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“On some peculiar modifications of the Force of Cohesion, with reference to the forms and structure of Clouds, Films and Membranes.” By William Addison, Esq., F.L.S. Communicated by P. M. Roget, M.D., Sec. R.S.

In the course of his researches into the nature and origin of tubercles in the lungs, and into the physical properties of the secretions of the human structure, the author had occasion to notice various fibrous and membranous forms arising solely from physical agencies. On pursuing the inquiry, he observed a class of phenomena indicating some peculiar modifications of the force of cohesion. Thus he found that transparent liquid streams are visible when vapours or fluids mingle with one another, and also when solids are dissolving in a fluid; and that opaque deposits, assuming the appearance of clouds, form on those streams, rendering visible the lines of junction of two fluid or gaseous surfaces. A great number of experiments are described illustrating these general facts, which are afterwards applied to explain various phenomena of clouds, films and membranous formations, resulting from the operation of the different cohesive forces which are called into action, under a diversity of circumstances, when liquid or gaseous bodies are brought into mutual contact.

“On the formation or secretion of Alkaline and Earthy Bodies by Animals.” By Robert Rigg, Esq., F.R.S.

From the results of a comparison made by the author of the weight of the ashes obtained from a quantity of bread, equal to that which was the sole food of two mice during thirty-eight days, and the weight of the ashes of their excretions during the same period, it appeared that the latter exceeded the former in the proportion of 1334 to 934. The amount of soluble salts was also found to be greater in the latter than in the former. From these data, the author infers that both alkaline and earthy bodies are formed out of their elements by the animal system, and found in their excretions.

“An Account of the Observation of the total Eclipse of the Sun on the 21st of December 1843.” By Lieutenant J. O. E. Ludlow, E.I.C. Engineers, Superintendent of the Magnetic Observatory at Madras. Communicated by J. C. Melville, Esq., F.R.S., Secretary to the Hon. the Court of Directors of the East India Company.

The author reports the results of his observation of the eclipse, which was unfortunately much interrupted by the passage of clouds; and he has also taken the opportunity of making observations on the Magnetic Dip and Horizontal Intensity at certain places on his journey.

“On the Barometrical Variation as affected by the Moon’s Declination.” By Luke Howard, Esq., F.R.S.

In this paper, which is a continuation of that which was published in the Society’s Transactions for 1841 (p. 277), and in which the