

AN UNFAMILIAR RAILWAY DANGER.

SIR,—In a short paper by Mr. Griesbach, C.I.E., of the Geological Survey of India, which appears in the Records of that Survey for May, 1893,¹ we learn that both lines of rails of the frontier section of the North-Western Railway, near the Station of Sanzal, in the neighbourhood of the Kójak Range, in Balúchistán, became violently distorted where crossed obliquely by a line of fissure which was caused by the earthquake of the 20th of December last. The first and most severe shock occurred at 5.40 a.m., but several others recurred at frequent intervals during that day and the two following. Photograveur illustrations of the scene showing the deflection of the rails, as well as a plan to scale, are given, from which it appears that the curvature of both pairs of rails, within a length of from 30 to 40 feet, shifted them more than the width of the track in each case, the curves being so sharp that any train passing along the lines in the dark, or without the occurrence being noticed or looked for, must have been wrecked. Buildings suffer more from earthquakes than Railways, still, these earth-movements are not so uncommon that Railway Companies should neglect the hint given by the occurrence.

A. B. W.

OBITUARY.

THE REV. HENRY HUGH HIGGINS, M.A.

BORN 28 JANUARY, 1814; DIED 2 JULY, 1893.

THE City of Liverpool has sustained a great loss in its intellectual life, by the death of the Rev. H. H. Higgins, M.A., who for more than forty years has devoted himself to the advancement of Natural Science in the midst of one of the busiest communities in England.

Born at Turvey Abbey, Beds, on January 28, 1814, he entered Corpus Christi College, Cambridge, in 1833, and took his B.A. degree in 1836. He was admitted to priest's orders in 1839, and devoted four years to clerical duty in the town of Wolverhampton, proceeding in the following year to Shrewsbury. Mr. Higgins came to reside in Liverpool in 1842, and occupied himself with more congenial educational work, being made Inspector of the Schools of the Church of England School Society, a position which he resigned in 1848, though, as Hon. Secretary, and afterwards Hon. Treasurer, he retained connection with the Society. After performing other church duties, he was appointed Chaplain to the County Asylum, Rainhill, in 1853, which post he continued to hold until 1886. A long Eastern tour through the Holy Land and Egypt was undertaken in 1848, and described in a course of six lectures given at the Liverpool Collegiate Institution, the proceeds of which—amounting to £300—Mr. Higgins generously gave to the School Society. In 1876 he accompanied Mr. Reginald Cholmondeley in his steam yacht, the "Argo," on a voyage to the West Indies, which Mr. Higgins has charmingly described in a small 12mo. volume entitled "Notes by a Field Naturalist in the Western Tropics." Valuable collections of natural history specimens, now interspersed

¹ This paper has only just come to hand since the writing of Mr. C. Davison's article, see *ante* pp. 356-360.—EDIT. GEOL. MAG.

in the series exhibited in the Liverpool Free Public Museum, resulted from the voyage. This Museum is largely indebted to Mr. Higgins's labours. For a long series of years he has acted as Chairman of the Museum Sub-Committee of Management, and he has besides devoted many hours weekly to the classification and arrangement of the collections in the possession of the city. In connection with this institution Mr. Higgins is the author of three useful handbooks, viz.—a “Synopsis of the Invertebrata,” a “Museum Memorandum Book,” and a popular pamphlet entitled “Museum Talk,” of which more than 25,000 copies have been sold at a nominal price in the Museum buildings. He has also published an essay on “Museums of Natural History” (contributed originally to the Literary and Philosophical Society of Liverpool, which is replete with practical suggestions on museum management and appliances. “The most important function of a museum,” states our author in this work, is not so much to instruct as to win and encourage minds to get themselves instructed through habits of observation.” One of the most valuable collections in the Museum is a fine series of Coal Measure fossils, collected by Mr. Higgins himself from a railway cutting at Ravenhead, near St. Helens. In 1880 he was fortunate in securing for the Museum a numerous series of Cirripedes collected in the “Beagle” by Charles Darwin. These were duplicates remaining after Mr. Darwin had (as he states in a letter to Mr. Higgins) made the British Museum collection as perfect as he could. The system of circulating boxes of museum specimens for use in schools was also originated by him. On more than one occasion Mr. Higgins has received from admirers of his work testimonials showing how greatly his labours have been appreciated.

