to be built, limestone was quarried close by in Millgill, not far from Millgill Fors. The rock is a slightly-argillaceous limestone, generally crowded with fossils. This was roughly dressed into shape, and finally chiselled along marginal fillets when the rock was built up as the quoins of the station and its surrounding buildings. I had occasion to stay a few hours at the station lately, and then took careful note of the condition of the stone at that time. After an exposure of twelve years the dressed surface of the stone in question is everywhere rough to the feel; and the general surface has been lowered by atmospheric waste in the mean time to such an extent that some of the more durable fragments of fossils remain in relief to about a twentieth of an inch. Assuming that the upper surface of the fossils represents the original dressed surface of the limestone quoins, then it is evident that the limestone has already wasted away at the rate of one inch in two hundred and forty years. This, however, is only the beginning of it: when the weather has eaten into the bedding planes and the bate of the rock, then the rate of waste will certainly be proportionate to the increased surface exposed to the attacks of the weather.

We have, in these facts, some kind of measure of the initial rate at which limestone is wasted along any given surface. Briefly summarized the facts are these:—

The Kirkby Stephen tombstones had weathered at the rate of	1	inch in	500	years.
The Tailbrig "macadam"	,,	,,	1	,,	250	,,
The Penrith limestone	,,	,,	1	,,	300	,,
The Askrigg limestone	,,	,,	1	,,	240	,,

A rough average based upon these observed facts would indicate as a kind of general rate of waste about one inch in three hundred years: that, of course, refers to waste along one plane, and does not take into account the greatly accelerated waste consequent upon the rock being attacked simultaneously along many different planes. I believe we shall not err greatly in assigning at least double the rate of erosion to limestone generally.

The bearing of these facts upon some larger phenomena of denudation will be indicated in a subsequent communication.

NOTICES OF MEMOIRS.

British Association for the Advancement of Science.
Leeds, September 4th to 10th, 1890.

List of Titles of Papers read in Section C, Geology.

Professor A. H. Green, M.A., F.R.S., President.

The President's Address. (See p. 475.)

Professor O. C. Marsh.—On the gigantic *Ceratopsidæ* (or horned Dinosaurs) of North America.

B. Holgate.—The Carboniferous Strata of Leeds and its immediate Suburbs.

B. Holgate.—Some Physical Properties of the Coals of the Leeds District.

G. W. Lamplugh.—On the Boulders and Glaciated Rock-surfaces of the Yorkshire Coast.

G. W. Lamplugh.—East Yorkshire during the Glacial Period.

G. W. Lamplugh.—Report on an Ancient Sea Beach near Bridlington.

J. F. Walker.—On Liassic Sections near Bridport.

T. De la Touche.—On the Sounds known as the "Barisúl Guns," occurring in the Gangetic Delta.

T. Tate.—On the so-called "Ingleton Granite."

W. A. E. Ussher.—The Devonian Rocks as described in De la Beche's Report, Interpreted in Accordance with Recent Researches.

Dr. H. Hicks.—On Pre-Cambrian Rocks occurring as fragments in the Cambrian Conglomerates in Britain.

Dr. H. Hicks.—The Effects produced by Earth-movements on the Pre-Cambrian and Lower Palæozoic Rocks in some sections in Wales and Shropshire.

C. S. Wilkinson.—On the Mineral Resources of New South Wales.

Dr. H. W. Crosskey.—Report on Erratic Blocks.

P. F. Kendall.—The Glacial Phenomena of the Isle of Man.

G. W. Lamplugh.—On the Speeton Clays and their Equivalents in Lincolnshire.

H. G. Seeley.—On the Neural Arch of the Vertebræ in the Ichthyosauria.

W. Brindley.—The Marbles and other Ornamental Rocks of the Mediterranean.

Dr. Tempest Anderson.—On the Supposed Volcanic Eruption of Cape Reykjanæs, Iceland, in 1887.

