The contributions to bryozoology of J.W. Gregory (1864–1932)

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1. Introduction

John Walter Gregory is known to bryozoologists mainly for the three volumes he wrote of the *Catalogue of Fossil Bryozoa in the Department of Geology, British Museum (Natural History)*, the first concerning the museum's Jurassic collection (Gregory 1896e) and the other two covering the Cretaceous cyclostomes (Gregory 1899, 1909b). These three publications are still useful today because they represent far more than simple lists of specimens and instead contain descriptions and synonymies of numerous species, many new, as well as discussing the taxonomy and classification of Mesozoic cyclostomes. In all, Gregory proposed 91 new species of bryozoans, 13 new genera, and 3 new suborders. However, Gregory's work on bryozoans represents just a tiny fraction of his scientific output, comprising 20 books and over 300 papers (Boswell 1932). He was a true polymath with a prodigious publication record spanning fields as diverse as stratigraphy, structural geology, ore mineralogy and mining, geomorphology and anthropology. In the same year – 1896 – that he published the Jurassic bryozoan catalogue (Gregory 1896e), Gregory's book *The Great Rift Valley* (Gregory 1896h) came out. This book reveals yet another aspect of Gregory: he had a passion for exploration. *The Great Rift Valley* is an account of an expedition he had undertaken to East Africa in 1892–3. The importance of Gregory's work in the Rift Valley was recognized by the subsequent naming in his honour of the Gregory Rift, the eastern branch of the African rift system extending from Ethiopia to Mozambique.

In the light of the fame achieved by Gregory through his other geological research (Leake 2011), it is hardly surprising that his work on bryozoans has been relatively

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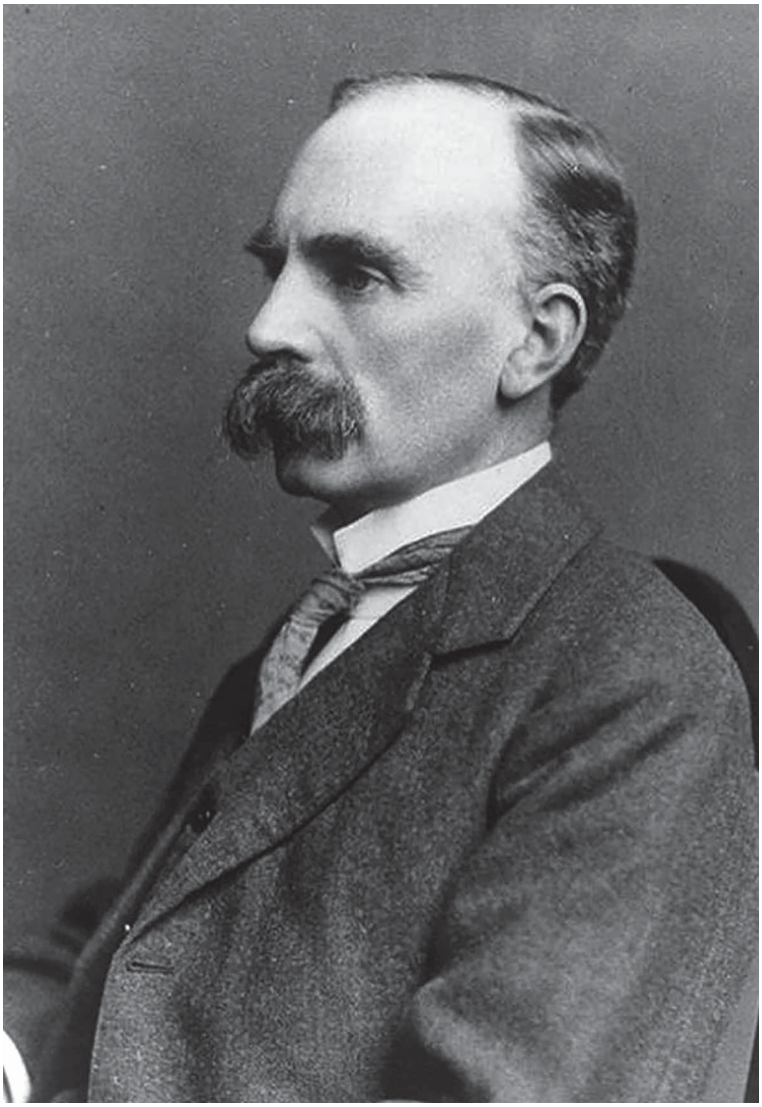

Figure 1. John Walter Gregory, aged about 50, when he was Professor of Geology at the University of Glasgow.

neglected. After a brief summary of Gregory's life and career, my aim here is to discuss his contributions to bryozoology, both in terms of the new taxa he introduced and his taxonomic philosophy.

2. Gregory's life and career

The following short summary of Gregory's life and career is based on information from Boswell (1932) and Leake (2011).

Technically, Gregory was a Cockney, born within the sound of the bells of Bow in the east end of London on 27th January 1864. His father, John James Gregory, was a wool salesman, the head of a solidly middle class, evangelical family. J.W. Gregory, or Jack, as he was known to his family, was educated at Stepney Grammar School before entering the world of business while at the same time studying in the evenings for a degree in science at the Birkbeck Scientific and Literary Institution (now part of the University of London). During family holidays to Essex as a child, he was able to enjoy rambling through the countryside, which led to an interest in geology as a means of understanding the geomorphological features he observed.

