

educated men we ought to have known we had no business to be going about the country. This was rather too strong, so I retorted, "That is nonsense; we have a right to take a walk along the roads to see the country." To cut a long story short, he departed, before our train arrived, with the remark that, if we had been photographing or sketching, he should have taken us into custody.

We were at nearest about seventeen miles from the sea. Neither at Louth (where we had spent a week) nor at Lincoln was any notice posted up in the hotel (or elsewhere, so far as we had seen) supporting his view, and we had not left the high road, except to enter two pits. It is therefore obvious that any village Dogberry may employ the "brief authority" with which he imagines himself clad to prevent all study of English geology or natural history.

T. G. BONNEY.

National Food Supply and Nutritional Value.

ONE of the remarks made in the article in NATURE of May 11 on my survey of the "Food Value of Great Britain's Food Supply" is certainly justified, namely, "the value for protein seems low." It is too low. This has arisen from taking an analysis for wheat flour in which the protein was 7.9 per cent., whereas it should be, more correctly, something like 10.7 per cent. Making an allowance for this difference increases the daily protein ration per man by 10.4 grams and brings it to 112.1 grams instead of 101.7. For a similar reason the carbohydrate should be reduced from 587.12 grams per man per day to 580.7 grams. Whether the fat should be reduced depends on the analysis adopted for the different kinds of meat. A recalculation, however, adopting different analyses, and perhaps, on the whole, more accurate ones, makes no material difference in the daily ration "as purchased." It certainly affords no ground for reduction; on the contrary, it shows an increase of 1.9 grams per man per day.

In conclusion, perhaps I may be permitted to express my grateful appreciation of the very fair and sympathetic way in which your article, as a whole, is written and for the opportunity it affords of making these corrections, which I hope to publish later in detail.

W. H. THOMPSON.

Trinity College, Dublin, May 15.

I AM glad to find that Prof. Thompson has discovered a reason for giving us a more reassuring figure concerning the national supply of protein. It is now clear that we have a larger margin upon which to draw in case retrenchment should prove necessary.

Readers of NATURE should be grateful to Prof. Thompson for making the correction, and I have myself to thank him for the courtesy of his letter.

THE WRITER OF THE ARTICLE.

May 19.

The Lower Greensand Flora.

IN the kind review of my work on the Lower Greensand Flora in NATURE of May 4 your reviewer states that I have overlooked a memoir by Buckland. This is the Bridgewater treatise. May I point out (1) that I was dealing with Lower Greensand and not Portland Oolite plants, and therefore not professing to give a complete account of the latter, but merely referred to Buckland's *original* memoir, in which the name of the genus was founded, for purposes of nomenclature; (2) that, even though in the later work (the Bridgewater treatise) Buckland figures a specimen with the "lateral buds," which are probably

cones, it remains the fact, as I stated, that no cones are figured in the original *type*; (3) that the Bridgewater treatise example can only be accepted as being the same species as the original type by an assumption that they were, in fact, identical, because, as I stated, the original type specimen is lost; (4) that, consequently, it is not carelessness, but a perhaps over-meticulous scrupulousness in nomenclature which made me, and still makes me, hesitate to accept as a certainty the identity of the so-called *Cycadites microphyllus* of the Bridgewater treatise with the lost original vegetative type of *Cycadeoidea microphyllus*, in spite of the top part of the drawing.

MARIE C. STOPES.

OVERLOOKING a reference is at least to some of us too common an occurrence to need an elaborate defence. My point is that Buckland's later description of one of his species, *Cycadeoidea microphylla*, is fatal to an important argument used by Dr. Stopes. Buckland expressed no doubt as to the specific identity of the specimen figured in the Bridgewater treatise with that on which the original account was based, and, whether or not the stems belong to the same species, there are no adequate grounds for doubting their generic identity. The natural course to pursue in endeavouring to solve a problem is to consider such evidence as is available, and, as regards the question at issue, I maintain that the evidence overlooked by Dr. Stopes furnishes a serious—in my opinion a fatal—objection to her conclusions.

A. C. S.

Meteorological Conditions of a Blizzard.

THE word "blizzard," signifying originally a type of snowstorm most common and most severe in the Rocky Mountain States of the Union, although occasionally occurring elsewhere, is now loosely used to mean any heavy snowstorm. This is unfortunate, for a term is needed for the type of storm referred to above. Three things must co-exist in a blizzard—large quantities of very fine snow; very low temperature, generally below zero Fahrenheit; and a high wind of great velocity.

Apparently the loose use of the word is becoming common in Great Britain, for you refer in NATURE of April 6 (p. 129) to "a blizzard of unusual severity." The context shows that neither the snow nor the temperature condition could have been fulfilled, for you say that the gale "was accompanied by rain and snow."

I doubt very much whether the British Isles could produce the requisite conditions for a real blizzard.

ARTHUR E. BOSTWICK.

St. Louis, Mo., April 24.

THE ROUTLEDGE EXPEDITION TO EASTER ISLAND.

