seen issuing from the summit of the volcano; and in the daytime vast volumes of smoke roll from it. Upon nearer approach from English Harbour it was found that the mountain had been split in two from peak to base by a great rupture extending across it from east to west, and that the northern slope of the mountain had sunk away to the level of the northern cliff.[1] This is corroborated by the statement of the hunting-party in Kamishak Bay. Smoke issued from the peak at a very short distance to the southward of the rupture.

The party of natives on Kamishak did not approach the islet, though they gave clear and distinct accounts of its eruption and subsequent appearance; but Capt. C. T. Sands, who was at English Harbour, gave the Alaska Company a full description; and Capt Cullie, of the *Kodiak*, states that, if there were plenty of water in the line of rupture, it would be possible for a vessel to sail through. At the time of Capt. Sands' observations the low ground of the island was visible, and seemed to be a vast crater, from which smoke and flames were issuing.

But beyond all these phenomena, apart from the volcanic eruption and the rupture of the island, we have the report of Capt. Cullie, of the schooner *Kodiak* (from whom we also obtain a statement in regard to the rupture), who approached the island from English Harbour on November 10, and found that a new island about a mile and a half long and seventy-five feet high, had been upheaved in the ten-fathom passage between Augustin and the mainland to the westward. This passage is from six to eight miles wide, and was sailed through by Puget in Vancouver's voyages of discovery.

This new island (also reported by the hunting-party in Kamishak) would appear to have arisen during the late volcanic activity. It lies to the north-westward of Chernaboura Island (Augustin), and was distinctly seen from the *Kodiak*, as that vessel lay ten miles to the north-eastward, and had clear weather.

To show the violence of the volcanic convulsions at this time, two extinct volcanoes on the Alaska peninsula, which are reported to be about west (true) from the active volcano Iliamna (twelve thousand feet high), had burst into activity; and during the day volumes of smoke were distinctly seen, and columns of flame at night. Usually, at that season, Augustin and the peak are covered with deep snow. On November 10, however, when Capt. Cullie approached the island, while there was a depth of four feet of snow at Port Graham (English Harbour), Mount St. Augustin was bare and black.

GEORGE DAVIDSON,
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THE ORIGIN OF THE SCENERY OF THE BRITISH ISLANDS[2]

THE Plains of Britain, like those elsewhere, must be regarded as local base-levels of denudation, that is, areas where, on the whole, denudation has ceased, or at least has become much less than deposit. Probably in all cases the areas they occupy have been levelled by denudation. Usually a greater or less depth of detrital material has been spread over them, and it is the level surface of these superficial accumulations that forms the plain. But in some instances, such as the flats of the Weald Clay and the Chalk of Salisbury Plain, there is hardly any such cover of detritus, the denuded surface of underlying rock forming the actual surface of the plain. Our plains, if classed according to the circumstances of their origin, may be conveniently regarded as (1) river plains—strips of meadow-land bordering the streams, and not infrequently rising in a succession of terraces to a considerable height above the present level of the water; (2) lake plains—tracts of arable ground occupying the sites of former lakes, and of which the number is ever on the increase; (3) marine plains—mostly flat selvages of alluvial ground, formed of materials originally laid down as a littoral marine deposit when the land lay below its present level: in the northern estuaries these up-raised sea-beds spread out as broad carse-lands, such as those of the Tay, Forth, and Clyde; (4) glacial drift plains—tracts over which the clays, sands, and gravels of the Ice Age form the existing surface; (5) submarine plains—the present floor of the North Sea and of the Irish Sea, which must be regarded as essentially part of the terrestrial area of Europe.

