NOTICES OF MEMOIRS.

I.—Index Generum et Specierum Animalium.

Report of a Committee consisting of Dr. Henry Woodward (Chairman), Dr. F. A. Bather (Secretary), Dr. P. L. Sclater, Rev. T. R. R. Stebbing, Dr. W. E. Hoyle, Hon. Walter Rothschild, and Lord Walsingham.[1]

STEADY progress has been made with the indexing of the literature for the second portion of this Index (1801–1850). Among numerous works dealt with, the compiler, Mr. C. Davies Sherborn, specially mentions the following:—

Boisduval's works on Lepidoptera.
Publications of the Bologna Academy.
Bonaparte's numerous tracts and his "Conspectus Generum Avium."
Publications of the Bonn Natural History Society.
Publications of the Bordeaux Linnean Society.
Roret's edition of the "Suites à Buffon."

The number of index slips increases with great rapidity, and continual effort is needed to keep this mass of material in order for reference. The sheets already arranged constitute a mine of information for monographers and others. They are preserved in the Geological Department of the British Museum (Natural History), where reference is frequently made to them by members of the staff and outside workers, while information derived from them is often asked for by correspondents at a distance. The Committee would, however, be glad to see still more advantage taken of the facilities now offered for the consultation of this valuable aid to systematic work.

A copy of the first volume of the "Index" is being shown in the Science Hall of the Franco-British Exhibition.

The Committee asks for reappointment, and earnestly hopes that the full sum of £100 will be granted towards the continued preparation of the "Index Animalium."

II.—Glacial Drift in Scilly.

OUR attention has been drawn by Mr. W. A. E. Ussher to the following passage in a paper by the late E. A. Wünsch, "On Raised Beaches," read on June 15th, 1894, at the Joint Meeting of the Scientific Societies of Cornwall at Penzance. In that paper he accepts the evidence put forward as to the stranding of erratics on the shores during the formation of the raised beaches, and continues thus:—"We must hence refer the age of our Raised Beaches to the later stages of the Glacial Period, and with this great northern drift with its heavier burden checked by and deposited in front of the Isle of Wight and Portland Bay we must connect the effects of the same drift farther westwards, by means of which, and by ground ice and

[1] Submitted to the Meeting of the British Association, Section D, Zoology; Dublin, September, 1908.

local ice-floes, the dispersion and extensive distribution of flint so conspicuous in all southern beaches, and extending even as far as the Scilly Isles, can alone be accounted for."

III.—On the Viscosity of Ice. (Abstract.) By R. M. Deeley, F.G.S.[1]

THE movement of glaciers has excited a great deal of interest, and the facts recorded concerning their motion have shown that the flow is such as would result if ice obeyed the laws of viscous flow. The viscosity of a liquid is measured by the tangential force per unit area of either of two horizontal planes at unit distance apart, one of which is fixed, while the other moves with unit velocity, the space between the planes being filled with the viscous substance. Taking such figures as are available, and estimating others as nearly as may be, it is possible to calculate roughly the viscosity of several glaciers. Stated in dynes per square centimetre by 10^{12}, the results obtained are roughly as follows:—The Mer de Glace 27, Morteratsch 143, Lower Grindelwald 3, and Great Aletsch 126. It seems probable that these discrepancies arise rather from differences in the actual viscosity of the glacier ice, due to its varying granular structure, than to errors in the data. Further measurements are required, however, before this can be regarded as proved.

It is also shown that the viscous motion of a glacier such as the Great Aletsch must exercise a drag on the floor upon which it rests amounting to two and a half tons per square foot, and that owing to the ability of the ice to transmit thrust, this force may be greatly exceeded at points where much resistance to motion is caused by inequalities in the floor upon which the ice rests.

McConnel made a number of very careful experiments on the shearing motion which can be produced by even very small forces in directions at right angles to the optic axes of ice crystals. A careful consideration of the experimental data shows that the rate at which the motion is produced is proportional, very nearly, to the stress, and that the resistance to shear increases very rapidly with rise of temperature. The flow at right angles to the optic axis is such as would be the case if ice were viscous (liquid) in a direction at right angles to the optic axis, the viscosity at 0° C. being about 3×10^{10} dynes per square centimetre.

McConnel showed that when the load was taken off a bar of ice which had been yielding viscously, there was a slow partial recovery of the original form. Experiments with highly brittle pitch also showed that when the load was taken off a weighted bar there was an immediate elastic recovery, and also an additional slow recovery. When this slow recovery ceased, the pitch bar again began to bend under its own weight.

[1] Royal Society, June 4th, 1908. Communicated by Dr. H. Woodward, F.R.S.
