deal with the meteors of the great shower of November, and those which seem associated with the orbit of Biela's comet. The meteor-shower which it was anticipated would be seen when the Earth passed nearest to the orbit of the comet, was not seen, either in November 1878 or November—December, 1879.

The remainder of the volume is devoted to essays of less strictly scientific nature, but in most cases of most interesting character. Those on 'Artificial Somnambulism,' 'Hereditary Traits,' and 'Mechanical Chess-players,' are especially well worth reading. On the whole, like most of Mr. Proctor's books, it is one which is far more easily taken up than laid down.

ERASMUS DARWIN.*

THE student of English books dating back some thirty or forty years and upwards has doubtless often met with fine if rather magniloquent verses quoted from a work called the *Botanic Garden*. This was a didactic poem of no small merit, in whatever light we look at it. Published originally in 1790 and 1791, its author was Dr. Erasmus Darwin, of Lichfield, a man of considerable repute in his day, and who would have occupied a far higher niche in the temple of Fame if his contemporaries had been in the least degree capable of appreciating his qualities. As most naturalists have long been aware, this Dr. Darwin was the originator of a conception of organized nature on the basis of evolution, which met with but contemptuous treatment from the author's countrymen. He has also a claim on our gratitude as having been the grandfather of Charles Darwin, whose influence upon the progress of Natural History has probably been greater than that of any other writer since the days of Linnæus.

A short note on his grandfather's biological views inserted by Mr. Darwin in the later editions of the *Origin of Species* excited the curiosity of a German *savant*, Dr. Ernst Krause, to know something more of the opinions entertained by Erasmus Darwin; and the result of a careful study of the writings of the latter on the part of Dr. Krause, was the publication in *Kosmos* of February last of a biographical and critical essay, a translation of the latter part of which, preceded by a biographical notice from his own hand, is now given to the public by Mr. Darwin.

Dr. Krause speaks of Erasmus Darwin as follows:—'This man, equally eminent as philanthropist, physician, naturalist, philosopher, and poet, is far less known and valued by posterity than he deserves, in comparison with other persons who occupy a similar rank. It is true that what is perhaps the most important of his many-sided endowments, namely, his broad view of the philosophy of nature, was not intelligible to his contemporaries; it is only now, after the lapse of a hundred years, that by the labours of one of his descendants we are in a position to estimate at its true value the wonderful perceptivity, amounting almost to divination, that he displayed in the

---

* *Erasmus Darwin.* By Ernst Krause. Translated from the German by W. S. Dallas. With a preliminary notice by Charles Darwin. Small 8vo. London, John Murray, 1879.

domain of biology. For in him we find the same indefatigable spirit of research, and almost the same biological tendency, as in his grandson; and we might, not without justice, assert that the latter has succeeded to an intellectual inheritance, and carried out a programme sketched forth and left behind by his grandfather.'

'But, at the same time, we remark a material difference in their interpretation of nature. The elder Darwin was a Lamarckian, or, more properly, Jean Lamarck was a Darwinian of the older school, for he has only carried out further the ideas of Erasmus Darwin, and it is to Darwin therefore that the credit is due of having first established a complete system of the theory of evolution.' Clearly such a man as this deserves to be rescued from the comparative oblivion into which he had fallen, and we are glad to see that two writers have in this same year tried to do justice to this English worthy.

It is hardly necessary to say that the life of Erasmus Darwin as a successful physician in a provincial town passed without any striking incidents. What is to be told, however, is told here by Mr. Darwin in an exceedingly pleasant style, and he naturally devotes his attention rather to the delineation of his grandfather's character than to the thankless task of giving full details of a somewhat uneventful life. Nevertheless, the few incidents narrated, and especially the quotations given from letters, are full of interest for those who like to realize as far as possible the modes of life and thought prevalent at a time so near our own, and yet so widely separated from us.

