twenty lengths, printed in successive columns, and occupies four pages of the book. This comparatively great length enables three significant figures to be read off directly from the scale divisions and subdivisions, while a fourth figure can be estimated. The author claims that computations can be made with a degree of accuracy equal to that obtained by the use of four-figure log tables, and with less trouble. We suspect, however, that few would be found who would allow this claim, or be willing to give up their tables for the author's plan. The title of the book is somewhat misleading; instead of a "substitute for the slide rule," the proper description would be, a substitute for tables of logarithms; the "calculating scale" is only an equivalent for the slide rule in the sense that a log table may be so regarded. We fail to see any useful purpose that this scale is likely to serve.

Practical Orthochromatic Photography. Photography Bookshelf, No. 14. By Arthur Payne, F.C.S. Pp. 178. (London: Iliffe and Sons, Ltd., 1903.) Price 1*s.* net.

IN these pages the author gives us an excellent account of the fundamental principles governing this branch of photography. Although he does not pretend to exhaust the subject, yet the reader will find that enough of the theory has been dealt with to enable him to obtain a good ground-work of the scientific principles for his own practical use. The ten chapters into which the book is divided treat of the advantages of this kind of photography, light, the use of the spectroscope, visual and photographic brightness, light filters, their use and effects, and other important subheads.

Not only is the letterpress clear, but the numerous illustrations are well chosen, and add to the utility of the volume. Those about to take up this branch of photography, and others who are practising it, should find this book a good guide.

Tombs of the Third Egyptian Dynasty at Reqâqnah and Bêt Khallâf. Report of Excavations at Reqâqnah, 1901–2. By John Garstang, B.A., B.Litt. Pp. 70+xxxiii plates. (Westminster: Archibald Constable and Co., Ltd., 1904.) Price 21*s.* net.

AFTER an introductory chapter describing the site of the excavations and the nature of the results, Mr. Garstang deals with the continuity of early history and the place of the third Egyptian dynasty in ancient history. Three chapters are then devoted to stairway tombs, to their construction, special features, and objects from them, respectively. The evolution of stairway tombs is discussed in a later chapter. Other sections of the volume are devoted to the necropolis, burial customs, burials under pottery vessels, objects from the smaller tombs, and the archæology of the third dynasty. There are thirty-three full-page plates containing a large number of good illustrations.

Worked Problems in Higher Arithmetic. By W. P. Workman, M.A., B.Sc., and R. H. Chope, B.A. Pp. vii+144. (London: W. B. Clive, 1904.) Price 2*s.*

THIS useful little book consists of two sections; in the first many of the difficult problems in the author's "Tutorial Arithmetic" are fully solved, while the second part, which will appeal more to teachers, comprises solutions of all the problems of Section xi. of the same work. The book should prove of value to the private student particularly, who is, we notice, warned that "but little benefit will accrue to him unless he makes it a regular practice to attempt to solve the questions for himself before reading the solutions here given."

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Blondlot's *n*-Rays.

FOR the past few months I have endeavoured to repeat some of Blondlot's measurements with *n*-rays, taking every precaution and following out closely the methods and adjustments described by Blondlot in his numerous papers which have appeared during the past year in the *Comptes rendus* of the Paris Academy of Sciences.

A Nernst lamp consuming 176 watts was used, which is described by Blondlot as emitting the rays most copiously. A variety of screens of phosphorescent calcium sulphide, some brilliantly phosphorescent, others very feebly so, were employed for the detection of the rays. The experiments were carried out in an absolutely dark room to which the eye had become accustomed by a wait of fifteen or twenty minutes, the only light visible being the phosphorescent glow of the screen. Lead screens, thickness ¼ inch and 1/16 inch, were used to intercept the rays, and occasionally a quartz lens was used to focus them on the screen.

But in no case could any certain difference in the brilliancy of the screen be shown to be due to the presence of the *n*-rays, although the experiments were repeated many times and under varied conditions. The only observed differences in brightness could be assigned to four known causes. If initially the sulphide was fairly bright, after a while it appeared less so, owing to the natural decay of the phosphorescence. If the phosphorescence was very feeble it appeared more brilliant by indirect than by direct vision, this being a well known phenomenon in physiological optics, which has been admirably discussed in the paper by O. Lummer, of which a translation appeared in NATURE of February 18 (p. 378).

The third effect was the increase of brightness due to the increasing sensitiveness of the eye during the first few minutes spent in a dark room, and the fourth is mentioned below. Several competent observers in England and Germany have likewise obtained negative results in looking for what Blondlot describes as being so simple, and it seems advisable to direct attention in the columns of NATURE to certain experimental precautions not sufficiently observed, perhaps, by Blondlot in the course of his work.

A slight rise in temperature increases the brilliancy of the screen. Using a screen which showed no appreciable brightening under the influence of the *n*-rays from a Nernst lamp, it was found that by heating it gently, perhaps 10 or 15 degrees centigrade, without using *n*-rays at all, the brightness increases very perceptibly, possibly 50 or 100 per cent. as nearly as could be estimated by simple observation; so that efforts to detect *n*-rays may be partially vitiated by the presence of heat effects, from the body of the observer, &c., unless special precautions are taken to show that this is negligible. Mr. S. G. Brown has brought this point forward very clearly in a recent letter to NATURE (January 28).

On reading a recent striking paper by Blondlot on the index of refraction and wave-length of *n*-rays (*Comptes rendus*, January 18), one cannot, considering the experimental conditions, fail to be impressed by the extraordinary experimental skill required to carry out what Blondlot describes.

In measuring the index of refraction, a comparatively wide slit (5 mm.) was used, placed 14 cm. from the filament of a Nernst lamp. After traversing the slit, the rays passed through an aluminium prism, and were dispersed, each homogeneous pencil spreading out into a constantly broadening beam. Now in measuring the angles of deviation there would be two difficulties to be overcome. The beams become so broad, being 1 cm. wide at a distance of 14 cm. from the slit, that the intensity is greatly weakened. Furthermore, it may be shown, by using Blondlot's actual values for the indices of refraction, and calculating backwards, so as to get the angles of deviation, by the well known formula for Descartes's method, that among the total number there are at least three consecutive beams