Mr. Higgins founded, in the year 1860, the Liverpool Naturalists' Field Club, of which he was President to the last; and he has also occupied the presidential chairs of the Literary and Philosophical and Microscopical Societies of Liverpool. His contributions to the published “Transactions” of these Societies, besides those of other similar associations, have been exceedingly numerous. They will be found conveniently collected in three 8vo. volumes, under the title of “Opuscula,” in the Free Public Library of Liverpool. The papers contained in these volumes range in date from 1855 to 1887, and deal with a variety of scientific subjects in a light and pleasing, yet instructive manner. In all his writings, Mr. Higgins is a true exponent of the “poetry of science,” which is far too often neglected in our modern haste for the rapid acquirement of knowledge—so characteristic a feature of the age in which we live.

With him originated the idea of sending out preserved specimens of various classes of creatures to form the subjects of lessons in elementary zoology and botany for schools. This commenced in 1884, and in the interval, the technical education scheme having been introduced, these specimens have been found exceedingly useful, especially as every one of them bears attached a few short notes indicating the outline of a lesson which the teacher has to prepare. Proceeding further in this direction, Mr. Higgins quite recently projected a popular mineral collection to show how things

dug out of the earth are rendered useful to man by being passed through various processes. Thus iron was to be seen in several stages, from the ore to the manufactured article. The introduction of mechanical models into the course of school lessons was also one of his ideas, and this was admirably carried out, notably by the "model clock" (made for him by Mr. George Eccles, clockmaker), which can be taken to pieces and put together again by the fingers, without the aid of tools. This clock is sent to the elementary schools whenever required, and when not so in use it stands in the vestibule of the Museum. He also strongly advocated the use of the lantern and limelight in illustrating lectures and lessons.

So deeply did he feel the importance of a museum as an institution which should be extended and rendered as complete and useful as possible, that he gladly took part in organising the Museums' Association, which held its first regular meeting in Liverpool in June, 1890, and, having been chosen the first President, he delivered the inaugural address, in the course of which, after having dealt with the general subject of natural history museums and their appliances, he went on to speak of "The New Knowledge." "As members," he said, "of our museum fellowship we are bound to be more or less familiar with the scientific side of the new knowledge, and must have felt the magnitude of the revolution it has brought about. It has an equally potent moral side, from which I will ask you to consider an inference fraught with encouragement for the future. The new knowledge leads to the conclusion that the most exalted productions ever brought forth in poetry, philosophy, or science were not obtained otherwise than in the orderly course of results which had gone before. Shakespeare could not have lived 100 years before his time. His life was not a miracle, except as having its share in that ever-engaging and enduring life-miracle in the presence of which we stand silent with bowed heads. Galileo, Bruno, had their times prepared for them, and in their turn prepared the way for Faraday, Agassiz, Darwin. Nor is there in our own days even the least indication of an approach to finality; gravitation, electricity, life are unknown essences. In biology some of the most illustrious discoveries still exhibit crudities and incompleteness removing them beyond a measurable distance from perfection. Were they, then, not discoveries? Assuredly they were; and in spite of all imperfections they are the glory of our times. But what we claim for our own knowledge we must grant to the attainments of our predecessors, admitting freely that there may be great good and even great glory in a very imperfect stage of knowledge, if it be that which is best fitted for its environments. This we have been slack in perceiving, because we have not realised how vast, how unique a thing has been the flow of knowledge from age to age. Take the knowledge of any age: it is a goal; it has been tended towards and reached by the efforts and successes of many former ages: it is a terminus, long forecasted, towards which the steps of followers have been unconsciously directed, rendering it more and more accessible as generations came and went." So much interest did Mr. Higgins manifest in the success of the Museums' Association that he con-

stantly attended its meetings, and it had been arranged that he and Mr. Paden, the acting curator at the William Brown Museum, should proceed to London on the 3rd July to attend a meeting of the Association there, commencing on Monday evening. This journey was agreed upon no later than on the 1st July, when, after listening to Mr. Best's organ recital, Mr. Higgins crossed over to the Museum, as was his usual custom almost daily.

The officials and employés at the Museum and Free Library received the news of his death with profound regret. Not being a member of the City Council, he could not be elected chairman of the Library, Museum, and Arts Committee, but some years ago he was appointed Chairman of the Sub-Committee of the Museum and Mayer Collection, and continued in that office till the last. It is almost needless to say that his literary attainments were of a high order, and that he was one of the most valued members of the Library Committee when books new or old came to be selected.

