309

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"To the solid ground
Of Nature trusts the mind which builds for aye."—WORDSWORTH

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of the previous evening. . . . When the rennet is added the milk is gently stirred with a long spoon for two or three minutes; a wooden cover is then placed on each pan, and it is left for five or six hours. . . . The curd is then taken out by spoonfuls and put into cylindrical white metal moulds which cost about 4*s.* 6*d.* a dozen, and which are open at both ends. These are previously placed upon rush mats upon slightly inclined tables, and which have on the lower extremity a small gutter which carries off the whey into a receptacle beneath. . . . When the curd has remained two days in moulds the cheese possesses consistency enough to enable it to be moved with ease. Then the left hand is placed beneath it, and, assisted by the right hand, cheese and mould are turned, so that the top face is placed at the bottom, in contact with the mat. At the end of thirty-six to forty-eight hours from filling, the cheeses are taken out of the moulds and salted. . . . When salted, they are placed upon the wooden shelves above the draining tables, and here they are left for two or three days until they are ready to be sent to the *hâloir*."

We have quoted the foregoing passage in order to show that there is nothing more complicated in the making of a French Camembert cheese, nor yet so complicated, as in the making of an English Cheddar. Whether by following Mr. Long's directions an English dairyman could produce the correct type and flavour can only be demonstrated by trial, but probably a cheese would be produced suitable to English methods which would add to the variety of our dairy products and find a ready market. Mr. Long also describes the manufacture of various other cheeses, among which are Pont l'Evêque, Livarot, Mignot, Boudon, Brie, Géromé, Coulommiers, Mont d'Or, Void, Suisse, St. Remy, Gervais, St. Marcellin, Jour iac, Gex, and a large number of others, the mere mention of which would occupy more space than we can spare.

Mr. Long has certainly contributed a handy text-book which it is hoped will find its way among and be studied by dairy farmers.

JOHN WRIGHTSON

OUR BOOK SHELF

Chain Cables and Chains. By Thomas W. Traill, C.E., R.N., the Engineer-Surveyor to the Board of Trade. (London: Crosby Lockwood, and Co., 1885.)

IN the volume before us we find the business of chain cable-making in its several branches well explained and illustrated; nor does the aim of the author end here. There is information given which is most useful to surveyors and inspectors, and we recommend all who have to deal either with the manufacture, inspection, or testing of chain cables to study the work. The volume contains many well-executed plates, showing good, bad, and indifferently-formed links, &c., for various kinds of cables, also tables of the best dimensions of each part of each link and shackle used in cables from 7-16th to 2½ inches, the dimensions being given in decimals to two places, and also calculated to thirty-second parts of an inch. We find also exact copies of certificates given by the several public proving establishments, seven plates in all, more than one example being quite unnecessary, varying as they do only in colour and the name of the town in which the establishment happens to be.

After a few pages giving an outline of the general manufacture and the methods of welding the links, we have a long historical chapter of the early uses of metallic chains, in which we are told that their uses date back to the time of Pharaoh and King Solomon; but it was not until 1808 that chain cables were used on board ship; at this time a chain cable was used in a vessel called the *Ann and Isabella*, of 221 tons, built at Berwick, and owned by Joshua Donkin. This cable was made by Robert Flinn, in North Shields, perhaps the first artificer in chain cables. In the year 1833 the first machine for testing iron cables in a Government yard was put down at Woolwich, and in 1834, although chain cables were almost in general use, the rules of Lloyd's Registry only specified the length, and it was not until twelve years afterwards it was part of the surveyor's duty to see that they had been properly tested. The author gives a very interesting account of the progress of manufacture and general adoption of iron cables. We then find the various Acts of Parliament pertaining to their use given in full. All public proving establishments are now under the management of Lloyd's Committee.

The method of proving chain cables is as follows:—From every length of 15 fathoms of the cable to be proved a piece consisting of three links is taken and subjected to an appropriate breaking-strain. If the piece so selected fail to withstand such a breaking-strain, another piece of three links is taken from the same 15-fathom length and tested in a like manner. If the first or second of such pieces withstand the breaking-strain, the remaining portion of the 15 fathoms of cable is then subjected to the tensile strain. If it is found that after the application of the tensile strain the cable is without defects or flaws, it is then stamped as proved with the distinguishing marks of the proving establishment; on the other hand, should the cable fail to stand the appropriate tests, it is rejected. Mr. Traill condemns the overtesting of cables, considering that the material is injured by so doing, and we agree with him in saying:—"A moderate test is all that is not detrimental. Proving the iron from which the cable is made, and breaking a sufficient number of samples, is what can and should be done to prove the actual quality and reliability of a chain."

The volume does great credit to the publishers, being well printed on good paper. We can safely recommend this work to all in any way connected with the manufacture of chain cables and chains as a very good book.

United States Coast and Geodetic Survey. Determination of Gravity at Stations in Pennsylvania, 1879-1880. *Appendix No.* 19. *Report for* 1883.

THIS appendix is a portion of the Annual Report of the U.S. Survey, and contains the pendulum observations made in 1879-1880 by Mr. C. S. Peirce at three stations in Pennsylvania—namely, at the Alleghany Observatory, at Ebensburg, and at York. The observations form part of a series undertaken in connection with the Geodetic Survey of the United States. A Repsold reversible pendulum was used and oscillated *in vacuo*, using various kinds of supports. At York a series of experiments were made to determine the effect of the flexure of the support. It appears from a previous report (Appendix No. 14 of 1881) that Mr. C. S. Peirce maintained against MM. Plantamour and Hirsch in Switzerland, that the oscillations of the support have a marked effect on the time of oscillation of the pendulum, and he accordingly undertook an exhaustive series of experiments to prove his point, and to measure the allowance to be made. The experiments given in Appendix No. 19 are only a small portion, and are in fact re-published from Appendix No. 14, with some few corrections. The question was disposed of in Appendix No. 14, and it was clearly shown that the flexure of the support ought to be taken into account, and it is evident, therefore, that the stiffness of the support is of vital importance. Experiments were also made at York to determine the relative value of the method of transits and a method of eye and ear coincidences invented by Mr. Farquhar; the method is not described, but appears to be far less accurate than the method of transits. The effect of substituting steel 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	0·9911015

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. Piazzi 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