

any motion in the interior fluid, in which the rotatory motion causing precession and nutation is produced indirectly by the effect of the same forces on the position of the solid shell. A modification is thus produced in the effects of the centrifugal force, which exactly compensates for the want of any direct effect from the action of the disturbing forces; a compensation which the author considers as scarcely less curious than many others already recognized in the solar system, and by which, amidst many conflicting causes, its harmony and permanence are so beautifully and wonderfully preserved.

The solution of the problem obtained by the author destroys the force of an argument, which might have been urged against the hypothesis of central fluidity, founded on the presumed improbability of our being able to account for the phenomena of precession and nutation on this hypothesis, as satisfactorily as on that of internal solidity. The object, however, of physical researches of this kind is not merely to determine the actual state of the globe, but also to trace its past history through that succession of ages, in which the matter composing it has probably passed gradually through all the stages between a simple elementary state and that in which it has become adapted to the habitation of man. In this point of view the author conceives the problem he proposes is not without value, as demonstrating an important fact in the history of the earth, presuming its solidification to have begun at the surface; namely, the permanence of the inclination of its axis of rotation, from the epoch of the first formation of an exterior crust. This permanence has frequently been insisted on, and is highly important as connected with the speculations of the author on the causes of that change of temperature which has probably taken place in the higher latitudes: all previous proofs of this fact having rested on the assumption of the earth's entire solidity; an assumption which, whatever may be the actual state of our planet, can never be admitted as applicable to it at all past epochs of time, at which it may have been the habitation of animate beings.

The author concludes, by expressing a hope that he may be enabled to prosecute the inquiry still further, and to bring before the Royal Society, at a future time, the matured results of his speculations.

March 14, 1839.

JOHN W. LUBBOCK, Esq., Vice-President and Treas.,
in the Chair.

G. W. Featherstonhaugh, Esq., who at the last Anniversary had ceased to be a Fellow from the non-payment of his annual contribution, was, at this Meeting, re-admitted by ballot into the Society, agreeably to the provision of the Statutes.

Clement Tudway Swanston, Esq., was balloted for, and duly elected into the Society.

A paper was read, entitled, "An Experimental Inquiry into the

Formation of Alkaline and Earthy Bodies, with reference to their presence in Plants, the Influence of Carbonic Acid in their generation, and the equilibrium of this gas in the atmosphere." By Robert Rigg, Esq. Communicated by the Rev. J. B. Reade, M.A., F.R.S.

The object of the author, in the present memoir, is to show that the solid materials which compose the residual matter in the analysis of vegetable substances, and which consist of alkaline and earthy bodies, are actually formed during the process of fermentation, whether that process be excited artificially, by the addition of a small quantity of yeast to fermentable mixtures, or take place naturally in the course of vegetation, or of spontaneous decomposition. His experiments also tend to show that this formation of alkaline and earthy bodies is always preceded by the absorption of carbonic acid, whether that acid be naturally formed or artificially supplied. He finds, also, that different kinds of garden mould, some being calcareous, others siliceous, and others aluminous, exposed in retorts to atmospheres consisting of a mixture of carbonic acid gas and common air, absorb large quantities of the former, combining with it in such a manner as not to afford any traces of this carbonic acid being disengaged by the action of other acids. He considers the result of this combination to be the formation of an alkaline body, and also of a colouring matter. This combination takes place to a greater extent during the night than during the day; and in general, the absorption of carbonic acid by the soil is greatest in proportion as it is more abundantly produced by the processes of vegetation; and conversely, it is least at the time when plants decompose this gas, appropriating its basis to the purposes of their own system. Hence he conceives that there is established in nature a remarkable compensating provision, which regulates the quantity of carbonic acid in the atmosphere, and renders its proportion constant.

A paper was also read, entitled, "Note on the Art of Photography, or the application of the Chemical Rays of Light to the purposes of Pictorial Representation." By Sir John F. W. Herschel, Bart., K.H., V.P.R.S., &c.

The author states that his attention was first called to the subject of M. Daguerre's concealed photographic processes, by a note from Captain Beaufort, dated the 22nd of January last, at which time he was ignorant that it had been considered by Mr. Talbot, or by any one in this country. As an enigma to be solved, a variety of processes at once presented themselves, of which the most promising are the following; 1st, the so-called de-oxidizing power of the chemical rays in their action on recently precipitated chloride of silver; 2ndly, the instant and copious precipitation of a mixture of a solution of muriate of platina and lime-water by solar light, forming an insoluble compound, which might afterwards be blackened by a variety of agents; 3rdly, the reduction of gold in contact with de-oxidizing agents; and, 4thly, the decomposition of an argentine compound soluble in water, exposed to light in an atmosphere of peroxide of chlorine, either pure or diluted.