When plains remain stationary in level, they may continue for an indefinite period with no material change of surface. But, should they be upraised, the elevation, by increasing the slope of the streams, augments their erosive power, and enables them once more to deepen their channels. Hence, plains like that of the New Forest, which have been deeply trenched by the water-courses that traverse them, may with probability be assigned to a time when the land stood at a lower level than it occupies at present. In this connection the successive river-terraces of the country deserve attention. They may be due not to the mere unaided work of the rivers, but to the cooperation of successive uplifts. It would be an interesting inquiry to correlate the various river-terraces throughout the country, for the purpose of discovering whether they throw any light on the conditions under which the most recent uprise of the country took place. That the elevation proceeded intermittently, with long pauses between the movements, is shown by the succession of raised beaches. It may be possible to establish a somewhat similar proof among our river-terraces.

The submarine plains are by far the most extensive within the British area. In the case of the North Sea the tendency of tidal scour and deposit must modify the form of the bottom. This great basin of water is obviously being slowly filled up by the deposit of sediment over its floor. A vast amount of mud and silt is borne into it by the rivers of Western Europe, as well as by those that drain the eastern and larger part of Britain, and the sea itself is cutting away the land on both sides and swallowing up the waste. We have only to contrast the colour of the Atlantic on the west of Ireland or Scotland with that of the North Sea to be assured of the wide diffusion of fine mud in the water of the latter. There is practically no outlet for the detritus that is thus poured into the basin of the North Sea. From the north a vast body of tidal water enters between Scotland and Norway, and travelling southward, aided by the strong northerly winds, sweeps the detritus in the same direction. On the other hand, another narrower and shallower tidal stream enters from the Strait of Dover, and, aided by the south-west winds, drives the sediment northward. Yet, making every allowance for the banks and shoals which this accumulating deposit has already formed, we can still, without much difficulty, recognise the broader features of the old land-surface that now lies submerged beneath the North Sea. It presents two plains, of which the southern has an average level of perhaps a little more than 100 feet below the surface of the water. This upper plain ends northward in a shelving bank, probably the prolongation of the Jurassic escarpment of Yorkshire, and is succeeded by the far wider northern plain, which lies from 100 to 150 feet lower, and gradually slopes northward. As mentioned in a previous lecture, the drainage-lines of the united Rhine, Thames, &c., on the one side, and the Elbe, Weser, &c., on the other, can still be partially traced on the sea-floor. The Irish Sea was probably, in its later history, a plain dotted with lakes. It appears to have been submerged before the whole of the present fauna and flora had reached Ireland.

Some of the most characteristic and charming scenery of the British Islands is to be found along their varied sea-board. Coast-scenery appears to depend for its distinctive features upon (1) the form of the ground at the time when by emergence or submergence the present level was established; (2) the composition and structure of the shore-rocks; (3) the direction of the prevalent winds, and the relative potency of subaërial and marine denudation. The British coast-line presents three distinct phases: in many places it is retreating; in others it is advancing; while in a few it may be regarded as practically stationary. As examples of retreat, the shores of a large part of the east of England may be cited. In Holderness, for instance, a strip of land more than a mile broad has been carried away during the last eight centuries. Even since the Ordnance Survey maps were published, thirty-three years ago, somewhere about 500 feet have in some places been removed, the rate of demolition being here and there as much as five yards in a year. The advance of the coast takes place chiefly in sheltered bays, or behind or in front of projecting headlands and piers, and is due in large measure to the deposit of material which has been removed by the sea from adjoining shores. The amount of land thus added does not compensate for the quantity carried away, so that the total result is a perceptible annual loss. The best examples of a stationary coast-line where there is no appre-

[1] Capt. Cullie's account.

[2] Abstract of fifth and concluding lecture by Archibald Geikie, F.R.S., Director-General of the Geological Survey, given at the Royal Institution, March 3. Continued from p. 420.

ciable erosion by the waves and no visible accumulation of detritus, are to be found among the land-locked fjords or inlets of the west coast of Scotland. In these sheltered recesses the smoothed striated rocks of the Ice Age slip under the sea, with their characteristic glaciated surfaces still so fresh that it is hard to believe that a long lapse of ages has passed away since the glaciers left them.

