

and Rankine. The lecture on Energy is followed by one on the Dynamical Theory; which embraces to some extent the relations of different forces, and the "varied modality" of chemical, thermal, and electrical action. The next lecture relates to Molecular Dynamics. Then in succession:—Electromotive force produced by Chemical Action, by Heat, by mechanical means, and by Induction. Mutual action of Currents and Magnets, Terrestrial Magnetism, Polar Auroræ; Atmospheric Electricity; Diamagnetism; Rhumkorff's Coil; Winds; Marine Currents; the Sun; the Doctrine of La Place; the Doctrine of Lyell; Thermogenesis; Atmolysis and Osmosis; Capillarity; the Doctrine of Mayer. The second course treats of electricity, undulations, sonority, musical timbre, echoes, photometry, dispersion and the spectroscopy, chromatism, vision, luminous undulations, diffraction, polarisation, radiant heat, action of electricity on organic bodies, the muscular current, electrical nervous phenomena, electrical fishes.

The arrangement is really wonderful. What can possibly warrant the following order for lectures:—diamagnetism, Rhumkorff's coil, winds, marine currents; or again—thermogenesis, atmolysis, capillarity? One lecture ends with "Che così mirabilmente si svolgono dall'evoluzione Darwiniana;" and the next commences "È impossibile proseguire un corso di Fisica e più ancora quella parte, che tratta delle azioni senza prima definire le parole, atomo, molecola." The Prof. Pozzo can scarcely be expected to lecture on all science: to pass from the sun to an atom, from Darwinism to electro-dynamics, from geology to elliptical polarisation. If he is, the system is a bad one, and his students may get a smattering of many things, and know nothing well. Mechanical philosophy seems to be almost ignored. The book is devoid of mathematics, and without woodcuts; and we imagine the youth of Perugia must yawn over it; and, if the lectures are as dry as the book, spend much of the time which ought to be given to physics in saying "felicissima notte" to each other. G. F. R.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

Proposed Alterations in the Medical Curriculum

THE remarks made in your number of December 18 by my friend Prof. Balfour are founded on the mistake he has made in supposing that it is proposed to abolish the regulation requiring attendance on the courses of lectures on Botany and Zoology. There is no question raised between mere examining boards and teaching institutions, between compulsory and optional attendance on professors' lectures. It is simply that the candidate for medical degrees be allowed to take the examination in Zoology and Botany earlier than is at present permitted. At present the examination in these subjects in Edinburgh University is fixed by ordinance at the end of the second of the four years of medical study, and in this University, while the Botany comes at that time, the Zoology is actually not till the end of the third year, so that our case is even worse than that of Edinburgh. Prof. Balfour says, "The student might be encouraged to take his science examination at an early period of his curriculum, say at the end of his first year of study." That is exactly the result practically aimed at here, and I am quite at one with him on the subject. But why prevent the student from taking the examination in Botany and Zoology before entering on his medical curriculum proper, if he has attended the professor's class and is ready for it? Very few would at present do so, as it would imply a preliminary year of attendance at the Universities to obtain the courses of Zoology and Botany. But is it not a very desirable thing, from every point of view, to encourage this? So far from lowering the standard in these subjects, or promoting cramming, it would do exactly the reverse. It would enable real study to take the place of the cramming which is inevitable when these subjects are left over to be mixed up with medical studies proper.

For some time there has been a strong feeling here that the examination in Zoology and Botany should take place not later than the end of the first year, and the Lord Rector of our University in taking this matter up, instead of tinkering as to particular dates, has announced the sound general principle that the student should be encouraged to take the subjects of Botany and Zoology before beginning his medical curriculum proper, with the view both of promoting a more real study of these sciences, and of clearing the subsequent medical curriculum for a more real study of the subjects which belong to it. I see nothing in the resolutions which our distinguished Lord Rector has laid before the University Court either suggesting or implying abolition of compulsory attendance on the professors' courses of Zoology and Botany, and Prof. Balfour might well have taken it for granted that the mere fact of the proposal emanating from Prof. Huxley is security enough that the object could not possibly be to lower the position of the natural sciences or to promote cramming instead of real study. Our Lord Rector has as yet only intimated his resolutions, but when the oracle speaks we shall no doubt hear such good reasons for them that even so enthusiastic a botanist as Prof. Balfour will have his alarm turned into joy.

Will any of those who are so strong on the point of compulsory attendance on courses of Zoology and Botany tell us why they do not say a word for Natural Philosophy? Including such subjects as heat, light, electricity, hydrostatics, pneumatics, optics, acoustics, it is surely of more importance than either of the other two, whether regarded educationally or in its bearing on modern medicine. Yet in the Scotch Universities there is no compulsion to attend a course of lectures on Natural Philosophy, and it is relegated to the preliminary examination in general education. The day is past for laying on additional compulsory courses of lectures, but it is surely not too much to say that the student might be allowed to profess and be examined in Natural Philosophy instead of one of the other two.

Aberdeen University, Dec. 20

JOHN STRUTHERS

The Distribution of Volcanoes

SOME of the correspondence in your paper has latterly been so caustic, that timid people may be pardoned for shrinking from writing letters which bring down upon them the hammers of scorn and contempt so vigorously.

Notwithstanding this, the discussion between Mr. Mallet and Dr. Forbes about volcanoes tempts me to write to you on a side issue of that controversy in which I have been interested for some time. What I have to say may not be new, although I believe it to be so. At all events it is not commented upon in the books accessible to me. I will premise that, caring little for laurels of any kind but a good deal for instruction, that if it be discovered that what I say is stale and old, I hope I may be treated as an ignorant scholar, willing to learn, and not as a rival to be crushed, and further, that my results having been obtained independently, they support and make more sure the position of my predecessors.

You were good enough, some months ago, to print some letters of mine on the current elevation of the circumpolar regions of the earth. I have since accumulated much new matter on this subject, which will be shortly published in part in the *Journal of the Geographical Society*. The general result of my inquiry is, that all the large land surfaces of the earth, the large continental and insular surfaces, are more or less in process of gradual or rapid elevation. There are a few small areas of depression on the outskirts and borders of the great land-masses, but these are very local and unimportant. And with this slight exception the continents of North and South America, Asia, Europe, Africa, and Australia, are all more or less rising. This rise of the land-surfaces necessitates a corresponding sinking, either an absolute or a relative sinking, in the surfaces covered with water. It is comparatively easy to test where a land surface is gradually protruding from the water. It is not such a simple matter always to know whether this rise is relative or absolute, for the same effect may be produced by the sinking of the sea-floor as by the actual rising of the land. One thing only we know, that when our measure is water, there must be a corresponding sinking either relative or absolute where there is a rising elsewhere. Direct evidence of the sinking of the sea-bottom is not very easy to find, but such does exist. Students are familiar with the facts collected by Darwin and others, showing from the growth of coral islands, &c., that the Pacific is an area of depression; other evidence consists in the disappearance of well-known rocks, the