the specific gravity 19.71848 at 0° - 4° . The critical temperature is 296.2° , pressure 18730 mm, and density 0.2327. W. D. B.

Vapor-density of dried mercurous chloride. *H. B. Baker. Jour. Chem. Soc.* 77, 646 (1900). — Carefully dried mercurous chloride gives a vapor-density corresponding to the formula Hg_2Cl_2 , and the vapor does not amalgamate gold. W. D. B.

Theory of the constant-volume gas-thermometer. *J. Rose-Innes. Phil. Mag.* [5] 50, 251 (1900). — The author points out that the weak point of the method adopted by Lord Kelvin in the integration of the fundamental equation for the constant-volume gas-thermometer to infinite values of v and t along the isopiestic is that it is necessary to assume that an empirical relation, which represents the Joule-Thomson effect for a small range, necessarily holds at any temperature. The author shows that it is possible to obviate this extrapolation by transforming the differential equation before integration. Applying the formula so obtained to calculate the absolute value of the freezing-point of water, the result was found to be in close agreement with the value obtained by Lord Kelvin by the constant-pressure gas-thermometer. The characteristic equation of a nearly perfect gas is treated by making further transformations from the author's differential equation. The paper concludes by discussing Mayer's hypothesis and the difference in the methods adopted by Joule and Lord Kelvin for testing it. H. T. B.

Notes on gas-thermometry. *P. Chappuis. Phil. Mag.* [5] 50, 433 (1900). — Owing to the necessity of using nitrogen for high temperature work, the author gives the result of careful measurements on the coefficient of dilatation of nitrogen. The maximum divergence from the normal hydrogen scale between 0° and 100° is 0.01° and 40° C. The coefficient reaches a minimum value at 80° C and then increases.

A determination of the sulphur boiling-point by the constant-volume nitrogen thermometer shows it to be 445.2°C instead of the value obtained by Callendar and Griffiths, i. e., 444.53°C . This the author attributes to various causes enumerated in the paper at some length. The consequences of so radical a change in the sulphur point if found to be correct would considerably influence the values of air-temperature as measured with platinum electrical thermometers.

The value of δ in the different formulas, equal to 1.50 for a standard sample of wire, calibrated according to the Callendar-Griffiths method, would require to be changed to 1.538 on the assumption of the author's value of the S. B. P. H. T. B.

Preparation of pure hydrobromic acid. *A. Scott. Jour. Chem. Soc.* 77, 648 (1900). — Since phosphorus almost invariably contains arsenic, the author advocates the sulphur dioxide method. W. D. B.

Two-Component Systems

The allotropic changes of alloys of iron and nickel. *L. Dumas. Comptes rendus*, 130, 1311 (1900). — Up to 25.84 percent of nickel, the points of irre-

versible transformation are above 0° ; starting from 27.12 percent of nickel, the transformation point for cooling lies below 0° , the value for 29.94 percent nickel lying below -78° . At 25.84 percent nickel, there occur points both of reversible and of irreversible transformation, the temperature at which the reversible change takes place rising with increasing percentage of nickel. *W. D. B.*

Solubility of benzophenone. *E. Derrien. Comptes rendus, 130, 721 (1900).*
— Isolated solubility determinations in about twenty solvents. *W. D. B.*

On the liquefaction of mixtures of carbon dioxide and sulphur dioxide. *F. Caubet. Comptes rendus, 130, 828 (1900).* — The author has determined the boiling-point and dew-point curves for a number of mixtures of carbon dioxide and sulphur dioxide. All mixtures show retrograde condensation.

W. D. B.

Poly-Component Systems

Action of hydrogen on antimony sulphide. *H. Pélabon. Comptes rendus, 130, 911 (1900).* — The author has studied the reaction $\text{Sb}_2\text{S}_3 + 3\text{H}_2 \rightleftharpoons 2\text{Sb} + 3\text{H}_2\text{S}$. At 440° both the antimony and the sulphide are solid and the ratio of the two gases is found to be independent of the absolute amount of the two solid phases. At 610° the sulphide of antimony is liquid and dissolves the metallic antimony. The ratio of the gases varies with the amount of antimony until so much is added that antimony separates as solid phase.

W. D. B.

Solubility of a mixture of salts having a common ion. *C. Touren. Comptes rendus, 130, 908, 1252 (1900).* — The author has determined isotherms for potassium nitrate and chloride, for potassium nitrate and bromide, and for potassium chloride and bromide in aqueous solutions. Equivalent quantities of potassium chloride and of potassium bromide have exactly the same effect on the solubility of the potassium nitrate. Potassium bromide and chloride give one continuous curve instead of two intersecting curves. The author is perfectly clear as to the theoretical significance of this.

W. D. B.

Note on partially miscible aqueous inorganic solutions. *J. S. Newth. Jour. Chem. Soc. 77, 775 (1900).* — Saturated potassium carbonate and strong aqueous ammonia form two liquid layers, and the temperatures at which these phases become identical vary with the amount of water present.

W. D. B.

Chemical reactions produced in a solution; vapor-pressure of the solvent. *A. Ponsot. Comptes rendus, 130, 782 (1900).* — A cyclical proof to show that, at constant pressure and temperature, a reversible reaction always increases the vapor-pressure of the solvent, provided the solvent takes no part in the reaction. This is interesting, of course, but one cannot help wondering whether it would hold true for the change of paraldehyde into acetaldehyde, for instance, or for the reaction between alcohol and acetic acid in benzene solution. It is very easy to overlook things even in the simplest thermodynamic proof.

W. D. B.

Limited chemical reactions in homogeneous systems. *A. Ponsot. Comptes rendus, 130, 829 (1900).* — The author shows that the equilibrium in a homogeneous gaseous mixture is independent of the nature and concentration of substances not entering into the reaction. He also claims that, at equilibrium, the