rangle, and are situated upon a site overlooking Weston Park. A tower has been erected at one corner of the quadrangle, octagonal turrets at two of the other corners, the site of the third turret together with the fourth side of the quadrangle being left vacant in order to provide for future extensions. The building on the south side, which faces Western Bank, contains the large hall of the University; this hall is to be known by the name of the Firth Hall, after the founder of Firth College. The Firth Hall is designed to accommodate an audience of about 800 persons. In the same building are the administrative offices, the council room, the common rooms and refectories. The building on the west side provides for the departments in the faculties of arts and pure science, that on the north for the departments in the medical faculty. The faculty of applied science is located on a separate site about four minutes away in St. George's Square.

The physical laboratories contain a superficial area of 10,000 square feet, and are self-contained on three floors connected by a spiral staircase and apparatus lift, the rooms on each floor being arranged on either side of a central corridor except those on the lower ground floor, which, owing to the slope of the ground, are confined to the quadrangle front. Accommodation is provided for all the various departments of physics, except electrical engineering, which is housed in the buildings for applied science in St. George's Square.

The chemical department occupies the northern half of the top floor in the western block, and has a floor area, including corridors, of 7400 square feet. Two lecture theatres are provided. The larger, 30 feet by 40 feet, is furnished with seating accommodation for 110 students. A preparation room for lecture experiments adjoins this. On the other side of the corridor is a smaller lecture theatre to accommodate 34 students; this will be utilised for tutorial work, and for work with small classes.

There are laboratories for elementary and advanced students, and a small one for research work.

The biological department, which includes the two subjects of zoology and botany, adjoins the chemical department, and occupies the southern half of the top floor of the west wing. A lecture room is also allotted to this department on the first floor, and the whole of the upper part of the tower. There are two lecture rooms, the larger having accommodation for about 80 students. The general laboratory, with a raised platform and table for the purpose of practical demonstrations, and the botanical laboratory afford accommodation for 30 students each; there is also a zoological laboratory for advanced students, besides zoological and botanical research laboratories.

The anatomical department includes a large lecture theatre, a museum, several research laboratories, and private rooms for the professor and demonstrators. Accommodation for microscopes and stereoscopes is provided, also a set of the most modern anthropological instruments, and requisites for students who may desire to do work in modern developments of anatomy.

The physiological department has an area of about 5400 square feet. There are nine rooms in the department, and no corridors, the rooms opening into each other; the three largest of these are the general laboratory, 70 feet by 25 feet, the chemico-physiological laboratory, 50 feet by 25 feet, and the lecture theatre. Another large room in the department is the general research room, 25 feet by 30 feet. The rooms in this department, like all the other rooms on the north front, are lighted with specially large windows in order to facilitate microscopical work, and have several concealed sinks in the floor, which, when opened, reveal supplies of gas, water, and electricity, thus avoiding the necessity of fixed benches, their place being taken by movable tables.

The pathological department occupies the whole of the upper floor of the medical block; the main feature is the large students' laboratory facing north, 70 feet by 26 feet, divided by two partitions. There are adjoining this two laboratories, one large and one small, intended for the bacteriological work to be done in connection with the City Health Department. A special feature consists of an incubating room in the centre of the department, so arranged that it can be kept at a constant temperature; this room will replace the ordinary incubating ovens. There is a large lecture theatre in the department, a museum with a top and a south light, a special research laboratory, also private rooms, photographic and store rooms—the last two mentioned being in the roof and the turrets above the department.

The new buildings allotted to the engineering department consist of four floors; the lowest floor or basement contains a large extension of the original laboratories. The main engineering laboratory contains a plant which can be used both by mechanical and electrical engineering students. There is also a very complete electrical equipment in the new building to demonstrate the applications of electricity to lighting, traction, and power transmission.

The department of metallurgy has had special attention paid to it, seated as it is in a city where the chief national metallurgical industry is carried on. As a natural consequence of this, so far as iron and steel metallurgy is concerned, the metallurgical laboratories of the University of Sheffield are unique. These laboratories are divided into two sections, the scientific and the practical. In the first named there are nine, and in the second two laboratories.

GEOLOGICAL NOTES.

