

the fitting out of a naval Arctic expedition in 1874. Mr. Goschen is, we have reason to think, now conversant with the subject, and, as the Minister whose duty it is to advance and foster the interests of the British navy, it is impossible that he can fail to see the advantages of Arctic service. He is supported, at the Admiralty, by Sir Alexander Milne, who has ever been friendly to such enterprises, and sensible of the excellent school for naval men afforded by voyages of discovery; and by Admiral Richards, the hydrographer, whose sound judgment and great Arctic experience render his advice most valuable.

The Prime Minister, with whom the decision will rest, is a statesman who well knows the general, as well as the scientific uses of Arctic enterprise. He formed one of that Ministry which despatched the last scientific expedition to the Arctic Regions; and, as a member of the Select Committee of the House of Commons on Sir John Ross's case, he signed a report expressing his approval of Arctic voyages in the strongest terms—"A public service is rendered to a maritime country, especially in times of peace, by deeds of daring, enterprise, and patient endurance of hardship, which excite the public sympathy and enlist the general feeling in favour of maritime adventure." Such were, and we trust still are, the views of Mr. Gladstone with reference to the general uses of Arctic voyages of discovery. When to these general impressions are added a knowledge of the important scientific and practical results to be attained, the assurance that there is no undue risk, that the cost will be comparatively slight, and the good both to the navy and to mercantile interests incalculable, we cannot bring ourselves to believe that the decision of Mr. Gladstone will not be favourable to a renewal of Arctic research.

LOCAL SCIENTIFIC SOCIETIES *

II.

ALTOGETHER, so far as we have been able to ascertain,† the number of existing local societies ‡ which have for their main, or only as a part of their object the culture of Science, that were established in the years between 1781 and 1830, are only 22. We shall see that the increase since 1830 has been enormous, though the large majority of those established during the last forty-three years are of a much more simple kind, so far as organisation is concerned, than those established during the former period, have to a great extent a different object in view or rather accomplish the intellectual improvement of the members after a different fashion, and are, we think, thoroughly characteristic of the scientifically inquisitive and increasingly intelligent period during which they have been established. Not many "Literary and Philosophical Societies" have been established during the latter period, most of them being professedly devoted to study and research in Science, especially in natural history, in all or one of its branches, and a large majority of them being Field Clubs, as those associations are called, the whole or part of whose programme is to investigate the natural history (including botany, zoology, and geology) of particular districts, in combination sometimes with

their archæology. Indeed the last forty years might well be designated the era of field clubs.

We have already mentioned the Northumberland, Durham, and Newcastle Natural History Society, established in 1829, which, although it has done some excellent field-club work, was not professedly established for this purpose. There can be no doubt that the first genuine field-club was the Berwickshire Naturalists' Club, founded September 21, 1831, though Sir Walter Elliot traces the true origin of field-clubs to an association of students, formed in 1823 at the University of Edinburgh, under the name of the Plinian Society, for the advancement of the "study of natural history, antiquities, and the physical sciences in general." They met weekly in the evening during the session, from November to July, for reading papers and discussions; and also, as the season advanced, made occasional excursions into the neighbouring country. The chief promoters of the scheme were three brothers named Baird, from Berwickshire; but John, the eldest, must be considered the founder. He drew up an elaborate code of laws in eighteen chapters, and, as the first president, made a statement of the proposed plan and objects of the society at their inaugural meeting on the 14th January 1823. Among the original members occur the names of James Hardie, J. Grant Malcolmson (both Indian geologists), and Dr. John Coldstream; and, at a later period, those of Charles Darwin* (of Shrewsbury, 1826), John Hutton Balfour (1827), and Hugh Falconer (1828), with others who have since become distinguished in the scientific and literary world. The latest notice of the society is the session of 1829-30, up to which time the Bairds, although they had left the University, appear as occasional contributors.

