

PHYSICAL GEOGRAPHY AND TERRESTRIAL
MOLLUSCA OF THE BAHAMA ISLANDS

A PAPER on this subject has recently been communicated to the Lyceum of Natural History, New York, by Mr. Thomas Bland.

The northern end of the Bahama group lies opposite southern Florida, and from this point the islands stretch off in a double series, nearly parallel to the trend of Cuba and San Domingo, and terminate, properly, in the Turk's Island Bank, on which are the last and most easterly of the chain, which extends about 600 miles, from within 70 miles of the coast of Florida to within 100 miles of that of San Domingo.

Several banks are distinguishable, and the islands are generally on the windward sides of these, never exceeding 200ft. in height, and being almost universally environed with reefs or shelves of rock, which extend often to a considerable distance and usually terminate abruptly.

The geological formation appears to resemble that of Bermuda; their form and surface condition being largely due to prevailing winds and currents, but also owing much, probably, to the configuration of the land on which the coral reefs were built up.

Lieutenant Nelson speaks of the Bahamas as the Gulf Stream Delta; thrown down where the stream receives a check from the Atlantic on emerging from the Gulf of Mexico.

In a communication to NATURE, vol. vi. p. 262, Mr. Jones furnished evidence of the subsidence of the Bermudas. In excavations made for the great dock *e.g.*, there was found, at 46 ft. below low-water mark, a layer of red earth, containing remains of cedar trees, and resting on a bed of compact calcareous sandstone.

Mr. Bland examines the evidence afforded (as to subsidence), by the distribution of land shells on the Bahama Islands. The total number of species known is about 80.

Judging from both operculates and inoperculates, the land-shell fauna of the Bahamas is essentially West Indian, and that of the Great Bank (especially), closely allied to the Cuban fauna. Mr. Bland gives a list of inoperculate species common to the Bahamas, the adjacent continent, Bermuda, and certain of the West Indian Islands; which shows in a marked manner the alliance referred to.

The banks and islands of the Bahama chain diminish in size to the south-east, indicating greater subsidence in that direction. Similarly, the submerged Virgin Island bank, Sombrero and the Anguilla bank, terminate the parallel West Indies chain eastward from Cuba; and in Anguilla have been found remains of large extinct mammalia which must have inhabited at one time a much more extensive area.

The author criticises Dr. Cleve's geological grouping of the sands north of Guadeloupe (in two groups, one comprising Bahamas, of post-pliocene date, another of the tertiary Eocene, Miocene, and Pliocene), and points out that the land shell fauna of Saba, St. Eustatius, St. Kitts and Nevis, of Redonda and Montserrat, and of Barbadoes and Antigua, is, in common with most of the islands to the south, to and inclusive of Trinidad, distinct from the fauna of the islands between and inclusive of the Bahamas and Cuba, and the Anguilla bank, on which are Anguilla, St. Martin and St. Bartholomew. This well-defined line of separation must be considered in connection with the past and present geological history of the islands.

Dana traces parallel bands of greater or less subsidence in the Pacific Ocean, and analogous conditions in the Atlantic; the subsidence was probably, he says, "much greater between Florida and Cuba than in the Peninsula of Florida itself, and greater along the Carribean Sea parallel with Cuba, as well as along the Bahama reefs than in Cuba." Recent soundings, cited by Mr. Bland, confirm this view.

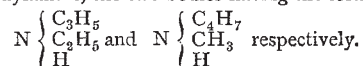
SCIENTIFIC SERIALS

Ocean Highways, November.—In an article on "The Results of the Arctic Campaign, 1873," it is shown that the right direction for Arctic Exploration has been unmistakably indicated, further proofs have been afforded of the practicability of attaining an advanced position by following that direction, and additional evidence has been accumulated against the route advocated by "unpractised theorists." These conclusions are rightly drawn from the eminently successful results obtained from the *Polaris* expedition and from Captain Markham's fruitful cruise in the *Arctic*, as contrasted with the comparatively unsuccessful attempts made in the Spitzbergen direction by the Swedish Expe-