AMONG recent publications of the Geologische Reichsanstalt of Vienna, Herr G. Geyer (*Verhandlungen*, 1904, p. 363) discusses the nature of the pre-Jurassic floor of Austria, from a study of blocks of crystalline rock embedded in Liassic sandstone, and of the island-like "Klippe," formed of granite, which lies N.W. of Weyer, and which has been utilised for the memorial of von Buch. This mass of granite, by-the-by (Toula, *ibid.*, 1905, p. 89), was correctly appreciated as a projecting mass of older land, and not as an erratic block, by von Hochstetter as far back as 1869. Herr Geyer refers to many instances of "exotic blocks" north of the Alps, and points out the influence of the old gneissic and granitic foundation on the subsequent folding in the region of the Enns. Herr R. J. Schubert (*ibid.*, 1904, p. 461) adds greatly to our knowledge of the Upper Eocene and Oligocene beds of Dalmatia, while Dr. Franz Kossmat (*ibid.*, 1905, p. 71) shows how the Sava began to flow eastward on the uplifted floor of a Miocene gulf, and formed the plain near Laibach by filling in a depression that developed during the latest movements of the Alps. In the department of palæontology, Dr. Katzer (*ibid.*, 1905, p. 45) furnishes an interesting account of the microscopic structure of the Devonian Tentaculite-limestones of Bohemia, which may be regarded as a valuable supplement to Novák's work on Tentaculites (*Beiträge zur Pal. Oesterreich-Ungarns*, ii. Bd., 1882). Herr Theodor Fuchs (*Jahrbuch der k.k. Reichsanstalt*, 1904, p. 359) reviews in considerable detail a number of recent papers on fucoids, and concludes that these problematic organisms were not washed into the strata after the manner of floating seaweeds, but arose where they are now found. He insists that museum-specimens in such cases are likely to be misleading, and that a study of fucoids in the field shows that some, at any rate, run perpendicularly to the strata by which they are surrounded. Herr G. Stache (*Verhandlungen*, 1905, p. 100) again investigates the globular Cretaceous organism named by him Bradya, and gives it new interest by showing its resemblance, in structure and mode of occurrence, to Brady's recent genus Keramosphæra, described in 1882 from the deep sea south of Australia. Bradya has long been connected with Steinmann's hydrozoan form Porosphæra; but Stache is now able to revive it, and once more to refer it to the foraminifera. Students of our well known British form Parkeria will find much to interest them in this paper. Herren Hofmann and Zdarsky (*Jahrbuch*, 1904, p. 577) discuss and illustrate the dentition of Deinotherium, and the abundant remains of a species of antelope, from the Miocene beds of Leoben.

The *Transactions of the Geological Society of South Africa* for January to April contain several stratigraphical and structural papers by Dr. Molengraaff and others; but general interest will be raised by the illustrated description of the great Cullinan diamond, by Messrs. Hatch and Corstorphine, on p. 26. In the *Transactions of the South African Philosophical Society*, vol. xvi. (1905), Mr. Rogers

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(p. 1) confirms his discovery of a glacial conglomerate, the Pakhuis bed, in the Table Mountain series near Clanwilliam. A thousand feet of sandstones, probably fluviatile, overlies these glacial strata, and the Devonian Bokkeveld beds follow, so that the antiquity of the conglomerate, as compared with the well known Dwyka beds, is put beyond a doubt. Mr. Schwarz (*ibid.*, p. 9) makes a block of gneiss from the volcano of Tristan d'Acunha serve as the text for a dissertation on oceanic islands in general, which he expands further into a treatise on several points in theoretical geology. We confess to a feeling of nightmare, as the one innocent specimen leads us on into enormous fields of speculation, where a considerable area is occupied by the slaying of the slain. When, after twenty-six pages, we reach the question, "What, after all, are volcanoes?" we are tempted to turn over the next eight, to where the description of "the rocks of Tristan d'Acunha" nestles humbly as an appendix. Mr. A. L. du Toit (p. 53) furnishes a serious paper on the forming of the Drakensberg, which summarises many recent observations. Stress is laid on the numerous volcanic necks and lava-flows, which are later than the Cave Sandstone. In some cases, the vents contain no igneous matter, but merely masses of exploded sandstone and shale, in a ground of pulverised grit. Dr. R. Broom re-opens (*ibid.*, p. 73) the whole question of the age and affinities of Tritylodon. Those who were present at the memorable meeting in London in 1884, when Owen laid upon the table what was believed to be the oldest known mammalian skull, will read with some surprise of the doubt which hangs over the locality and horizon of the fossil. Dr. Broom believes that it came, as then stated, from Basutoland; if so, it is from the Stormberg beds, which he regards as of Lower Jurassic age. As was pointed out in NATURE, vol. lxxii. p. 36, the reference of the reptilian beds of South Africa to the Permian may carry back the Stormberg beds also, and this will make Dr. Broom's defence of Tritylodon as a mammal, and not a reptile, of even greater interest as research goes on.

Dr. A. E. Salter (*Proceedings of the Geologists' Association*, vol. xix. p. 1) produces a large amount of original evidence bearing on the sources of the superficial deposits found above the Jurassic and Cretaceous strata to the south, north-west, and west of London. The area studied is a wide one, and Dr. Salter traces fluviatile action in it to an epoch before the deposition of the "Boulder-clay." Among his interesting conclusions, we note that a large amount of "drift" material in the lower basin of the Thames is of southern origin, suggesting that "the southern slope was formerly more extensive than at present," the distribution of such material having been probably aided by earth-movements. In support of this latter contention, it is shown that Lower Greensand chert from the Wealden area occurs 650 feet above the sea at Goring Gap. The Lower Thames Valley is thus held to be of recent geological age (pp. 17, 25, &c.). Other evidence is adduced of the modification of the general direction of drainage by earth-movements since the higher gravels were deposited.

