

tinuous current beyond that region cannot be proved by observations, either of temperature or movement.

IX. That the Gulf-stream and other local currents put in motion by the trade-winds or other influences acting on the surface only, will have as their complement in a horizontal circulation return surface currents; and that the horizontal circulation of which the Atlantic Equatorial Current and the Gulf-stream constitute the first part is completed—so far as the Northern Hemisphere is concerned—partly by the direct return of one large section of the Gulf-stream into the Equatorial Current, and as to the other section, by the superficial polar currents which make their way southwards, the principal of them even reaching the commencement of the Gulf-stream.

In conclusion it may be added that the doctrine of a general vertical oceanic circulation is in remarkable accordance with the fact now placed beyond doubt by the concurrent evidence of a great number of observations, that whilst the density of oceanic water, which is lowest in the Polar area, progressively increases as we approach the Tropics, it again shows a decided reduction in the intertropical area. It has been thought that an explanation of this fact is to be found in the large amount of rainfall and of inflow of fresh water from great rivers in the intertropical region; but it is to be remembered that the surface evaporation also is there the most excessive, so that some more satisfactory account of the fact seems requisite. Such an explanation is afforded by the doctrine here advocated; the Polar water which flows towards the Equator along the bottom of the ocean basins, being there pumped up and brought to the surface.* And it is not a little confirmatory of the views advanced in this Report that in a recent elaborate discussion of the facts relating to the comparative density of oceanic water on different parts of the earth's surface, the doctrine of a general vertical circulation is advocated as affording the only feasible rationale of them.†

SCIENTIFIC SERIALS

THE *Zeitschrift für Ethnologie* (1870 Heft III. and IV contains the following notices:—Orton's "Andes and the Amazon."—Waring's "Stone Monuments, Tumuli, &c.," "Manuscript Troano," giving an account of the MS. in question, which is written in the Maya language; the reviewer calls this "surely the wildest production that ever saw the light with the sanction of an Imperial Government," though he admits that still wilder productions are published in his own country, now also under "Imperial government."—Benfey's "Gesch. de Sprachwissenschaft" is highly praised.—Bürgen's "Temples of Satrunjaya," with forty-five photographs.—Hamy's "Paléontologie Humaine."

The last part of the "Neues Jahrbuch für Mineralogie, Geologie," &c., published 1871, contains the following papers:—R. D. M. Verbeek on the Nummulites of the Borneo Rocks, with three plates illustrating new species, &c., one species, *N. Biaritsensis*, is also found in these beds, and extends through all the nummulitic formation from the Pyrenees to Borneo. He believes that this formation extends to Java and most of the islands of the East Indian Archipelago, but hitherto this formation has not been recognised.‡—Dr. R. Lincke on the Buntersandstein in Thüringen, which is the commencement of an elaborate monograph on these beds.—Dr. Alfred Stelzner on Quartz and Allied Minerals.—Adolph Pichler, Additions to the Mineralogy of the Tyrol; and, by the same author, Additions to the Palæontology of the Tyrol, and the usual mineralogical, geological, and palæontological notices.

Of the Transactions of the Natural History Society of Rhenish Prussia and Westphalia, including also the reports of the Society of Natural History and Medicine of the Lower Rhine, we have received the twenty-sixth volume, containing an account of the doings of the respective societies in the year 1869. The papers published by the first-mentioned society are well known to naturalists, and often of very great value. In the present volume we find the following:—"Contributions to the Rhenish Flora,"