dition and that of Mr. Leigh Smith. "The learned societies will be able to make their appeal to the Government with even stronger and more cogent arguments than were at their disposal in the end of last year; while in the present Prime Minister and Chancellor of the Exchequer they have an old and staunch supporter of Arctic expeditions, and one who has studied their history and appreciated their uses." There is a carefully constructed map illustrative of Captain Markham's voyage in the *Arctic*. Other articles are, "On the Distribution of Coal in China," by Baron von Richthofen; "South American Progress" (Argentine Republic), by F. J. Rickard; "Highways and Byeways of Naval History," the first of a series of articles by Mr. R. Lendall.

Gazetta Chimica Italiana, Fascicolo V. and VI.—The number commences with a paper on Santonin, by S. Cannizzaro and F. Sestini. Santoninic acid is described; it is carefully prepared by the addition of one molecule of water to one of santonin. The addition is effected by acting on santonin by means of a warm aqueous alkaline solution. The formula of the acid is $C_{15}H_{20}O_4 = C_{15}H_{18}O_3 + H_2O$. The properties of the acids and its salts are described, and the action of nascent hydrogen on santonin is then considered.—New researches on benzylated phenol, by E. Paternò and M. Fileti.—On the chemical analysis of some wines grown in the Veronese province, by Prof. G. Dal Sie. The wines in question seem to be somewhat strong, the percentage (volume) of alcohol ranging from 9.4 to 16.4. Very voluminous tables of analyses are given.—A paper on the dry distillation of calcic formate, by A. Lieben and E. Paternò concludes the original portion of the number, which concludes with 155 pages of abstracts from foreign journals.

Annalen der Chemie und Pharmacie, Band 168, Heft 2 and 3, August 30.—The number commences with two papers from Prof. Beilstein's laboratory. The first by W. Hemelien is on a new method of preparing the sulpho acids; the method in question is a modification of that of Strecker. Dr. E. Wroblevsky communicates a paper on certain haloid derivatives of toluol; he describes a number of the meta-brom-toluol compounds, and also deals with the para-brom-toluols and the tri-brom-toluols.—The other papers are: On selenic acid and its salts, by Dr. v. Gerichten. He finds that the seleniates are all isomorphous with the corresponding sulphates, and the double salts also agree with the double sulphates.—On the action of tri-sulpho-carbonate and sulpho-carbaminat of ammonium on aldehyde and acetone, by E. Mulder. A number of the compounds resulting from these reactions are described.—On a new mode of forming ortho-toluilic acid, by R. Fittig and William Ramsay. On meta-toluic acid, by C. Boettinger and W. Ramsay.—On ethyl and di-ethyl-allyamine, by A. Rinne. Ethyl-allyamine is isomeric with methyl crotonylamine, the two bodies having the formulæ—



The author describes several of the salts of the former. Di-ethyl-allyamine $N \begin{cases} C_3H_5 \\ C_2H_5 \end{cases}$ is produced by the action of ethyl iodide

on allylamine. The author describes it and its hydrochlorate and platino-chloride.—Researches on the isomers of cresol with regard to their occurrence in coal tar, by M. S. Southworth.—Researches on sorbic acid by E. Kachel and R. Fittig.—The number concludes with a very lengthy paper on the actions occurring in the inner non-luminous flame of the Bunsen burner, by R. Blochmann. The author has collected and examined the gases from various parts of the flame, and the memoir is illustrated with two plates showing the apparatus used, and the flames given by the burner under various treatments, and a diagram showing the percentages of CO_2 and H_2O , given by flames when burning, at various heights above the burner up to 120 millimetres.

SOCIETIES AND ACADEMIES

LONDON

Zoological Society, Nov. 4.—Prof. Newton, F.R.S., vice-president, in the chair. The Secretary read a report on the additions that had been made to the Society's menagerie during the months of June, July, August, and September. Mr. G. Dawson Rowley exhibited a singular malformed variety of the Domestic Duck, and the Secretary a collection of fishes (containing six examples of *Ceratodus forsteri*) made by Mr.