The remarkable contrast between the scenery of the eastern and western coast-line of the British Islands arises partly from the preponderance of harder rocks on the west than on the east side, but probably in large measure upon the greater extent of the submergence of the western sea-board, whereby the sea has been allowed to penetrate far inland by fjords which were formerly glens and open valleys. The details of coast-scenery vary with the rock in which they are developed. Nowhere can the effects of each leading type of rock upon landscape be more instructively studied than along the sea-margin. As distinct types of coast-scenery, reference may be made to sea-cliffs and rocky shores of granite, gneiss, basalt, massive sandstone and flagstone, limestone, alternations of sandstone shale or other strata, and boulder-clay, and to the forms assumed by detrital accumulations such as sand-dunes, shingle-banks, and flats of sand or mud.

The concluding portion of the lecture was devoted to an indication of the connection between the scenery of a country and the history and temperament of the people. This subject was considered from four points of view, the influence of landscape and geological structure being traced in the distribution of races, in national history, in industrial and commercial progress, and in national temperament and literature.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—The proposal to allow women to enter for the same honour examinations as men met with less opposition in Congregation than was generally anticipated. By 100 votes to 46 the statute was passed by Congregation permitting women to enter for both Classical and Mathematical Moderations, and for the final Schools of History, Mathematics, and Natural Science. On March 11 the statute will come before Convocation, and will in all probability be passed.

In a Convocation held on March 4 a decree was passed authorising the Professors of Anatomy and Physiology to engage a table for the use of students of the University at the Zoological Station at Villefranche. The anti-vivisectionists were demonstrative, but did not divide the House.

The Professor of Medicine gives notice that the Testamurs for Chemistry and Physics in the Preliminary Honour Examination excuse candidates from the Chemistry and Physics Examination in the First M.B., but that the Testamurs for Chemistry and Physics in the Pass School are not recognised. Candidates may take up Chemistry and Physics separately from Anatomy and Physiology.

An examination will be held at Keble College on March 18 to elect a Scholar in Natural Science. Candidates may offer Chemistry and Biology.

CAMBRIDGE.—Plans have been obtained for the building of a new foundry and a temporary lecture-room and museum for the Department of Mechanism, suitable eventually for additional workshops. The cost is to be 450*l*. The number of pupils in this department has now increased to fifty-seven.

Plans have also been prepared for the new botanical classrooms for microscopic work, the estimated cost being 1065*l*.

Messrs. E. C. Ames, B.A., B. H. Bent, and J. H Nicholl, B.A., have been appointed Demonstrators of Mechanism and Applied Mechanics.

The following Colleges hold Examinations for Open Scholarships in Natural Sciences on the respective dates mentioned:—Clare, March 18; Jesus, March 13; Downing, June 10; Cavendish, August 6. For particulars, application should be made to the tutors of the Colleges. A Clothworkers' Exhibition in Physical Science, tenable either at Oxford or at Cambridge, will be awarded in July. Information may be obtained from the Censor of Non-Collegiate Students, Cambridge.

SCIENTIFIC SERIALS

Journal of Botany.—The number for February commences with the first part of an important paper by Mr. Thomas Hick on protoplasmic continuity in the Florideæ. The connection of protoplasm from cell to cell has now been established in a number of instances in the vegetable kingdom. It may be seen with very great ease, as described and drawn by Mr. Hick, in the frond of some of the red seaweeds, as *Polysiphonia* and *Callithamnion*, without any chemical reagent, except one that causes a slight contraction.—Mr. Carruthers contributes a useful paper on the mode of distinguishing the seed of the sweet vernal grass, *Anthoxanthum odoratum*, from that of *A. Puellii*, an annual species with which it is often adulterated by seed-growers.

