

loose it retarded it very much. From this follows the practical truth, that we can produce a very different effect by the same number of clothes according to their make.

"Generally our clothing has been considered as an apparatus for keeping the air from us. This conception is utterly erroneous, and we can bear no garment which does not allow of a continual ventilation of our surface. Just those textures which are most permeable to the air keep us warmest. I have examined different materials for their permeability to air, and taking the permeability of air passing through flannel as 100, linen allowed 58, silk 40, buckskin 58, chamois 51, kid 1 part of air to pass through them. If the above-stated notion were correct, kid would keep us 100 times, chamois warmer by half, than flannel, and so on, while everyone knows that it is quite the reverse."

With reference to Fur the author says:—"A fur is so arranged that its fine hair projecting into the air intercepts all the heat which flows from the surface of the body by radiation and conduction, and distributes this heat through the air which circulates between the single hair-cylinders. Thus the air, however cold it may be, reaches the nerves of our skin as a warmed air. Furred animals in winter, when touched superficially, give a very cold sensation; it is only near the skin that their hair feels warm. In a severe cold, certainly little of our animal heat comes as far as the points of the hair, from which it would escape by radiation or conduction, as the current of air in the fur cools the hair from its points towards its roots, and a severe cold penetrates only a little farther into the fur, without reaching the skin of the same. This can take place only at an exceedingly low temperature, or when a very cold air is in violent motion. In a well-furred animal the changes of temperature in the surrounding air only change the latitudes at the cold and warm zones in the fur; the place where the temperature of the body and the air equalise each other, moves between the roots and points of the hair, and for this reason a furred animal is not warmer in summer than in winter. In summer its heat leaves at the points, in winter near the roots of the hair."

Journal of the Proceedings and Annual Report of the Winchester and Hampshire Scientific and Literary Society, vol. i., part ii. 1871-2 (Winchester: Warren and Son, 1873).

WE are glad to see from the Third Annual Report of this Society that it continues prosperous, the number of members being, in 1872, 105. We hope good use will be made of the valuable herbarium of flowering plants, ferns, lichens, &c., collected and arranged by the late Mr. Hill, which has come into the possession of the society, through the generosity of the Mayor, Mr. R. P. Forster, and the President. The present part of the journal contains a number of papers, literary and scientific, read at various meetings of the society. The principal one is the Introductory Address delivered at the commencement of the third session, by the Rev. Canon Kingsley, on "Bio-Geology—the science which treats of the distribution of plants and animals over the globe, and the causes of that distribution." The address is an eloquent one, it can easily be imagined, shows extensive knowledge and great shrewdness, and contains many valuable hints both to young and old naturalists. Most of the other papers are also by clergymen, the principal ones being the following:—"On the Dawn of Thought in Greece," by the Rev. W. Awdry; "On the Metamorphosis of Lepidoptera," by Mr. J. Pamplin; "the Planet Jupiter," by the Rev. E. Firmstone, in which the author gives many interesting facts and speculations as to the condition of that planet; "Vesuvius previous to and during the Eruption of 1872," by the Rev. C. A. Johns, in which the author describes an ascent he made shortly before the last erup-

tion, and appends a condensed abstract of Palmieri's account of the eruption. Appended to the journal is a valuable list of 315 works on the Geology, Mineralogy, and Palæontology of the Hampshire Basin, compiled by Mr. William Whitaker, of the Geological Survey.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

Wyville Thomson and the Ventriculidæ

I TRUST that you will afford me a little space for a few remarks upon some passages in Prof. Wyville-Thomson's book, the "Depths of the Sea," which, owing to many engagements, has only just come into my hands. So earnest a labourer in the wide field of truth will not, I hope, deem me discourteous if I point out one corner where his feet have slipped; and if it be objected that, after all, it is only in a small spot, the learned Professor will, I am sure, agree with the answer that, even in the smallest steps towards truth, attainable accuracy is important.

In 1847-48 my father published a series of papers in the "Annals and Magazine of Natural History," which were afterwards collected into a volume, on the "Ventriculidæ of the chalk, their microscopic structure, affinities, and classification." This work, which still remains, I believe, the authority on its subject, introduced order and classification where before all was confusion, expressly founding these upon two guiding principles of anatomy, the existence of which had been proved by searching tests. These two principles—the first being the structure, the second the fold, of the membrane—I am careful to recall, as I think there is considerable misapprehension regarding them. The chief locality of these fossils was in the south and west of England.

In his chapter on the Continuity of the Chalk, Prof. Thomson brings forward several families of ancient fauna as palæontological evidence in support of his argument. Among these he devotes some attention to the Ventriculidæ (he calls them *Ventriculites*, but why? In the same sentence he uses the family name *Hexactinellidæ*); but, though he acknowledges my father's work, and refers to his "minute and most accurate description of their structure," it does not appear by what follows that he has quite comprehended it: "He (Mr. Toulmin Smith) found them to consist of tubes of extreme tenuity, delicately meshed, and having between them interspaces usually with very regular cubical or octohedral forms" ["Depths," &c. p. 482]. This description (the Professor will forgive me for saying so) does not convey a very clear idea of any structure, and certainly does not apply to the Ventriculidæ: if the word "tube" here means the body of the creature, it may in one sense be partially true of a few species in each of the genera—*Ventriculites*, *Cephalites*, and *Brachiolites*; but if it is intended to apply to the substance of the structure, I must say that it denotes a complete error. My father's words are, that "the membrane of the Ventriculidæ is composed of very delicate fibres," "the fibre is single and solid, never fistular," and that in this structure "there are no tubes whatever" (pp. 21, 25, 30). My father carefully describes this membrane, and marks it as the essential characteristic of the whole family of Ventriculidæ. Among the thirty-five species, for the most part marked by strong differences, he points out that *Ventriculites simplex* is the type of the whole family, consisting of a single membrane without a trace of fold.

Now, Prof. Thomson gives a figure of the octohedral structure to which I will not take exception, but he writes underneath it, "*Ventriculites simplex*, Toulmin Smith. Section of the outer wall, showing the structure of the silicious net-work." This implies, while citing my father's name (1) that this structure is proper to that species; and (2) that there is an inner wall. It also speaks of the net-work as silicious, while, two pages before, it is said, that "Mr. Toulmin Smith supposed that the skeleton of the Ventriculite had been originally calcareous." But though mistakes of this sort might easily arise through misapprehension, I must say I was very much astonished to see the figures, one of the entire fossil, the other of the "outer surface," given as "*Ventriculites simplex*, Toulmin Smith," from Mr. Sanderson's collection ("Depths," &c., pp. 483, 484.) A glance at Fig. I, on the second plate in my father's book, will show that the name