

cylinders for the usual knives was also tried, and every care taken to prevent the inclusion of dust, but the results were very unsatisfactory.

The results obtained are as follows:—

Length of second's pendulum reduced to sea-level at the equator.

	Metre.
Alleghany Observatory	0'9909384
Ebensburg	0'9910672
York	0'991015

At Alleghany, the effect of a valley was not taken into account, as there was no topographical survey available; the necessary correction will slightly increase the above value.

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 Presence of the Remains of Dicynodon in the Triassic Sandstone of Elgin

IN my address to the Geological Section of the British Association I was fortunately able to announce a discovery which is of the very greatest interest both to geologists and biologists. As this discovery was made only a few days before the commencement of the meeting at Aberdeen, and after the draft of the address was in type, it does not appear in your columns; I will therefore ask you to insert this note upon the subject. Visiting the "Cutties Hillock" quarry near Elgin early in September, I found that the workmen had recently obtained a new specimen of a reptile, in which the head was preserved. On examining this I found that there were clear indications of two large canine teeth in the upper jaw with permanent pulp cavities. These characters and the general form of the skull left scarcely the smallest doubt in my mind that the remains must belong to a reptile closely allied to *Dicynodon*. From the examination of a photograph which I submitted to him, my friend Dr. Traquair was able to fully confirm this conclusion, and to lay a preliminary note on the specimen before the Geological Section at Aberdeen. I hope that ere long he will be able to give a complete description of it.

As *Dicynodonts* have hitherto been only found in South Africa, in India, and in the Ural Mountains, this discovery is an exceedingly important one. Seeing that doubts have been expressed concerning the Triassic age of the South African deposits, the occurrence of the very characteristic African form in the Trias of Western Europe is an important link in the chain of evidence by which these beds have been correlated. It is interesting, too, to be able to point out that the sandstones of Elgin, concerning the age of which such a great amount of controversy has taken place, have now yielded reptiles belonging to no less than four orders—namely, the Lacertilia, the Crocodilia, the Dinosauria, and the *Dicynodontia*. J. W. JUDD

An Earthquake Invention

WHILE on a visit to the Melbourne Observatory I saw NATURE of July 2 containing two letters from Prof. Piazz Smyth, intended to expose a piratical attempt on the part of a "B.A. man" to adopt an idea of Mr. David Stevenson with regard to the construction of houses to withstand earthquake motion. The publication of the first of these letters is at the request of Mr. D. A. Stevenson. The piracy referred to by Prof. Smyth is a brief note in a paper written by myself. My name is at the head of it (see *Report to the B.A.* 1814). Prof. Smyth complains that I have not taken notice of a paper written some twenty years ago by Mr. D. Stevenson. I regret to say that I am not acquainted with that paper, and how Prof. Smyth expects that I should be when living 10,000 miles away from collections of European books, I fail to see. I am, however, acquainted with very much relating to aseismic or aseismatic tables, and if I made reference to the work of Mr. David Stevenson, I must

necessarily have referred to the work of others. As every report which I have hitherto written for the British Association has been in the form of notes which have subsequently been expanded in special papers, an historical account of aseismic tables would have been out of place. Prof. Smyth is apparently only acquainted with the work of Mr. D. Stevenson. Under the head of aseismic tables I include ball and plate seismographs, the lamp tables in certain Japanese lighthouses, two model houses which I constructed in Japan, together with the model lighthouse spoken of by Prof. Smyth, and my own dwelling house. *All of these involve the same principles, and they only differ in their dimensions.*

(1) *Ball and Plate Seismographs*.—Of these seismographs I have constructed several types. At the time of an earthquake, in consequence of acquiring a surging movement, they fail to give reliable records. They have been *independently* invented and described as original by many. Mr. Briggs, of Launceston, Tasmania; Dr. Verbeck, of Tokio, Japan; Mr. T. Gray, of Glasgow; Mr. D. A. Stevenson, of Edinburgh, &c., have all been authors of such instruments.

Mr. D. A. Stevenson recently figured and described his form of seismograph in the pages of NATURE. If we overlook certain mechanical defects in this instrument, as, for instance, attaching a recording index to the edge of the "steady plate" rather than at its centre of inertia, the resemblance of Mr. Stevenson's contrivance is strikingly like a seismograph the photographs and descriptions of which existed in several societies and libraries in Britain prior to the appearance of Mr. Stevenson's invention. After reading Mr. Stevenson's description I did not ask for the publication of an "interesting" and "well-put" letter, accusing Mr. Stevenson of having appropriated the ideas of others, but I furnished him with copies and references to papers in the *Transactions* of the Seismological Society and other periodicals where mention was made of this type of instrument.

(2) *Lamp Tables*.—As I have been an officer in the Public Works Department of Japan for the last ten years, where I have every facility of knowing what the performance of the lamp tables at the lighthouses has been at the time of severe earthquakes, I trust that some credence may be given to what I may say on this subject. When I last made inquiries about these tables, I found that they were all regarded as failures and one and all had been clamped. If Mr. Stevenson would like to have details respecting these failures I shall, on my return to Japan, have great pleasure in making them public.

Mr. Mallet, in his "*Palmieri's Vesuvius*," very distinctly states that he was consulted by Mr. Stevenson respecting the Japanese structures, and that the principles indicated by him (Mallet) were followed out in their construction.

As Mr. Mallet is dead, perhaps Mr. Stevenson or Prof. Smyth will kindly enlighten us as to the meaning of this passage. Although I have made seismology a speciality for some years, I must confess that I am as yet in the dark as to who was the first inventor of the aseismic joint. To me it appears that there have been many inventors.

(3) *Models*.—My first model was about as large as a good-sized dog kennel. For a short-period oscillatory movement the house resting on its rollers remained at rest. Prof. Smyth speaks of Mr. Stevenson having imitated earthquake motion by the blows of a sledge-hammer. Although Prof. Smyth regards the blows of a sledge-hammer as an admirable illustration of earthquake motion, any one acquainted with the true nature of earthquake motion would decline to recognise Mr. Stevenson's test as any test whatever.

(4) *Building*.—The only building placed on free foundations with which I am acquainted is the one I have erected in Tokio. At first it rested on balls, and, like Mr. Stevenson's lamp tables, it was for certain reasons a failure. Now it rests on spherical grains of cast-iron sand. It is now astatic, and I regard it as a success. At the time of an earthquake the motion outside the house is usually about six times what it is inside. A description of it will be found in the *Reports* of the British Association for 1885.

From what I have now said it will be clear that I have no desire to claim the authorship of the aseismatic joint. Detailed reference to the obscure and manifold authorship of what has hitherto proved a failure would certainly have been out of place in the report to which Prof. Smyth has referred.

Had Messrs. Stevenson and Smyth been acquainted with the nature of earthquake motion, a few of the more important facts in the history of the ball and plate joint, and the details of the