

boundless scope for absorbing and interesting cogitation in such inquiries as the origin of species, spontaneous generation, animal or vegetable character of certain obscure forms of life, the correlation of physical forces, mutual relations of the physical and vital forces, and similar modern engagements of human thought. The other great class, the practical, who have been taught by the books of their earliest youth to appreciate the difference between "eyes and no eyes," will also be prepared fully to admit with the student of Natural History that, merely to see an object, or to remember its name, is not to *know* it; and that if thoroughness of knowledge be essential or desirable in all the practical engagements of life, it must be equally so in our study of the countless objects of nature's universal domain—objects that are inseparably connected with the supply of all human necessities and comforts. But this knowledge is not merely useful, it is also elevating and interesting in the highest possible degree; and this I will proceed to show as far as I can in the brief limits to which I must confine myself, by seeking in the three great kingdoms of nature some practical illustrations of the truth of these assertions.

The animal world, from which we may take our first illustration, presents, from its lowest to its highest forms, a series of organic structures progressing with almost imperceptible gradation in perfection of development and complexity of organization. Amongst the simplest of its representatives are the Protozoa, the great majority of which are too small to be distinguished without the aid of the microscope. They are graphically described by Dr. Wm. B. Carpenter as consisting of "seemingly structureless jelly." They perform those vital operations which we are accustomed to see carried on by an elaborate apparatus without any special instruments whatever—a little particle of apparently homogeneous jelly changing itself into a greater variety of forms than the fabled Proteus; laying hold of its food without members, swallowing without a mouth, digesting without a stomach, appropriating its nutritious material without absorbent vessels or a circulatory system, moving from place to place without muscles, feeling (if it has any power to do so) without nerves, multiplying itself without eggs, and not only this, but, in many

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