

### Die Kupferchlorid-Kristallisation in Naturwissenschaft und Medizin

Von Dr. A. Selawry und Dr. O. Selawry. Mit einer Einführung in die kristallographischen Grundlagen von Prof. A. Neuhaus. Pp. xl + 232 (11 plates). (Stuttgart: Gustav Fischer Verlag, 1957.) 43 D.M.

THE growth-habit of crystals is often sensitive to small quantities of surface-active material in the environment, and proteins are among the particularly active habit-modifiers. When the crystal naturally tends to the forking needle type of growth which leads to spherulites, quantitatively slight changes in growth rate and forking frequency make qualitatively obvious changes in the crystallization picture.  $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$  is an example of a crystal showing this behaviour from aqueous solution, giving an *a priori* possibility that it might afford a sensitive test of some value in serological investigation. The method, which has been enthusiastically pursued by various workers since it was started by Pfeiffer (inspired by Rudolf Steiner) in 1930, is to add a small quantity of tissue extract to copper chloride solution crystallizing in a shallow dish, and to look at the resulting crystallization pattern. The two principal authors of this book are among the enthusiasts. Neuhaus contributes a sober, conservative and mainly accurate account of the scientific background of the subject. The fact that a scientific re-examination of the method has been commenced in his laboratory is to be welcomed. His opinion appears to be not very different from that of the reviewer, namely, that under careful control, and with a morphogenetic rather than a morphographic analysis of the results, such tests may be of some value; but that it is very unlikely that, as the principal authors consider, various simple geometrical elements of the pattern can be taken as directly diagnostic of a large variety of pathological conditions. While these are the methods of analysis, there can be little doubt that, even though there be truth in them, they cannot fail to be conducive to quackery. Some statistical tabulations showing reliabilities of the order 80 per cent are given, but not in a form designed for the persuasion of sceptics: the sceptical approach is foreign to the authors' nature. The book, including numerous good photographs, is beautifully produced, and those who are interested in spherulitic crystal growth (a subject with many queer byways) may consider adding it to their collection.

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### Irradiation Colours and Luminescence

By Dr. Karl Przibram. (Translated and revised in collaboration with the author by John Espenett Caffyn.) Pp. xiv + 332. (Pergamon Science Series: Physics, Vol. 1.) (London: Pergamon Press, Ltd.) 63s. net.

THE author, now emeritus professor of physics in the University of Vienna, has devoted many years of patient research to the elucidation of the very complex phenomena of the coloration of minerals and their luminescence under various conditions. The results of his studies he presented in 1953 in a book which is primarily devoted to the description of his own observations but discusses them in the light of general physical theories. The very favourable reception of this work by physicists and mineralogists created the demand for an English translation. This, unfortunately, was published only after a lapse of nearly four years after the completion

of the German manuscript. It would obviously have been desirable to re-write those parts in which progress has been most marked, but collaboration between author and translator was apparently not close enough for this task; only the survey of the literature at the end of the book has really been brought up to date.

It is still more regrettable that the translator did not always avoid the well-known pitfalls of rendering a German text into English. The shortcomings range from misunderstandings of words to a rather heavy and occasionally even obscure style. Already on the second page one is astonished to read that Faraday in his diary—jotted down only for his own use—is thanking his assistant; a comparison with the German original reveals that the difficulty of distinguishing between *denken* and *danken* (to think and to thank) was too much for the translator. Nor did he recognize the frequent necessity of breaking up long German periods into several English sentences.

The most valuable part of this English edition is the considerably enlarged survey of relevant publications. Thanks mainly to the contributions by the author, some 500 references have been added; the new compilation seems as reliable as the shorter list in the German book and can be regarded as a very welcome new edition of it. It may also be mentioned that since the publication of that book the author himself has given a summary of its contents in English in an article (*Endeavour*, 13, 37; 1954) which is distinguished by excellent colour reproductions of some of the minerals described.

F. A. PANETH

### Automatic Process Control for Chemical Engineers

By Prof. Norman H. Ceaglske. Pp. xiv + 228. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1956.) 6.75 dollars; 54s. net.

THIS book is intended to form the basis of an undergraduate course of some forty-five to fifty hours with practical work in addition, for chemical engineering students in an American university. Its emphasis is on the theoretical aspects of automatic control and the mathematical methods available for expressing control system behaviour quantitatively. The treatment is elementary in that it deals with simple ideal systems, but not so elementary that it shuns the use of the Laplace transformation and many of the other techniques developed in the servo-mechanism field, although prior knowledge of these is not assumed.

The first two chapters discuss qualitatively and quite briefly the individual elements that make up a control loop, and here the author gives the impression of impatience to reach the quantitative approach which occupies the remaining two-thirds of the book; some of the illustrative graphs in this first section are open to criticism. The value of the book lies in the remaining five chapters in which the transfer function for each element of the loop is derived and the behaviour of the loop, subjected to stepwise or sinusoidal disturbances, is evaluated. The stability of the closed loop and the methods of arriving at a suitable controller gain are considered. The practising chemical engineer will find this book invaluable in his efforts to change a qualitative approach to a quantitative one and it is to be hoped that it will stimulate a more thorough teaching of this important subject in universities.

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