ramosa had nematophores on the stem, and I think so still. Some of his other remarks are so very obvious as to have scarcely required mention, at any rate to biological readers; a few, however, are just such debatable points as I was anxious to have opinions upon from as many naturalists as possible, and I am glad to know Prof. Thompson's. I am glad to say a number of biologists have written to me, since the scheme appeared in NATURE, expressing general approval, and criticising various points of detail, and some of them kindly making offers of assistance in special groups—and without that kind of assistance from specialists I need scarcely say it would be impossible to carry out the work satisfactorily. The proposal was first brought before the Biological Society of Liverpool on November 11, and it was only after some weeks of intermittent discussion with some of my friends in that Society (such as Dr. Hanitsch, Mr. Isaac Thompson, and Mr. A. O. Walker) who are specialists in certain groups of marine invertebrata, and after correspondence with Canon Norman and other biologists, that I sent the scheme to NATURE, with the view of getting further opinions. Consequently some of the debatable matters alluded to by Prof. Thompson (limits of British area, introduction of certain non-British forms, specific nomenclature, how to treat records of size and distribution, best terms to use for zones of depth, and, I may add, for relative abundance) have already been considerably discussed. The other points raised by Prof. Thompson in connection with *Antennularia* only require a few words. I said *A. ramosa* was usually branched. Prof. Thompson says it "may sometimes" be unbranched. The difference between these statements is slight. As to dimensions, a zoophyte which grows to 12, or occasionally to 24, inches in height, will, of course, be also frequently found of smaller sizes; and it might be the best plan to give the extreme range, say, 1 to 24 inches. What I gave was the fair average size of most of the specimens dredged or seen in collections, which I still consider to be 6 to 9 inches.

The rest of Prof. Thompson's contention is practically that there are great difficulties in the way of drawing up such a book of the known British marine invertebrate animals, and that if it is ever done it will be more or less incomplete, because Canon Norman and others (I hope including both Prof. Thompson and myself) will continue to find new British animals. That is perfectly true—in fact obvious—but the same objection applies more or less to every work on systematic zoology that has ever been published; and I do not consider that because our British Pycnogonids, and some other small groups, are still very imperfectly known, that is any sufficient reason for delaying indefinitely an attempt to deal with the rest of the invertebrata. On the contrary my opinion is rather that an approximation is better than nothing, and that every group, or every family, reduced to "Handbook" form with specific diagnoses and figures must be a distinct gain. I hope Prof. Thompson will not think that I am trying to dispute all his criticisms, or that I am ungrateful for the trouble he has taken. I have no doubt that he could correct me in many details, and give me great assistance in records, &c., of zoophytes, pycnogonids, and other groups, and I hope he will do so. W. A. HERDMAN.

University College, Liverpool, January 20.

PROF. D'ARCY THOMPSON'S letter raises a question which is, I think, well worthy of Prof. Herdman's consideration. That a handbook of our marine fauna is needed cannot for a moment be doubted, and the only matter that calls for discussion is one of scope and method, of ways and means. Prior to the appearance of Prof. Herdman's circular and article I had intended, if possible, to bring this very matter before the British Association at its next meeting, believing that a select Committee of the Association would best be able to further the interests of marine zoology in this respect. But, as the matter now stands, I leave any such action very willingly to Prof. Herdman's initiative.

Put broadly (although I well know that such a work in Prof. Herdman's hands would by no means have the character of a mere compilation), the question at issue is whether the handbook should be mainly a compilation from existing material, or should express the work of various specialists and be based upon a series of special investigations. For myself I agree with Prof. Thompson, and for the same reasons, that the adoption of the latter alternative would be likely to meet our needs most fully and satisfactorily. It would ensure, as far as possible, the equal treatment of the various groups, and would thus give to

the book (which is important) a more permanent and authoritative value than could be attained by a book depending upon the personal labours of one zoologist. I feel confident that, should Prof. Herdman admit the force of this consideration and be willing to edit a handbook in which the diagnoses were drawn up for the various groups by specialists or specially-chosen investigators, he would find no difficulty whatever in meeting with willing co-operation.

But I hardly see the point of extending the scope of the work to the extent which Prof. Thompson would seem to desire. We need a handbook for use around the coasts of our own islands. To include the fauna of the whole North Atlantic would needlessly add to the size of the work, delay the time of its appearance, and even in the end be incomplete; while it is doubtful whether the advantages would at all outweigh these defects.

W. GARSTANG

Marine Biological Association, Plymouth, January 20.

Fossil Plants as Tests of Climate.

