topogenous structure on a set $E$ is a family of partial orders on $P(E)$, satisfying certain natural conditions. The family defining a topology, for example, consists of a single order, $A < B$ meaning that $B$ is a neighborhood of $A$.

The subject is treated in exhaustive detail—too exhaustive for almost anyone. (An index of notation contains more than 100 entries.) Fortunately, the introduction includes an excellent summary of the principal definitions and results.

The reader should have some background in general topology. The book proper starts with a review of elementary facts about relations in general and continues through 20 chapters of painstaking discussion of "semi-topogenous," "topogenous," "perfect," "biperfect," "simple," and "symmetric" orders or structures, and of generalizations to them of the definitions and main theorems about continuity, product spaces, separation axioms, convergence of filter bases, completion, and compactification.

Let $E$ be a set. A *topogenous order* on $E$ is a relation $<$ on $P(E)$ satisfying: $0 < 0$; $E < E$; $A < B$ implies $A \subset B$; $A \subset A' < B' \subset B$ implies $A < B$ (so far, a "semi-topogenous" order); and $A < B$ and $A' < B'$ implies $A \cup A' < B \cup B'$ and $A \cap A' < B \cap B'$. A topogenous order $<$ is said to be *perfect* if $A_i < B_i$ implies $\bigcup_i A_i < \bigcup_i B_i$ (over arbitrary index sets), *symmetric* if $A < B$ implies $E - B < E - A$. A *syntopogenous structure* on $E$ is a family of topogenous orders directed by $\subset$ and such that for each $<$ there exists $<'$ such that $A < B$ implies $A <' C <' B$ for some $C$. Such a structure is called perfect or symmetric in case all its members are perfect or symmetric, respectively. A syntopogenous structure with just one member is *simple*. The familiar structures arise from taking the conditions two at a time: simple and perfect $\longleftrightarrow$ topology; simple and symmetric $\longleftrightarrow$ proximity; perfect and symmetric $\longleftrightarrow$ uniformity. For example, if $\{<\}$ is perfect, then the family $\{G: G < G\}$ is a topology on $E$; and the correspondence thus defined from simple, perfect syntopogenous structures to topologies is one-one and onto. Clearly, this work should be of great interest to those who deal with the foundations of general topology.

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## New Books

### Biological and Medical Sciences

**Physical Factors and Modification of Radiation Injury**. Harold E. Whipple, Ed. New York Acad. of Sciences, New York, 1964. 716 pp. Illus. Paper, $12. Sixty-five papers, some of which were presented at a conference sponsored by the Academy on 29 November–1 December 1962. The others are the result of meetings of the Conference on Modification of Radiation Injury by Bone Marrow Transplantation and Chemical Protection—a joint session with the Academy's conference on 1 December and separate sessions at the Sloan-Kettering Institute for Cancer Research on 2–3 December 1962. The volume is published as vol. 114 (art. 1) of the Academy's *Annals*.

**Physical Properties of the Steriod Hormones**. Lewis L. Engel, Ed. Macmillan, New York, 1963. 496 pp. Illus. $15.

**Physiological Foundations of Behavior**. Charles M. Child. Hafner, New York (reprint of 1924 edition), 1964. 348 pp. Illus. $7.50.

**The Physiology and Biochemistry of Herbicides**. L. J. Audus, Ed. Academic Press, New York, 1964. 575 pp. Illus. $16.50.

**Primary Processes in Photosynthesis**. Martin D. Kamen. Academic Press, New York, 1963. 195 pp. Illus. $5.50.

**Principles of Preventive Psychiatry**. Gerald Caplan. Basic Books, New York, 1964. 320 pp. $6.50.

**Problems of Sleep and Dream in Children**. Ernest Harms, Ed. Pergamon, London; Macmillan, New York, 1964. 153 pp. $6.50.

**Problems of the Biochemistry of the Nervous System**. A. V. Palladin, Ed. Translated from the Russian edition (Kiev, 1959) by F. S. Freisinger. Pergaman, London; Macmillan, New York, 1964. 342 pp. Illus. $11.50.

**Radiation Medicine**. A. I. Burnazyan and A. V. Lebedinskii, Ed. Translated from the Russian edition (Moscow, 1960) by Harry Asher. Pergamon, London; Macmillan, New York, 1964. 375 pp. Illus. $12.

