put off by statements in the first chapters which imply that the only significant contributions to the theory of turbulence have been made by Russian workers. Aside from this slight flaw, the book is an invaluable introduction to the field. The translation is readable both from the language and technical points of view.

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Space Travel Problems

Human Factors in Jet and Space Travel. A medical-psychological analysis. S. B. Sells and Charles A. Berry, Eds. Ronald, New York, 1961. xvi + 386 pp. Illus. $12.

The objective of this book is to present a comprehensive view of the human factors involved in operating high-performance aircraft and space vehicles. The material is well chosen to portray the joint effort of many disciplines, and it is presented in a clear, objective fashion. Although the lay reader may have difficulty with some sections, by and large those with a scientifically oriented background will find much of interest. The duplication of material, almost inevitable in a book written by 13 different authors, is very limited, and the style has a certain similarity and continuity throughout. Each chapter is well documented with factual information, and the book is relatively free of the flights of fancy so characteristic of some of the literature in the field of space exploration. There are selected bibliographies at the end of each chapter. The comprehensive subject index will be useful.

The content is primarily concerned with the human responses to the wide variety of stimuli encountered in flight at all altitudes. The medical and psychological problems of jet and space travel receive extensive treatment, but not out of proportion to their importance. The chapters range from the basic aspects of selection and skill of human operators to a detailed consideration of the tasks to be performed with safety and efficiency. Even the problems anticipated with group behavior, or the assemblage of several operators in a space vehicle, receive consideration. The area of radiobiology in space flight is analyzed extensively. The analysis of dysbarism, the symptoms resulting from evolved gases with extreme changes in pressure, constitutes an original and informative section. Preventive medicine and the control of contagious diseases are discussed, and the chapter on accidents is very informative. One of the most comprehensive chapters deals with cabin air conditioning, toxic exposures, decompression, radiation, acceleration, and noise. The engineered environment of the space vehicle, including the operational aspects of space flight, is carefully analyzed by well-qualified authorities.

In general, the book is an excellent introduction to the wide range of problems encountered thus far, and a forerunner in the area of the difficult problems remaining to be solved before travel, within and outside the earth's atmosphere, can be undertaken with safety and comfort.

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Russian Dictionary

Botanical Dictionary. Russian-English-German-French-Latin. Compiled by N. N. Davidov. F. Kh. Bakhteev, Ed. Foreign Language Scientific and Technical Dictionaries, Moscow, 1960. 335 pp. R 1.16.

Although many Russian botanical words, because of similarity to Western terms, can be translated easily by botanists who have a little familiarity with the language (beyond the alphabet) and even more words can be worked out by those who have some knowledge of the language and a little imagination, the remaining technical vocabulary bears little resemblance to its English-language counterpart and much of it is not found even in the best Russian-English dictionaries.

This botanical dictionary uses Russian as the basic language for the primary alphabetical listing and provides translations of the terms into four languages: English, German, French, and Latin. Each entry is numbered, and there are appended indexes to the four languages, which use the numerical system to locate the Russian equivalent in the main body of the work. Thus, the dictionary serves equally well for translating from the four languages into Russian. The 5806 entries are mostly in the area of gross morphology, so the dictionary will be of greatest use to plant taxonomists, anatomists, and morphologists. About 30 percent of the terms are plant names, translated into the vernacular in all languages except Latin, in which the binomial, author, and family are given. The translations of technical words are generally adequate, although frequently the English equivalents are unwieldy terms such as *dipyrenous, ramentaceous,* or *guttiflorous* which might better be translated into short descriptive phrases. There appear to be few factual errors; I find it difficult to believe that *bazidia* means *spore mother cell* as the dictionary indicates. The North American audience will object to the listing of *bergamot* as *Citrus bergamia* Risso, although this is in keeping with the Old World orientation of the dictionary terminology. *Sexless* is not the best English translation for *byezpolnii,* which is given better treatment as *geschlechtlos* and *asexuel* in German and French. Frequently, more than one equivalent is given so that some choice may be exercised in selecting the proper word. Occasionally, however, as in the choice of *rotten* or *corrupt* for *gniloi,* the user may decide upon another unlisted but more suitable word.

This dictionary will be of little use to botanists working outside the areas mentioned above, despite its title. Nevertheless, once its limitations are recognized, the dictionary will be useful to some botanists who have a minimal knowledge of Russian, and it can even be used by those who have no knowledge of the language. A comprehensive botanical, or better yet, biological Russian-English dictionary aimed at an English-speaking audience is desperately needed, but until such a dictionary is published this one will fill part of the existing vacuum.