MR. J. STARKIE GARDNER, in his interesting review of Mr. Seward's valuable essay, makes a statement which I fancy may be misinterpreted at page 268 of NATURE, where he speaks of the fragmentary character of the Arctic tertiary plants, and the inexperience of the collectors. He doubtless is referring to the remains of certain supposed "palms and cycads in the Greenland Eocene," but those who have not followed this branch of Arctic research would hardly gather from the review that Prof. Heer has determined a magnificent flora of more than 350 species from these northern tertiaries, and that he at once pointed out the absence of tropical and subtropical forms, and the fact that large leaves are not only perfectly preserved up to their edges, but that upright trees associated with their fruits and seeds prove them to have grown on the spot. "Thus of *Sequoia Langsdorffi*," he writes, "we see not only the twigs covered with leaves, but also cones and seeds, and even a male catkin."¹

In April 1875 I endeavoured to give an abstract of all that was then known of Arctic geology, in a series of articles that appeared in your columns (NATURE, vol. xi. pp. 447, 467, 492, and 508), and added some general conclusions of my own, which are further accentuated in the joint communications of Colonel Feilden and myself to the Geological Society in 1878, and in the "Geology Appendix" to Sir George Nares' "Voyage to the Polar Sea," in which expedition Colonel Feilden played a most valuable part. I have ever since carefully followed the progress of Arctic research, and am now of opinion that looking to the identity of a large number of species (often extending to the varieties of the same) occurring in the Silurian, Carboniferous, Lias, Oolite, Cretaceous, and Tertiary strata of the Arctic regions, with those occurring in similar strata in Europe and other parts of the world, they point to a common temperature over these areas and probably over the whole world, from Silurian to early Cretaceous times, and that this was the case does not appear to me to be affected by the question as to whether or not these deposits were homotaxeous.

In late Cretaceous times commenced *horizontal* variation of cold, or what we now term "climate," though previously *vertical* variation had evidently been present, for the later investigations of Messrs. Blanford appear to place beyond doubt the existence of glaciers in geological times, as was suggested in 1855 by my lamented chief, Sir Andrew Ramsay; but I equally fail to see that the slightest evidence has been anywhere adduced to support the theory of "recurrence of ice-ages," originated by my talented colleague the late Dr. Croll, and now supported with a "modification" by Sir Robert Ball.

The facts, whether we look to the history of plant life, or animal life, or the character of the rocks themselves, appear to me to be all the other way, as they disclose nothing resembling the refrigeration that, gradually increasing in the Tertiary epoch, culminated in the Glacial episode, which choked up the North and Irish Seas with an ice-sheet since man has been an occupant of our islands.

CHAS. E. DE RANCE.

H.M. Geological Survey, Alderley Edge, Manchester.

Racial Dwarfs in the Pyrenees.

IN consequence of evidence that I had obtained as to the existence of a dwarf race in Spain, I wrote to Mr. McPherson,

¹ "On the Miocene Flora of North Greenland," by Prof. Oswald Heer. Translated by R. H. Scott, F.R.S., Brit. Assoc., 1897, pp. 53.

our Consul at Barcelona, and enclose his reply. There have long been rumours of survivals of a dwarf or a prehistoric race existing in parts of Spain, but careful inquiries at Madrid failed to supply any definite information on the subject. Last summer on reading over an old number of *Kosmos* (Paris, 1887), I found a brief paragraph referring to a pigmy race having been found in the province of Gerona, Spain, who had slightly Mongolian eyes, yellow, broad, square faces, height from 1 m. 10 to 1 m. 15, and red hair.

An Austrian gentleman recently told me he had seen, in the market-place at Salamanca, some very under-sized peasants, with broad faces and mahogany-coloured woolly hair.

You will see that these accounts all agree substantially, and that these dwarfs and those of Africa are precisely similar.

I have got a deal of information from an old Spanish woman who belongs to a half-breed nano family, and who says that there are in such families frequently nanos (or "enanos") who have red tufts of wool, and are as small as ordinary small boys. But these tufts of wool are peculiarly characteristic of dwarf races nearly everywhere.

I shall write more fully as to my inquiries among half-breed nanos; but they are of very secondary interest now that we can find pure racial nanos within easy reach.

It is most fortunate that they live in the Valley of Ribas and the Col de Tosas, within a little more than a half-day's journey from Toulouse. Some health-seekers or tourists in the South of France may perhaps feel inclined to pay a visit to these little people.

Should the suggestion be acted on, and prove satisfactory, a line to myself on the subject, addressed to 28, Pall Mall, would be highly valued.

R. G. HALIBURTON.

Tangier, January 9.

[COPY.]

"British Consulate, Barcelona, December 10, 1892.

