branches which have not previously been developed in Russia. Since it is generally recognized that Russian astrophysicists have obtained remarkable results in many fields of study the benefits of such an arrangement would be by no means one-sided and our own observatories would gain enormously from the contact.

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IS TEACHING ABILITY RECOGNIZED?

LIKE a refrain one hears in current discussions of academic problems remarks like the following: "These objectives can be obtained only if the teaching ability of faculty members is given as much recognition as is given to research ability." "Teaching ability is not rewarded by our colleges as is research ability."

If some one does not soon question the accuracy of these statements they will come to be believed through mere repetition. The first time I ever heard the validity of such assertions openly and adequately challenged was during the meeting of the American Society of Agronomy at St. Louis in November, 1942. A session was being held on teaching and its problems. A guest speaker had repeated the time-worn remark that in our colleges teaching is not rewarded as is research. In the course of the discussion which followed Dr. H. K. Hayes, of Minnesota, offered the comment that teaching ability in that field was recognized and rewarded. He added that if necessary he could present the proof.

The discussion went on. As I was a visitor, only a few of the men present were known to me personally. It was, however, evident from the remarks that many of them were men of unquestioned eminence in their field. The group evidently included a good number of heads of large departments of agronomy and a sprinkling of deans of agriculture. Finally some one asked Professor Hayes for his proof. His reply, which I quote from memory, was somewhat as follows: "I have objective proof. It is here in this room. I do not wish to embarass anyone so I will not name individuals unless someone insists, but I see here a goodly number of individuals of recognized standing and influence in their fields whose positions rest on their recognized ability as teachers rather than as investigators." That ended the discussion.

One result of the discussion thus ended was that I started a survey of the teaching of botany in the United States during the past generation. Some portion of the material assembled will be published elsewhere. One of the conclusions to which I have come is a wholehearted agreement with Professor Hayes's spontaneous outburst at St. Louis. It makes little difference what objective criterion of eminence one chooses provided the list contains a fair number of names. A list of presidents of the Botanical Society of America will serve or a list of the presidents of any of the other societies concerned with plant science or the chairmen of Section G, or of those who have received the now much discussed "stars" in "American Men of Science." In any case one finds a large percentage of those who are known first and foremost as teachers. This is particularly impressive when it is realized how many of our colleagues have to give all their time to research or administration.

The same thing may not be true in fields other than those of the plant sciences. At least the question may fairly be raised regarding them. Of course I have no information as to the salaries received by these outstanding teachers; that seems to be the critical point, but it seems unlikely that they have been conspicuously less well paid than their fellows.

Apparently one source of the assertion so freely made that teaching ability as such is not adequately rewarded is the failure of those who make it to recognize that teaching ability may be coupled with other abilities. In other words, the mere fact that a member of a college faculty is unable or unwilling to carry out a research program does not constitute *prima facie* evidence of teaching ability of a high order.

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SCIENTIFIC BOOKS

ERUPTIVE ROCKS

Eruptive Rocks, Their Genesis, Composition, and Classification, with a Chapter on Meteorites. By S. JAMES SHAND. Second edition. New York: John Wiley and Sons. London: Thomas Murby and Company, 1943. Pp. xvi + 444; figs. 47, pls. 3. $5.00.

THIS second edition of Professor Shand's notable book has been extensively revised. The wide field and laboratory experience of the author and his many contacts with the points of view of petrologists of three continents, as a student in Scotland and as a teacher in South Africa and America, give him an unusually comprehensive grasp of the subject. This has resulted in a book which gives the best elementary treatment of the eruptive rocks that is in print. The author has a wide familiarity with the literature and lists many references at the end of each chapter. Throughout, the discussions are brief and critical, and they preserve an excellent balance between the field,

the laboratory, and the geochemical data and arguments.