THE last part (vol. iii. heft 3) of Cohn's *Beiträge zur Biologie der Pflanzen* contains two important cryptogamic papers: one by E. Eidam, on the development of the Ascomycetes, in which two new forms are described; the other, by M. Franke, describing an interesting new genus of parasitic algæ, *Endoclonium*, dimorphic, and growing on decaying fronds of *Lemna gibba*.

Journal of the Russian Chemical and Physical Society, vol. xv. fasc. 9.—On the action of the hydrocarbons of the acetylene series upon oxide of mercury and its salts, by M. Kutscheroff.—Thermic data of pyrosulphuryl, by D. Konovaloff. The heat of formation of a molecule of $S_2O_5Cl_2$ from its elements in a gaseous state is equal to 180·6 calories.—On a hydrate of silicium obtained from cast iron, by G. Zabudsky.—On the characters of the infra-molecular force, by M. Bardsky (second article).—On electrolytic light, by N. Sloughinoff, being an experimental and mathematical inquiry into the light disengaged during the electrolysis of liquids at one of the electrodes: historical sketch of the subject; instruments employed; the laws of the extra-currents of Edlund; light disengaged in a water solution of sulphuric acid, and dependence of it upon the number of elements in the battery; oscillations of the force of the current; experiments with a rotating glass; wearing of the electrodes; spectrum; light in the acid solutions of salts; on the resistance, the electro-spheroidal state, and the heat disengaged; the oscillating currents.—On the theory of the curved nets, by A. Sokoloff.

Atti della R. Accademia dei Lincei, Rome, October 18 and 19, 1883.—On the alterations undergone by the red globules of the blood in malarious infections, by Prof. Ettore Marchiafava.—Meteorological observations made at the Royal Observatory of the Campidoglio during the months of August, September, and October, 1883.

December 2.—Remarks on Dr. F. Mercanti's memoir on the cilian muscle in reptiles, by Signor Moriggia.—On the alterations in the red globules of the blood in malarious infections, by S. Todaro.—Report on Prof. E. Millosevich's memoir on the diameter of Uranus, by S. Respighi.—On the molecular velocities of gaseous bodies, by A. Violi.—Note on fluorbenzine and fluorotoluine, by P. Emanuele and O. Vincenzo.—A new series of compounds of titanium, by A. Piccini.—On the transformation of the fluorbenzoic acids in the animal organism, by F. Coppola.—A study of the resins of *Thapsia garganica*, by Fr. Canzoneri.—On a new species of Salpa (*S. dolicosoma*), by Fr. Todaro).—Observations on the Pons-Brooks comet, by Pietro Tacchini.—On the unipolar induced electric current and nervous excitement, by G. Magini.—Archæological discoveries at Angera, Peschiera, Viterbo, Rome, Sulmona, and in other parts of Italy, from June to October, 1883.—S. Sella and S. Mamiani were elected president and vice-president for the ensuing four years, 1884·7.

Rivista Scientifico-Industriale, Florence, November 15–30, 1883.—Further applications of the nephoscope invented by Filippo Cecchi (four illustrations).—Description of a new electromagnet recently exhibited before the Society of Natural and Economical Sciences at Palermo, by Prof. A. Riccò.—An account of some of the important results already obtained in the Acclimatisation Garden established ten years ago by General Vincenzo Ricasoli at Portercole, by G. Arcangeli. Amongst the exotics here successfully reared are *Cocos flexuosa*, *Calorica borbonica*, *Phœnix reclinata*, *Boldea fragrans*, *Citharerylon reticulatum*, *Casuarina quadrivalvis*, *Edwardsia grandiflora*, *Eugenia australis*, *Ficus elastica*, *Picconia fragrans*, besides numerous species of *Bignonia*, *Agave*, *Acacia*, and *Eucalyptus*, and other Australian plants.

Rendiconti del R. Istituto Lombardo, Milan, December 13, 1883.—On the distinctions observed in criminal law between the authors and accomplices in a felony, by Prof. A. Buccellati.—Inquiry into the nature of the underground disturbances that