forerunner, the result being that the book provides a good general preparatory course, which will give students of medicine a broad and satisfactory view of the principles of physics, and will equip them with very serviceable knowledge. Intended primarily to meet the new regulations of the General Medical Council (which make physics a part of the extended course of professional study), the book contains numerous examples of the application of physical principles to medical science, relating both to instruments and muscular actions. But though medical students will find special interest in some of the examples used to illustrate the subjects described, the information given can readily be understood by all who read with studious mind. Therefore we commend Dr. Daniell's volume to teachers of physics generally, believing that they will find it worthy of adoption. The contents include chapters on units of measurement, motion of bodies, friction, matter, sound, heat, ether-waves, and electricity. All these subjects are treated as thoroughly as is possible in a book of this character.

Physics cannot be learned; it must be experienced. Dr. Daniell recognises this, and points out that his work "is not designed to supersede, but rather to clear the ground for practical teaching and demonstration." It is to be hoped that this practical work will some day form a part of the professional curriculum.

Physical Units. By Magnus Maclean, M.A., D.Sc., F.R.S.E. Pp. 147. (London: Biggs and Co., 1896.)

IT can safely be said that this book will find its way into every laboratory where physical facts are investigated. The tables of results brought together in the volume will be most useful for reference; and as they represent determinations made by foremost workers, trust can be put in them. Additional value is given to the tables by the fact that references are made in most cases to the books and papers from which the data have been obtained.

Two-thirds of the book are devoted to the discussion of physical units and the relations between them, the remaining third being taken up with the tables already mentioned. Students of physics will obtain from the text clear and sound knowledge of their units of measurement, and to more advanced investigators the book will prove a veritable vade-mecum.

Elements of the Theory of Functions. By Dr. H. Durége. Translated by George Egbert Fischer and Isaac J. Schwatt. Pp. 288. (Philadelphia, 1896.)

THE late Prof. Durége's treatise, in this English translation, will be a welcome addition to the works on this subject by Forsyth and Harkness and Morley. Durége has a genial method of exposition, as all who know his other book on Elliptic Functions will testify. The numerous definitions and novel ideas in the "Theory of Functions" are made clear by well-chosen illustrations and diagrams. There is no reference to the date of the first edition, but we believe it goes back some thirty years; so that Durége could claim to be a pioneer in the presentation of this subject to the general reader, Weierstrass's ideas being inaccessible to all except his own university pupils. G.

Charles Darwin and his Theory. By M. A. Antonovich. Pp. 353, with a portrait. (Russian.) (St. Petersburg, 1896.)

THIS is a very good summary of the chief works of Darwin, in which his scientific views are intimately interwoven with personal details of his life, in so far as they are known from Francis Darwin's "Life and Letters," and partly from Krause's "Charles Darwin," the whole being written with a deep admiration of both Darwin's personal qualities and his philosophy.

LETTERS TO THE EDITOR.

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A Query concerning the Origin of Atolls.

HAVING recently visited and studied in some detail the coral mass of the Bermuda Islands, I have been impressed by one thing more than by anything else, namely, the fact so long known that the islands owe their present elevation almost exclusively to the action of the wind. The hills, which often rise to a height of 200–250 feet above the sea, from near their base to their summit, are made of blown coral sand, now consolidated into a more or less compact rock.

A recent subsidence has carried most of the islands below the sea level, leaving only the more elevated southern part above, because this had been built higher than the rest by the strong southern winds. This subsidence has been so recent that the heavy south waves are still battering at the cliff; and the débris thus obtained, added to that furnished by the abundant coral growth of the reef which lies immediately off shore, has not yet been able to build extensive beaches. Here and there we find beaches, usually small ones, and from these the sand is even now marching inland and adding to the height of the land, illustrating the process by which the islands have been reared to their present height. Nevertheless, although in a few places the importance of the wind action is still illustrated, it is practically at an end, and that because of a recent subsidence of certainly 50 feet and probably less than 100 feet.

On the basis of these facts I wish to propound a query which has arisen in my mind, but which I would not assume to answer on the basis of a study of only one coral island. Granting an atoll ring formed in the mid-ocean in the way which the theory supported by Dr. Murray and others demands, would we not of necessity have first a ring of reef or beach rock, then of coral sand which with age continued to rise in elevation until the Bermuda stage was reached? For various reasons a luxuriant vegetation would not at first serve to check this. A constant supply of sand is furnished by the life which skirts the shore, the waves are present to drive it on the shore, and the wind to heap it up.

Given this tendency and islands either standing at a uniform level, or being elevated, there should, it would seem, be all gradations between the atoll ring and the insular mass of wind-blown sand not unlike the Bermudas. If, however, the older theory advocated by Darwin and by Dana were correct, there would not need to be such a condition, for subsidence would counteract the action of waves and winds, and the ring condition of the low atoll could easily be the type condition.

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"The Primary Factors of Organic Evolution."

IN a review of Prof. Cope's "Primary Factors of Organic Evolution" (NATURE, vol. liii. p. 553), Dr. Alfred R. Wallace denounces its "extraordinary statements," its "misstatements," and its "absurd arguments," and finds it refreshing to turn to the original ideas and acute reasoning of another book. The fact that the first book is by an opponent and the second by a follower of the reviewer, perhaps accounts for, though it does not justify, opinions that depart widely from what will be the judgment of the most competent. A work of unusual originality such as Prof. Cope's, is apt to contain much that is open to criticism; but it is no small matter to have brought together, as he has done, the evidence in favour of finding in the environment, in the movements of animals and in consciousness, the efficient factors of organic evolution. The present writer finds the arguments inconclusive, but he does not understand how any one can read the book without admiring the intimate knowledge of facts and the great powers of generalisation which it discloses. Dr. Wallace states that it is "absolutely untrue" that "the variation which has resulted in evolution has not been multifarious or promiscuous, but in definite directions," yet the evidence offered for this proposition—due perhaps more to Prof. Cope than to any other—has within the past few months proved convincing even to Prof. Weismann. Prof. Cope's book and his work should be adequately described and seriously criticised; but Dr. Wallace has done neither. J. MCKEEN CATTELL.

Columbia University, New York, May 9.