

have any moisture which it may contain dried up by his (the sun's) vertical beams; while on the other, or dark side, the ground must be frozen hard to the depth of several feet, the mountains covered with glaciers, and the seas blocked up with icebergs. At the very margin between the two hemispheres there will be a narrow temperate zone, which will of course move round the moon, as the latter turns round its axis and presents its different faces successively to the sun; and the only way in which we can see that life could be supported with comfort at the moon (supposing the atmospherical difficulty surmounted) would be by moving constantly round it, so as to keep always in this temperate zone. A queer Noah's Ark-like sight it would be to see the whole inhabitants of the moon, side by side, in a huge procession extending from pole to pole, and hurrying quickly round it at the rate of ten miles an hour—some riding, some driving, and some travelling in slow railway trains; beasts, wild and tame, galloping by their side, and all the birds of heaven flying along over their heads!" The chapter, too, on Astrology, is of a very diverting character, and above all, Zadkiel's horoscope of the heir-apparent to the British throne.

In the face of such an avowal as the author has made, anything like rigidity of criticism would be out of place: but we cannot help expressing regret that his always pleasing and often beautifully written descriptions should occasionally require the support of a more accurate statement of facts. We have so much respect for his ability, and admiration more especially for the high tone of his principle, as to hope that the book may reach a second edition: but in that case we should hope for the removal of several blemishes which it might seem invidious to point out, but which will be obvious to the scientific reader.

T. W. W.

OUR BOOK SHELF

Proceedings of the Berwickshire Naturalists' Club,
Vol. vi. No. 4.

THIS is, we believe, the oldest field-club in existence, and has all along been one of the most efficient and most prosperous so far as numbers and funds are concerned. Its publications, moreover, are already numerous, and contain much valuable material for the natural history, archæology, and antiquities of Berwickshire. There must be already a vast amount of material shut up in the transactions of the now numerous local societies, of the greatest value in reference to the natural history of this country and to students of biology generally, but almost inaccessible except to the members of the various societies. It is a pity that some means could not be devised for bringing the most important contributions to local natural history, in its widest sense, together in some systematised form, so that they could be readily referred to and made available to students at large. Sir Walter Elliot refers to this point in his able address on Provincial Scientific Societies, and it is to be hoped that the Committee appointed by the British Association will give it their consideration. Prefixed to the Proceedings before us is the President's, the Rev. F. R. Simpson's, address, which is wholly occupied with an interesting account of the various meetings of the club during the summer of 1872. For this society is purely a field club, meeting only during the summer months, to explore some of the rich vales of Berwickshire or stretch their limbs over some of the bonny Cheviot fells, gathering rich stores of varied knowledge, and finding a glorious appetite for the sub-

stantial dinner which usually winds up the meetings. One of the longest and most interesting papers is by one of the secretaries, Mr. James Hardy, "On Langleyford Vale and the Cheviots," being a sort of survey of the district between Wooler and the base of Cheviot, and containing a wonderful amount of information on the geology, botany, zoology, and especially the prehistoric antiquities of the district. Mr. Hardy also contributes some valuable entomological lists to this part of the Proceedings, and various antiquarian papers; while Mr. Robert Hislop has a list of the rarer Coleoptera occurring chiefly in the parish of Nenthorn. Sir Walter Elliot contributes a list of the diurnal birds of prey hitherto found within the club's limits. There are many other valuable papers including a memoir of the late Dr. William Baird, F.R.S., one of the founders of this old society, appended to which is a list of his many writings. There are two very well executed plates of flint implements and a sculptured stone, and a fine portrait of the Club's late Secretary, Mr. George Tate.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

Dr. Bastian's Turnip-Cheese Experiments

IN a former communication* I gave an account of a series of experiments by Dr. Bastian, in which it was established that, "by following his directions, infusions can be prepared which are not deprived by an ebullition of from five to ten minutes of the faculty of undergoing those chemical changes which are characterised by the presence of swarms of Bacteria, and that the development of these organisms can proceed with the greatest activity in hermetically sealed glass vessels, from which almost the whole of the air has been expelled by boiling."

In the first paragraph of that paper I adverted to the importance in every experimental inquiry of defining as completely as possible the method by which any given result can be attained. With this consideration in view, I now propose to give an account of additional experiments, made chiefly for the purpose of elucidating the influence of slight variations of temperature on the result. To guard against the possibility of mistake, it may not be unadvisable to remark that, whereas in the experiments previously reported upon, I took no part, excepting as a witness, I am exclusively answerable for those now to be recorded.

Certain particulars in Dr. Bastian's method have been objected to as possible sources of uncertainty. Thus it has been suggested that when a flask, of which the neck has been drawn out to a capillary orifice, is boiled even for ten minutes over a lamp, it is not certain that the whole of the liquid contained in it is heated to the temperature of boiling; and again, that when the lamp is withdrawn in the act of closing the capillary orifice, germs may enter from without. Although I do not attach much importance to either of these objections, I have modified Dr. Bastian's method, so as to render them inapplicable. The modification, however, applies exclusively to the mode of heating the hermetically sealed flasks. As regards the preparation of the liquid, I have in no respects departed from his instructions.

The liquid is prepared by simmering slices of peeled turnip in a beaker containing about a pint of distilled water. The acid infusion thus obtained, is, if necessary, concentrated by evaporation until it possesses a specific gravity of from 1018 to 1020. It is then filtered and neutralised with sodic carbonate. A little Cheddar cheese is rubbed up with a few drachms of the liquid in a mortar, and the mixture strained through calico. By adding the strained product to the rest of the infusion a turbid liquid is obtained, in every drop of which particles of cheese can be detected by the microscope, although there are scarcely any of a sufficient size to be distinguished by the naked eye.

In the first four sets of experiments retorts were used, in the others flasks. In either case they were charged with the liquid of which the preparation has just been described (their necks having been previously drawn out), boiled over a spirit lamp, and sealed hermetically by directing the flame of the gas blow-

* See NATURE, vol. viii. p. 180.