No doubt this Edinburgh Association had considerable influence in originating the Berwickshire Club, for two of the Bairds became parish ministers in Berwickshire, and it was they, along with their brother, the late Dr. William Baird, of the British Museum, Dr. Johnstone, Dr. Embleton, and four or five others, who met at Coldingham on the date above given, and drew up the plan of the Berwickshire Naturalists' Club, "a term," Sir W. Elliot remarks, "now first extended to a scientific body." Its object was declared to be the "investigation of the natural history of Berwickshire and its vicinage;" in reality its field extends over the whole of Berwickshire, Roxburghshire, and the north-east part of Northumberland, to the limits of the Tyne-side Club's district. The rules of the club, as all rules should be, are short, providing that the club should hold no property, require no admission fee, and should meet five times in the year at a place and hour to be communicated to each member by the secretary. Thus the Berwickshire Club is a field-club pure and simple, having, unlike many other similar clubs, no winter meetings for the reading of papers, whatever papers are read being read after dinner on the days when excursions are made. At the first anniversary it numbered 27 members, and in 1870, when Sir Walter Elliot gave his address, there were 249 members on the roll, including a few ladies, and "two corresponding members, the last description having been

* Continued from vol. viii. p. 524.

† We regret to say that none of the Edinburgh Societies have seen meet to forward us information.

‡ We do not include in this article the great London Societies, as the Royal, the Linnean, the Astronomical, &c.

* The first paper contributed by him, entitled "On the Ova of the *Flustra*," in which he announces that he has discovered organs of motion, and, secondly, that the small black body hitherto mistaken for the young of *Fucus loreus* is in reality the ovum of *Pontobdella muricata*, exhibits his early habits of minute investigation.

added in 1868 to admit intelligent working-men," though why this invidious distinction should be maintained in a body solely devoted to scientific research, we fail to see; surely Science at least is a common ground on which all classes can meet without a shadow of bitter class-feeling to mar the geniality of intercourse. The more that the higher tastes and recreations are common to all classes, the less room will there be for misunderstanding and bitterness. If a working-man can pay the subscription—and the field-club subscription is usually small, and working-men's wages are now unusually high—by all means let them be received on a common footing with the other members. Many of our best field-clubs are composed almost entirely of working-men, and every encouragement should be given to this class to join such clubs, for, morally and intellectually, we think they will reap more benefit from such associations than any other class.

The Berwickshire Club continues to be one of the most efficient and productive in the country, the fruits of its excursions being contained in six goodly volumes, containing many valuable papers on the natural history and archæology of its large district, and extensive and carefully compiled lists of the existing and extinct fauna and flora. As the Berwickshire Club is the model after which, to some extent, all succeeding field-clubs have been formed, we shall here give from Sir Walter Elliot's address, its simple and inexpensive method of conducting its field-days:—"Arrangements are made with the railway companies for the issue of tickets on favourable terms. The members assemble at breakfast at 9.30, after which the programme of the day is explained, and any objects of interest procured since the last meeting are exhibited and described. At 11 the party proceeds on foot or by conveyance to the points indicated, breaking into sections for botanical, geological, or antiquarian research, and either meeting again at some convenient spot, or returning independently to dinner at 4 o'clock. The members present rarely exceed from 30 to 50, often fewer. Of course the hive contains a considerable proportion of drones who rarely appear, ladies never. The distances are so great, the excursions so thoroughly directed to investigation, that few but those intent on work attend. After a frugal repast, the staple of which is a fine salmon invariably sent from Berwick, papers are read and discussed, and the members disperse according to the exigencies of their trains. The whole expenses of the day vary from four to five shillings per head."

In the decade between 1830 and 1840, other sixteen local societies were formed, many of which, though not professedly field-clubs, have done, through individual members, good field-club work, as is testified by their publications, and have otherwise done much to promote the cause of Science in the neighbourhood. It was during this period that the Cornwall Polytechnic Society (already mentioned), the Penzance Natural History and Antiquarian Society, the Royal Institution of South Wales, the Ludlow Natural History Society, and the West Riding Geological and Polytechnic Society, were formed, each of which, in its own particular fashion, does good service to Science, and helps to keep the lamp of culture burning in its neighbourhood.

