

recently confirmed by Foote's discovery of diamonds in the Cañon Diablo meteorite, and by that of Weinschenk in the meteorite of Ava. Cliftonite, a form of carbon in cubical crystals, detected by Mr. Fletcher in the meteorite of Youndegin in West Australia, may not improbably be regarded as a pseudomorph in graphite after the diamond.

Finally, Moissan's preparation of diamonds by crystallisation from molten iron has at last solved the long-standing problem of the artificial formation of the mineral.

Sir William Crookes suggests both a deep-seated terrestrial, and a meteoric origin as possible for the diamonds found upon our globe—in both cases the agency of iron as the crystallising medium being invoked. It must not be forgotten, however, that the same mineral species has often originated in many different ways, and it is by no means certain that nature in her laboratories—provided as they are with such abundant resources—has been compelled to resort to precisely the same expedients as we have been led to employ in our experimental researches.

J. W. J.

OUR BOOK SHELF.

The Constitution and Functions of Gases. Part iii. By Severinus J. Corrigan. Pp. 179. (St. Paul: Pioneer Press Company, 1897.)

THIS volume is a continuation of the "Constitution and Functions of Gases"—the first two parts of which were reviewed in these columns last year—and deals with the applications of the author's theory to questions of astronomy, treating especially with the genesis and development of the solar system, the age of the sun and the earth and the other planets, and the consideration of the earth from its geological aspect.

It may be remembered that the author in the first part of his treatise expounded a new theory of gases, where, instead of the irregular movements of colliding molecules as developed in the theory of Clausius and Maxwell, the molecule is supposed to remain stationary as a whole, but is made up of a large number of electric or magnetic doublets which revolve in approximately circular orbits with enormous velocities. In this way many of the properties of gases can be readily explained, and the solutions of many interesting problems attempted which, in some cases, agree fairly accurately with experimental results. The theory was ingeniously developed to do away with the necessity of an ether for the transmission of light vibrations through space, by substituting for it a gas of extreme tenuity.

By utilising the general ideas of the nebular hypothesis of Laplace, and by applying the equations obtained in the first treatise, the author proceeds to investigate the genesis and development of the solar system, to determine the ages and temperatures of the planets, as well as a multitude of other important facts, which, if they could only be demonstrated, would place the author on a pedestal by the side of Newton as the greatest astronomer of the age. The fertility of resource of the author in developing his ideas is astonishing, and though at all times the theories are intended to be primarily based on known experimental data, this basis is in many cases so slight and uncertain, and the assumptions so numerous, that the results must be looked upon as mere speculations. The author is equally at home discussing the cause of the Noachian deluge, the nature of vegetation on the planet Mars, and the cause and origin of X-rays.

In the treatment of the earth, the duration of every geological epoch and its cause is determined. The great

glacial period is discussed, and, according to the author's views, must be ascribed to the varying intensity of the sun's radiation in past ages.

It is impossible in this short space to enumerate a tithe of the wonderful results that the author obtains; but though there is much that is purely visionary, occasionally some very interesting suggestions are advanced which bear the stamp of probability. The book is written from a scientific rather than a popular point of view, and is chiefly of interest as an example of how an ingenious mind can build up a large and comprehensive theory on very slight foundations.

E. R.

A Run round the Empire; being the Log of Two Young People who Circumnavigated the Globe. Written out by their father, Alex. Hill, M.A., M.D., Master of Downing College, and Vice-Chancellor of the University of Cambridge. With 42 illustrations. Pp. viii + 286. (London: Swan Sonnenschein and Co., Ltd., 1897.)

THE Master of Downing jokingly lays claim in his preface to the invention of a new system of education—by taking children for a voyage round the world "before the faculty of observation has been stifled by the study of dead languages, mathematics and other abstract subjects, which have no counterpart in our physical environment." The stifling of the faculty of observation is, one must sorrowfully admit, too often a result of studies conducted in the manner of English schools; but the method of education by travel is surely at least as old as the days of the obsolete Grand Tour; and educational journeys for children form part of the routine of many continental schools.

The short record of a family trip round the world is of a character with which the public is familiar: notes of the trivial incidents of life on board ship, little bits of history, occasional touches of moralising, and vivid impressions of what must have been a very enjoyable as well as a most instructive holiday. The route led by Gibraltar and Naples to Port Said, thence to Colombo, whence a considerable tour in Ceylon was made, on to Australia, Tasmania, New Zealand, Samoa, the Sandwich Islands, and home by the Canadian Pacific Railway and the Atlantic. The young people are indeed to be envied who have so magnificent an opportunity of educating themselves by seeing the world while still unstifled by scholastic cram.

A few slips are not to be wondered at. It is remarked of the Suez Canal that "larger undertakings of the same kind have been carried out since," the diversity in the use of Tacoma and Rainier (not *Ranier* as printed), as names of a mountain, is not correctly described; Morley is transposed to the wrong side of the Rocky Mountains, and Labrador and Newfoundland change places on the Strait of Belleisle. There is, unfortunately, no map; but if read with an atlas, this pleasantly written book should prove a valuable supplement to more formal geographies.

H. R. M.

Wild Flowers, and other Poems. By James Rigg. Pp. 294. (Paisley and London: Gardner, 1897.)

IT is not within our province to express an opinion on the metrical merits of this volume. The author is evidently an ardent lover of nature, and of a poetic disposition. We have learnt, by sad experience, not to expect too much scientific accuracy from writers of verse; and the volume before us is not alone in its offences. Still, it does seem strange that the author should not have got some botanist friend to look over his proof-sheets; for by so doing he would have learnt that *Vaccinium europæa* (*sic*) is not the Latin name of the "blaeberry" (*sic*), nor *Stellaria minor* of the chickweed, nor *Pinus borealis* of the Scotch pine. The Latin names are constantly misspelt.