ters formally undertaken by the Union at former meetings, we find a considerable number of accounts of investigations privately conducted and submitted to the Union as coming within its general province, the whole composing a *pot pourri* probably beyond the competence of any one person not a professed encyclopedist. Among the matters discussed we note, by way of illustration only, the sun's rotation; the measurement of its radiant energy; the measurement of wave-lengths; observation of sun spots, prominences and faculæ; the organization of solar eclipse observations; the study of solar vortices; the refraction of light in the solar atmosphere; the sun's magnetic field; etc.

While in general the papers dealing with these several themes can hardly be regarded as addressed to the lay reader, when taken in connection with the discussions evoked, they furnish to the serious student the best available résumé of current opinion upon controverted questions relating to the sun, as well as upon certain wider aspects of general physics. The reporting appears to have been well done, although, perchance, something of geographic prophecy rather than current fact is to be found in the secretary's classification of Finland as an independent country and the assignment of Kopenhagen to Norway, in the tabular list of delegates.

The personal reports of American participants in the conference confirm the impression produced by the narrative parts of the volume, that the hosts left nothing undone that could promote the social side of the conference and the enjoyment of their guests. How bitter must be to many of these the commentary of August, 1914, upon the chairman's closing words in August, 1913, "und so hoffe er dass die Bonner Versammlung nützbringend für die Wissenschaft und angenehm für die Theilnehmer werden würde, so dass sie später gern an Bonn zurückdenken könnten."

While it is not to be supposed that the present European war will end international cooperation for scientific research it has certainly placed obstacles in the way thereto, and may it not be that in the coming decade men of divers tongues, accustomed to work together for the advancement of knowledge, may find a major line of usefulness in collectively seeking to restore good will to the world.

GEO. C. COMSTOCK
UNIVERSITY OF WISCONSIN

Representative Procedures in Quantitative Chemical Analysis. By FRANK AUSTIN GOOCH, Professor of Chemistry and Director of the Kent Chemical Laboratory in Yale University. New York and London: John Wiley & Sons, Inc. 1916. Pp. viii + 250. Price $2.00 net.

In the volume entitled "Methods in Chemical Analysis" published in 1912, the author gave to his colleagues a fund of material drawn from the records of a laboratory which for more than a generation has outranked most others in the development of authoritative analytical procedures. In the volume under review he writes from the fullness of his experience as a teacher of quantitative chemical analysis, one whose influence has been widely felt, through both his publications and his pupils. The manual is intended as an introduction to representative analytical procedures.

The book opens with a brief discussion of non-reversible and reversible reactions, including the mass law and the principle of LeChatelier. This is succeeded by a full consideration of the processes of weighing and measuring. The analytical procedures are, as usual, subdivided into gravimetric and volumetric analyses, the latter including brief sections upon gasometric and colorimetric methods. The concluding chapter deals with systematic analyses of brass, limestone, silicates, substances yielding ammonia, and a few applications of indirect methods of analysis. Among the volumetric procedures much space is devoted to iodometric processes, many of which have been devised or developed in the Kent Laboratory. Iodometric processes are, as the author states, among the most accurate and satisfactory available, and do not, in general, receive the recognition which they deserve.

While detailed directions for "experimental processes" (that is, analyses to be performed) are numerous, the usefulness of the manual is by no means limited to these, since the range of processes discussed in the text is exceedingly wide. The richness of the author's experience is reflected in many unusual suggestions as to technique and reagents, such, for example, as the employment of anthracene filters, and the use of sodium tungstate as an absorbent. The treatment of such topics as the variations in solubility of precipitated substances under varying conditions, colloids, the washing of precipitates, electrolysis, normal solutions and indicators is broad and scientific, and should give the thoughtful student a clear notion that analytical chemistry is not only much more than a question of manual skill, but something demanding his best intellectual efforts. In a few instances, notably the basic acetate process, the explanation of the part played by the various reagents might to advantage be somewhat elaborated.

The book is a noteworthy and valuable addition to the literature of analytical chemistry. It contains much that is of novel interest to a more experienced analyst, but it is probable that many teachers will question whether a beginner, lacking a background of experience, will be able to appreciate and use the descriptive material which is included in the text, but not directly applied to definite analyses. This material is, however, so arranged as to permit of selection, and it is all stimulating to the interested worker.

H. P. Talbot

The Embryology of the Honey Bee. By James Allen Nelson, Ph.D. Princeton University Press, Princeton, N. J., 1915.

A monograph of 282 pages with 95 figures in the text and six plates is an achievement in itself even when one deals with a comparatively well-known subject; but the present monograph is not simply a compilation. Dr. Nelson has incorporated in this work a great deal of his own research and many original observations. His account of the work done by others is accurate and, while preserving his own point of view, he displays in his criticism the admirable quality of abstaining from personal remarks which so often mar the pages of scientific papers.

It would be very difficult to review the whole book in detail since many chapters naturally deal with facts already known to science, which merely find their confirmation here. I shall therefore endeavor only to emphasize some of the observations new to science and to point out certain shortcomings in this otherwise excellent book. Thus, in the chapter on cleavage, Nelson makes the interesting statement that "the size of the nuclei is, in a given egg, quite uniform from the beginning to the end of the period under consideration, *but varies considerably in different eggs,* ranging from 9–14 microns" (p. 21) (italics are mine). In every other respect Nelson's observations on cleavage are in harmony with those of other investigators. The figures accompanying this chapter are fairly good, but the addition of a figure representing a sagittal section through an egg at the end of the cleavage process would have been advisable. The chapter on the formation of the rudiments of the mid-intestine is accompanied by excellent figures and gives new support to the opinion expressed by the reviewer and others that the mesenteron is derived from the mesoderm, although Nelson believes that a choice is possible between this interpretation and that of *Carrière,* according to which the mesenteron rudiments may be considered to be purely blastodermal in origin, such a choice depending "largely on the theoretical bias of the interpreter." In the next chapter Nelson comes to the conclusion that both the "Rz" cells described by the reviewer and the "yolk plug" are identical with the "cephalo-dorsal body." This affords the reviewer an opportunity to state that he, too, is now of the same opinion. That the reviewer has never before come out with a statement to this effect, is due to the unusually personal note struck by his critics, even to an insinuation of motives other than a desire to find out the truth. In such cases silence seems always to be the best answer. With the fall of the interpretation