

Music." The book itself may without unfairness be described as an "arrangement," or rather as a "pot-pourri," inasmuch as it resembles those musical compositions in which some of the fragmentary themes of one or more great masters are dished up for the public in some new or popularised setting, consisting of commonplaces of a more or less florid type. About 80 per cent. of the pages before us consist of clippings and quotations taken *verbatim et literatim* (and in quotation marks be it added) from the works of Helmholtz, Stone, Pole, Tyndall, and Sedley Taylor, interspersed with a connective-tissue woven from the "author's" own brain. We have found this ingenious fabric very remarkable reading, and have gleaned a number of new facts from it. We have learned, for example, that the transmission of verbal messages, prayers, hymns, and sermons through the telegraph wire by the telephone must be held to "prove that air is not the only medium through which sound-impulses can pass." We find our author declaring on p. 80 that the reason why so romantic a name as the "siren" should be applied to so matter-of-fact an instrument *does not appear*; while on p. 98 he seems to have made the discovery that the name is a misnomer, because "Homer's *Σειρήνεος*" (*sic*) were not endowed with the power of singing under water as this instrument can. Our author is very unhappy in dealing with equal temperament, and complains that nearly all writers on temperament, with the exception of Mr. Ellis, describe it as dividing the octave into twelve precisely equal semitones, "without explaining that these semitones are not absolutely equal." That the perfect equality of the theoretically equal temperament is never attained *in practice* is indeed true; but why does our author find fault with writers on temperament for stating the exact theory? His accusation against Dr. Stone for palpable misuse of language (on p. 359) is utterly out of place, and only shows that the author has not comprehended the true meaning of a musical interval as defined by a ratio. He appears not to know that if an octave is divided into twelve exactly equal geometrical parts or ratios, the differences between the successive terms of the ratios are not, and cannot be, arithmetically equal to one another. Hence his attack on the perfectly unexceptionable statements of Dr. Pole and Dr. Stone. The diagrams with which the work is interspersed consist principally in pictures of syrens and in copies of wave-forms taken from Mr. Sedley Taylor's "Sound and Music," and spoiled by drawing them as if made up of semicircles pieced together. The wave-form given on p. 266 to illustrate beats does not show the wave-form of the beat *at all*: and though the author gives on p. 102 a wave-form which illustrates a beat admirably, he appears not to know it, as he passes it by as being merely one of a few different forms of tracing which a vibroscope can register. But we have said enough to justify us in having at the outset pronounced "The Student's Helmholtz" to be what we called it—a *pot-pourri*—or, in the plain English tongue, a *hash*.

Afrika im Lichte unserer Tage. Bodengestalt und geologischer Bau. (With a Hypsometrical Map.) By Josef Chavanne. (Vienna: A. Hartleben.)

THE conclusions come to by Herr Chavanne we have already referred to. Africa, he finds, is, on the whole, a high plateau or table-land, crossed here and there by mountain-chains or single elevations. The plateau commences in most places at a remarkably short distance from the sea, the slopes south of the equator being particularly steep. North of the equator the land may be looked upon as a very slightly inclined plane, which, like the southern plateau, is also crossed by separate elevations, some of them being very considerable. The presence of numerous, and for the greater part widely-distributed, lakes is unlike the general physiognomy of the other large continents. By far the most important

part of the author's work is the excellent hypsometrical map which accompanies the book, and to which we referred a short time ago. Its scale is 1 : 30,000,000. The elevations are marked in eight different tints of brown, showing so many grades and altitudes from zero upwards. Thus at one glance we see the African continent rising as a rule from 0 to 600 metres in the northern half, while, in the southern half, elevations from 900-1200 metres are the rule. The greatest heights—those of 1500-2000 metres and more—are packed close together on the east side, between the southern end of the Red Sea and the Zambesi River, and only occur again in the extreme south-east (Natal) and far up in the north-west (Atlas). The text of the book is well written; the author's descriptions are always attractive, to the point, and free from all superfluous wordiness.

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.]

Struggle of Parts in the Organism

THE review of Dr. Roux's work on the "Struggle of Parts in the Organism" by Mr. Geo. J. Romanes which appears in your number of September 29 (p. 505) contains some passages which, I venture to think, are hardly consistent with the purpose to which the columns of NATURE are devoted. I understand that purpose to be the discussion of scientific facts and scientific laws, properly so called. I should be the last to deny that these facts and these laws may have, and indeed must have, their own ultimate bearing upon theology, whether natural or revealed. But it is not the purpose of a purely scientific journal to enter upon this discussion; it is one which cannot be there pursued without involving controversies alien to the spirit in which physical science ought to be studied and explained.

And if even temperate discussion upon the subject ought to be avoided in a purely scientific journal, still more ought there to be a scrupulous abstention from dogmatic utterances which are hostile to theological opinions, and which are unsupported by even the semblance of argument.

In the passages to which I refer Mr. Romanes asserts that to the whole "argument from design" in nature an "end has come"—as the result of Mr. Darwin's Theory of Evolution—that the "fountains of this great deep have been broken up by the power of one man," and that "never in the history of thought has a change been effected of a comparable magnitude and importance."

As an expression of the opinion of Mr. Romanes that the Darwinian theory ought to put an end to the "argument from design," this assertion may be allowed to pass. But as the assertion of a fact I venture to say that it has no foundation. There are many minds, including some of those most distinguished in science, who not only fail to see any contradiction between evolution and design, but who hold that the doctrine of evolution and the facts on which it is founded have supplied richer illustrations than were ever before accessible of the operations of design in nature.

I should be transgressing my own rule were I to defend this view in your columns. I shall therefore content myself with saying that no possible amount of discovery concerning the physical causes of natural phenomena can affect the argument that the combination and co-ordination of these causes which produce the "apparent" effects of purpose are really and truly what they seem to be—the work of Mind and Will.

Inverary, October 4

ARGYLL

Solar Chemistry

THE researches of Mr. Lockyer, and others, summarised by him in recent numbers of NATURE, have to a great extent complicated the aspect of this grand problem, which appeared so