

- III. "On some of the Properties of Water and of Steam." By WILLIAM RAMSAY, F.R.S., Professor of Chemistry in University College, London, and SYDNEY YOUNG, Professor of Chemistry in University College, Bristol. Received November 5, 1891.

(Abstract.)

This investigation forms one of a series, former members of which refer to the thermal properties of ethyl oxide and various alcohols. Owing to the high temperature of the critical point of water, the work was confined to comparatively low temperatures. Tables are given in the paper of the orthobaric volumes of liquid water at temperatures between  $100^{\circ}$  and  $270^{\circ}$ ; of the compressibility of water at different temperatures; of the vapour-pressures of water up to  $270^{\circ}$ ; and of the density of the vapour of water under various conditions of temperature and pressure. Regnault's measurements of vapour-pressure do not extend beyond  $220^{\circ}$ ; and the results of this investigation confirm them in a remarkable manner, besides amplifying them. The densities of the saturated vapour, also, measured directly, are nearly identical with those calculated from Regnault's determinations of heats of vaporisation; but near the condensing point of steam, especially at low temperatures, the pressure is too low, owing to the adhesion of water-vapour to glass, which causes condensation at pressures below the vapour-pressures. This necessarily renders the measurements near the condensing points uncertain, but the numbers calculated from Regnault's results give volumes for saturated steam agreeing sufficiently well with those obtained by direct measurements at volumes somewhat larger than those of the saturated vapour. It is probable that the real isochoric lines for water show a linear relation between temperature and pressure; but, owing to the circumstance mentioned, they deviate from rectilinearity near the condensing-points of the vapour.

- IV. "On Hindoo Astronomy." By W. BRENNAND. Communicated by C. B. CLARKE, F.R.S. Received November 10, 1891.

(Abstract.)

*Introduction.*—Gives a short history of Indian astronomy, as known in Europe in the last century.

Treats of Indian astronomical æras, and gives some account of the Siddhantas and their authors, &c.

Ends with an investigation of the great number called the Kalpa, of 4,320,000,000 years, showing its uses in astronomical calculations,