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.

GEORGE WEISS
University of Maryland

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.

ROSS A. MCFARLAND
Guggenheim Center for Aviation Health and Safety,
Harvard School of Public Health

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.

ROBERT ORNDUFF
Department of Biology,
Reed College

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