No other regular field-club was instituted until nearly fifteen years after the foundation of the Berwickshire

Club, when a sort of offshoot of that Society was formed in 1846 in Newcastle-on-Tyne, under the title of the Tyneside Naturalists' Field Club, which, "guided by the experience of the parent club, at once assumed a perfect organisation." The constitution was, however, somewhat amplified, a proviso being put in the rules that should assuredly have a place in the rules of every similar society in the kingdom. Its last rule, we think, worthy of all commendation and universal imitation; it is as follows:—

"That the Club shall endeavour to discourage the practice of removing rare plants from the localities of which they are characteristic, and of risking the extermination of rare birds and other animals by wanton persecution; that the members be requested to use their influence with landowners and others, for the protection of the characteristic birds of the country, and to dispel the prejudices which are leading to their destruction; and that consequently the rarer botanical specimens collected at the Field Meetings be chiefly such as can be gathered without disturbing the roots of the plants; and that notes on the habits of birds be accumulated instead of specimens, by which our closet collections would be enriched only at the expense of nature's great museum out of doors. That in like manner the club shall endeavour to cultivate a fuller knowledge of the local antiquities, historical, popular, and idiomatic, and to promote a taste for carefully preserving the monuments of the past from wanton injury."

We have more than once recently in noticing the proceedings of some societies, and it has been animadverted on in other quarters, referred to the pernicious practice of encouraging, by the offer of prizes for rare specimens, especially of plants, the extermination of the rare flora peculiar to certain districts. One of the prime duties of every local club should be the preservation of such rare specimens, the fact of whose existence is often of great value from a scientific point of view, and the destruction of which, by transference to a herbarium, can serve no good purpose whatever. The Tyneside Club is divided into six sections, each charged with a special department for investigation:—1, Mammalia and Ornithology; 2, Amphibia, Ichthyology, Radiata; 3, Mollusca, Crustacea, Zoophytes; 4, Entomology; 5, Botany; 6, Geology. This club holds meetings during the winter in Newcastle. Up to 1864, it had published six volumes of very valuable Transactions. In that year an arrangement was come to whereby the members (numbering 429), became associates of the Northumberland, Durham, and Newcastle Natural History Society, already referred to. Thenceforth, as we have already said, the proceedings of the two bodies have been published conjointly under the title of "Natural History Transactions of Northumberland and Durham," of which three volumes have been published. "The work of the Club," Sir Walter Elliott says, "has been most conspicuous in zoology. It has the merit of publishing its lists and catalogues in a separate form for sale, so as to make them accessible to all inquirers."

We cannot mention in detail the foundation of the swarm of field-clubs which have come into existence in the various parts of the country since 1846; we can only allude very briefly to two of the most important, the Cotteswold and the Woolhope, the former an offshoot of the Berwickshire Club. The originators of the Cotteswold Field Club, which, like the Tyneside Club, was started in 1846, were Sir Thomas Tancred (who had been

a member of the Berwickshire Club), Mr. T. B. Lloyd Baker (the well-known originator of the "Reformatory System"), Dr. Daubeny, of Oxford, Hugh Strickland, and some others, who met "at the Black Bull Inn, in Birdlip, a village on the summit of the Cotteswold range overlooking the vales of Gloucester and Worcester, about six miles south of Cheltenham, and seven south-west of Gloucester." There the club was inaugurated, Mr. Baker being elected the first president. "The labours of the club have been most conspicuous in geological investigation, for which the district offers such a rich field. Many of the members have, by their recorded observations, attained to high distinction. In the words of the president, 'It will suffice to mention the names of Daubeny, Strickland, Woodward, Maskelyne, Wright, Moore, Buckman, Jones, Lycett, Brodie, Symonds, Maw, and Etheridge, all members of the club, to recall at once names of writers well known in the scientific annals of the county, and of whom some have by their works obtained a more than European reputation.'"

The Woolhope Club, in Bedfordshire, whose publications are also well known as among the most valuable of those of provincial societies, was formed in 1851, and derived its name from the mass of Silurian rocks described by Sir Roderick Murchison as the "Woolhope Valley of Elevation." This club and the Cotteswold have occasional joint field days, and their example is followed by several other societies, and might, we think, with advantage be followed much more extensively than it is.