"DEAR SIR,—Since I received your letter of November 18 and its enclosures I have endeavoured to ascertain what truth there is in the statement that pigmies, or 'enanos' (not 'nanos') exist in the Valley of Ribas. From conversations I had with various individuals who have visited that district it appears certain that a race of men, of about from one metre to one metre and twenty centimetres high, of a darkish complexion (copper-coloured), dark hair and woolly, and flat, broad nose, live in that district, particularly in the 'Collado de Tosas.' They are active, and are generally employed as shepherds. It is also asserted that they are not very intelligent, and that they appear to understand and to make themselves understood with difficulty. It would be an easy journey to go to that place from this town. I had no little difficulty in finding out that such a race lived in that place, for many of the persons with whom I have spoken on the subject were evidently confused and confused me, as besides these, evidently racial pigmies, there are in that neighbourhood many 'cretins,' which were at times described to me as if these were the 'enanos' I spoke about. I am now certain that there arecretins and pigmies in the Valley of Ribas. It is stated that the 'enanos' are rapidly disappearing, and that latterly many have died of smallpox. The men you speak of, who were seen at Salamanca, are, I should say, natives of the Batuecas, or rather of Los Hurdes. These men were discovered in the sixteenth century, and they were then and are even now, in an almost absolute state of savagery." [The remainder as to this race is omitted, as it does not appear that they are nanos.—R. G. H.]

"Yours very truly,

(Signed)

"WM. McPHERSON.

"R. G. Haliburton, Esq."

British Earthworms.

I WRITE to suggest—in connection with the recent letters in *NATURE* upon this subject—that some one give a thoroughly trustworthy list of British earthworms, with the memoirs in which the species were originally described, and the chief characteristics of each. Dr. Benham would be doing very useful and acceptable work if he were to accomplish this. From what I understand everybody has been making mistakes, and the whole matter is in the utmost confusion. It is very necessary that

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such a classification should exist, if only for the benefit of those who are working on the earthworm more from a comparative anatomist's than from a specialist's point of view.

FRANK J. COLE.

Zoological Department, Edinburgh, January 12.

DANTE'S "QUÆSTIO DE AQUA ET TERRA."

"Quæstio Aurea ac perutilis edita per Dantem Alagherium, poetam florentinum clarissimum, de natura duorum elementorum Aquæ et Terræ disserentem."

"Lo, the past is hurled

In twain: up thrust, out staggering on the world,

Subsiding into shape, a darkness rears

Its outline, kindles at the core, appears

Verona."—R. BROWNING, "Sordello," Book i.

"TO all and each who shall see this document, *Dante Alighieri* of Florence, the least amongst true philosophers, wishes health in Him who is the Beginning of truth and the Light.

"Be it known unto ye all that whilst I was at Mantua there arose a certain question, the which after having been many times dilated upon rather for vain show than for Truth's sake, still remained undecided. Wherefore I, since from boyhood I have been nurtured continually in love of Truth, could not bear to leave the question undiscussed; but I thought fit to show the truth concerning it and to dissolve the arguments adduced to the contrary, both for love of Truth and hatred of Falsehood. And lest the malice of many who are wont to fabricate envious lies against the absent should behind my back alter what was well said, I have moreover thought fit to leave written down on paper what I proved, and to set forth the form of the whole disputation."

These are the words with which Dante commences this "golden and most useful" inquiry concerning the nature of the two elements, earth and water. The treatise is little known in comparison with the other writings of the poet;¹ but although rejected by Ugo Foscolo and others as "impostura indegna d'esame," its genuineness and importance are now almost universally admitted; and without yielding unreservedly to the enthusiastic opinion of an Italian geologist (Stoppani) that there are more truths relating to cosmology to be found prognosticated, affirmed, and even demonstrated in these few pages of the supreme poet than in all the writings of the middle ages taken together, we may nevertheless acknowledge it to be a work of the greatest interest and importance, and by no means unworthy of the singer of the "Divina Commedia."

It seems to be the last work of the poet's life, written at that period which he himself describes in his sonnet to Giovanni Quirino:—

"Lo Re, che merta i suoi servi a ristoro

Con abbondanza, e vince ogni misura,

Mi fa lasciare la fiera rancura,

E drizzar gli occhi al sommo consistoro

E qui pensando al glorioso coro

De' cittadini della cittade pura,

Laudando il Creatore, io creatura

Di più laudarlo sempre m'innamoro."

—Sonetto xlv. ed. Fraticelli.²

Dante was at this time the guest of Guido Novello di Polenta at Ravenna. About the commencement of the

¹ It is, I believe, the only one of Dante's writings that has not yet been translated into English.

² "The King by whose rich grace His servants be

With plenty beyond measure set to dwell,

Ordaims that I my bitter wrath dispel

And lift mine eyes to the great consistory;

Till, noting how in glorious quires agree

The citizens of that fair citadel,

To the Creator I, His creature, swell

Their song, and all their love possesses me."

—Rossetti's translation in "Dante and his Circle."