preparing orthophosphoric acid, and the titration of phosphoric and arsenic acids by means of various indicators, by M. A. Joly.—Note on the action of acetic acid on the essence of turpentine, by MM. G. Bouchardat and J. Lafont. It is shown that acetic acid combines already in the cool state with the essence of turpentine, yielding monacetates belonging to two entirely distinct series. At the same time the uncombined essence is transformed into two carburets $C_{20}H_{16}$, one monovalent, analogous to terebinthene, the other bivalent, or active terpilene.—Note on a new direct method of studying animal heat, by M. Desplats. The method here described is carried out by means of M. Berthelot's water calorimeter, but it is applicable only to small animals, such as rats, guinea-pigs, sparrows, &c. At equal weight and in a given time birds are found to evolve three times more heat than mammals, absorbing thrice the quantity of oxygen and emitting three times more carbonic acid.—Note on the Eocene Echinidæ belonging to the family of the Spantangideæ, by M. G. Cotteau.—On some fossil Cycadeæ of the Carboniferous formations, by M. Daubrée.—On a sub-lacustrine moraine on the bar of Yvoise, which divides Lake Geneva into two distinct basins, by M. F. A. Forel. The dredgings carried out in September 1885 have satisfied the author that this bar is, in fact, a glacial moraine like the neighbouring hills. That this moraine, 60 metres below the surface and 1 kilometre from the shore, has been kept clear of recent lacustrine alluvial deposits, is attributed to the action of the sub-lacustrine currents.—Remarks on the geological map of Russian Turkestan prepared by MM. Mushketoff and Romanovsky—six chromolithographic sheets to the scale of 1 : 1,260,000, by M. Venukoff.—Note on the relations existing between the geological, topographic, and chemical properties of the soil and the vegetation covering it in Central Russia, by M. Venukoff.

BERLIN

Meteorological Society, December 1, 1885.—Prof. Börnstein reported on a treatise by Herr van Bebber, which had just appeared, in which the latter, on the ground that typical weather phenomena accompanied the minima that advanced along the well-known highways of storms over Europe, demonstrated that, from the position of the minimum on one of the five highways of storms, and from the local condition of the weather, might be derived the best data as a basis for a trustworthy prognostication of the weather.—Prof. Schwalbe made a comprehensive survey of the investigations that had been carried on by him for several years respecting the ice cavities. In supplement of former reports on these investigations (*vide* NATURE, January 28, p. 312) the following is abstracted from the address which dealt at large with the subject. The earliest notice of the occurrence of ice cavities was contained in an account written in the end of the seventeenth century. In the last and in the beginning of the present century ice cavities had been variously described, but the descriptions were greatly exaggerated. Down even to the present time these enigmas of nature were little known and little investigated. Of all students of natural science whom this subject had engaged, the speaker had assuredly examined the greatest number of ice cavities. Ice cavities formed but one group of ice phenomena, which comprehended likewise dolines, ice holes, rolled ice, ventaroles, and the cold strata of the ground. In the temperate zone they were pretty widely distributed, and occurred in the most varied mountain systems of Europe at heights of from 2000 to 4000 metres above sea-level, and some individual ones at much lower elevations. They were found principally in limestone, in gypsum, in basalt, and lava, but were present likewise in mica slate and other stones. The most essential condition of their presence was that the stone should be readily percolable by water. In the majority of cases the entrance into these cavities was from above, and the passage was directed downwards, yet there were also cases in which the entrance was from below and the passage upwards. The cavities themselves were completely isolated, and no draught of wind was ever perceived in them. The air in the cavities was in winter somewhat colder than in summer, in winter the temperature sinking to 0° C., and somewhat lower, in summer ranging from 4° to 5° C. The walls were always colder than the air in the central part, and the air, moreover, was always completely saturated with moisture. The ice is formed in spring, when the water began to filter through the ground, and almost exclusively on the floor of the cavities. The ceiling was always free of ice, the floor more or less uniformly covered with a thick layer of ice, which, on being broken, splits into prismatic pillars resembling honeycombs. The walls were covered with pearl-like ice-crystals, and stalactitic ice formations came multifariously to view. There was frequent opportunity for observing in an ice cavity how the water-drops, having filtered through the stone, fell to the ground, and there at once congealed. The speaker then referred to and combated the various theories which had been brought forward to explain the ice formation in the cavities. His own view was that the water filtering through the cold stone became refrigerated to excess, and therefore, on falling, at once congealed.

BOOKS AND PAMPHLETS RECEIVED

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