Mr. Higgins, who was in his eightieth year, had been in his usual health on Sunday, 2nd July, and proceeded to his library, as was his wont, in the evening, where his retirement was not broken, and was permitted to remain undisturbed for some time, but on his study being entered about nine o'clock Mr. Higgins was found by one of his sons sitting at his writing-desk, surrounded as usual with his books and papers, but quite dead. The circumstances of his death seemed, one would think, an appropriate close to a life the remarkable industry and activity of which has aided so largely in the advance of scientific progress and educational culture and has left no time for idleness. It was known to the family that he had intended to proceed on Monday, 3rd July, to London, to attend the Meeting of the Museums' Association, at which he had undertaken to read a paper entitled "On a Public Museum Series of Minerals arranged in aid of Technical Education." The manuscript found on his writing-desk immediately in front of him showed that he had been busily engaged on that very work. Several folios of it had been written, and its sudden stoppage in the middle of a word indicated that the attack had proved at once fatal.

With the Literary and Philosophical Society of Liverpool Mr. Higgins had been connected for forty-six years, and he had twice filled office as its President.

Mr. Higgins was also intimately identified with the Naturalist's Field-club, another society connected with the Royal Institution, and he had been its President for many years, and a constant attendant at the field meetings. He was also identified with the Microscopical, and other scientific societies held in Liverpool.

On the death, in 1885, of his brother, Charles Longuet Higgins, of Turvey Abbey (the "Good Layman" in Dean Burgon's "Lives of Twelve Good Men"), Mr. Higgins succeeded to the manor of Turvey and the family estates in Bedfordshire and Buckinghamshire.

Although he will be long remembered and much missed in connection with the societies already named, the work which he accomplished in connection with the Free Library and Museum, on

the committee of which he was a member for about thirty-three years, will probably in future years be regarded as the chief monument to his memory. His labours in reference to the Museum commenced really about seven years before he became a member of the committee, in November, 1859, as a representative of the Derby Trustees, his scientific knowledge, of which the late Sir James Picton had a very high opinion, pointing him out as probably the best-equipped gentleman in Liverpool to assist by his advice in extending the scope of the Institution, which was then at its commencement, and which has since become so famous. His labour in the Liverpool Museum for the past forty years may therefore be truly described as a labour of love. In the classification and arrangement of the specimens he took an active part in conjunction with the chief curator, the late Mr. T. J. Moore, the two officials making a general division of the work, Mr. Moore attending chiefly to the vertebrates, and Mr. Higgins to the invertebrates, each rendering the other the most ready assistance, and working in perfect harmony to the last, Mr. Moore having passed away only a few months ago. With an eye to the practical as well as the strictly scientific uses of the Museum, Mr. Higgins conceived the idea of exhibiting the specimens in so simple a manner that people of ordinary education could appreciate them, and to that end he compiled the well-known little book entitled "Museum Talk about Animals which have no Bones," and which was intended and has been extensively used as a "Visitors' Companion" to the Museum. That the pamphlet has become popular may be gathered from the fact that 36,000 copies have been issued in six editions.

Rarely could anyone retain, as Mr. Higgins did, for nearly eighty years, that earnest craving for increased scientific knowledge, combined with a child-like simplicity and sweetness of disposition which endeared him to his friends and attracted all young people to him from far and wide.

He was a keen musician, and his love of harmony pervaded all his scientific pursuits, and added a charm to his home-life, and to the wider circle of those who knew and appreciated him for his many personal merits, as well as for his devotion to the public service.

ERRATA: GEOLOGICAL MAGAZINE, JULY, 1893.

Readers are requested to make the following corrections in Prof. V. Ball's article on "Barren Island."

p. 290. Note 1., for *Rhyticiros*, read *Rhyticeros*.

p. 291. line 10, for "Prince," read "Prine."

In re "New Classifications of the Brachiopoda," GEOLOGICAL MAGAZINE, July, p. 318, third line from bottom, for *Neotremata*, read *Protremata*.

The *Telotremata* originated from the pentameroids of the *Protremata*, as is correctly indicated by Mr. Schuchert on his Table V. and p. 145, "American Geologist," vol. xi. No. 3, while on a subsequent page (147) he states "The *Telotremata* had their origin in the *Neotremata*"! The first statements are correct, but the fact is the ordinal characters converge the farther we go back in geological times, and what better proof can we have of the evolution of the Brachiopoda? Mr. Chas. Schuchert is now attached to the National Museum, Washington, D.C., U.S.A.

AGNES CRANE.

On p. 336, line 6 from bottom, for "Gygomatic," read "Zygomatic."