

trine to the case of cholera, but we can congratulate Dr. Koch on the result of his labours so far, and at the same time trust that the example set us in this instance by the German nation may not be thrown away upon the people of this country, who, whilst having a higher interest than any other in ascertaining the real nature of cholera, allowed the opportunity of the Egyptian epidemic to pass by without attempting any scientific investigation as to its causes.

SCHOPENHAUER

The World as Will and Idea. By Arthur Schopenhauer.

Translated from the German by R. B. Haldane, M.A., and J. Kemp, M.A. Vol. I. (London: Trübner and Co., 1883.)

AS the Kantian heaven works, philosophy shows less and less of an inclination to quit what Kant described as the fruitful bathos of experience. No doubt many a structure is still reared around us, "pinnacled dim in the intense inane," but that is simply because philosophy, more than any special department of knowledge, is exposed to the inroads of the uninstructed. But here, as elsewhere, the honest inquirer will find a consensus of competent opinion which estimates these piles at their true value. Serious workers pass by on the other side without controversy, lest perchance they should be as those on whom the tower of Siloam fell. On the other hand, only confusion of thought can lead people to identify philosophy with science, and to suppose that, when they have reckoned over the list of the sciences, they may erect a stone to the great god Terminus. For, though the matter of philosophy is the same as that of the sciences (and not, according to the current myth, a spider-like product of intestinal origin), yet the point of view from which the common material is regarded is *ab initio* different. Science, in its whole extent (including psychology), deals with the world of objects, whereas the first task of philosophy is to remind scientific men of the abstraction which they have been making—and for their own purposes rightly making—by showing them that the world of objects is unintelligible without a subject to which it is referred. Having rectified this fundamental abstraction, philosophy proceeds, as theory of knowledge, to a critical analysis of the conceptions on which, as ultimate presuppositions or working hypotheses, the different sciences are based. The notion of the atom and of infinite space may be mentioned as two of the earliest cases where such criticism is required. The result of such a criticism is to show that no science can say of its "facts" that they are absolutely true, because they cannot be stated except in terms of the conceptions or hypotheses which are assumed by the particular science. But conceptions such as those of space or atom are found to dissolve in self-contradiction when taken as a statement of the ultimate nature of the real. It follows, therefore, that they must be regarded as only a provisional or partial account of things. The account they give is one which may require to be superseded by—or rather, which inevitably merges itself in—a less abstract statement of the same facts. In the new statement, the same "facts" appear differently, because no longer separated from other aspects that belong to the full reality of the known world.

For the philosopher is essentially what Plato in a happy moment styled him, *συννοητικός*, the man who insists on seeing things together; and philosophy, in her office as critic of the sciences, aims at harmonising the notions on which they respectively rest, and thereby reaching a statement of the nature of the real which may claim to overcome the abstractness of the several provisional stages represented by the different sciences.

Judged by this standard, it is to be feared, Schopenhauer's philosophy will be found wanting. Its interest is undoubtedly, in the main, more literary than scientific; and in his central dogma of a metempirical or transphenomenal Will, Schopenhauer shows himself quite the traditional "metaphysician." Taken as literature, high praise must be awarded to the style of his productions, which is very different from that of his heavy-footed countrymen generally. Pessimism was lately much in fashion, and Buddhism is still highly esteemed. The philosophic father of these things is tolerably sure, therefore, of an interested audience; and "the general reader" will find rich pasture in the aphoristic wisdom of the man of the world, his keen and often cynical psychological analysis, and his genuine appreciation of art, especially of music, which was almost the one redeeming feature in an otherwise ignoble character. Mr. Haldane and Mr. Kemp have done their work so well, that those who are drawn to the book by the literary reputation of the original will not have their enjoyment marred by the intrusion of foreign idioms, clumsy constructions, and the general lameness of the translation style. All praise must also be given to the clearness and accuracy with which they have rendered the philosophical terminology of the work.

But the translators would probably hardly have undertaken the task, had they not believed that there was more of value in Schopenhauer than what has just been allowed him. And, in point of fact, it is perfectly possible to divide Schopenhauer's work into two parts. The world presents itself to him under the twofold aspect of "Will and Idea." "The world as Idea" is the phenomenal world, the world of science, while Will—one mighty unconscious desire or force—is the inner or noumenal reality of which the phenomenal world is the outward expression. I appear to others, and to myself, as an organised body—that is, as an object or complex of ideas; but I also know myself, Schopenhauer says, on the inner side as Will. He next denudes this Will of the characteristics which belong to it in the conscious life, ignoring at the same time the other features which, equally with Will, go to constitute that life, and then, with a superb sweep of anthropomorphism, declares that Will, as an impersonal force, is the essence of all phenomena—the steam that drives the world. In support of this thesis, he fastens on obscure facts like those of instinct; and, though he scouts at the "Bridgewater Treatises," he argues from teleology in an exactly similar sense. But as no scientific reader is likely to be led away by Schopenhauer's reasoning here, it is needless to enter into any formal refutation of his positions. It is more to the purpose to draw attention to the side of the book which, though not so distinctly Schopenhauerian, and probably not so attractive reading as the collection of brilliant analogies on which his system is built, contains an acute

and, so far as it goes, a sound, criticism of certain false or inadequate views of the world. Schopenhauer claimed to be the true follower of Kant, and when he is speaking of "the world as Idea," we find ourselves on the general ground of the modern philosophical criticism which dates from Kant. Schopenhauer certainly neglects much that is valuable in Kant, and presents other elements superficially; but, perhaps for that very reason, he may be useful as a populariser of thoughts which, in one shape or another, it is essential for the modern world to master. We need only note here his insistence on the complete relativity of subject and object—a relativity which, of course, excludes the possibility of any causal relation between them—and his criticism of the ideas of space, time, and matter, leading him to the conclusion that the world of objects exists as a system of complete relativity, in which no individual objects can claim any reality except what consists in their necessary relation to one another. Any one reading these and similar passages must acknowledge that, where his doctrines are otherwise sound, Schopenhauer's clear and incisive style makes him an admirable interpreter.

