similar vibrating condition, giving rise to similar colours and similar tastes. A study of the carbon compounds yields as conclusive evidence. The alcohol bodies, such as mannite, grape-sugar, glycerine, glycol, are sweet. They possess a certain common molecular structure and a compound radical, $CH_2.OH$. Associated with this radical is the taste called sweet, just as are associated with it many chemical and physical properties. Common alcohol is tasteless, but it is monatomic, all the polyatomic alcohols having a sweet taste. The organic acids, too, have a radical, CO.OH, with which seems to be associated their acid properties and the power of producing a special taste. Now it is certain that compound radicals, like elementary substances, vibrate in a definite way, however they are combined. A coloured acid like chromic and picric acid forms a class of coloured salts. Ammonia viewed in quantity shows characteristic absorption-bands; replace an atom of hydrogen by ethyl or methyl, and the same bands are to be observed, shifted, however, slightly towards the red end of the spectrum. We see, then, in the carbon compound the radical vibrates, modifies light passing through it in a definite way, and affects the sensorium by causing the production of a definite sensation of colour. So too it can produce a definite taste sensation. I do not hazard an opinion as to how the molecule stimulates the end-organs in the tongue. Too little is known about the stimulation of the retina by light. Whether or not in both cases it is mechanical, one cannot say. As to its being chemical action, it may well be asked, What is this? Chemical action itself may perhaps be most satisfactorily interpreted by the use of a mechanical hypothesis. Much has yet to be discovered as to the exact relationship between vibration and taste sensation. That this relationship exists, is all the author wishes to prove. When spectroscopic investigation of the invisible spectrum is more advanced, what Helmholtz has done for sound may also be done for taste, and we may know the exact vibrational counterpart of a taste quality as we know it already of the sound of a violin-string.

PARIS

Academy of Sciences, September 13.—M. Émile Blanchard in the chair.—Experiments on the electrical conductibility of gases and vapours, by M. Jean Luvini. A series of experiments are described, which have led the author to the general conclusion that, under all pressures and at all temperatures, gases and vapours are perfect insulators, and that they cannot be electrified by friction either with themselves or with solid or liquid bodies. Crucial tests were applied to air saturated with the vapour of water at temperatures ranging from 16° to 100° C.; to hydrogen and carbonic acid not dried, but just as they left the bath generating them; to the vapour of mercury at 100° C.; the vapours of sal ammoniac; air heated by live embers or the flame of a candle; the fumes of sugar, camomile, incense, &c., none of which vapours gave the least indication of conductibility. Hence to suppose, as is generally done, that very rarefied gases, or gases at very high temperatures, are conductors, is a mistake due to confusion between resistance to disruptive and conductive discharges. Thus Masson has shown that at like potential the distance of the disruptive discharge in the air is twelve or thirteen times greater than in water, which simply means that the resistance of water to the disruptive discharge is greater than that of air, not that air is a better conductor than water. Henceforth physicists will have to reject all theories regarding the electricity of machines, the air, or clouds, in which moist air is assumed to be a conductor, or in which gases and vapours are supposed capable of being electrified by friction.—Quantitative analysis of the dry extract of wines, by M. E. Bouilhon. In order to shorten the ordinary tedious process, some chemists separate the liquids by means of porous bodies increasing the surface of evaporation. But this method leads to fallacious results, numerous experiments showing that all increase of the surface lowers the weight of the residuum to a very considerable extent, in consequence of the evaporation of a portion of the glycerine. Thus a litre of claret yielded 22·4, 22·0, and 21·2 grammes of sediment according to the various forms and sizes of the vessels employed in the process.—On *Fecampia erythrocephala*, a new species of Rhabdocœle, parasitic and nidulating, by M. A. Giard. This species, which is very common on the coasts of Fécamp and Yport, is shown to differ considerably from Graffilla and the different genera of Rhabdocœle hitherto described. It appears greatly to resemble a parasite discovered by Lang in the foot of *Tethys fimbriata*, and a more complete study of this Mediterranean type will no doubt show that, like the parasite here described, it also secretes a cocoon.—Researches on the circulatory apparatus of the Ophiures, by M. R. Kœhler. The circulatory system of these organisms, as here described, appears to be very analogous to that of the Echinidæ, as already revealed by previous investigations of the author and M. Prouho. Both groups present the same structure of the madreporic gland, the same relations of this gland, on the one hand with the periphery, on the other with a peribuccal ring; two peribuccal rings throwing off two branches in the same directions; lastly, the absence of aboral circle.—On the heart, digestive tube, and reproductive apparatus of *Amaræcium torquatum* (a Compound Ascidian), by M. Charles Maurice. In this paper the author determines the true physiological functions of some of the organs already observed by Seeliger, Von Drasche, and Della Valle in other species of Ascidians.—On the annual movement of the barometer in European Russia, by General Alexis de Tillo. While the yearly oscillations of the barometer in Siberia may be figured by a curve of somewhat simple type, those of European Russia are shown to be of a much more complicated character. From the numerous records published by the St. Petersburg Central Physical Observatory, the author has deduced the mean monthly readings for eighty meteorological stations in this region, and these data have enabled him to determine the mean type of the annual barometrical curve for the centre of European Russia. As it advances eastward in the direction of Siberia and Central Asia, this curve loses its secondary maxima and minima, while on the other hand its amplitude increases gradually.

BOOKS AND PAMPHLETS RECEIVED

"Marion's Practical Guide to Photography," new edition (Marion and Co.).—"Die Angiospermen des Bernsteins," Zweiter Band, by Dr. H. Conwentz (Danzig).—"Verhöffentlichungen der Grossherzoglichen Sternwarte zu Karlsruhe," Zweiter Heft, by Dr. W. Valentiner (Karlsruhe).—"Proceedings of the Royal Society of Queensland, 1885," vol. ii. parts 1 and 2 (Brisbane).—"Boston University Year-Book," vol. xiii.—"Results of Rain and River Observations made in New South Wales during 1885," by H. C. Russell (Sydney).—"Letters on Sport in Eastern Bengal," by F. B. Simson (Porter).—"Nyt Magazin for Natur ridenskabern," 12 parts (Christiania).—"Mountaineering below the Snow-Line," by M. Paterson (Redway).

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