The Worcestershire Naturalists' Club originated in the same year as the Cotteswold, followed the year after by the Huddersfield Naturalists' Society, and in 1849 by the Yorkshire Naturalists' Club. Besides the four field-clubs mentioned, other six societies originated in this decade, most of them distinctly scientific, including the Torquay Natural History Society, the Bristol Microscopic Society, and the Isle of Wight Philosophical and Scientific Society.

In the decade between 1850 and 1860, twenty-two local scientific societies were founded, of which sixteen are field-clubs, including such well-known names as the Woolhope, just mentioned, the London Geologists' Association, the Liverpool Naturalists' Field Society, the Bath Natural History and Antiquarian Field Club, and the Malvern Field Club.

(To be continued.)

HARTWIG'S "SEA AND ITS WONDERS"

The Sea and its living Wonders. A popular account of the Marvels of the Deep, and of the progress of Maritime Discovery from the earliest ages to the present time. By Dr. G. Hartwig. Fourth edition, enlarged and improved, with numerous woodcuts and eight chromoxygraphic plates. (London: Longmans, 1873.)

NO other evidence is needed beyond the publication of the fourth edition of this work to prove the demand there is in Great Britain for this kind of literature. The reading public want to know what about the sea, and all that is in it; and, in their eagerness to know, they buy even such books as this. When will scientific men turn their attention towards teaching the public as far as it can

be taught, in a correct, yet popular manner, the rudiments of biological science? When they do the time for such books as the one we must now notice will have passed away, and the resources of the great publishing firm who issue it will be engaged on more truly solid and important work. As an indication of what we mean, let us contrast the popular works of Hartwig or Figuier with Quatrefages' "Souvenirs d'une Naturaliste," or Gosse's "Devonshire Rambles;" or let the reader imagine what a delightful work the one before us would have been if written by, say Huxley, Allman, Günther, or Wyville Thomson. But to return to this volume, which consists of three parts; (1) the Physical Geography of the Sea; (2) the Inhabitants of the Sea; (3) the Progress of Maritime Discovery. The latter part commences with the maritime discoveries of the Phœnicians, and ends with a reference of sixteen lines in length to the numerous scientific voyages of circumnavigation of the present century.

Before proceeding to very briefly notice Parts I. and II., we have to object most strongly to the woodcuts not being drawn to any scale; thus, on page 101 the Rorqual is figured as rather smaller than the Herring, while, on the same page, and just above these figures, will be found a Whale Louse, and a Lepas represented as bigger than either. Surely figures like these must terribly mislead the ordinary reader, who, though he may possibly have some notion of the size of a herring, cannot be supposed to be aware of the dimensions of the whale's parasites. Many of the woodcuts are very good, but several of them are bad, and the majority of them are not seen in this volume for the first time; this we would not so much object to if the woodcuts were selected to illustrate the text, and not, as is too often the case in this work, the text written so as to make some forced allusion to the woodcuts.

Though the Dugong is illustrated by copying the woodcut from Tennent's work on Ceylon, yet scarcely a word is to be found about it in the chapter on the Cetacea. The Tailor birds' nest is figured on page 143, but no allusion whatever is made to it in the text. The great Auk is figured, and in the accompanying explanation is said to congregate in vast flocks on the rocky islets and headlands of the Northern Coasts. Surely a little careful supervision would have prevented such mistakes as these occurring. But leaving the subject of the woodcuts, we come to consider the letterpress; and here, too, not only a more careful supervision, but some more acquaintance with the subject would have been desirable. Why, among the Fishes, should the Anchovy have five lines devoted to it, when not one word is to be found about that equally important little fish, the Sardine? and surely half a page would not have been too much to devote to that interesting living wonder of the sea, the Whitebait. It would be an easy, but withal a useless task to point out other errors of omission and commission among the other classes.

Among the Corals and Sponges the author had enough to guide him, for he has borrowed wholesale the really beautiful woodcuts illustrating Prof. Greene's Manuals; if he had borrowed equally largely from their text, he would have made this the most trustworthy portion of his book.

No notice is taken of such important new forms as Rhizocrinus, or Brisinga, nor do we find mention under