

proposed to use chased copper in the place of brass in constructing the vessel, on account of its offering greater resistance to pressure, and believed to have already found satisfactory means for improving the instrument invented by himself and his brother.—Dr. Marthe gave an account of Kiiwa based on the study of Russian literature on the subject, winding up with the suggestion, that the withdrawing of a large body of the water from the Amu for the irrigation of the oasis, deprived the lake Aral of so large a supply, that to this circumstance might be due the diminution its surface has suffered, and the fact of its present isolation. The water which before took its way through lake Aral to the Caspian, now evaporates from the rice-fields of Kiiwa.

Geological Society, June 4.—Dr. J. Ewald in the chair.—Baron Richthofen drew attention to the activity recently displayed, according to newspaper reports, by several volcanoes of Japan, some of which have not been active for a long time, and gave an account of the distribution of volcanoes in Japan. The west and east portion of the aggregate body of the Japanese islands (leaving out of consideration the small inland passages), is in every way the direct continuation of the mountain system which occupies the south-eastern portion of China, the axial chain of which extends from the frontier of Annam to the island of Chusan, in the direction of W. 30° S.; E. 30° N. It is accompanied on either side by a number of parallel chains. The prolongation of the main portion of this group of linear chains passes through the island of Kiushiu to the great bend of Japan; and in that entire region of country, the structure of the hills, the rocks of which they are made up (chiefly Silurian and Devonian strata accompanied by granite), and the lines of strike are the same which were observed in south-eastern China. This first system is intersected, at either end, by another which runs S.S.W., N.N.E. On the west, it commences in Kiushiu, and extends southward in the direction of the Liu-Kiu islands, while on the east it constitutes the northern branch of the main island, and, with a slight deviation in its course, continues through the islands of Yesso and Saghalin. A third system, which does not properly belong to Japan, is indicated by the S.W. and N.E. line of the Kuril islands. The first system, where it occupies the breadth of the country for itself alone, is as free from volcanoes or any accumulation of volcanic rocks as it is in south-eastern China. The second is accompanied by volcanoes. But the greatest accumulation of volcanic rocks, as well as of extinct volcanoes, is found in the places of interference, or those regions where the lines of the two systems cross each other; and besides, in that region where the third system branches off from the second. To the same three regions of interference those volcanoes are confined which have been active in historical times. Some details were then given regarding the structure of Kiushiu. This island, although having its longer axis directed from north to south, is intersected, as it were, by several solid bars made up of very ancient rocks, and following the strike of W. 30° S., E. 30° N. They form high mountain barriers, the most central of which (south of the provinces of Higo and Bungo) rises to over 7,000 feet, and is extremely wild and rugged. Among the details regarding the volcanoes of Satsuma, particular attention was drawn to the fact that the various families of volcanic rocks have arrived there at the surface in exactly the same order of succession as is the case in Hungary, Mexico, the Great Basin, and many other volcanic regions, namely, 1st, Propylite, or trachytic greenstone; 2nd, Andesite; 3rd, Trachyte and Rhyolite; and 4th, the basaltic rocks. There is the greatest accumulation of mountain masses in Japan, one of the several chains rising to upwards of 11,000 feet in its summits. Among them are situated several gigantic volcanoes, such as Fusi-yama, the highest of all, Yatsunga-Jake, a series of elevated cones with extinct craters, and several others partly active and partly extinct. Those of the third group were not visited by Richthofen.—Prof. E. Weiss exhibited some curious octahedral crystals of Hausmannite, remarkable on account of certain re-entering angles and the striated aspect of the faces, and proved that the lines which caused this appearance were due to a kind of twin formation not hitherto observed.

PARIS

Academy of Sciences, June 23.—M. de Quatrefages, president, in the chair.—The following papers were read:—Second note on guano, by M. Chevreul.—New researches on the silent electric discharge, by MM. P. and A. Thenard.—Researches on chlorine and its compounds, by M. Berthelot. The author dealt

with the compounds of chlorine with water and the proto-salts.—A new series of observations on the solar protuberances; new remarks on the relations between protuberances and spots, by Father Secchi. The Rev. Father presented his observations for the last quarter, and then, in his letter, criticised Respighi's late remarks on the absence of the chromosphere over spots, which he maintains is not the case. He then gave an account of some experiments on sodium vapour, which, however, contained nothing new, and then proceeded to state that the line D<sub>3</sub> appears to him to coincide with one of the components of the D group which appears when the sun is near the horizon. He has also found a bright iron line between *b*<sub>2</sub> and *b*<sub>3</sub>, and having examined the spectrum of iron with a battery of 50 cells, has seen 480 lines, but could not find 1474 Kirchhoff; he hopes to repeat this experiment, and if the results are same, he considers that the absence of Fe from the corona will be proved. With magnesium in the lamp, he finds the same nebulosity as is exhibited by the sodium lines, but it is accompanied by a banded spectrum of MgO; he thinks that if the nebulosity is also due to the oxide, that the occurrence of oxidation in the sun will be proved.—On the influence of atmospheric refraction as it affects the time of contact in a transit of Venus, by M. E. Dubois.—On the coloration and greening of *Neottia Nidus-avis*, by M. E. Prillieux.—On semi-diurnal barometric variations, by M. Broun.—On hot-air warming apparatus, by M. Ducrot.—A letter was received from M. de Lesseps praying the Academy to include his name among those of the candidates for the vacant seat of Académicien libre, vacant by M. de Verneuil's death.—On the constitution of the sun and the theory of the spots, by M. E. Vicaire.—On the production of methylic alcohol by the distillation of calcic formate, by MM. C. Friedel and R. D. Silva. The authors believe that formic aldehyde is first formed by the reaction (CHO)<sub>2</sub>C<sub>1</sub> = CO<sub>2</sub>Ca? + H<sub>2</sub>O + CH<sub>2</sub>O, and that the aldehyde is converted into alcohol by the action of nascent hydrogen.—On terebene, by M. J. Ribau.—On the production of the rotatory power in the neutral derivatives of mannite, by M. G. Bouchardat.—An answer to a late note, by M. du Moncel, on the resistance maxima of induction coils, by M. Reynaud.

DIARY

- FRIDAY, JULY 4.  
 GEOLOGISTS' ASSOCIATION, at 8.  
 ARCHÆOLOGICAL INSTITUTE, at 4.  
 HORTICULTURAL SOCIETY, at 3.—Lecture.  
 SATURDAY, JULY 5.  
 GEOLOGISTS' ASSOCIATION.—Excursion to Plumstead and Crossness.  
 MONDAY, JULY 7.  
 GEOGRAPHICAL SOCIETY, at 8.30.—Boat Journey up the River Wami: C. C. Hill.—Remarks on Zanzibar and the East Coast of Africa: Sir Bartle Frere, K.C.B., president.  
 ENTOMOLOGICAL SOCIETY, at 7.

BOOKS RECEIVED

AMERICAN.—Families of Fishes: Theo. Gill (Smithsonian Institution).—Memoir of Sir Benjamin Thompson, Count Rumford, 2 vols: George Ellis (Claxton & Co, U.S.A.).—U.S. Sanitary Commission in Valley of Mississippi, 1861-6: Dr. Newberry (Cleveland, U.S.A.).—Geological Survey of Indiana: E. T. Cox (Indianapolis, U.S.A.).

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