Dr. O. Mann begins, in the *Sitzungsberichte der Gesellschaft Isis* (1904, p. 61), what promises to be a detailed account of the tin-deposits of the Erzgebirge, including a microscopic examination of the veins of quartz, tourmaline, and cassiterite.

Dr. J. W. Spencer further emphasises his views as to submerged river-channels and continental shelves in two notices of the work of Hull and Nansen (*American Geologist*, vol. xxxv. pp. 152 and 222). He provides us also with a useful bibliography of the subject in relation to America (*American Journal of Science*, vol. xix. p. 341).

A preliminary note on the geology of the provinces of Tsang and Ü in Tibet, by H. H. Hayden (*Records, Geol. Survey of India*, vol. xxxii. p. 160), forms a pleasant outcome of the recent political expedition. Marine Cainozoic beds are found north of the Sikkim border, and there is evidence of a former considerable extension of glaciers northward from the Himalayas. The granite near Lhasa is intrusive in a wide area of Jurassic strata, which have suffered much from crushing and metamorphism. The country does not appear rich in minerals, and even the gems are imported. G. A. J. C.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Amongst the list of donations to the university benefaction fund which was recently published by the Vice-Chancellor the following sums may be mentioned:—the Right Hon. Lord Rayleigh, 5000*l.*; the Right Hon. Lord Iveagh (further donation), 1000*l.*; C. J. Heywood, Esq., 100*l.*; J. Lumb, Esq., 100*l.* Besides these a number of smaller sums have been received, some of which are especially allocated to the Huddersfield lectureship in pathology. In addition to these sums the Cambridge University Association has collected more than 6000*l.* towards the fund for the university library. The success of this is due almost entirely to the energy of the registrary. The Schuter scholarship in St. Bartholomew's Hospital has been awarded to Mr. R. B. S. Sewell, late scholar of Christ's College.

DR. T. G. PINCHES has been invited to join the staff of the institute of archæology of the University of Liverpool as assyriologist.

THE resignation of Mr. H. J. L. Beadnell from his position on the Geological Survey of Egypt is announced. Mr. Beadnell has been connected with the survey since 1896, *i.e.* from the time it was established.

FROM a long list of recent changes we extract the following appointments to professorships at technical colleges:—Prof. M. Disteli at Dresden, for descriptive geometry; Mr. Camillo Körner and Prof. K. Zsigmondy at Prague, for machine construction and mathematics respectively; Dr. Leo Grünmach at Berlin; Dr. Gustav Rasch at Aachen; Dr. Clarence Feldmann at Delft, for electrotechnics; Dr. A. Tobler at Zurich, for applied electricity; Prof. F. Schilling at Charlottenburg, for geometry. W. König, of Greifswald, has been appointed professor of physics at the University of Giessen, and Dr. Karl Stöchl professor of mathematics and physics at Passau.

THE proposal made by the Emperor of Germany for the temporary interchange of professors with America for a course of lectures is leading to a number of important results. Harvard University has invited Prof. Ostwald, of Leipzig, to give a half year's course, Columbia University has secured lectures from Prof. V. F. Bjerknes, of Stockholm, on "Fields of Force," and from Prof. H. A. Lorentz, of Leyden, on "Extensions of Maxwell's Electromagnetic Theory." Is Great Britain with its usual insularity going to keep aloof from the new movement? It is hardly likely that any proposal from our country would fail to obtain hearty support either in Germany or in America.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 9.—"The Rate of Transmission of the Guatemala Earthquake of April 19, 1902." By R. D. **Oldham.**

This paper contains a complete study of an earthquake from the point of view of the rate of transmission. The time and place of origin are known with a sufficient degree of accuracy, and the shock was of sufficient power to give distinct records even at 160° from the origin. Three phases of wave motion are recognised, the third phase including all those which are distinguished in Japan by the symbols $P_3 \ldots P_8$, as the author believes that it is doubtful whether there is any real difference in the character of the wave motion, or whether, in these so-called phases, we have not waves of essentially similar nature, but varying rates of propagation. The first and second phases are, however, of distinct character, being mass-waves, differing from each other not only in rate of propagation but in character of wave motion. Of these, the first phase shows a continuous increase in the apparent rate of propagation as the distance from the origin becomes greater, and seems to emerge almost simultaneously at all points more than 145° from the origin. The second phase shows an increase in the apparent rate of propagation up to 100°, and a decrease beyond this; the result is unexpected, but the author, while remarking that it must not be rejected on that

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