

the Liverworts and Characeæ, with an appendix to the species of Mosses and Hepaticæ, and a copious index. The vascular cryptogams are described by Stenzel, and include twenty-one genera, fifty-three species, and ten sub-species. A history of the discovery of Silesian Pteridophyta is prefixed, and an interesting account of their distribution. Thus the species found on serpentine, limestone, and other rocks, are noted, as well as the hypsometrical distribution. Four regions of elevation are distinguished: 1, from 55 metres to 150 m.; 2, from 150 m. to 500 m.; 3, from 500 m. to 1,100 m.; and 4, from 1,100 m. to 1,500 m. The arrangement of some of the species and sub-species is not quite in accordance with our English ideas. Thus *Woodzia hyperborea*, Koch, is separated into two sub-species: 1, *arvonica*, With.; and 2, *rufidula*, Sw.; equal to *hyperborea* R., Br. and *ilvensis* R., Br. respectively. *Cystopteris montana* of British botanists is *C. sudetica*, Al. Braun and Milde. Then *A. dilatatum*, *spinulosum*, and *cristatum*, are all placed as sub-species of *Aspidium spinulosum*, Sw., and *A. aculeatum lobatum*, and *angulare* are made sub-species of *A. aculeatum*, Döll.

The Mosses and Liverworts are described by Limpricht, and occupy the greater part of the volume, there being 106 genera and 464 species of Mosses, and 39 genera and 132 species of Hepaticæ. A few additional species are added in the Appendix, bringing up the Mosses to 492 species and the Liverworts to 155. The same arrangement is here followed as to history and distribution as in the case of the vascular cryptogams. The descriptions seem excellent, and the information given very full and complete, the characters of the orders and families being given in great detail.

The Characeæ have been described by Prof. Alexander Braun. Probably this was one of the last important works from his prolific pen. All must deplore his recent loss. His vast knowledge, the importance of his contributions to botany, and his genial kindly manner, the readiness he always showed in assisting his students, are well known. To know him was to love him, and we esteem it a high privilege to have been one of his students. The Characeæ are not very numerous, three genera and fourteen species being enumerated; but in the hands of Prof. Braun it becomes a most valuable memoir on the whole group, while the species likely to be found in Silesia are all pointed out. The synonymy must be very confused, as Braun notices that *Chara flexilis*, Waller, includes three or four species of *Nitella*, three of *Tolyphella*, and one *Chara*, *C. gracilis* of Sprengel is a still greater monster, as it includes five species of *Nitella*, one *Lychnothamnus*, and three species of *Chara*.

W. R. McNAB

*The Countries of the World, being a Popular Description of the Various Continents, Islands, Rivers, Seas, and Peoples of the Globe.* By Robert Brown, M.A., Ph.D., &c. Vol. I. (London: Cassell, Petter, and Galpin. No date.)

THIS is certainly an attractive book; the wealth of illustrations renders it so. While we recognise some of the illustrations as having done service elsewhere, many of them are new, well-executed, and afford a good idea of the scenery, products, and people of the regions they are meant to illustrate. This volume treats of the Arctic regions and North America, contains a great amount of miscellaneous information, and is written in a rambling easy-going style. It is essentially a popular work, but might have been made valuable even to the geographical student had some of the pictures been dispensed with and a number of regional maps substituted similar to those which are so important a feature in Reclus' "Géographie Universelle," with which masterly and exhaustive work, however, it would be unfair to compare it. We have no doubt Dr. Brown's work will afford pleasure and prove instructive to many readers.

## LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

### The Radiometer and its Lessons

HAVING been prevented from attending the recent meeting of the British Association by the necessity of devoting my entire vacation to mental and bodily renovation after the sad family losses I had sustained, I have only become aware within the last few days that my article in the April number of the *Nineteenth Century*, entitled "The Radiometer and its Lessons," had been there spoken of by Prof. G. Carey Foster, in his address as President of Section A, as showing an "unmistakable tendency, either intentionally or unintentionally, to depreciate Mr. Crookes's merits, and to make it appear that he had put a wrong interpretation upon his own results," which statement is said by your reporter to have "elicited great applause."

Of Mr. Crookes's own reply in the July number of the same periodical, entitled "More Lessons from the Radiometer," I took no notice; partly because my mind was at the time fully occupied by sad cares and urgent duties, and partly because I thought that his assertions (1) that he had not theorised on the subject at all, (2) that he had not attributed the rotation of the radiometer to the direct impetus of light, and (3) that he had never claimed the discovery of a new force or a new mode of force, were so well known in the scientific world to be inconsistent with fact, that I need not trouble myself to refute them.

Prof. Carey Foster, however, speaking with authority as President of the Physical section of the British Association, has given it as his judicial opinion that what I have written on this subject shows an unmistakable tendency to depreciate Mr. Crookes's merits, and to misrepresent his opinions; and he has further "unmistakably" suggested (as it appears to me) that this may have been done with deliberate intention, instead of being done in good faith under the influence of an unintentional bias. As it is impossible for me to allow such an imputation from such a quarter to pass unnoticed, I might fairly challenge Prof. Carey Foster to justify language which I must presume him to have used with all due consideration of its obvious meaning, and of his and my relative positions. But as he explicitly disavows the more serious part of this imputation, I have now only to ask to be allowed to show, in the columns of the journal which has not only recorded the accusation, but has pointedly directed attention to it,—first, that I have not, even unintentionally, "depreciated Mr. Crookes's merits" as the inventor of the Radiometer; and secondly, that Mr. Crookes really did in the first instance put that "wrong interpretation upon his own results" which I attributed to him. Had Prof. Carey Foster complied with the request I privately made him, that he should specify the passages which (in his opinion) justify his charge, I should have been able to reply to it much more briefly. But by declining thus to particularise, he obliges me to traverse the whole ground covered by his general accusation.

That I was not influenced, when writing on the Radiometer, by any animus arising from my personal antagonism to Mr. Crookes on another subject, will appear, I think, from the following extracts from the two lectures which I delivered at the London Institution (by special request) on Mesmerism, Spiritualism, &c., before Christmas, and which were published in *Fraser's Magazine* at the commencement of the present year:—

"The recent history of Mr. Crookes's most admirable invention, the Radiometer, is pregnant with lessons on this point. When this was first exhibited to the admiring gaze of the large body of scientific men assembled at the *soirée* of the Royal Society, there was probably no one who was not ready to believe with its inventor that the driving-round of its vanes was effected by the direct mechanical aid of that mode of Radiant Force which we call Light; and the eminent Physicists in whose judgment the greatest confidence was placed, seemed to have no doubt that this mechanical agency was something outside Optics properly so called, and was, in fact, if not a new Force in nature, a new *modus operandi* of a force previously known under another form. There was here, then, a perfect readiness to admit a novelty