

for such important considerations as land use and settlement get relatively meager treatment.

However, the book has much charm and interest, even practical value for those interested in our own peat lands, such as the Everglades of Florida or the Sacramento-San Joaquin delta of California. Astbury has a fascinating theme—man's mighty struggle against water and the conversion of a marshy waste into the major tract of first-class arable land in the British Isles. Agriculturalists, reclaimers, geographers, and others with like interests will derive much instruction and diversion from this book.

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Soviet Research in Crystallography.

Chemistry Collection No. 5, vols. 1 and 2. English translation. Consultants Bureau, New York, 1958. 618 pp. vol. 1, \$30; vol. 2, \$100; set, \$115.

These two volumes contain selected papers from Russian journals translated into English, reproduced by photo-offset, and bound in paper. In spite of the title and supposed aim of this publication, it contains little of interest to the crystallographer. Volume 1 contains 60 papers in the general field of inorganic chemistry; volume 2, 33 papers dealing with a miscellaneous collection of topics, including x-ray spectrography, structure of glasses, and crystal growth.

It is of great interest to those of us who have no way to penetrate the language barrier to be able to read through these Russian papers in the way that we read through the Western journals in the library. It is a pleasure to discover papers such as that by D. A. Petrov and N. D. Nagoskaya on the phase diagram of the Al-Cu-Mg-Si system—a strikingly comprehensive and beautiful study of an exceedingly complex system. It is noticeable, however, that many techniques which are regarded as routine in this country are not made use of, apparently, in Russian laboratories: for example, x-ray methods are only rarely used in phase-diagram studies, and counter methods are not used at all in x-ray spectrography. One paper on heteropoly-molybdate complexes displays a great confusion about the structural chemistry of these compounds—a confusion which is shared by most American chemists.

The main points of criticism of these volumes must be directed toward the editorial work, which leaves a great deal to be desired. The editors apparently have no concept at all of the meaning of the term *crystallography* to scientists, espe-

cially crystallographers. The bulk of volume 1 is devoted to phase-diagram studies of such systems as $\text{CuSO}_4\text{—H}_2\text{SO}_4\text{—H}_2\text{O}$; $\text{LiCl—BeCl}_2\text{—H}_2\text{O}$; $\text{H}_3\text{BO}_3\text{—KNO}_3\text{—H}_2\text{O}$; $\text{KNO}_3\text{—KCl—KBr}$; and $\text{K}_2\text{SO}_4\text{—K}_2\text{CrO}_4\text{—KNO}_3$, most of which depend on classical thermal methods. None of these papers can in any sense be classified under crystallography. Volume 2 does contain some articles of crystallographic interest, such as papers on the structure of polyamides of dipheic acid (by S. S. Spassky and M. A. Mikhailova), optical properties and structure of polyiodides (by D. A. Godina and G. P. Faerman), crystalline modifications of plumbic fluoride (by Ya. Sauka), and oxonium ion in crystal lattices of inorganic compounds (by N. V. Shishkin) and a series of papers by V. Kurbatov on "The nature of crystals," which discuss binding energies in various types of crystals. This volume also contains a series of papers of particular (although not crystallographic) interest on the techniques of x-ray spectrography, by E. E. Vainshtein and his colleagues. There are no papers at all on crystal structure analysis in the modern sense.

Obviously, the editors intended to present in these books merely a sampling of papers from the Russian journals in the period 1949–1955. The merit of such a project might well be discussed, but even if it is assumed to be worth while, the result is spoiled by a complete lack of judgment in the selection of papers. During the period covered, scores of papers of great crystallographic interest appeared in the Russian journals. Why were the works of such eminent crystallographers as G. S. Zhdanov, N. V. Belov, and A. I. Kitaigorodskii completely ignored? Crystallographers would have welcomed complete translations of their works on such important crystal structures as heavy metal thiocyanate complexes, diopside, and epidote; on contributions to the theory of structure determination; and on many other topics well known to Western scientists through abstracts. Such glaring negligence could only be a result of failure to seek the advice of anyone connected with the field of crystallography.

