described by Gümbel occur in depths of over 2000 fathoms when near to land, while a Globigerina ooze or Pteropod ooze may occur in very shallow depths, in the tropics, far from land. These deposits of the *Drache*, being near the coast, it is found that quartz predominates. The fragments of plagioclase, orthose, hornblende, augite, bronzite, mica, garnet, tourmaline, dicroite (is it not glaucophane?), magnetite, zircon, chlorite, all come from the disintegration of the ancient rocks which form the coast of Norway and Scotland. Gümbel also finds fragments of granitic rocks, dioritic rocks, &c. Fragments of modern volcanic rocks, such as lavas and pumice, are very rare when compared with the particles derived from ancient rocks. Glauconite was found in some of the specimens, and the author believes that these have been transported, which is quite unlikely, as large deposits of glauconite are now in process of formation along the coasts of the north of Scotland. The organisms—mollusks, echinoderms, foraminifera, and diatoms—are all the same as those usually found in partially inclosed seas like the North Sea, and do not present any peculiarities worthy of note.

The author supposes that there is a continuation under the North Sea of the ancient rock-masses of Scandinavia. This may be true, but the supposition can in no way have been suggested by the chemical, microscopic, and mineralogical examinations of the deposits of the North Sea. In conclusion, Gümbel states that the sediments of the North Sea prove that sandy deposits can be formed alongside of clayey and marly deposits, during the same time in the same sea. This conclusion has already been perfectly established, and this confirmation supports an interpretation generally received, which was one of the first results of the examination of the *Challenger* deposits.

The Hydrographic Office of the German Admiralty have done excellent service in taking up the scientific examination of the North Sea. It is a work that we would like to see continued and advanced by our own Hydrographic Office. J. M.

OUR BOOK SHELF

Chemical Arithmetic. By Sydney Lupton, M.A., F.C.S., F.I.C. Second Edition. (London: Macmillan and Co., 1886.)

WE are pleased to note a new edition of this excellent work, in which several improvements have been made. The hundred pages of introductory matter in the first edition have been reduced by about one-half, much unnecessary pure arithmetic having been cut out. The 1200 examples with answers are, on the whole, well selected, though many of them can scarcely be called chemical. A greater number of typical examples might advantageously have been worked out at full length.

The book is especially to be commended for its clear and concise definitions, which are in many books very loosely expressed. The differences between density and specific gravity, atomic and molecular weights, for instance, are explained in a manner that any student of ordinary ability will readily understand. We feel sure that the book will be appreciated alike by students and teachers, but it will be especially valuable to teachers.

Experimental Chemistry. By C. W. Heaton, F.I.C., F.C.S. New Edition, Revised. (London: George Bell and Sons, 1886.)

ANOTHER edition of this work on experimental chemistry, adapted from the German of Dr. Stöckhardt, has just been issued. To those students of limited means who desire to work at chemistry as well as to read it—and it is for those that the book is intended—it will be found useful. The introduction, however, is much too extensive and theoretical for beginners, and we fear that many would be disheartened before reaching the really experimental work. In our opinion, the book is not sufficiently practical, many experiments lacking detail. We would suggest that in future editions a few pages be devoted to instructions in the manipulation of apparatus and the working of glass.

Part IV., which is devoted to organic chemistry, is very clearly set out. The book is not sufficiently modernised for these days of competitive examinations, but the teacher who is desirous of encouraging his students to perform simple experiments in spare moments would get many valuable ideas from it.

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. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.*]

The Sense of Smell

IN your issue of Septhmber 30 (vol. xxxiv. p. 521) your correspondent *Dr. Arthur Mitchell is desirous of obtaining some* data in regard to the sense of smell. In a paper presented at the Philadelphia meeting of the American Association for the Advancement of Science (1884) we have described a series of experiments designed to test the delicacy of this sense. These experiments, being of a preliminary character, have hitherto been withheld from publication, but the following brief statement of the results obtained may be of interest to Mr. Mitchell and to other readers of NATURE. We made use of the following substances:—(1) oil of cloves, (2) nitrite of amyl, (3) extract of garlic, (4) bromine, (5) cyanide of potassium. A series of solutions of each of these was prepared, such that each member was of half the strength of the preceding one. These series were extended by successive dilutions till it was impossible to detect the substances by smell. The order of the bottles containing these solutions was completely disarranged, and the test consisted in the attempt to properly classify them by the unaided sense of smell. The thirty-four observers who assisted in these experiments were of both sexes; the results are indicated in the following table (I.):—

Amount detected

	Oil of cloves	Nitrite of amyl	Extract of garlic	Bromine	Cyanide of potassium
Average of 17 males	1 part in 88,218 of water	1 in 783,870	1 in 57,927	1 in 49,254	1 in 109,140
Average of 17 females	1 part in 50,667 of water	1 in 311,330	1 in 43,900	1 in 16,244	1 in 9,002

The same method of investigation has since been followed by one of us[1] in some experiments, the results of which are given in Table II.

Amount detected

	Prussic acid	Oil of lemon	Oil of wintergreen
Average of 27 males	1 part in 112,000 of water	1 in 280,000	1 in 600,000
Average of 21 females	1 part in 18,000 of water	1 in 116,000	1 in 311,000

[1] "Some Special Tests in Regard to the Delicacy of the Sense of Smell," by E. H. S. Bailey and L. M. Powell (*Proc. Kansas Acad. o Science*, vol. ix.).