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Anticipated Trend

Immunochemical Approaches to Problems in Microbiology. Michael Heidelberger and Otto J. Plescia, Eds. Rutgers University Press, New Brunswick, N.J., 1961. x + 402 pp.

It is probably safe to predict that in this next decade immunochemistry will be adapted to even more investigational pursuits in microbiology than during its entire first 50 years. Microbiology itself

has been enlarged to include nearly every aspect of biological and biochemical research. As attention is focused continually downward into the microscopic and submicroscopic world in attempts to define and resolve the nuances of biological function, the sensitivity and discriminatory power of the immunochemical discipline, methods, and techniques will find continually wider application.

Perhaps in anticipation of this trend, Heidelberger and Plescia assembled a notable international body of panelists. Five panels were organized to present and discuss recent advances in the quantitative aspects of specificity, multiplicity of bacterial antigens, immunochemistry of viruses, "non-specific" immunity, and the biosynthesis of antigens and antibodies. In this *Proceedings* volume, the comments made during the open discussions are published following the formal presentations of each panel; more frequently than not, those discussions emerge just as meaty and thoughtful as the prepared manuscripts.

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New Books

Biological and Medical Sciences

Advances in Protein Chemistry. vol. 15. C. B. Anfinsen, Jr., Kenneth Bailey, M. L. Anson, and John T. Edsall, Eds. Academic Press, New York, 1960. 457 pp. Illus. $13.

Biology. Relis B. Brown. Heath, Boston, Mass., ed. 2, 1961. 666 pp. Illus.

Biology through Microbes. A laboratory guide. Alfred S. Sussman. Univ. of Michigan Press, Ann Arbor, 1961. 202 pp. Illus.

Blood and Other Body Fluids. Analysis and compilations by Philip L. Altman. Dorothy S. Dittmer, Ed. Federation of American Societies for Experimental Biology, Washington, D.C., 1961. 557 pp. $10. A continuation of the handbook series prepared under the auspices of the National Acad. of Sciences–National Research Council.

Blood Platelets. Shirley A. Johnson, Raymond W. Monto, John W. Rebuck, and Robert C. Horn, Jr., Eds. Little, Brown, Boston, Mass., 1961. 755 pp. Illus. $18.50. Proceedings, 10th Henry Ford Hospital Symposia, held in March 1960.

Chemicals in Your Food and in Farm Produce. Their harmful effects. Franklin Bicknell. Emerson Books, New York, 1961. 192 pp. $2.95.

Elementary Human Physiology. A text for undergraduates. Terence A. Rogers. Wiley, New York, 1961. 429 pp. Illus. $6.50.

Experimental Immunochemistry. Elvin A. Kabat and Manfred M. Mayer. Thomas, Springfield, Ill., ed. 2, 1961. 917 pp. Illus. $26.50.

Microbial Cell Walls. M. R. J. Salton. Wiley, New York, 1960. 103 pp. Illus. $3.50. 1960 CIBA lectures in microbial biochemistry, presented at Rutgers University.

Microbial Reaction to Environment. Eleventh symposium of the Society for General Microbiology. Cambridge Univ. Press, New York, 1961. 426 pp. Illus. + plates. $7.50.

Progress in Biophysics and Biophysical Chemistry. vol. 11. J. A. V. Butler, B. Katz, and R. E. Zirkle, Eds. Pergamon Press, New York, 1961. 282 pp. Illus. $12.50.

Protides of the Biological Fluids. H. Peeters, Ed. Elsevier, Amsterdam, Netherlands, 1961 (order from Van Nostrand, Princeton, N.J.). 366 pp. Illus. $16.75. Proceedings of the colloquium held in Bruges, Belgium, in 1960.

Economics and Social Sciences

The Dynamics of Communism in Eastern Europe. R. V. Burks, Princeton Univ. Press, Princeton, N.J., 1961. 256 pp. Illus. $5.

Economics. An introductory analysis. Paul A. Samuelson. McGraw-Hill, New York, ed. 5, 1961. 863 pp. Illus. $7.50.

The Lolo of Liang Shan (Liang-shan I-chia). Lin Yueh-hua. Translated by Ju-Shu Pan. Wu-Chi Liu, Ed. HRAF Press, New Haven, Conn., 1961 (order from Taplinger, New York). 167 pp. Illus. $3.

Measurement and Evaluation in Psychology and Education. Robert L. Thorndike and Elizabeth Hagen. Wiley, New York, ed. 2, 1961. 610 pp. Illus.

Tristes Tropiques. C. Levi-Strauss. Translated by John Russell. Criterion Books, New York, 1961. 404 pp. Illus. + plates. $12.50.