The quality of the translations cannot be properly judged by one who is not familiar with the Russian language, but the general intelligibility of the texts appears to be fairly good, although occasional awkward passages and phrases are evident. The origin of the papers is identified only by a system of code numbers, which indicate the journal and year but not the page numbers. The code numbers refer to some master translation file which presumably is available to the reader through services supplied by the publishers. References given in the papers

themselves are, of course, translated in the normal manner. The quality of reproduction is fair, but in the copy examined there are several missing or blank pages. One paper is reproduced twice. The standards of quality do not seriously impair the usefulness of the material presented (except where a page is missing), but they fall somewhat short of those set by a similar project sponsored by the American Institute of Physics.

Strangely, there is no explanatory information anywhere in the two volumes concerning this ambitious translation project. No mention is made of any of the editors responsible for the work. It can only be said that the volumes are valuable in that they will make available in useful form in the libraries some parts of the Russian scientific literature, but such an investment for the personal library will generally be out of the question.

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Discussions on Child Development. A

consideration of the biological, psychological, and cultural approaches to the understanding of human development and behavior. *Proceedings of the World Health Organization Study Group on the Psychobiological Development of the Child*: vol. III, third meeting, Geneva, 1955. J. M. Tanner and Bärbel Inhelder, Eds. International Universities Press, New York, 1958. 223 pp. \$5.

This volume continues the *Discussions on Child Development* series, of which the earlier two volumes were reviewed in the *Scientific Monthly* [84, 323 (1957)]. The sessions focused on the development of sex differences and of individuality or ego identity. As a basis for discussion of the first topic there were presentations by Margaret Mead on the "Childhood genesis of sex differences in behavior" and by Erik Erikson on "Sex differences in the play construction of twelve-year-old children." To introduce the second topic, presentations were made by Erik Erikson on "The syndrome of identity diffusion in adolescents and young adults" and on "The psychosocial development of children." In addition to the members of the study group, D. Buckle, Julian S. Huxley, and Raymond de Saussure participated in the discussions. The volume is a well-edited condensation of a week's discussion that moves forward at a lively pace.

But because the discussion moves freely without close contact with data, the reader who seeks quantified and verified statements will be disappointed. Even in the presentation of the mate-

rial on sex differences in play construction, where condensation and presentation in statistical terms is clearly possible, what is presented is an account of individual cases illustrated by diagrams of individual constructions. How does one advance from a combination of anecdotes and observations on individual persons and individual primitive societies to generalizations that make possible the prediction and understanding of human behavior? Erik Erikson presents a diagram of various stages in the gradual unfolding of the human personality through psychosocial crises which is tied to broad age categories. When one examines the evidence presented in support of this summarization, one finds its basis to be psychoanalytic theory rather than an extensive series of empirically derived principles based on an adequate sampling of human beings at various developmental levels, with appropriate attention to statistical significance.

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Economics of Mental Illness. Joint Commission on Mental Illness and Health, Monograph Series, No. 2. Rashi Fein. Basic Books, New York, 1958. xx + 164 pp. \$3.

This volume, the second in a series of studies sponsored by the Joint Commission on Mental Illness and Health, defines and assesses the direct and indirect cost of mental illness.

The questions which the commission sought answers to include: How much does mental illness cost the people of the United States? How much would it cost to provide the highest possible standard of care for the mentally ill? Can we afford these costs? Could greatly increased expenditures be justified on economic grounds? Where is the money coming from?

Rashi Fein sorts out these questions into problems on which the economist can provide direction and those which lie outside his professional competence. "What society can spend (and ultimately what society should spend) depends on the value system that society holds to. It is obvious that society can spend much more on mental illness (or on anything) than it presently is doing. Whether or not it chooses to do so is another question. We can provide data to assist us in understanding the implications of additional expenditures, the economic benefits to be derived therefrom, the gains, the costs. These may aid in answering the question, 'What should society do?' They do not answer the question. The

answer is up to society. The question, 'What can society do?' cannot be answered." Given the costs of mental illness, especially the loss in earnings and production, the issue becomes more clearly: Can we afford to incur the costs of not spending?

