

taken as representing the teaching given to metallurgical students in America, and forms an interesting study to those who wish to know something of the much-praised methods in vogue there. Judging from the contents of Prof. Lodge's volume, the methods do not differ much from those in use in this country and in other parts of the world. The assaying of gold and silver ores is dealt with adequately, and there is an interesting though incomplete chapter on the metals of the platinum group, but the rest of the third-year work (the assay of bullion and of copper and tin ores) is scrappy and of little value. The notes for the fourth-year's work would also not be of much help to students. For example, in the section on cleaning mercury, the student is recommended to wash away soluble and light material with a stream of water, and then to "decant off water and add a small piece of potassium cyanide (poison), which ought to clean it nicely." The author seems to have some misgivings as to whether base metals would really be removed in this way, but the true nature of the problem is nowhere stated, nor are the correct methods of purification described.

In the more valuable part of the book, the assaying of gold and silver ores is discussed at considerable length. The following differences between the instructions given to the student and those usually given in England are noteworthy:—(1) In scorification the slags are not cleaned by the addition of carbon after the eye of lead is closed. (2) In cupellation, the formation of feathers of litharge is strongly insisted on. (3) Beads from gold ores are parted by boiling three times in nitric acid of different strengths.

A large number of exact experiments in assaying are described, and inferences drawn from them. Such work is always useful, but it is better not to put it before students until it has been discussed. Some of the inferences given can hardly be accepted, such, for example, as that the presence of silver does not diminish and that of copper does not increase the cupellation loss of gold. A word of protest may be uttered against the low standard of draughtsmanship in the illustrations. The scorifying tongs, depicted twice, on pp. 13 and 38, are absolutely startling.

T. K. R.

The Practical Photographer. Library Series. Edited by Rev. F. C. Lambert. No. 18, *Gum-bichromate Printing*. Pp. xxiv+64. No. 19, *Floral Photography*. Pp. xx+64. No. 20, *Portraiture*. Pp. xxviii+64. No. 21, *Orthochromatic Photography*. Pp. xx+64. No. 22, *Figure Studies, Groups and Genre*. Pp. xx+64. No. 23, *Summer Number*. Pp. 64. (London: Hodder and Stoughton, 1905.) Price 1s. net each.

THE reputation of this excellent series of photographic books is well maintained in the above-named additions to this useful library. As in previous issues, each volume is the work of numerous authors, and the value of the series is that the information is given by those who are at work at the various subjects, and therefore more practical than theoretical.

The illustrations, which are very numerous in each number, are all of a high order of efficiency, and add greatly to the value and utility of the text. The editor in each case contributes an interesting article on the pictorial work of some photographer of note, and those included in these numbers are, in the order of the books given above:—Charles Moss, Mrs. Cadby, Furlay Lewis, Harold Baker, William Rawlings, and F. J. Mortimer. An important feature of each of these essays is the reproduction of specimens of their work. As practical handbooks these new volumes will be found very serviceable.

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LETTERS TO THE EDITOR.

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Exploration of the Indian Ocean.

MR. STANLEY GARDINER, leader of the Sladen Trust Expedition for the exploration of the Indian Ocean between Ceylon and the Seychelles, in H.M.S. *Sealark*, has sent me the following short account of the progress of the expedition up to the date of writing. The letter is written from the Salomon Atoll, Chagos Group, and is dated June 4.

A. SEDGWICK.

Trinity College, Cambridge, August 4.

"We came on board H.M.S. *Sealark* on May 8 at Colombo. Weighing anchor the following evening we set a course for Peros Banhos, the large N.W. atoll of this group, but on the second day out appreciated the fact that we were getting in for the commencement of the burst of the S.W. monsoon. On May 14 we had reached a latitude south of the Maldives, and commenced sounding in view of the possible existence of a bank between this group and the Chagos as indicated by the soundings taken by the German *Valdivia* Expedition. I may say at once that our soundings showed a depth of more than 2000 fathoms between the two groups. The depth increases from the Maldives and Chagos towards the centre of the passage between, but in this position there would seem to be a broad flat, extending along the line of latitude with a depth of 2000 to 2150 fathoms. Of course both east and west the depth probably increases gradually to 25,000 fathoms or even more, but one obviously cannot build up any views of a possible former connection of the Maldivian and Chagos Banks on such a slender basis.

"On our way down we took samples of the sea-water and of the plankton (pelagic fauna) at the surface and at every 25 fathoms to 150 fathoms, using a wire with a heavy weight at the end running over a measuring block and clamping on the nets as each 25 fathoms ran out. We also took a series of hauls with the Fowler and Wolfenden closing nets, so as to get our wire into trim, &c. The weather was dead calm with a moderate swell, and generally our results were satisfactory. The Fowler net, being opened at a certain depth and then hauled up vertically to a lesser depth and closed, seemed more suitable for the conditions prevailing in this region than the Wolfenden, which is opened and closed at the same depth, being dependent on the drift of the ship, in the absence of any deep-sea current, for what enters the actual net; heavy messengers, too, are essential for opening and closing the nets. Of course these results on the depth of pelagic animals have a value of their own, but our best haul from a collector's point of view was that of a large net, mouth one yard square, length about twelve yards, made of strong mosquito cloth, ten meshes to the inch. This net we let down on 1200 fathoms of wire and hauled in as fast as our winch could take it. Unfortunately the wire became tied up most abominably, but the comparison of the contents of the tin with the collections made by the Fowler net showed that the net itself must have actually sunk to 600 or 700 fathoms. The presence in the tin of a series of prawns (one 6 inches long), a cuttle fish, and many strong swimming jelly-fish suggests that the use of this method of investigating the swimming fauna (nekton) of the sea should yield valuable results.

"On May 19 we anchored at Île de Diamant, Peros Banhos Atoll, but it became obvious in the next couple of days that in the S.E. trade winds now prevailing in this region, any thorough examination of this atoll, open as it is to the S.E., would be impossible. Accordingly we moved on to the Salomon Atoll on May 22, coming on shore to camp on the following day, selecting it as being of small size (5 miles long by 3½ broad) and enclosed on all sides, save for one passage to the north, by a surface reef. While Cooper and I are collecting the marine fauna and flora, and examining the reefs and land. Captain Somerville and the officers of H.M.S. *Sealark* are making a fresh chart of the atoll on a large scale,