ANDREW SETH

OUR BOOK SHELF

Cours de Minéralogie. A. De Lapparent. (Paris: Savy, 1883.)

MINERALOGY was the father of Geology; but the son has for many years in this country shown great want of respect to his parent. A very large proportion of our geologists are extraordinarily ignorant of mineralogy. To them as well as to those who have not so seriously neglected that branch of science we recommend a perusal of the work before us. The object of its distinguished author (who has already rescued French Geology from the charge of possessing no modern text-book of native origin) is in the first place to simplify as much as possible the teaching of rational crystallography, as established by the works of Bravais and completed by Mallard, so as to bring it within the comprehension of all earnest students of minerals and rocks; and in the second place to put geologists in possession of the knowledge which they must acquire if they would apply themselves with any satisfaction and profit to the study of the microscopic structure of rocks.

The volume is divided into three parts. In the first of these, entitled *Geometric Crystallography*, M. De Lapparent states the laws of crystalline symmetry and shows in detail the forms of which each system is composed, these forms being rigorously classed and deduced from each other according to the method of Bravais. Tables and stereographic perspective diagrams are added.

The second part, or *Physical Crystallography*, is devoted to the explanation of the physical, and especially the optical, properties of crystallised matter. It concludes with an analysis of the different crystalline groups, with which, following Mallard, the author connects the phenomena of isomorphism and dimorphism.

The object of the third part is the *Description of the Principal Mineral Species*. The author adopts a system of classification which is entirely new, and which might be called the geological system of mineralogy, because it is based upon the part which each species plays in the composition of the earth's crust. From this point of view minerals are divided into four great classes:—(1) silicates or elements of the fundamental rocks. (2) Elements of mineral veins. (3) Metallic minerals. (4) Combustible minerals.

The work consists of 550 pages, with 519 figures

inserted in the text, a chromolithographed plate, and an index comprising 3500 names, from which a knowledge can be obtained of all terms employed in mineralogy.

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 insure the appearance even of communications containing interesting and novel facts.]

The Remarkable Sunsets

THE remarkable and beautiful atmospheric phenomena which within the last four or five months have so powerfully attracted attention in all parts of the world, made their appearance here about the same time that they did in England and on the continent of Europe. It is true that as early as October 14, 1883, something similar was noticed at Santa Barbara, about 280 miles south-east of this place; but the characteristic phenomena were not observed here and at other positions on the coast of California until after the middle of November, 1883. I first observed it on the evening of November 24, when it presented a very striking appearance. That afternoon the sky had been overcast with dark clouds, and the south-east wind had brought a slight rainfall. Towards sunset a bright portion of sky appeared at the western horizon, extending to an altitude of about 10°, while the dark hood of clouds enveloped the remainder of the celestial vault. At 6 p.m. the lurid redness (almost angry) of the western horizon attracted universal attention; it had the appearance of a sky illuminated by an immense conflagration. Doubtless the effect was heightened by the contrast with the dark canopy of clouds. Similar appearances, more or less conspicuous, presented themselves during the remaining days of November, and in a less striking manner (when the weather was favourable) during the month of December, both after sunset and before sunrise. At a quarter past six on the morning of November 29 the eastern sky emitted such a brilliant ruddy light as to arrest my attention by the peculiar red illumination of the window-curtain of my bedroom. On looking out, the whole eastern sky was seen to be drenched in gorgeous red. During the month of January, 1884, the "upper-glows" (as Miss Ley appropriately designates them) became much less conspicuous.

At the period when the phenomena were most conspicuous, the atmosphere during the day was not perfectly clear, although the sunlight was not obscured to any considerable extent:—there was always observed a thin veil of fleecy clouds covering the heavens, and a whitish glare manifested itself about the sun, extending to a distance of about 20° or 25° from his centre. It is evident that the suspended matter producing these phenomena must have been above the region of the loftiest cirri, for ordinary changes of weather and disturbances in the atmosphere did not modify the appearances.

But the manifestations presented by the sky seem to have been so nearly identical in all parts of the globe, that detailed descriptions of them, as exhibited here, are unnecessary. It was, however, evident that the phenomena were less pronounced on this coast than they were in many other countries. This was indicated by the fact that, wherever the phenomena were sufficiently developed, the sun during the day was encircled by more or less distinct coloured halos or coronæ; whereas at this place it amounted to nothing more than a whitish glare about that luminary. The Rev. S. E. Bishop writes me from Honolulu, that these chromatic circles around the sun were constantly observed in all of the Hawaiian Islands from September 5 to December 15, 1883; and I notice that they were observed in England as frequent accompaniments of the upper-glows.

While the large size of these coloured circles might (as I have indicated in a letter to *Science*) seem to connect them with the well-known ice-crystal halos of 22° radius, yet I am disposed to regard this chromatic feature of the phenomenon as mainly due to the diffractive action of the impalpable dust-particles suspended in the lofty supra-cirri regions of the atmosphere. Nevertheless, inasmuch as the experiments of M. Coulier and Mr. John Aitken show that the presence of dust-particles in the