Ramsay, in Queensland.—A communication was read from Mr. J. B. Perrin, containing an account of the Myology of the Hoatzin (*Opisthocomus cristatus*).—A communication was read from Capt. R. Beavan, Bengal Staff Corps, containing a list of fishes met with in the River Nerbudda, in India.—A second communication from Capt. Beavan contained some remarks on certain difficulties involved in the acceptance of the Darwinian theory of evolution.—A communication was read from Mr. Montague R. Butler, containing descriptions of several new species of Diurnal Lepidoptera.—A communication was read from Mr. R. Swinhoe, H.B.M. Consul at Chefoo, on the Song-Jay of Northern China, with further notes on Chinese ornithology.—Mr. P. L. Sclater, F.R.S., exhibited and pointed out the characters of fourteen new species of birds collected by Signor Luigi Maria D'Albertis during his recent expedition into the interior of New Guinea.—A communication was read from Prof. J. V. Barboza du Bocage, on the Ground Hornbill of Southern Africa.—*Buceros carunculatus cafer* of Schlegel.—A second communication from Prof. Barboza du Bocage contained a note on the habitat of *Euprepes coctei*, Dum. et Bibr.—A communication was read from Surgeon-Major Francis Day, containing descriptions of new or little known Indian fishes.—Mr. R. B. Sharpe, read a paper describing the contents of a collection of birds recently received from Mombas in Eastern Africa.—A second paper by Mr. R. B. Sharpe contained a list of a collection of birds from the River Congo.—Mr. G. B. Sowerby, jun., communicated the descriptions of eleven new species of shells.—A communication was read from Dr. J. E. Gray, F.R.S., on the skulls and alveolar surfaces of Land Tortoises, *Testudinata*.

Linnean Society, Nov. 6.—Mr. G. Bentham, president, in the chair.—Before the commencement of proceedings, this being the first occasion of the meeting of the society in its new rooms in Burlington House, the president gave an address on the present relation of Government towards the learned societies, which will be found elsewhere.—A resolution was then proposed by Dr. Hooker, seconded by Mr. Gwyn Jeffreys, and carried unanimously, recognising the obligations of the Linnean Society towards the Government for the handsome accommodation now for the first time provided independently for it.—On *Hydnora americana*, by Dr. J. D. Hooker. In his monograph of the Rafflesiaceæ in De Candolle's "Prodromus," Dr. Hooker had thrown some doubt on the correctness of De Bary's description *Hydnora*, and on the close affinity which he traced between it and *Prosobanche*. Further investigation has, however, amply confirmed the accuracy of De Bary's description. A very great difficulty is presented, from the point of view of the theory of evolution, in the occurrence of two species of this genus, one in South Africa and one in South America, so closely resembling one another in every point of their structure, and both root-parasites, that it is impossible to look upon them otherwise than as very nearly related. The only possible connection between them would appear to be through *Cytinus*, another nearly allied genus of root-parasites, species of which are natives both of South Africa and of South and North America.

Chemical Society, Nov. 6.—Dr. Odling, F.R.S., president, in the chair.—The president delivered a short address, to which we refer elsewhere, congratulating the Fellows on taking possession of their new rooms in Burlington House. A paper was then read by Mr. David Howard on the optical properties of some modifications of the cinchona alkaloids, being an elaborate investigation of the variations in the rotatory powers of this class of bodies when examined by the polarimeter. The other communications were—a preliminary notice on the oils of wormwood and citronella, by Dr. C. R. A. Wright; on the estimation of nitrates in potable waters, by Mr. W. F. Donkin; and a note on the action of iodine trichloride upon carbon disulphide, by Mr. J. B. Hannay.

