

of view. It is divided into five chapters, the first two being concerned with the coal itself, the second two with the products, namely, oil tests and gas analysis, and the final chapter with fan and ventilation tests.

The volume has evidently been put together with great care by its authors, who have had practical experience of their subject. The description of the apparatus and methods is clear and concise, and illustrated by diagrams and by actual examples, so that the student should have no difficulty in carrying out the different operations. J. B. C.

OUR BOOKSHELF.

Some Frontiers of To-morrow: An Aspiration for Europe. By Prof. L. W. Lyde. Pp. viii + 120. (London: A. and C. Black, Ltd., 1915.) Price 2s. 6d.

IN this small volume Prof. Lyde makes suggestions for the settlement of European frontiers after the war. Three considerations are laid down as of vital importance: (1) that the frontier should be associated, not with war, but with peace; (2) that the unit of area should have some direct relation to national sentiment; (3) that inability to assimilate should disqualify any Power for territorial expansion. The first suggestion is the most important. Prof. Lyde maintains that frontiers should be identified with features related to the meeting of people in the ordinary routine of peaceful intercourse. If this be true, it follows that a navigable river makes the best frontier. A defensive frontier—the type of frontier of the past—will never put an end to conflict between neighbours, but may even promote it. An inhabited, in contrast to an uninhabited, frontier belt encourages contact between adjoining people, discourages racial and cultural antagonism, and so minimises the chance of friction, and promotes civilisation. Prof. Lyde is always stimulating, even if he fails to convince at times. His book is crammed with ideas from beginning to end, which should attract the attention of statesmen. But it will be hard to convince those who have treaty making in their hands that accurate scientific knowledge is a real asset in the matter, and that the geographer is the expert who has the knowledge and should be consulted.

R. N. R. B.

Liverpool Marine Biology Committee. L.M.B.C. Memoirs on Typical British Marine Plants and Animals. Edited by Prof. W. A. Herdman. xxiii. Tubifex. By G. C. Dixon. Pp. viii + 100 + 7 plates. (London: Williams and Norgate, 1915.) Price 3s. 6d.

Tubifex rivulorum is a slender Oligochæte, not more than two inches long, often found in large numbers in the mud of rivers and streams, but it occurs frequently also in brackish tidal waters, and therefore a memoir on this worm is appropriately included in a series dealing with marine animals. Of the aquatic Oligochætes, *Tubifex* is

the type usually chosen for study in advanced classes in this country. Accounts of the different systems of organs have appeared in various zoological publications, but for figures of the worm the student has hitherto been dependent chiefly on the memoirs of d'Udekem (1855) and Vejdovsky (1884). Miss Dixon has revised and extended the previous accounts, with the result that her memoir gives a careful and reasonably full description of the structure of the worm, illustrated by seven well-drawn plates, of which the first in particular will be useful to the student.

After a few general remarks on the habits of the worm, an account is given of the external features and of the various systems of organs, the hermaphrodite reproductive apparatus being described in considerable detail, almost one-half of the memoir being devoted to this group of organs. Of considerable interest is the discovery that *Tubifex* possesses dimorphic spermatozoa. Both kinds of spermatozoa are of the elongate type and are tailed, but they differ in size and in the proportions of their parts. In the ordinary spermatozoa the head forms about one-sixth of the total length. The second type of sperm is about three times as long as the ordinary one, and the head forms about one-half the total length.

A good account is given of the remarkable spermatophores of *Tubifex*, which are moulded into their characteristic form in the spermathecal duct.

The memoir concludes with a brief reference to the parasites of *Tubifex* and a bibliography.

LETTERS TO THE EDITOR.

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Distances at which Sounds of Heavy Gun-firing are Heard.

REFERRING to the correspondence on this subject, I have been collecting information as to places at which the sound of the firing in Belgium has been heard in this country.

I have undoubted records of its having been heard at many places throughout the south-east of England (all of them in Essex, Kent, Sussex, or Surrey), and am giving the result of my inquiries in a paper to be read before the Essex Field Club on October 30. Here, at a distance of about 125 miles from Ypres (taking that town for convenience, as a known centre), I have heard firing quite unmistakably since the beginning of the war—often all day, and for many days in succession, and frequently at night too.

So far as I have been able to ascertain, the greatest distance from Ypres at which the firing has been heard unmistakably is about 140 miles, though I have a less satisfactory record up to 150 miles. No doubt, however, it has been heard further in favourable conditions. Observations seem to show that the direction of the wind has less to do with the transmission of the sound than certain atmospheric conditions, though it is not easy to ascertain exactly what these conditions are.