Erasmus Darwin was descended from a family of landed gentry in Lincolnshire, and was born on the 12th of December, 1731, at Elston Hall, in Nottinghamshire. He early displayed a great fondness for poetry, and also for mechanical pursuits, both of which tastes he preserved to the end of his life; and when very young, according to his elder brother, Robert, he used to show little experiments in electricity with a rude apparatus he then invented with a bottle. In 1750 he was entered at St. John's College, Cambridge, and took a respectable degree in that university in 1754. In the autumn of the latter year he went to Edinburgh to study medicine, returned to Cambridge in 1755 to take his degree of Bachelor of Medicine, then went again to Edinburgh, whence he returned in September, 1756, and settled as a physician in Nottingham. Being unsuccessful in that city, he removed in two or three months to Lichfield, where, owing to the reputation made for him by two or three successful cases, he speedily got into good practice. At Lichfield he remained for twenty-five years, and then removed to Derby, where he died on April 18, 1802. Dr. Darwin was twice married, first to a Miss Howard, whom he lost after thirteen years of married life, and secondly to a widow lady, for whom he appears to have entertained a strong passion even during the life of her first husband, and who survived him.

Of his grandfather's character Mr. Darwin speaks very unreservedly, but on the whole, sums up, and justly, in his favour. As he says, 'There is, perhaps, no safer test of a man's real character than that of his long-continued friendship with good and able men.' Darwin's intimate and almost life-long friends were such men as Josiah Wedgwood, Keir, the chemist, Day, the author of *Sandford and Merton* (are any of the rising generation, we wonder, acquainted with Harry, and Tommy, and that wonderful Mr. Barlow?),

Boulton, and Watt, the engineers, and Mr. Edgeworth. He appears to have been incessantly active, kindly, although sometimes sarcastic, liberal in his practice, and very free from what is usually considered as one of the weaknesses of a poet, vanity. His feelings towards his children have been represented by his female biographer, Miss Seward, as not of the most amiable character; and some of his letters to them show a curious coldness: but Mr. Darwin proves clearly, indeed from that lady's own admission, that there was no truth in the most repulsive of her stories, and he accounts for her ready acceptance of so much that told to the disadvantage of Dr. Darwin, by the motive of disappointed affection, the lady having, it appears, manifested a strong desire to marry the doctor after the decease of his first wife. After his death she probably thought that a little spite could do him no harm, while it would certainly be a stab for her successful rival; and it would appear that Mr. Darwin's father was in possession of documents connected with the doctor's relations with Miss Seward, which he thought it would be unpleasant for her to have published.

What Mr. Darwin modestly calls his *Preliminary Notice* to the translation from Dr. Krause's essay occupies about three-fifths of the little volume that he has published in commemoration of his grandfather, and we fear that we have followed his example in the present notice. We, have, however, already indicated in general terms, borrowed from Dr. Krause's essay, what was the character of Dr. Darwin's philosophical work, and the essay on his scientific labours is even in the original so condensed that we could hardly do justice to it without transferring the greater part to our pages. 'Almost every single work of the younger Darwin,' says Dr. Krause, 'may be paralleled by at least a chapter in the works of his ancestor: the mystery of heredity, adaptation, the protective arrangements of animals and plants, sexual selection, insectivorous plants, and the analysis of the emotions and sociological impulses, nay, even the studies on infants are to be found already discussed in the writings of the elder Darwin.' It is to be remarked, however, that Dr. Darwin nowhere gives his ideas on the nature and evolution of organisms in a connected form, but the arguments and details are scattered profusely through the notes appended to his various didactic poems, and only partially brought together more closely in some parts of his great prose work, the *Zoonomia*. But even in these scattered notices we recognize, as indeed is remarked by Dr. Krause, the most wonderful resemblances between the elder Darwin and his still more distinguished descendant. In both we see the same philosophical breadth of view, combined with the same extraordinary power of grasping and bringing together an immense mass of details from the most varied sources to support and illustrate the argument under discussion—in fact, the same qualities which most strike us in Mr. Darwin's work are the most prominent characteristics of his grandfather's, and their exercise led both to approximately the same result. That is to say, Erasmus Darwin, equally with Charles Darwin, arrived evidently at a belief in the origin of the diversity of organized forms by a process of evolution one from the other, but the former regarded this process as brought about by internal impulses, at least semi-conscious, rather than by the action of external conditions giving rise to a process of natural selection under the struggle for existence.