

Spontaneous evaporation: HARRY B. WEISER and EVERETT E. PORTER.

Negative surface energy: WILLIAM D. HARKINS and Y. C. CHENG.

The formation of ammonia from nitrogen and hydrogen in the corona: WILLIAM D. HARKINS and A. MORTON.

The electrical conductivity of dilute aqueous solutions of the alkali hydroxides: MERLE RANDALL and C. C. SCALIONS.

The partial molal volume of the constituents in solutions of electrolytes: MERLE RANDALL.

A revision of the atomic weight of antimony. Preliminary report: H. H. WILLARD and R. K. McALPINE.

A separation and volumetric determination of cobalt: H. H. WILLARD and DOROTHY HALL.

A new form of filtering crucible: H. H. WILLARD.

Notes on the determination of chromium as chromic oxide: WM. H. BLANCHARD.

The preparation of colloidal selenium: VICTOR E. LEVINE.

A theory of catalytic action: CHAS. W. CUNO.

Radiation and chemical reactivity: ERIC K. RIDEAL. The radiation theory of chemical physical action as developed by Trausy Marcelin Price and more recently by Mc. Lewis, Bernouilli and Perrin, in the light of the Rutherford Bohr atomic structure offers a tangible interpretation for the mechanism of chemical and physical change; calculation from radiation data leads to results for the latent heats of evaporation; electrode potentials and heats of reaction of various elements and compounds in close agreement with experimental results. Catalytic action on the radiation theory admits of various interpretations as to the possible modes of mechanism; these are briefly described and answered.

Quantitative measurement of fluorescence: L. J. DESHA. The radiation from a mercury arc in quartz tube, separated from most of the visible rays by a glass screen of the "Uviol" type, is allowed to fall upon solutions contained in the cups of the Kober nephelometer. Fluorescent substances emit light which may be compared in the eye piece as in nephelometry. Solutions containing one half to two parts of quinine sulphate per million in normal sulphuric acid yield readily comparable results which are almost if not quite directly proportional to the concentrations. Applications as an analytical procedure are suggested. The work is being continued.

Some applications of sodium peroxide in analytical chemistry: W. M. STERNBERG. Some applications of sodium peroxide to analytical processes in particular fusions of lead and zinc ores in iron crucibles have been studied. The decomposition is very rapid and complete in every case. When the usual proportion of sodium peroxide to ore (5 to 8 times the weight of the ore) has been used. If smaller amounts of the peroxide be taken the reaction in case of sulphide ores is rather violent. The results in case of lead ores were uniform but low unless the standard solution has been standardized against a standard ore run by the fusion method. The procedure consisted in fusion one half gram ore in an iron crucible with about 3 to 4 grams of sodium peroxide, dissolving the melt in water, adding 0.7 gram oxalic acid to reduce the lead peroxide. The solution was acidified with sulphuric acid boiled, cooled, lead sulphate filtered and washed with 5 per cent. sulphuric acid. The impure lead sulphate was dissolved in ammonium chloride, or ammonium chloride-sodium acetate mixture, heated to boiling and titrated with ammonium molybdate. In the case of zinc ores the peroxide fusion was dissolved in ammoniacal ammonium chloride solution heated to boiling, filtered and washed with hot ammonium chloride solution, acidified with hydrochloric acid, heated to boiling and titrated with potassium ferrocyanide, after the addition of 50 c.c. of hydrogen sulphide water. Here also good results have been obtained if the solution has been standardized against the standard zinc ore D, or against zinc oxide, both fused and treated in the way described.

CHARLES L. PARSONS,
Secretary

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