NOW that members of Mr. Scoresby Routledge's expedition to Easter Island have returned to this country, it is possible to give some idea in broad outline of the objects of the expedition and of its chief results. The expedition, which was aided by grants from the British Association and the Royal Society, was exceptionally well equipped. It also had the advantage of being independent of the infrequent opportunities of communication with Easter Island, as Mr. Routledge had built and fitted at his own expense the schooner *Mana*, of 126 tons, with auxiliary motor power, in which the expedition sailed from

Southampton to Chile *viâ* the Straits of Magellan, and thence to its destination. The party consisted of Mr. and Mrs. Routledge, Lieutenant R. D. Ritchie (seconded by the Admiralty for navigation and survey work), and Mr. F. Lowry Corry, geologist. The last-mentioned gentleman had unfortunately to be left behind in South America owing to a severe attack of typhoid fever which necessitated his subsequent return to England. The expedition arrived at the island on March 29, 1914, and did not leave until August, 1915, making a stay of sixteen and a half months.

Easter Island, or Rapa Nui, the most easterly island of the Polynesian group, lying about 11 miles south-east of Pitcairn, was discovered in 1721 by a Dutch captain named Roggewein. It was visited on several occasions subsequently by navigators, notably by H.M.S. *Topaze* in 1868. Our knowledge of the history and antiquities of the island is based largely on the results of a visit of twelve days' duration made by the *Mohican*, of the United States Navy, in 1886.

The islanders speak a dialect of Polynesian, and in physical character they conform to the Polynesian type. At the present day their numbers are small, owing to the fact that in 1862 or 1863 about half of the population was carried off by Chilean slave raiders, and a large number of the remainder were transferred to Tahiti, Eimeo, and Gambier by various agencies. Considerable modification in their customs would appear to have taken place after the Chilean raid; the chiefs upon whom their social organisation was based disappeared, and many of their ancient customs fell into desuetude, though the tradition was preserved among the older members of the community. From this tradition and from the references in the accounts of the older voyagers, it would appear that in religion, culture, and social organisation the Easter Islanders were broadly Polynesian. During their stay on the island the members of the Routledge expedition were able to get into intimate relation with those islanders who still have some knowledge of the older tradition. The result has been a fund of information of quite unhopèd-for interest and importance, especially in its relation to the archæological remains of the island, which have always been something of a puzzle.

The chief interest of Easter Island lies in the fact that it possesses remains which, although not exactly unique, are yet sufficiently remarkable to have given rise to considerable speculation. These consist of stone terraces, or platforms, resembling the Polynesian *marais*; colossal monolithic statues, stone carvings, and stone-built houses. Further, Easter Island is the only part of Polynesia in which anything approaching a script was developed. About fifteen inscribed wooden tablets from the island are known to exist, one being in the British Museum.¹

The stone terraces or platforms have been carefully examined and measured by the Routledge

expedition, and the number known to exist has now been considerably increased. These platforms are remarkable both for their size—one of them is 150 feet long, or with the wings which run from the upper level to the ground, 560 feet long—and for the method of their structure. They were built by filling in with stone rubble the space between parallel walls of squared uncemented stone. On the top of the platforms stood the stone statues. These statues, of which there are two examples in the British Museum, are of enormous size, weighing from 10 to 40 tons. Many of them lie where they were made in the crater, and a large number still stand on the slopes of Rana Roraku, one of the volcanic craters which form the chief physical features of the island. Dr. Rivers has recently directed attention to the fact that Moerenhout in 1837 pointed out that similar, though smaller, statues existed in Pitcairn and Laivaivai, while he himself suggests a connection with the cults and secret societies of Melanesia.² None of the statues on the platforms are now standing, and their manufacture appears to have ceased abruptly. One explanation of the cessation which has been offered is that it was due to a volcanic disturbance, while a native legend states that the statues were thrown down in an intertribal quarrel. The Routledge expedition made a number of excavations around the statues in the hope that light might be obtained on this point, and the methods of manufacture were carefully investigated. Particular attention was given to the question of orientation, but no uniformity was observed. On the coast the statues on the platforms faced inland, while the platforms themselves faced in all directions. Those erected on the mountain followed the nature of the ground. Inside the crater they faced north and east; on the outer slope south-west. The stone-built houses were also subjected to a close examination, and much new information obtained as to them. It could scarcely be expected that at this late date, especially having in view the results of earlier inquiries, an interpretation of the tablets could be obtained; but a certain amount of information of value has been acquired.

The expedition, on leaving Easter Island, visited Pitcairn Island (where a stay of four days was made), Tahiti, and the Sandwich Islands, in all of which material valuable for comparative purposes was obtained.

It would be premature and unfair, while the data of the expedition are still under examination, to do more than indicate in the briefest manner the points to which attention has been directed. Enough has been stated, however, to suggest the value of the expedition's work, which it may safely be said will not only add considerably to our knowledge of the island itself, but will have important bearing upon more general questions relating to the culture of the Pacific. It is hoped that it will be possible for a full account of the expedition to be given at the forthcoming meeting of the British Association at Newcastle.

E. N. FALLAIZE.

¹ The tablets are described and the attempts at their interpretation summarised and discussed by Mr. O. M. Dalton. "On an inscribed wooden tablet from Easter Island (Rapa Nui) in the British Museum." *Man*, London, 1904, No. 1.

² W. H. R. Rivers, "Sun Cult and Megaliths in Oceania." *American Anthropologist*, New Series, 17, 1915, 442 fol.