phosphites of ammonia, by M. L. Amat. The process is described by means of which the author has obtained the salt $(PhO_3HO)NH_4O,HO$, which has not hitherto been studied. It may be prepared very easily in beautiful crystals and in a perfectly pure state, which is rarely the case with phosphites.—On the production of the double carbonate of silver and potassium, by M. A. de Schulten. The carbonate of silver obtained by the action of an alkaline carbonate on the nitrate of silver is found to be sometimes yellow, sometimes white, while in most cases the white precipitate takes the yellow colour when washed with water. The experiments here described show that, as anticipated by the author, the white colour of the precipitates is due to a combination of the carbonate of silver with the alkaline carbonate, this combination being transformed by the water into a yellow carbonate by eliminating the alkaline carbonate.—On some salts of aniline, by M. A. Ditte. The salts here described are formed by metallic acids almost insoluble in water, or by energetic oxidants, and have been obtained by the process of double decomposition. They comprise a molybdate, a tungstate, a vanadate, an iodate, a chlorate, and a borate.—Formation of normal amylic alcohol in the fermentation of glycerine set up by *Bacillus butylicus*, by M. Ed. Charles Morin. Fitz has shown that, under certain conditions of temperature and environment, this Bacillus transforms glycerine into alcohols, glycol, and acids. To the normal ethylic and propylic alcohols determined in the products of the fermentation must now be added normal amylic alcohol, which may be easily extracted by distillation.—On a remarkable variety of mineral wax, by MM. G. Dollfus and Stanislas Meunier. The specimens here described came from Sloboda Rungorska, near Kolomea, in Austrian Galicia, where petroleum wells have recently been sunk. A rough analysis yields H = 15, C = 85, corresponding to the formula CH, with density 0·60.

BERLIN.

Physical Society, October 28.—Prof. von Helmholtz, President, in the chair.—The President gave a heart-felt address in memory of the late Prof. Kirchhoff, who was Vice-President of the Society.—Dr. Robert von Helmholtz showed and explained before the Society the experiments on vapour currents, of which he has recently given an account in *Weidemann's Annalen*. In his earlier experiments on the formation of mist he arrived at the same results that had been obtained by Aitken—namely, that the condensation of supersaturated aqueous vapour, as it forms a mist, takes place only at some nucleus which is provided ordinarily by the particles of dust in the air. His observations on vapour currents have, however, now shown that other conditions have an influence on the condensation. When a platinum wire heated red-hot by an electric current is brought near a current of vapour, the colour of the latter changes owing to an increased condensation. A similar result was obtained when the following agents were employed instead of the red-hot platinum wire, viz. the gases evolved from a hydrogen flame; the gases which rise from a glowing wire gauze; a metallic point from which electricity is making its exit; an electric spark; the vapours which rise from sulphuric acid; sal-ammoniac when formed in the current of vapour by the interaction of hydrochloric acid gas and ammonia. In all these last-named cases, where the condensation is facilitated, it is impossible to speak of any "nuclear" action. The speaker was of opinion that a supersaturated vapour, just as is the case with water cooled below its freezing-point, or a supersaturated solution of any salt, can be made to pass from its condition of unstable equilibrium by two means, either by some "nuclear" action or by a sudden vibration. Mist formation is the result of a "nuclear" action in those cases in which the atmospheric dust induces a condensation in the supersaturated vapour. The condensation must be regarded as the result of the sudden vibration in the other cases mentioned above. Although in these cases no truly mechanical vibration takes place, still the chemical processes involved in the production of the gases evolved by the flame, in the evaporation of the sulphuric acid, in the formation of the sal-ammoniac, at the point from which the electricity is making its exit, and in the electric spark, are to be regarded as so many sources of molecular tremors which upset the unstable equilibrium of the supersaturated vapour.—Dr. Dieterici gave an account of his experiments on the determination of the mechanical equivalent of heat by the indirect electrical method. He made this choice of method on account of the exactness with which electrical values can now be determined in absolute units. The speaker described the general arrangement of his experiments and gave a detailed account of the ice calorimeter which he used, as specially modified by himself. As the result of his series of measurements he obtained closely agreeing values for the mechanical equivalent of heat, namely 424·4 and 424·2 as the mean of each series, the highest and lowest values obtained differing but little from the mean of the determinations. When making his calculations the speaker took as the specific heat of water, the mean of the determinations made between 0° C. and 100° C. The statements which have been made respecting changes in the specific heat of water as dependent on changes of temperature differ so greatly with different observers that the mean values based on their results provide no constant factor; the speaker's determinations would have been considerably different had he taken as his basis any other value of the specific heat of water. He next compared the results of his experiments with those of earlier observers, and discussed the very marked differences in the values given for the specific heat of water at various temperatures. He thinks that the specific heat of water may best be determined by the electrical measurement of the mechanical equivalent of heat, and intends to investigate this question more fully at a later date.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Pen and Pencil in Asia Minor: W. Cochran (Low).—An Elementary Treatise on Light and Heat: Rev. F. W. Aveling (Relfe).—British and Irish Salmonidæ: F. Day (Williams and Norgate).—*Vega* Expeditionens, 2 vols.: A. E. Nordenskjöld (Beigers, Stockholm).—L'Atmosphère et Météorologie Populaire: C. Flammarion (Hachette, Paris).—Spezial Karte von Afrika, 2, 3, 4, 5 Lief. (Perthes, Gotha).—Guatemala; the Land of the Quetzal: W. T. Brigham (Unwin).—The Microscope in Theory and Practice, translated from the German of Prof. Carl Naegeli and Prof. S. Schwendener (Sonnenschein).—Reynolds's Experimental Chemistry, Part 4, Organic (Longmans).—Klima und Gestaltung der Erdoberfläche: Dr. J. Probst (Schweizerbart'sche, Stuttgart).—Beiträge zur Geophysik, i. Band: Prof. Dr. Georg Gerland (Schweizerbart'sche, Stuttgart).—Die Japanischen Seeigel, 1 Theil: Dr. L. Döderlein (Schweizerbart'sche, Stuttgart).—The Lake Age in Ohio: E. W. Claypole (Maclachlan and Stewart).—Gold-fields of Victoria, Reports of the Mining Registrars for Quarter ended June 30, 1887 (Melbourne).—Report on the Progress and Condition of the Government Botanical Gardens at Saharanpur and Mussoorie for Year ending March 31, 1887 (Allahabad).—Coleoptera; or, Beetles of South Australia: J. G. O. Tepper (Wigg, Adelaide).—The Answer to the Universal Question, What is an Earthquake?—Journal of Anatomy and Physiology, October (Williams and Norgate).—Journal of the National Fish-Culture Association, October.—Journal of the Chemical Society, November (Gurney and Jackson).

CONTENTS.