eds. Karger, Basel, 1968 (U.S. distributor, Phiebig, White Plains, N.Y.). x + 242 pp., illus. \$16.60. *Experimental Biology and Medicine*, vol. 3.

The blood platelets play a dominant role in the physiology of hemostasis, and their variously impaired functions are associated with hemorrhagic diseases. Furthermore, intravascular clotting and thrombosis involve the platelets. This highlights their importance, because widespread manifestations of thrombosis and thrombohemorrhagic diseases present one of the great challenges of our time in clinical medicine. The tremendous attention given the platelets during the past two decades thus represents attention where it counts, and this new book comes near to summarizing the present-day perspective.

Platelets are round elements from 2 to 5 microns in diameter. "They extend and retract pseudopods, adhere to collagen, cohere to each other, undergo fusion and release substances that precipitate some of the events . . . culminating in hemostasis, coagulation, and final dissolution of the blood clot." Inside the limited membrane is a fine granular substance (hyalomer), which is distinguished from various types of vacuoles and granules. The vacuoles and granules have mitochondria, glyco-

gen particles, and α -granules with their platelet factor 3, which is so very important for the clotting of blood. There are also microtubules and 5-hydroxytryptamine organelles. Ribosomes are very rare. The actomyosin-like substance called thrombasthenin is an adenosine triphosphatase and functions in clot retraction to express serum. The platelets contain numerous substances, including fibrinogen, antiheparin material, fibrinolytic inhibitor, fibrinoplastin, and a precursor of transglutaminase, which has a role in forming ϵ (γ -glutamyl) lysine crosslinks in the fibrin clot.

Adenosine diphosphate is the center of attention in platelet aggregation, the release reaction, and viscous metamorphosis (VM) and could very well turn out to be recognized as the essential pathway in VM. Adrenaline promotes platelet aggregation, and this opens the possibility for thrombogenesis through the release of adrenaline which occurs under stress. Platelet VM seems to be triggered by various external agents through an increase in membrane permeability. The search is on for compounds that will inhibit platelet aggregation with the hope of finding therapeutic agents for use in prophylaxis or where thrombogenesis is recognized. Examples of inhibitors are adenosine, prostaglandin, *N*-methylmaleimide, vasodilator drugs, and α -adrenergic blocking agents.

I amused myself with several items in the book. Lüscher states that it took a long time to recognize that thrombin can produce VM, and thinks the retarding factor presented a variety of obstacles. I thought it was because thrombin had first to be isolated. I remember the sample of thrombin I made for DeRobertus *et al.* which they used in their electron microscope studies of the action of thrombin on blood platelets (*Blood*, vol. 8, 1953, p. 587). They clearly demonstrated a profound effect of thrombin on platelet integrity. I made a quick survey of the 537 references in the book. About 80 percent of the citations are of papers more recent than 1958. Approximately 18 percent of these are for the year 1966. The number then declines to 35 percent for 1958. It is evident that emphasis is on recent contributions.

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Books Received

Angular Momentum. D. M. Brink and G. R. Satchler. Clarendon (Oxford University Press), New York, ed. 2, 1968. x + 160 pp., illus. Paper, \$3.50. Oxford Library of the Physical Sciences.

Annual Review of Information Science and Technology. Vol. 3. Carlos A. Cuadra, Ed. Encyclopaedia Britannica, Chicago, 1968. x + 462 pp., illus. \$15.

The Art of Organic Forms. Philip C. Ritterbush. Smithsonian Institution Press, Washington, D.C., 1968. (distributor, Random House, New York). x + 152 pp., illus. \$10.

Aspects of Hydrocarbon Radiolysis. T. Gäumann and J. Hoigné, Eds. Academic Press, New York, 1968. x + 274 pp., illus. \$11.

Automatic Information Organization and Retrieval. Gerard Salton. McGraw-Hill, New York, 1968. xiv + 514 pp., illus. \$14.50.

Behind These Doors. Science Museum Makers. Margery Facklam. Rand McNally, Chicago, 1968. 144 pp., illus. \$4.50.

Biological Interfaces: Flows and Exchanges. Proceedings of a symposium. Little, Brown, Boston, 1968. xii + 326 pp., illus. \$7.50. New York Heart Association Basic Science Symposia. Also published as a supplement to the *Journal of General Physiology*, Vol. 52, No. 1, part 2.

Bird Navigation. G. V. T. Matthews. Cambridge University Press, New York, ed. 2, 1968 + 198 pp., illus. Cloth, \$7; paper, \$2.45. Cambridge Monographs in Experimental Biology, No. 3.

Black Rage. William H. Grier and Price M. Cobbs. Basic Books, New York, 1968. x + 214 pp. \$5.95.

A Ceremonial Ox of India. The Mithan in Nature, Culture, and History. With Notes on the Domestication of Common Cattle. Frederick J. Simoons, assisted by Elizabeth S. Simoons. xvi + 324 pp., illus. \$11.

Chemical Warfare. A Study in Restraints. Frederick J. Brown. Princeton University Press, Princeton, N.J., 1968. xx + 356 pp. \$9.

Classical Electromagnetism via Relativity. An Alternative Approach to Maxwell's Equations. W. G. V. Rosser. Plenum, New York; Butterworths, London, 1968. x + 294 pp., illus. \$12.50.

Climate and Agriculture. An Ecological Survey. Jen-Hu Chang. Aldine, Chicago, 1968. xvi + 304 pp., illus. \$9.75.

The Closed Corporation. American Universities in Crisis. James Ridgeway. Random House, New York, 1968. xii + 276 pp. \$5.95.

Cooley and Sociological Analysis. Albert J. Reiss, Jr., Ed. University of Michigan Press, Ann Arbor, 1968. xii + 178 pp. \$7.50.

The Crime of Punishment. Karl Menninger. Viking, New York, 1968. xiv + 306 pp. \$8.95.

Crystal Structures. Vol. 4, Miscellaneous Inorganic Compounds, Silicates, and Basic Structural Information. Ralph W. G. Wyckoff. Interscience (Wiley), New York, ed. 2, 1968. viii + 568 pp., illus. \$25.

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