W. Cash.—On a new Lepidodendron from the Halifax Hard Bed.

J. R. Dakyns.—On the Changes of the Lower Carboniferous Rocks in Yorkshire, from South to North.

Dr. J. Crawford.—Human Footprints in Recent Volcanic Mud in Nicaragua.

Dr. J. Crawford.—On the Geology of Nicaragua.

J. C. Antrobus and *Dr. F. H. Hatch.*—Preliminary Note on the Composition and Origin of the Cheshire Boulders.

Dr. F. H. Hatch.—On some West Yorkshire Mica-Trap Dykes.

T. Tate.—Note on Phillips' Dyke, Ingleton.

Dr. H. J. Johnston-Lavis.—Report on the Volcanic Phenomena of Vesuvius.

A. R. Hunt.—On the Origin of Saline Inclusions in the Crystalline Rocks of Dartmoor.

J. Bickerton Morgan.—On the Base of the Silurian in North-east Montgomeryshire.

W. W. Watts.—Geology of the Long Mountain on the Welsh Borders.

Rev. E. Jones.—The Exploration of Elbolton Cave.

Dr. A. Irving.—Physical Studies of an ancient Estuary.

C. E. De Rance.—Report on the Circulation of Underground Waters.

Professor T. Rupert Jones.—Report upon the Fossil Phyllopoda of the Palæozoic Rocks.

G. R. Vine.—Report on the Cretaceous Polyzoa.

W. Whitaker.—Suggestions on Sites for Coal-search in the South-east of England.

Dr. P. H. Carpenter.—On some points in the Morphology of the Cystides.

Professor Silvanus Thompson.—On the Source of the River Aire.

O. W. Jeffs.—Report on Geological Photographs.

J. W. Davis.—Fossil Fish of the West-Riding Coal-Field.

A. Smith Woodward.—On the Discovery of a Jurassic Fish-Fauna in the Hawkesbury Beds of New South Wales.

A. Smith Woodward.—Communications on behalf of *Professor Anton Fritsch* (of Prague). Restorations of the Palæozoic Elasmobranchs, *Pleuracanthus* and *Xenacanthus*.

J. E. Marr.—Report on the Registration of Type-Specimens.

A. Bell.—Report on the "Manure-Gravels" of Wexford.

J. L. Lobley.—On the Origin of Gold.

R. G. M. Browne.—On the Historic Evidence as to the Change of Sea-level off the South Coast of England.

T. Hart.—Notes on Volcanic Paroxysms.

Papers read in other Sections bearing on Geology and Palæontology:—

Prof. O. C. Marsh.—Cretaceous Mammals of North America.

Prof. J. Milne.—Report of the Committee on the Volcanic and Seismological Phenomena of Japan.

Dr. Tempest Anderson and *Dr. Johnston-Lavis.*—A Visit to the Skapten District of Iceland.

REVIEWS.

I.—Geological Survey of Western Australia. Annual General Report for 1888–1889. By Harry Page Woodward, F.G.S., etc., Government Geologist. 8vo. pp. 60. (Perth, W.A., 1890.)

THE geologist in Western Australia has a fine field for original observations, for there is an area of upwards of a million square miles in which up to the end of 1887 very little had been done in the way of a systematic Geological Survey. Hitherto scarce a dozen geologists have plied their hammers in this vast territory, although some of them have done good and detailed work over limited tracts, and have forwarded collections of fossils to England for description. Many years must yet elapse before even the leading geological features of Western Australia can be marked out; but during the years 1888 and 1889 a great deal has been accomplished by the Government Geologist, Mr. Harry P. Woodward, whose Report is now before us. A Geological Surveyor in Britain would be astounded at the idea of mapping 64,000 and more square miles in one year; but such is the record of work done by this energetic geologist in Western Australia, and it is easy to calculate, in a rough way, the time that might be occupied in completing a geological sketch-map of the entire Colony.

The country has only been "settled" for about 200 miles inland, whereas it is 1450 miles in its greatest length and 850 miles in breadth. Mr. Harry Woodward, however, hopes to have examined