by Dr. P. Wirtzen, including a discussion of the species of dog-roses, with the description of a so-called new species, *Rosa exilis*, a notice of *Asplenium Heuffleri*, the description of a new plantain from Saarbruck, *Plantago Winteri*, a notice of the various forms of *Rubus tomentosus*, and of anomalies in other species of *Rubus*, and notices on the geographical distribution of certain plants; also, by the same author, a supplement to his manual of "The Flora of Rhenish Prussia; a paper "On the Height of the Water of the Rhine at Cologne from 1811-1867," by M. H. von Dechen; the continuation of Kaltenbach's valuable memoir on the German Phytophagous insects, in which the species feeding upon each species of plant are noticed, the plants being arranged in the alphabetical order of their botanical names, now reaching to the end of the letter S.; a contribution to the knowledge of the cryptogamous flora of the Saar district, by M. F. Winter, containing notices of Equisetaceæ, Lycopodiaceæ, and Ferns; and a paper, illustrated with three plates, "On the Fossil Echinodermata of North Germany," by Dr. C. Schlüter. In the last-mentioned paper, the author notices the described species of Jurassic and Cretaceous Echinoderms found in North Germany, and describes several new forms. The reports of the second society mentioned, which holds its meetings in Bonn, include an immense number of short notices of communications on almost all branches of science, but especially on Natural History and Chemistry; many of them are of considerable interest.

In the March number of the *Journal of Anthropology* there is a careful anatomical description of the body of a negro by Dr. Kopermèki. Detailed measurements are added, together with the weights of the principal organs, and the diameter of more than twenty of the nerves. A remarkable feature in the case was the state of atrophy in which the supra-renal bodies were found; and if, in the absence of other fatal lesions, this may be assumed as the cause of death, there is here recorded a case of Addison's disease occurring in a negro. In the same journal is a translation of a review by Rüttimeyer of Prof. Bischoff's work on the skulls of the anthropoid apes, in which both the text and the atlas of plates which accompanies it are severely criticised. Both the original pamphlet and the review have, however, lost much of the interest they possessed at the times of the publication, 1864 and 1868 respectively.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, March 30.—"Contributions to the History of Orcin.—No. 1. Nitro-substitution Compounds of the Orcins." By John Stenhouse, LL.D., F.R.S. The action of nitric acid upon orcin has been studied by several chemists, but with comparatively negative results. Schunck in this manner obtained a red resinous substance, which, by further treatment with the acid, was oxidised with oxalic acid; and in 1864 De Luynes found that orcin dissolved in cooled fuming nitric acid without evolution of nitrous fumes, and that the addition of water precipitated a red colouring matter; the long-continued action of the vapour of fuming nitric acid on powdered orcin likewise produced a red dye apparently identical with the above. These, however, are resinous uncrystallisable substances. Although under ordinary circumstances only resinous products are obtained by treating orcin with nitric acid, yet, when colourless orcin in fine powder is gradually added to strong nitric acid, cooled by a freezing mixture, it dissolves with a pale brown coloration, but without the slightest evolution of nitrous fumes. If this solution be now slowly dropped into concentrated sulphuric acid, cooled to -10° C., the mixture becomes yellow and pasty, from the formation of nitro-orcin, which is but slightly soluble in sulphuric acid. When this is poured into a considerable quantity of cold water, the nitro-body separates as a bright yellow crystalline powder, quite free from any admixture of resin. The crude nitro-orcin was collected, washed with a little cold water, and purified by one or two crystallisations from boiling water (40 parts). It was thus obtained in large yellow needles, which are readily soluble in hot water and but slightly in the cold; the addition of a strong acid precipitates almost the whole of the nitro-orcin from its cold aqueous solution. It is soluble in alcohol, very soluble in hot benzol, and crystallises out in great part on cooling; it is less soluble in ether, and but moderately so in bisulphide of carbon. It dyes the skin yellow, like picric acid, but is tasteless. It volatilises slightly at 100° C., melts at 162° C., and decomposes with slight explosion imme-

* That water of a lower should thus underlie water of a higher degree of salinity in travelling from the Pole to the Equator, is not difficult to account for, when the relative temperatures of the two strata are borne in mind.

† Densité, Salèrè, et Courants de l'Océan Atlantique, par Lieut. B. Savy, Annales Hydrographiques, 1868, p. 620.

‡ It is not out of place to mention here that Baron Reichthofen has quite recently found this nummulitic formation in China; it is described in *Silliman's Journal* for February 1871. It has been found also in Japan.