

The following Donation to the Museum was presented—

A Specimen of a Vegetable Impression from Burdie House.—*Presented by D. Balfour, Esq. younger of Trenaby.*

The following Gentlemen were duly admitted Ordinary Fellows of the Society:—

Andrew Coventry, Esq., Advocate.

D. Balfour, Esq. younger of Trenaby.

Monday, 20th March 1843.

Sir DAVID BREWSTER, Vice-President, in the Chair.

The following communication was read:—

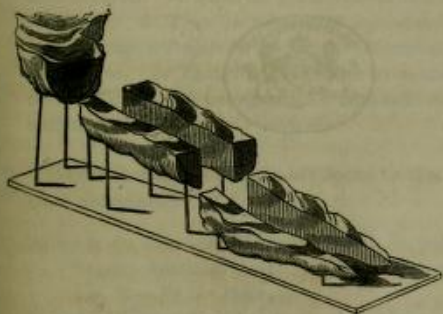
Papers on Glaciers. No. 3, On the Structure of Glaciers, and the cause of their motion. By Professor Forbes.

With reference to his former paper of the 27th February, the author stated, that he had received a most satisfactory confirmation of his opinion respecting the motion of glaciers in winter. From observations made by his direction on the Mer de Glace of Chamouni, and in which he places entire confidence, it appears that the ice moved no less than 76 feet between the 12th December 1842 and 17th February 1843, or at the rate of $13\frac{1}{2}$ inches *per diem*, whilst its mean motion during the summer was $17\frac{1}{2}$ inches.

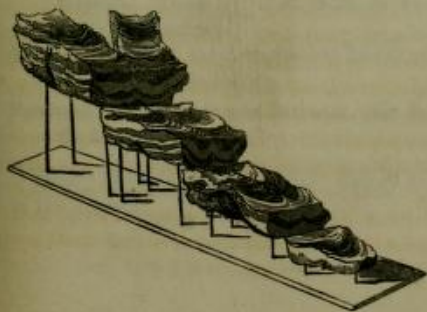
The author then explained the manner in which he conceives the conoidal structure of glaciers to be due to the varying velocity of different points of their section producing discontinuity by minute fissures, which are infiltrated and ultimately frozen. He had before satisfied himself that the forms of these surfaces are such as the motion of the particles of a viscid fluid, obstructed by the sides and bottom of the canal in which it moves, would engender. But to make this more palpable, he has endeavoured to imitate the motion of a glacier, by causing a plastic fluid of different colours to mould itself by the action of gravity in an inclined bed, and he has thus succeeded in reproducing the forms of the structural surfaces of glaciers so precisely that they cannot be distinguished from the curves which he had drawn as representing the actual phenomena.—*See Edinburgh Philosophical Journal, Oct. 1842, pages 346, 347.*

ILLUSTRATIONS
OF THE
VEINED STRUCTURE
OF GLACIERS.

View of a Glacier,
shewing its Structure
by Ideal Sections.



View of a Model
shewing the curves
generated (experi-
mentally) by the mo-
tion of a viscous fluid.



View of a Model
shewing the effect of
the union of two
streams on the mo-
tion of a viscid fluid.

Professor Forbes also mentioned the objection recently taken by M. Agassiz to this theory of the veined structure being due to the different velocity of parallel portions of the ice, namely, that where two glacier streamers unite, their structure remains separate and distinct. Professor Forbes admits that it does so for a certain distance after union, but affirms, that, if the glacier be long enough, the structure always tends to consist of a single series of curves. He shewed, by models formed by the union of two plastic streams, that, in point of fact, such phenomena of united streams may be reproduced, the double structure being very slowly worn out, in consequence of the nearly uniform movement of the middle part of the stream.

Professor Forbes recapitulated the proofs that the glacier moves as a plastic mass, the friction of whose parts is less than their friction upon the surface over which they tend to slide; and he bases his theory upon three classes of facts, which he considers that he has demonstrated. 1. That the glacier moves like a stream, fastest at the centre. 2. That its velocity is immediately governed by the external temperature and the state of infiltration of the ice by water at the time. 3. That the forms which its veined structure assumes are those due to the movement of a semi-solid mass in the manner supposed.

The following Donations of Books to the Society's Library were announced.

Archives du Museum d'Histoire Naturelle, publiées par les Professeurs-Administrateurs de cet Etablissement. Tome ii. Liv. 3.—*By the Editors.*

Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences. Tome xv. Nos. 9-26, et Tome xvi. Nos. 1-7. —*By the Academy.*

Monthly Notices of the Astronomical Society of London. Vol. v. No. 28.—*By the Society.*

Specimen de l'Imprimerie de Bachelier, Rue de Jardinets.—*By M. Bachelier.*

Henry Stephens, Esq was duly elected an Ordinary Fellow of the Society.