We thus seem to be warranted in the fourth proposition.

(4) *In five-year groups having each a sunspot minimum year third (or central), there are generally more cool summers than hot.*

From the present point of view, then, it would appear that in our climate sunspot maxima tend to be associated with a preponderance of mild winters and hot summers; and minima with a preponderance of severe winters and cool summers.

The latter condition of things we should now be near; if we suppose a minimum in 1901, then we might expect at least three of the winters, 1899-1903, to be severe, and three of the summers cool, in the sense indicated.

A further feature may here be noticed. If we arrange the summers and winters in vertical series, according as they are in maximum (or minimum years) one year after maximum, two years after, &c., to the extent of five on either side, there are in these vertical series, I find, only two cases of uniformity throughout, viz. these: (1) *All summers of minimum years have been cool*; (2) *all summers in the fifth year after minima (and therefore near maxima) have been hot.* This agrees with the foregoing.

A. B. M.

Rotifers in Lake Bassenthwaite.

IF the occurrence of *Asplanchna* as a conspicuous member of the pelagic fauna of lakes has not hitherto been recorded in Britain, it can only be attributed to the lack of attention in this country to the systematic investigation of our fresh-water fauna. On the continent of Europe and in North America, *Asplanchna priodonta* with its variety *helvetica* and other members of the genus are constantly recorded as among the commonest constituents of the lake plankton. I have on several occasions found *A. priodonta* in lochs near Dundee in swarms similar to that described by Prof. Hickson, and I have no reason to suppose that there is anything exceptional in the phenomenon. Mr. John Hood, of this city, a veteran student of the Rotifera, tells me that its occurrence under these conditions has long been familiar to him. He states that the domestic water supply of Dundee, which always contains a variety of pelagic organisms, was on one occasion rendered quite turbid by swarms of the same species.

It must be remembered that Hudson and Gosse's monograph was written at a time when the tow-net had hardly begun to be employed in fresh-water investigation, and that many of the common pelagic species were either unknown, or, like *Notholca longispina* for example, very little known to the authors.

Prof. Hickson does not state whether any males were present in the gatherings obtained by him. It is probable, as Wesenberg-Lund has recently pointed out (*Zool. Anz.*, March 7, that the appearance of any one species in large numbers is an indication of the approach of the "sexual period," which is always preceded by a period of very rapid parthenogenetic reproduction.

W. T. CALMAN.

University College, Dundee, July 5.

THE STORY OF THE SMITHSONIAN INSTITUTION.¹

IN this sumptuous volume, produced with all that excellence of type, paper, and illustration, in which so many of the American official publications excel, the story is told of how the Smithsonian Institution was founded, and of the work which it has done in its first half-century.

The Smithsonian Institution, like our own Royal Society, has something of a semi-official connection with the Government. Without being a Government department, or deriving its funds from Government, it is in close correspondence with the ruling powers in respect to scientific matters, advises them upon scientific questions, administers funds voted by Congress for specific scientific purposes, and in general keeps an eye upon the scientific side of many national undertakings.

It is presumably in recognition of this semi-official character of the Institution, that the President of the United States has written a brief but interesting preface

¹ "The Smithsonian Institution, 1846-1896. The History of its First Half-Century." Edited by George Brown Goode. (City of Washington, 1897.)

to the present volume. In this preface Mr. McKinley recalls how, in 1796, George Washington, in his farewell address to his fellow-countrymen, said "Promote, then, as an object of primary importance, institutions for the general diffusion of knowledge, for in proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened"; and how, thirty years later, "an Englishman, James Smithson, as though influenced by these words, bequeathed the whole of his property to the United States of America in trust 'to found at Washington an establishment for the increase and diffusion of knowledge among men.'"

James Smithson, the benefactor who is thus commemorated, was born in 1765, and was known in his youth as James Lewis Macie, he being in fact an illegitimate son of Hugh Smithson, afterwards Duke of Northumberland, by Elizabeth Macie, a cousin of the Percys, who, at the time of his birth, was a widow.

This fact of his parentage is important, not only as explaining why James Macie subsequently took the name of Smithson, and so gave its name to the Smithsonian Institution, but as explaining also one strong motive which influenced him in founding that institution; for, all his life, it seems, he smarted under a sense of injustice, and was determined that in some way he would attain to fame, though excluded from hereditary rank. "The best blood of England," he once wrote, "flows in my veins; on my father's side I am a Northumberland, on my mother's side I am related to kings, but this avails me not. My name shall live in the memory of man when the titles of the Northumberlands and the Percys are extinct and forgotten."

Smithson was a student of science, and did some sound scientific work. He was a Fellow of the Royal Society, and contributed twenty-seven papers to the *Philosophical Transactions*, the *Annals of Philosophy*, and the *Philosophical Magazine*—papers which, in the opinion of Dr. S. P. Langley, whose biographical sketch of Smithson fronts this history, "give the idea of an assiduous and faithful experimenter." Nevertheless he did not by this path attain any such eminence as would justify him in hoping for the immortality which he coveted, and there can be little doubt that it was at least in part his consciousness of this fact which led him to follow the remaining path to fame, that of a munificent benefactor to the branch of learning which he loved.

In his later years he was a great sufferer. He lived chiefly in Paris, where he cultivated the friendship of Arago. From Arago's "Eulogy on Ampère" Dr. Langley gives a very interesting extract, which is worth quoting in full, as giving us a vivid glimpse of Smithson's declining years, and a rather touching picture of Arago's friendship with him.

"Some years since in Paris I made the acquaintance of a distinguished foreigner of great wealth, but in wretched health, whose life, save a few hours given to repose, was regularly divided between the most interesting scientific researches and gaming. It was a source of great regret to me that this learned experimentalist should devote the half of so valuable a life to a course so little in harmony with an intellect whose wonderful powers called forth the admiration of the world around him. Unfortunately there occurred fluctuations of loss and gain, momentarily balancing each other, which led him to conclude that the advantages enjoyed by the bank were neither so assured nor considerable as to preclude his winning largely through a run of luck. The analytical formulas of probabilities offering a radical means, the only one perhaps, of dissipating this illusion, I proposed, the number of the games and the stakes being given, to determine in advance, in my study, the amount not merely of the loss of a day, nor that of a week, but of each quarter. The calculation was found