The first chapter deals with such properties of magmas as their fluidity, water content and temperatures of consolidation. For the latter he boldly places the temperature of consolidation of extrusive rocks above 700° and those of most granular rocks from 700° to 500°. These temperatures are probably lower than would be given by most petrographers. At the time the quartz of the pegmatites was studied all the pegmatites were thought to be magmatic, but our present knowledge indicates that all the low quartz tested from pegmatites was hydrothermal and all the magmatic quartz was high quartz. There is no convincing evidence that the temperature of crystallization of the extrusive rocks is much, if any, higher than that of the granular rocks with the same composition.

The second chapter deals with the minerals and mineral families in the eruptive rocks and the relative abundance of the oxides and elements. The descriptions of the mineral families deal chiefly with their chemical compositions and artificial formation. It recognizes the complexity of the rock minerals and explains this on the modern theory of atomic substitution. The descriptions are brief, but they are clear and accurate and so are suitable for an elementary student.

Chapter 3 deals with the fugative constituents and is a well-balanced discussion of the field, laboratory and geochemical data.

Chapter 4 discusses the temperature and pressure in the magma. The discussion is excellent. However, the reviewer has concluded both from a study of the literature and from personal observations that inversion of quartz to tridymite by magmatic heat is very rare, and we still need clear evidence that it takes place. The data on the effect of pressure on the high-to-low-quartz inversion are accurately known. The curve of Goldschmidt on the effect of pressure on the reaction $CaCO_3 + SiO_2 \rightleftarrows CaSiO_3 + CO_2$ has little value as the pressure involved is the vapor pressure of CO_2 and this may be low since the CO_2 escapes as the reaction takes place.

Chapter 5 on the freezing of the magma presents chiefly the psysico-chemical data. Chapter 6 on the magma and its walls places reasonable emphasis on reaction and assimilation by the magma. Chapter 7 on the order of crystallization fails to give sufficient emphasis to the natural chilling experiments prepared for us by nature in the lavas and small intrusive bodies. Chapter 8 deals with compatible and uncompatible phases and Chapter 9 with eruptive rock complexes.

The next ten chapters deal with the classification and description of rocks and with problems that concern chiefly one group of rocks. After a general discussion of rock classification, the author presents his own system. The major divisions are based on the rather obvious and commonly used silica content—oversaturation, saturation, or undersaturation. The next subdivision is based on the alumina content with respect to that required to form feldspars and feldspathoids. Does a broad study of rocks justify such great importance being given to alumina? Next are four divisions depending on the proportion of dark minerals. Then four divisions based on the proportion of the different feldspars or feldspathiods: or $>$ an and or $>$ ab; or $>$ an and or $<$ ab; or $<$ an and ab $>$ an; and or $<$ an and ab $<$ an.

Shand's system of classification seems to differ materially in many respects from that in common use, yet rock names are used by Shand with much the same meaning as in other systems.

Shand's book is very well written. It does not present the material dogmatically but gives the arguments pro and con clearly and concisely. The reader is shown the complexities and uncertainties that are inherent in nearly all petrological problems.

The repeated use of the terms acid and basic rather than silicic or some other more appropriate terms and the use of alkaline for alkalic will be unwelcome to many American petrographers who have been attempting to discourage the use of these inappropriate terms.

The philosophical quotations at the beginning of each chapter are apt.

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CHEMISTRY

Chemistry Made Easy. By CORNELIA T. SNELL and FOSTER DEE SNELL. D. Van Nostrand Company, Inc., New York. 1943. 4 vols. $7.95.

IN four small volumes this collection runs the gamut of introductory chemistry: theoretical inorganic (184 pp.), descriptive inorganic (232 pp.), organic (256 pp.) and industrial chemicals (542 pp.).

As for the first two volumes, the part-time scientist may prefer their easy style to the pedantry of most general chemistry text-books, and certainly will welcome the interesting bits of industrial information which reflect the authors' close association with chemical industry. Unfortunately, theory is sketchy and occasionally incorrect; and a sound perspective of the family relationships of the elements is lacking. For example, the cart seems before the horse in the statement (II, 12) that H_2F_2 is written as a dimer because it forms acid salts, rather than writing that its molecular weight so indicates; or that (I, 98) "the essential characteristic of an element (in forming com-