General

Arms Control, Disarmament, and National Security. Donald G. Brennan, Ed. Braziller, New York, 1961. 475 pp. $6.

Careers and Opportunities in Physics. Philip Pollack. Dutton, ed. 2, New York, 1961. 159 pp. Illus. $3.75.

The Forbidden Voyage. Earle Reynolds. McKay, New York, 1961. 281 pp. Illus. $4.95.

Human Heredity. Jean Rostand (Translated by Wade Baskin from *L'Heredité Humaine*). Philosophical Library, New York, 1961. 139 pp. $4.75.

A Prelude to Medical History. Félix Martí-Ibãnez. MD Publications, New York, 1961. 277 pp. Illus. $5.75.

Scientific Russian Guide. Handbook for students and professionals interested in scientific Russian. Mary A. Emery and Serge A. Emery. McGraw-Hill, New York, 1961. 198 pp. $4.50.

Mathematics, Physical Sciences, and Engineering

Abundance of Chemical Elements. V. V. Cherdyntsev. Translated by Walter Nichiporuk. Univ. of Chicago Press, Chicago, Ill., 1961. 324 pp. Illus. $10.

Advanced Calculus. An Introduction to analysis. Watson Fulks. Wiley, New York, 1961. 536 pp. Illus. $11.25.

Astronautics. Fundamentals of dynamical astronomy and space flight. Arthur I. Berman. Wiley, New York, 1961. 365 pp. Illus. $9.25.

Chemistry. Michell J. Sienko and Robert A. Plane. McGraw-Hill, New York, ed. 2, 1961. 636 pp. Illus.

Codes for Reactor Computations. International Atomic Energy Agency, Vienna, Austria, 1961 (order from International Publications, New York 22). 538 pp. Illus. $8. Proceedings of the symposium held in April 1960.

College Algebra. Paul K. Rees and Fred W. Sparks. McGraw-Hill, New York, ed. 4, 1961. 442 pp. Illus. $6.50.

Design and Construction of Ports and Marine Structures. Alonzo DeF. Quinn. McGraw-Hill, New York, 1961. 539 pp. Illus. $16.

Electronic Packaging with Resins. A practical guide for materials and manufacturing techniques. Charles A. Harper. McGraw-Hill, New York, 1961. 351 pp. Illus. $11.

Flammenphotometrie. R. Herrmann and C. Th. J. Alkemade. Springer, Berlin, 1960. 402 pp. Illus. + plates. DM. 88.

Gas and Air Compression Machinery. Lyman F. Scheel. McGraw-Hill, New York, 1961. 358 pp. Illus. $12.

Handbook of Chemistry. Norbert Adolph Lange, Ed. McGraw-Hill, New York, ed. 10, 1961. 1983 pp. $11.

An Introduction to Applied Anisotropic Elasticity. R. F. S. Hearmon. Oxford Univ. Press, New York, 1961. 146 pp. Illus. 35s.

Introduction to Mechanics of Continua. William Prager. Ginn, Boston, Mass., 1961. 240 pp. Illus. $8.

Introduction to Physiological and Pathological Chemistry. L. Earle Arnow. Revised with the assistance of Marie C. D'Andrea. Mosby, St. Louis, Mo., ed. 6, 1961. 490 pp. Illus. $5.50.

Introductory Chemistry. Otto W. Nitz. Van Nostrand, Princeton, N.J., 1961. 639 pp. Illus. $4.95.

Measure, Lebesgue Integrals, and Hilbert Space. A. N. Kolmogorov and S. V. Fomin. Translated by Natascha Artin Brunswick and Alan Jeffrey. Academic Press, New York, 1961. 159 pp. $4.

Methods of Celestial Mechanics. Dirk Brouwer and Gerald M. Clemence. Academic Press, New York, 1961. 610 pp. $15.50.

Name Reactions in Organic Chemistry. Alexander R. Surrey. Academic Press, New York, ed. 2, 1961. 288 pp. $8.

Nuclear Pulse Spectrometry. Robert L. Chase. McGraw-Hill, New York, 1961. 228 pp. Illus. $8.50.

Physical Oceanography. vols. 1 and 2. Albert Defant. Pergamon, New York, 1961. vol. 1, 745 pp.; vol. 2, 606 pp. Illus. Set, $35.

The Physical Theory of Transistors. Leopoldo B. Valdes. McGraw-Hill, New York, 1961. 384 pp. Illus. $10.50.

Physics and Chemistry of the Earth. vol. 4. L. H. Ahrens, Frank Press, Kalervo Rankama, and S. K. Runcorn. Pergamon, New York, 1961. 322 pp. Illus. $10.