Royal Microscopical Society, Nov. 5.—Chas. Brooke, F.R.S., president, in the chair. A paper by the Rev. W. H. Dallinger was read, describing some further researches made by himself and Dr. Drysdale on the development of certain monads, in the course of which they had been able to trace the life-history of a species, although in their earliest stages these organisms were so minute as to require an objective of $\frac{1}{8}$ in. for their observation. A number of beautifully executed drawings accompanied the paper.—Mr. Alfred Sanders read a paper on the art of photographing microscopic objects, in which he described a simple and successful process of manipulation, and showed how the most satisfactory results might be obtained without the

aid of expensive and complicated apparatus.—A paper was also read by Mr. S. J. McIntire, entitled "Some Notes on Acairellus," in which he minutely described a species found parasitic upon *Obisium*, and which he believed to be identical with *Hypopus*, described by Dujardin. Specimens both mounted and alive were exhibited under the Society's microscopes.—Some photographs of *Navicula lyra* and *Amphipleura pellucida*, taken by Dr. J. J. Woodward, were also exhibited.

PARIS

Academy of Sciences, November 3.—M. de Quatrefages, president, in the chair.—The following papers were read:—An analysis and criticism of an "Essay on the Constitution and Origin of the Solar System," by M. Roche.—On the mutual action of voltaic currents by M. Bertrand.—On the verification of Baume's hydrometer, by MM. Berthelot, Coulier, and d'Almeida.—On certain calorimetric values and problems, by M. Berthelot.—Observations of the solar protuberances during the last six solar rotations (April 23 to October 2, 1873) with some consequences affecting the theory of the spots, by Father Secchi. In this paper Secchi continued his observations, portions of which appeared in the first half of the year. The author again asserted that the spots are the product of eruptions, and observed that some metals were more opaque than others, e.g., a sodium eruption gave a very black spot. He admitted, however, that some spots existed without eruptions.—Researches on the thermic effects accompanying the compression of liquids, by MM. Favre and Laurent.—MM. Morin and Phillips presented a report on M. Graeff's paper on the régime of rivers and the effects of a multiple system of reservoirs.—Memoir on experimental teratology, by M. C. Dareste.—On a map of the world on a gnomonic projection, &c., by M. B. de Chancourtois.—The following papers were presented to the Academy:—Observations on M. Dubois' paper on the influence of refraction at the moment of contact of Venus with the Sun's limb, by M. Oudemans.—On a new volatile saccharine matter extracted from Madagascar rubber, by M. Aimé Girard.—On the cooling effects produced by the joint actions of capillarity and evaporation: Evaporation of carbonic disulphide on porous paper, by M. C. Decharme.—Origin and formation of the dental follicle in the mammifere, by MM. Magitot and Legros.—On capillary embolism and hemorrhagic infarctus, by M. Bouchut.—Observations on M. Pellarin's note on choleraic dejections as agents in the propagation of that disease, by M. H. Blanc.—On the different practical problems of aërial navigation, by M. W. de Fonvielle.—On the formation of swellings on the rootlets of the vine, by M. Max. Cornu.—Observations on M. Guérin Méneville's suggestion that the *Phylloxera* is a result of the vine disease.—Note on the best dimensions for electro-magnets, by M. Th. du Moncel.—On a process for the preparation of active amylic alcohol, by M. J. A. Le Bel.—On the influence which certain gases exercise on the preservation of eggs, and on the influence of certain substances in the preservation of eggs, by Mr. C. Calvert.—On the metamorphism and physiological changeability of certain microphytes under the influence of media and on the relation of these phenomena to their initial cause of fermentation, &c., by M. J. Duval.—On the action of the respiratory apparatus after the opening of the thoracic cavity, by MM. Carlet and Strauss.—On the different properties and structures of the red and white muscle in rabbits and in rays, by M. Ranvier.—On scurvy and its treatment, by M. Champouillon.—On telluric intoxication, by M. L. Colin.—On the calcareous spar of the green marbles of Chennevière, by M. Stan. Meunier.

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