To a certain extent Ibn Badr makes up formulæ of the type $f(x, y)=0$ or $f(x, y, z)=0$ to solve a whole set of problems; see, for instance, pp. 88–90. He also discusses some problems which lead to linear Diophantine equations; for instance (pp. 90–92), we have the problem:—

"A man sold three kinds of grain, wheat, barley, and millet; the wheat at 4 dirhems per measure (*qafīz*), the barley at 2 dirhems per measure, the millet at half a dirhem per measure. Altogether he sold 100 measures for 100 dirhems; how many measures of each grain did he sell?"

This leads, of course, to the equations $x+y+z=4x+2y+\frac{1}{2}z=100$, and hence to $7x+3y=100$; but Ibn Badr's analysis is quite different from this. The editor concludes (pp. xix–xx) from the occurrence of problems of this type that the author belongs to the twelfth or thirteenth century.

An interesting feature of the text is the way in which different technical terms are used. Thus *māl*, which properly means "wealth," is used by Ibn Badr not only in the sense of "capital," but also (*e.g.* text p. 18, line 1) in the sense of x^2, and this even when x is a quadratic surd. Does this arise from marshalling troops in squadrons, or possibly from reducing areas to equivalent squares? Other terms are noted by the editor.

So far as we can judge, the editor's work seems to be very well done. Besides the text and translation we have an introduction describing the (unique) MS., now in the Escurial Library, photographic facsimiles of the first and last pages, a very useful summary of the contents (using modern notation), and a few notes on the history of mathematics in Spain.

This and other recently published works indicate that Spain is becoming really alive to the value of scientific research; it may be added that it appears under the auspices of the *Junta para ampliación de estudios e investigaciones científicas*.

G. B. M.

OUR BOOKSHELF.

Cours de Manipulations de Chimie Physique et d'Electrochimie. Par M. Centnerszwer. Pp. 182. (Paris: Gauthier-Villars et Cie, 1914.) Price 6 francs.

WHEN a student actually measures the quantities involved in theory, a flood of light is frequently thrown on hitherto obscure points, and the object of the present practical course is to assist in the study of theory rather than to provide a training in manipulation. The book is orthodox according to the Ostwald school. It has been gradually evolved from teaching experience in the Riga Polytechnic, and meets with the approval of Walden. It thus has much to commend it.

Following the well-known Leipzig lines, it presents mostly familiar features, except that it is almost unique among books on practical physical chemistry in giving exercises on the measurement of critical constants. No other practical book, except Ostwald-Luther, so far as we are aware, deals with this subject, and in the short practical course at Leipzig the exercises on critical constants are marked as optional. The author's special experience in this field no doubt accounts for this novelty, and what makes it the more welcome is that the methods described have been put to the test.

Practical details are very fully given in the part on electrochemistry, which occupies 77 out of a total of 182 pages. We note, however, that a table of absolute potentials for elements is given instead of the more trustworthy and equally practicable potentials relative to the hydrogen electrode. This is possibly due to the elementary nature of the work, just as in most elementary books on general chemistry it is not considered wise to confuse the beginner by giving arguments in favour of the oxygen basis for atomic weights. The same desire for simplicity also explains the absence of reference to the degree of uncertainty in experimental results.

FRANCIS W. GRAY.

The Nation of the Future: a Survey of Hygienic Conditions and Possibilities in School and Home Life. By L. Haden Guest. Pp. 115. (London: G. Bell and Sons, Ltd., 1916.) Price 2*s.* net.

THIS little book, clothed in an ambitious and somewhat misleading title, deals entirely with the welfare of the school child and with the medical inspection and treatment of school children.

The first section deals with the disabilities to which school children are subject, their results, their treatment, and their prevention.

In the second section the method of carrying out the medical inspection of school children is described, the system being that which has been adopted by the London County Council. Finally, the case for the school clinic is presented to the reader.

The book is a popular one suited to the requirements of education committees, teachers, and health visitors, and as such may be useful. The text is illustrated with several plates.

Stars at a Glance. Pp. 48. (London: G. Philip and Son, Ltd., n.d.) Price 1*s.* net.

THIS simple guide to the stars will admirably meet the requirements of those who are commencing the study of astronomy or who have become interested in the heavens since the lighting restrictions came into operation. It provides an "aspect chart" for each month, which will enable the observer to make a general acquaintance with the stars visible at a specified time and date, and four additional charts showing the constellations in greater detail. An important feature is a calendar-index, whereby the proper chart to be consulted at any time may easily be selected. In conjunction with a compass-card which is provided, the charts may be conveniently used for purposes of night-marching. The text includes a useful introduction to the study of the heavens and some brief notes on the constellations and principal stars.

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