In glancing through the geological portion errors of fact, such as that palms are oolitic, are seen to be numerous. The confidence too with which the exact succession of dicotyledons in geological time is set out is not warranted by the present state of our knowledge. We read the oft-repeated theory, now stated as fact, that *Apetalæ* preceded *Polypetalæ*, and these *Gamopetalæ*. That this succession really took place, however probable in itself, is, it is well known, far from proved. The actual flowers discovered in the lowest eocene—almost the oldest dicotyledonous flowers known—are *Gamopetalous*, and have been referred to *Porana* and *Symplocos*. The abundance and differentiation of the *Papilionaceæ*, the *Cæsalpinaceæ*, and the *Mimosæ*, show how ancient are the *Polypetalæ*. Any preponderance we may fancy the wind-fertilised *Apetalæ* possess is due to the fact that most of them are forest trees, and it is the leaves of these which form the great mass of the known dicotyledonous floras. Were those divisions really produced in the sequence assigned them, the origin of all alike is far older than the eocene and at present unknown to us: so that even thus the writer of the book is in error.

A most unfortunate selection of illustrative genera of eocene plants has been made. Azaleas did not abound in the eocene, and have never even been met with in it. Neither did the cactus nor aroids, since they have been but recently noticed in the eocene, and then only in England. In like manner the "peculiar" feature attributed to the miocene, its gathering together in the same flora plants now only found at immense distances apart, is not a peculiarity of that formation, since it characterises eocene floras in at least an equal degree. Chapter IV., on the geographical distribution of flowers, deserves especial mention, but must be consulted itself should any one desire to learn (p. 80) how "the *Proteaceæ* became Australian, the magnolias and tulip-trees chiefly North American."

Looking at the more botanical part of the book, it is seen that the explanations of the modifications and appliances of flowers to insure fertilisation are in some cases not treated with the caution the subject requires. To select an instance: the theory that white flowers open more than any others at night, because they are the most visible to moths, seems probable at first sight; but the unscientific reader, to whom the work is addressed, wishing to see for himself, would reject it after his first walk down a hedgerow at eventide, when he found the dog-rose, the white convolvulus, and the daisy, all closed. Why, too, white flowers, if they rely upon their colour to attract, should be also the most powerfully scented, is not explained. It is likely that perfumes would be more necessary to the dark-coloured flowers which are open at night, unless we suppose, which from experience we of course should not, that only white flowers are fertilised by night-flying moths. Persons whose experience of flowers is confined to ordinary English gardens would remember the heliotrope, the mignonette, musk, yellow azalea, wall-flower, rose, coloured pink, hyacinth, violet, scented verbena, scented geraniums, as the most highly-perfumed plants, and would reasonably doubt that any exceptional attractions in this respect belong to white flowers. In comparison with perfume, the white colour may have little to do with it, but Mr. Taylor must have remarked that some law gives vastly superior brilliance to butterflies and day-flying moths and insects, and this law may also require that flowers which only open at night should, like insects which only fly at night, be white or comparatively very subdued in colour. J. S. G.

Elements of Descriptive Geometry. By J. B. Millar, B.E. (Macmillan, 1878.)

THANKS to Messrs. Kempe, Hart, and other writers on Linkages, we are able "Curvo dignoscere rectum," and "Parallels design Sure as Demoivre" could. The title of the work before us shows that it is not concerned with such elementary details as those which most naturally find a place in works on practical geometry. Chasles in describing the aim of Monge's great discovery, says:—"La géométrie descriptive, en effet, qui n'est que la traduction graphique de la géométrie générale et rationnelle, servit de flambeau dans les recherches et dans l'appréciation des résultats de la géométrie analytique; et par la nature de ses opérations, qui ont pour but d'établir une correspondance complète et sûre entre des figures effectivement tracées sur un plan et des corps fictifs dans l'espace, elle familiarisa avec les formes de ces corps, les fit concevoir idéalement, avec exactitude et promptitude, et doubla de la sorte nos moyens d'investigation dans la science de l'étendue." Mr. Millar's book is a very serviceable exposition of the subject as thus described, and he has prefixed a short introduction on solid geometry. A good English text-book on this branch (solid geometry) is yet a desideratum. The plan on which the figures are arranged and drawn is, we think, likely to aid the student in his working out the propositions in the text.

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.*]

Hughes's Microphone

MR. EDISON finds a resemblance between his carbon telephone and my microphone.

I can find none whatever; the microphone in its numerous forms that I have already made, and varied by many others since, is simply the embodiment of a discovery I have made, in which I consider the microphone as the first step to new and perhaps more wonderful applications.

I have proved that all bodies, solid, liquid, and gaseous, are in a state of molecular agitation when under the influence of sonorous vibrations, no matter if it is a piece of board, walls of a house, street, fields, or wood, sea or air, all are in this constant state of vibration, which simply becomes more evident as the sonorous vibrations are more powerful. This I have proved by the discovery that when two or more electrical conducting bodies are placed in contact under very slight constant pressure, resting on any body whatever, they will of themselves transform a constant electrical current into an undulatory current, representing in its exact form the vibrations of the matter on which it reposes; it requires no complicated arrangement and no special material, and to most experimenters the three simple iron nails that I have described form the best and most sensitive microphone. But these contact points would soon oxidise, so naturally I prefer some conducting material which will not oxidise.

Mr. Edison's carbon telephone represents the principle of the varying pressure of a diaphragm or its equivalent on a button of carbon varying the amount of electricity in accordance with this change of pressure; it represents no field of discovery, and its uses are restricted to telephony.

The three nails I have spoken of will not only do all, and that far better than Edison's carbon telephone in telephony, but have the power of taking up sounds inaudible to human ears, and rendering them audible, in fact a true microphone; besides it has the merit of demonstrating the molecular action, which is constantly occurring in all matter under the influence of sonorous vibrations.

Here we have certainly no resemblance in form, materials, or principles to Mr. Edison's telephone. The carbon telephone represents a special material in a special way to a special purpose.

The microphone demonstrates and represents the whole field of nature, the whole world of matter is suitable to act upon,