it is useful ; secondly, we have established the great principle of "correlation of growth," which is a brief way of stating that in organisms there is such an intricate binding together of the mechanism that when one part varies other parts vary concomitantly—so that a useful variation of the beak or eyelid of a bird (for example) may *necessitate* a concomitant and perfectly useless variation in the toe-nails or the tail-feathers ; thirdly, useless structures undoubtedly exist owing to the potency of heredity, which is of such strength that long after a structure has ceased to be a matter of selection it is transmitted from generation to generation, though dwindled in size and more or less imperfect in structure.

I think there will be no difficulty by reference to one or other of the three considerations above stated in disposing of cases of so-called "uselessness," or "prophetic" functionless organs "on the way to use," which the Duke of Argyll may find to be stumbling-blocks in the way of his faith in Darwin, if he will submit them one by one for pulverization, though I am afraid the process will not interest your readers.

September 21. E. RAY LANKESTER.

A Shadow and Halo.

A FEW evenings ago, whilst walking down a sloping pasture, with the moon shining brightly at an altitude of about 20° behind me, and with no visible dew nor fog, yet with heavy dew on the grass, I noticed that the shadow of my head and shoulders was very sharply defined, but that it was surrounded by a halo of light, and that this halo or nimbus increased in brightness as my shadow was lengthened out because of the increasing slope ; and not only was the brightness increased, but it extended now to my hips. That this was due to the greater depth of moist air through which the moon's light passed, by reason of the increase of the slope, I think was proved by the fact that in the neighbourhood of a high hedge, which would to some extent alter the conditions, this halo nearly wholly disappeared. At one time I thought that my eyes were deceiving me concerning this appearance, the contrast of the dark shadow with the surrounding brightly illuminated grass giving rise to the appearance above mentioned, but, by holding up my hand so as to cut off the view of the shadow, I still saw the brighter light which surrounded it, and this brightness still increased or decreased in intensity as the slope on which I took up my position was greater or less. There was no casting of a shadow on a fog-bank, as there was no fog at all, but rather the air was particularly clear. I noticed this phenomenon three nights in succession. I shall be glad to know if any other amongst your readers has noticed this occurrence, and will explain it. E. W. P.

Tamworth, September 29.

Sonorous Sands.

REFERRING to Mr. Carus-Wilson's letter recording the supposed discovery of musical sand in Dorsetshire, I may mention that about two years ago the late Admiral E. J. Bedford sent me three boxes of musical sand, one of them being labelled, "Musical sand ; Studland Bay, Dorset, 1885 ; sonorous when collected." I am not aware whether Admiral Bedford himself discovered the sonorous properties of this sand, but it is clear that he was well acquainted with both the sand and its character in 1885. A. R. HUNT.

Torquay, September 27.

THE REPORT OF THE KRAKATAÕ COMMITTEE OF THE ROYAL SOCIETY.

I.

AFTER an interval which has been prolonged partly by the unexpected continuance of the subsequent atmospheric phenomena, and partly through other circumstances incidental to publishing, the Report on the great eruption of the volcanic island of Krakataõ in August 1883 is now before the world.

Every Committee is bound to issue a Report of some kind, but it rarely falls to the lot of a Committee to deal with anything at once so stupendous in its character and far-reaching in its consequences as the eruption which not only figuratively, but literally, vibrated through the world on August 27, 1883.

We, in these islands, may boast of our Essex earthquakes, and of the frequent little tremors to which a certain district in Perthshire is subject ; but few of us, or our immediate neighbours, can, from our local experience, form the faintest conception of the terrific subterranean powers which ordinarily manifested themselves in the volcanic region of which Krakataõ may be fitly termed the *focus*.

The first accounts which reached us by telegram, inaccurate though they were bound to be as regarded details, were scarcely exaggerations in point of magnitude ; and, indeed, the cataclysm in this case rose superior to all artificial modes of transmission, by announcing the very date and hour, if not minute, of its culminating explosion through a series of air-waves, which recorded themselves no less than four times on every automatically recording barometer throughout the world.

Three other distinct and abnormal phenomena were : (1) the immense distance to which the sound-waves were propagated (altogether transcending anything hitherto on record ; (2) the immense local height, destructive power, and subsequent wide diffusion of the accompanying sea-waves, which in this case were *not*, as is usually the case, due to earthquake action ; (3) the simultaneous occurrence in the Javan and Indian area, and subsequently rapid extension, first round the equatorial zone, and, finally, to the whole world, of a most remarkable group of optical phenomena, including coloured suns, lurid and prolonged glows at twilight, large coronæ round the sun and moon, and a peculiar cirriform haze which was evidently connected in some way with these and the eruption.

It was plain, in the face of these preliminary facts, that the collection and discussion of such a grand series of exceptional phenomena gratuitously evolved out of Nature's own laboratory, could not fail to be of service to science, and that while the more local features and practical results of the episode might be left to the Dutch Government, to whom the district belonged, its attendant and subsequent phenomena deserved permanent record in the pages of scientific history.

On this basis, a Committee of the Royal Society was appointed on January 17, 1884, in the following terms :—

"That a Committee, to consist of Sir F. Evans, Prof. Judd, Mr. Norman Lockyer, Mr. R. H. Scott, General Strachey, and Mr. G. J. Symons, with power to add to their number, be appointed to collect the various accounts of the volcanic eruption at Krakataõ and attendant phenomena in such form as shall best provide for their preservation and promote their usefulness."

The subsequent expansion of the Committee by co-operation of additional members, and the substitution of one—Captain Wharton—in consequence of the death of Sir Frederick Evans, is detailed in the preface.

The main object of the Committee was thus to collect facts and reduce them into a systematic and useful form. While this has been its primary object, it has been thought advisable to enlarge upon the original basis of the Report, and, while giving a *résumé* of all the leading opinions, especially those relating to the debated question of the relation of the optical phenomena to the eruption, to enter at some length into a discussion of the facts thus systematized. Though it is hardly to be expected that everybody will agree with the deductions arrived at by each author, and though it has been impossible to avoid omissions in a work embracing, in its latter sections, observations extending over three years, and a literature of its own, the main facts have not only been recorded, but, as the Chairman, Mr. G. J. Symons, says, can be readily verified.