**Radiation, Radioactivity, and Insects**. R. D. O'Brien and L. S. Wolfe. Academic Press, New York, 1964. 227 pp. Illus. Paper, $3.45; cloth, $5.95.

**Recent Advances in Food Science**. vol. 3, *Biochemistry and Biophysics in Food Research*. J. Muil Leitch and Douglas N. Rhodes, Eds. Butterworth, Washington, D.C., 1963. 339 pp. Illus. $13.95 (31 papers).

**Residue Reviews**. Residues of pesticides and other foreign chemicals in foods and feeds. vol. 4. Francis A. Gunther, Ed. Academic Press, New York; Springer, Berlin, 1963. 175 pp. Illus. $6.

**Separation Methods in Biochemistry**. C. J. O. R. Morris and P. Morris. Interscience (Wiley), New York, 1964. 895 pp. Illus. $17.50.

**The Septum of the Cat**. Orlando J. Andy and Heinz Stephan. Thomas, Springfield, Ill., 1964. 96 pp. Illus. $6.75.

**Short Guide to Geo-Botanical Surveying**. S. V. Viktorov, Ye A. Vostokova, and D. D. Vyshivkin. Translated from the Russian edition (Moscow, 1959) by J. M. Maclennan. Pergamon, London; Macmillan, New York, 1964. 170 pp. Illus. $9.

**Social Behavior and Organization Among Vertebrates**. William Etkin, Ed. Univ. of Chicago Press, Chicago, 1964. 319 pp. Illus. $7.50.

**Standard Methods of Clinical Chemistry**. vol 4. David Seligson, Ed. Academic Press, New York, 1963. 277 pp. Illus. $7.50.

**Stochastic Models in Medicine and Biology**. Proceedings of a symposium (Madison, Wis.), June 1963. John Gurland, Ed. Univ. of Wisconsin Press, Madison, 1964. 409 pp. Illus. $6 (13 papers).

### General

**Philosophy of Science**. The Delaware Seminar. vol. 2, 1962–1963. Bernard Baumrin, Ed. Interscience (Wiley), New York, 1963. 569 pp. Illus. $14.50. Pt. 1, Scientific Explanation, Prediction, and Theories (contributors: P. K. Feyerabend, N. Rescher, W. Sellars, S. Bromberger, M. Scriven); pt. 2, Space and Time (contributors: D. Shapere, A. Grünbaum, H. Putnam); pt. 3, Particles, Fields, and Quantum Mechanics (contributors: E. L. Hill, A. Pais, P. Suppes); pt. 4, Induction and Measurement (contributors: W. C. Salmon, B. Ellis); pt. 5, Science and Man (contributors: E. C. Pollard, R. B. Lindsay, S. M. McCurrin); pt. 6, Cosmology (contributors: N. R. Hanson and J. A. Wheeler).

**Research with Primates**. Proceedings of a conference held near Beaverton, Ore., in May 1962. Donald E. Pickering, Ed. Oregon Regional Primate Research Center, Beaverton, 1963 (order from Tektronix Foundation, Beaverton). 108 pp. Illus. $2.50. Dedication of the Oregon Regional Primate Research Center.

**Royal Society of London, Yearbook, 1964**. The Society, London, 1964. 333 pp. $3.15. Contents: Past officers, calendar; lists of members, committees and boards (including names of those who serve on them); lists of medals, lectures, publications, and the various fellowships, professorships, and appointments. The information is correct as of 31 December 1963.

**A Russian Scientific Reader**. E. J. D. Warne. Allen and Unwin, London, 1964. 82 pp. Paper, 10s.

**Science and Ideas**. Selected readings. Arnold B. Arons and Alfred M. Bork, Eds. Prentice-Hall, Englewood Cliffs, N.J., 1964. 288 pp. Illus. Paper, $3.95.

**Science Citation Index**. An international interdisciplinary index to the literature of science. vols. 1–5. Prepared and published by the Inst. for Scientific Information, Philadelphia, 1963. 2704 pp. $700.

**Word Association Norms**. Grade school through college. David S. Palermo and James J. Jenkins. Univ. of Minnesota Press, Minneapolis, 1964. 479 pp. $7.50.

**The Year of the Gorilla**. George B. Schaller. Univ. of Chicago Press, Chicago, Ill., 1964. 272 pp. Illus. $5.95.

**You and Your Cells**. Leo Schneider. Harcourt, Brace and World, New York, 1964. 157 pp. Illus. $3.75.