Direct costs per annum, defined as the sum of public expenditures (national, state, and local) and of identifiable private expenditures for the care of the mentally ill, are estimated to exceed \$1.7 billion. This sum includes not only the purchase of goods and services but also cash payments to the disabled under the Veterans Administration program. Indirect costs per annum, defined as the loss in productive activity of persons resident in mental institutions and of those who because of mental illness are absent from work, are estimated to approach \$800 million. Estimates are also developed by means of other techniques of measuring indirect costs. These range upward to \$1.9 billion—the estimated present value of all future earnings of persons who represent first admissions to public prolonged-care hospitals in 1954.

The volume contributes importantly to the literature on the cost of illness and the price of health. It makes a substantial beginning toward the formulation of different concepts of economic loss (or indirect cost) from illness and the concepts appropriate to the different uses. The concept of annual production-and-earnings loss is distinguished from loss measured as the present value of future earnings. Gross-production loss is differentiated from a net concept in which a deduction is made for the costs of maintaining a life saved. The book refines some of the tools of measurement used in earlier studies. Work-force-participation rates rather than population, or labor force, aggregates are used to determine the man-years loss in production. Definitions are tied to those used for national income account estimates so that output loss may be related to national net income product.

I might mention some minor technical deficiencies, without intending to suggest that these detract from the general usefulness of the study. There is no indication that the author is familiar with several earlier studies on the costs of sickness, including the C.-E. A. Winslow volume prepared for the World Health Organization, the *Cost of Sickness and the Price of Health* (1951). The author does not appear to be familiar with the work that has been done on construction of work-life tables—a readily available tool which would have simplified some of the estimating and would, on the whole, have improved the author's product. A median wage-and-salary figure is used to convert work-force years to dollar earnings per annum, without an ex-

planation of the use of a median rather than a mean, or of why wages and salaries are applied in lieu of an earnings figure that includes self-employment earnings.

While there are several other minor technical deficiencies, Rashi Fein has performed well the task of pointing out the nature of the costs of mental illness, the effects of use of additional resources for the care and prevention of mental illness, and the economic costs of possible types of action—including, clearly, inaction as well. His work should prove useful as a guide to programing in the period ahead.

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Handbuch der Physik. vol. 45, *Nuclear Instrumentation II*. S. Flügge, Ed. Springer, Berlin, 1958. vii + 544 pp. Illus. DM. 128.

Nuclear Instrumentation II, volume 45 of the *Handbuch der Physik*, is the second of two volumes devoted to nuclear instrumentation. The first of these has not as yet been published. E. Creutz is coeditor of the instrumentation volumes, together with S. Flügge, who is responsible for the over-all editorial direction of this new edition of the *Handbuch*.

Nuclear Instrumentation II contains the following sections: "Ionization chambers in nuclear physics," by H. W. Fulbright; "Geiger counters," by S. A. Korff; "Scintillation and Cerenkov counters," by W. E. Mott and R. B. Sutton; "The proportional counter as detector and spectrometer," by S. C. Curran; "The coincidence method," by S. DeBenedetti and R. W. Findley; "Cloud chambers," by C. M. York; "The bubble chamber," by D. H. Glaser; "Nuclear emulsions," by M. M. Shapiro; "Detection of neutrons," by H. H. Barschall; and "High energy neutron detectors," by R. T. Siegel. All of the articles give a rather complete review of the literature up to about 1956–1957.

For such topics as ionization chambers and proportional counters, where the art has been highly developed, the articles can be and are elegantly presented. For the topics covering scintillation and Cerenkov counters and high-energy neutron detectors—fields where important contributions are yet to be made—it is difficult to give an elegant presentation. Here the authors rely mainly on quoting the published literature and pointing out the inconsistencies which are typical in a rapidly developing field. The article on nuclear emulsions deserves mention as it is a very clear and logical exposition of