CHEMICAL NOTES.

The Optical Properties of Mixtures of Isomorphous Salts.—H. Dufet has verified the law which he communicated to the Academy, April 8, 1878, *i. e.*, that a crystal formed of a mixture of two isomorphous salts has indices of refraction, which vary continuously with its composition, so that the variation in the value of the index is proportional to the number of equivalents of one of the salts introduced into the mixture.

Influence of Temperature on the Distribution of Salts in their Solutions.—In all salts the concentration of the heated portion decreases and that of the cold part increases. The difference thus established increases with the original concentration. In the series of the alkaline chlorides the differerence is so much the greater for the same absolute concentration as the molecular weight is higher. The phenomenon seems to have no relation with the curve of solubility. C. Soret.

Rise of the Zero-point in Mercurial Thermometers.—The zero-point rises further and more quickly in thermometers of "crystal" glass than in those free from lead. The rise of the zero-point is much more rapid at the outset, and tends probably towards a limit for a very prolonged heating at a fixed temperature. The effect of an elevated temperature renders the thermometer more stable under the influence of heat at any lower temperature.

J. M. Crafts.

Development by Pressure of Polar Electricity in Hemihedral Crystals with Inclined Surfaces.—Whatever may be the determining cause, whenever a hemihedral non-conducting crystal with inclined surfaces occurs, there is a formation of electric poles in a certain direction; whenever the crystal expands the disengagement of electricity takes place in an opposite direction.

MM. Jacques and Pierre Curie.

Action of Permanganate upon Potassium Cyanide.—This reaction produces much nitrite and a little urea in an alkaline medium, whilst, if the liquid is acidified with sulphuric acid, urea is formed in abundance. The simultaneous formation of two incompatible compounds, urea and nitrous acid, under the influence of permanganate, shows that the nitrogen of the cyanogen is exposed at once to an oxidising action and to hydrogenisation.

E. Baudrimont.

Comparative Solubility of Lead Phosphate and Arseniate in Dilute Acetic Acid.—One part of lead arseniate dissolves in 2703.05 parts of dilute acetic acid at 38.94 per cent. One part of lead phosphate requires only 782.90 parts of the same acid. Armand Bertrand.

Cause of the Acid Reaction of Animal Tissues after Death.—The acid reaction is due to a decomposition of the fluids in the tissues effected immediately after death by the action of Schizomycetes. At first volatile fatty acids appear to be derived from the incipient decomposition of the albumen, speedily followed by the two lactic acids produced from glycogen. The richer a tissue in carbohydrates, the longer this acid reaction prevails after death, as in the liver, the muscles and the lungs. It is briefest and faintest in the pancreas. In the later hours of putrefaction, the lactic acids disappear and are succeeded by succinic acid. Sooner or later an alkaline reaction sets in throughout the tissues, much ammonia being evolved from the decomposition of the albumen.

Marie Ekunina.

Constitution of the Salts of Rosanaline and of Analogous Coloring-Matters.—If rosaniline is a triamidic aromatic carbinol its salts will be of two classes: the first series is to be regarded as the ether of a tertiary aromatic alcohol; the second series comprises the salts of this ether, which is itself a triacid amine.

A. Rosentiehl.

Resin of Palisander Wood.—A. Terreil and A. Wolff ascribe to this resin the composition—$C_{21}H_{21}O_8$. It is very soluble in alcohol in all proportions, less soluble in ether, chloroform, and carbon disulphide, and insoluble in water. Nitric acid transforms it into an acid, which crystallizes in very fine orange-yellow needles, united in tufts.

Solubility of Recently Precipitated Carbonate of Lime in Ammoniacal Salts in Presence of an Equivalent Proportion of Sodium Chloride.—At the temperature of 10° to dissolve 1 grm. calcium carbonate there are required:

Ammonium hydrochlorate	13 980 grms.
" sulphate	8.380 "
" nitrate	14.438 "

Armand Bertrand.

Purification and Refining of Fatty Matters.—To determine whether an oil is pure, M. Octave Allaire takes a piece of carbonate of soda (crystal), the size of a nut, dissolves it in its own bulk of water, and shakes it up with the oil under examination in a bottle. If the oil becomes turbid, and gives, on settling, a solid bulky deposit, it has been badly purified. Oils which act upon the metal of lamps and form deposits of verdigris are also to be rejected as impure. Commercial samples often contain 10 to 15 per cent. of free oleic acid.

Remarks on the Platinum Sulphocyanide of V. Marcagno.—This body is not a platinum sulphocyanide, but a potassium platino-sulphocyanide, having in its anhydrous state been long ago analysed by M. Buckton. Nor does it yield a proof of the octo-atomicity of platinum, which in this case, as in many others, is tetratomic.

G. Wyrouboff.

A Compound of Titanium Tetrachloride and Acetyle Chloride.—On mixing these two bodies the compound in question is immediately precipitated in small yellow brilliant spangles resembling lead iodide. On exposure to moisture these crystals undergo a change, liberating hydrochloric acid. They may be preserved in dry air, or preferably in dry hydrochloric acid. They melt at 25° to 30° and crystallize on cooling. In contact with alkaline solutions they are decomposed, forming an alkaline acetate and chloride, titanic acid which is precipitated, and water. The analysis of the crystals yielded results agreeing with the formula $C_2H_3OCl+TiCl_4$. Armand Bertrand.

Certain Properties of Mixtures of Methyl Cyanide with Common Alcohol and Methylic Alcohol.—In order to separate methyl cyanide from alcohol it is necessary to submit the mixture to fractional distillation in order to classify the products; then to dissolve the largest possible quantity of calcium chloride in the mixture, boiling at the lowest temperature in order to absorb the alcohol; then to distil again in the water-bath, and to submit again the product thus obtained to fractional distillation. A very rich cyanide is thus obtained, from which the last traces of alcohol are eliminated by distillation over a small quantity of phosphoric anhydride, and by rectification to remove the small quantity of ethyl oxide and acetate which arise from the reaction of the phosphoric acid.

C. Vincent and B. Delachanal.

Determination of Urea by Sodium Hypobromite.—C. Mehu criticises the memoirs of M. Fauconnier and M. Jay (*Bulletin de la Soc. Chimique*, xxxiii., pp. 102 and 105). In opposition to the former of these chemists he finds that the presence of cane-sugar distinctly augments the quantity of nitrogen evolved from urea by means of sodium hypobromite. In opposition to M. Jay he considers that it is easy to meet with starch syrups, which give off merely an insignificant quantity of ammonia if heated with caustic soda.

A sealed paper from the firm of Scheurer-Rott, opened at the last session of l'Académie des Sciences, refers to an improvement in alizarin steam reds, by printing upon pieces previously prepared with emulsive oil, mixed in certain cases with hypochlorite of soda. For producing cadmium sulphide directly upon the fibre, M. Schmid prints a mixture of arsenious acid, sulphur, sodium acetate, and cadmium nitrate. A fine yellow is obtained by steaming for 1 to 2 hours and an orange is produced by increasing the sodium acetate.

A paper by M. Ziegler was opened, recommending an addition of arsenic or boracic acid to the colour beck in dyeing madder reds and roses.