In 1887, Gregory was appointed to an assistantship in the Department of Geology, British Museum (Natural History), a post he held until 1900. His palaeontological publications during his employment at the BM(NH) included papers not only on bryozoans but also echinoids and corals, as well as the controversial Precambrian pseudofossil *Eozoon*. He also began his lifelong passion as an explorer, joining expeditions to Spitsbergen, the North American Rockies, the West Indies and East Africa. These resulted in further publications, most notably *The Great Rift Valley* (Gregory 1896h).

Gregory spent a brief period as Director of the Civilian Staff of the Antarctic Expedition of 1900, reputedly resigning on finding out that he was outranked by Captain Robert Falcon Scott, the explorer who tragically lost his life in 1912 during the Terra Nova expedition. Instead of 'Scott of the Antarctic' it could so easily have been 'Gregory of the Antarctic'. Between 1901 and 1904, Gregory held the Chair of Geology at the University of Melbourne in Australia. Despite the rich Cenozoic bryozoans close to hand, his geomorphological interests dominated and he published nothing on the local bryozoans. He served simultaneously as Director of the Geological Survey of Victoria.

After his brief spell in Australia, Gregory accepted the Chair of Geology at the University of Glasgow, a post he was to occupy until his retirement in 1929. He is credited with the massive enlargement of this department, which eventually saw over 400 first-year students studying geology. His varied research continued, and he undertook further expeditions, travelling to North Africa and Tibet, as well as becoming involved in numerous committees and popularizing geology in his writings for newspapers. Retirement did not signal an end to his scientific research, or to his expeditions. Gregory's last expedition was to South America where he drowned following the overturning of the boat carrying him through the rapids of the Pongo de Mainique in the Peruvian Andes.

Gregory's scientific achievements brought him many honours, notably fellowships of the Royal Society (1901) and the Royal Society of Edinburgh (1905), and the award of the Bigsby Medal by the Geological Society of London (1905). Sporting a bushy moustache (Figure 1), Gregory was small in stature but a giant in terms of his compass of interests. While much of his work has stood the test of time, some has not, such as his opposition to continental drift. Furthermore, he was a vociferous supporter of some of the unpalatable and incorrect views about race that were in vogue during the 1920s and 1930s, recommending racial segregation in the mistaken belief that inter-racial marriages produced inferior progeny.

3. Taxonomic contributions

"Probably few groups of British Neozoic fossils have been so much neglected as the British Lower Cainozoic Bryozoa"; with this statement Gregory (1893, p. 219) opened *On the British Palaeogene Bryozoa*, his first paper on bryozoans. In parenthesis, and notwithstanding the papers of Davis (1934) and Cheetham (1966) on specific faunas, this remains the only monographic study of British Palaeogene bryozoans. Gregory's publication introduced 26 new species of Eocene bryozoans, 22 cheilostomes and 4 cyclostomes (Table 1). Four new cheilostome genera were named: *Biselenaria* [nom. nov. for *Diplotaxis* Reuss, 1867], *Meniscopora*, *Schismoporella* and *Teichopora*. The 33 species described came mostly from the collection of the BM(NH) and included some specimens described previously by Busk (1866). With the exception of one species recorded in the Thanet Sands, which as the name suggests is from the Thanetian Stage of the Paleocene, all of the bryozoans are of Eocene age, particularly from the London Clay (Ypresian) and Bracklesham Beds (Lutetian) with a few from the Barton Beds and Headon Beds of Bartonian age. The text is accompanied by four lithographic plates showing groups of zooids on a black background.

Gregory descended the stratigraphical column into the Mesozoic for the rest of his bryozoan publications which focused on Jurassic and Cretaceous bryozoans, particularly cyclostomes. His first Mesozoic foray (Gregory 1894a) was a short catalogue of the Jurassic bryozoans in the York Museum. He listed 10 species of which the most notable – and the only ones to be figured – were the type specimen of *Cellaria smithii* Phillips, 1829 from the Cornbrash of Scarborough, Yorkshire, and a specimen of another species described by Phillips, *Millepora straminea* Phillips, 1829 from the Middle Jurassic of Gristhorpe, south of Scarborough. The second of these species was subsequently made the type species of *Haplooecia* Gregory, 1896c. As for *Cellaria smithii*, Gregory realised that this species did not belong in *Cellaria*, a jointed erect cheilostome, and transferred it to the encrusting cyclostome genus *Stomatopora* Bronn, 1825. However, it is now known to be a cast bioimmuration of a ctenostome initially assigned to *Arachnidium* (Taylor 1978) but since chosen as the type species of *Simplicidium* Todd, Taylor & Favorskaya, 1997.

In his final involvement with cheilostomes, Gregory (1894b) recorded what he believed to be the first examples of this order in the Jurassic. The two specimens he described from the BM(NH) collections had reputedly been found in the Bathonian Calcaire à polypiers of Ranville, Calvados, France, a deposit known to be very rich in bryozoans (Walter 1970). These he named *Membranipora jurassica* Gregory, 1894b and *Onychocella bathonica* Gregory, 1894b. His selection of *jurassica* and *bathonica* as species names proved to be particularly unfortunate when it was conclusively shown by Voigt (1968) that the specimens actually came from the Late Cretaceous (Maastrichtian) of the Cotentin, Manche, France. Gregory's *Onychocella bathonica* is *O. piriformis* Goldfuss, 1826 according to Voigt, while *Membranipora jurassica* was reassigned to the cribrimorph genus *Castanopora* as *C. jurassica* (Gregory, 1894b).

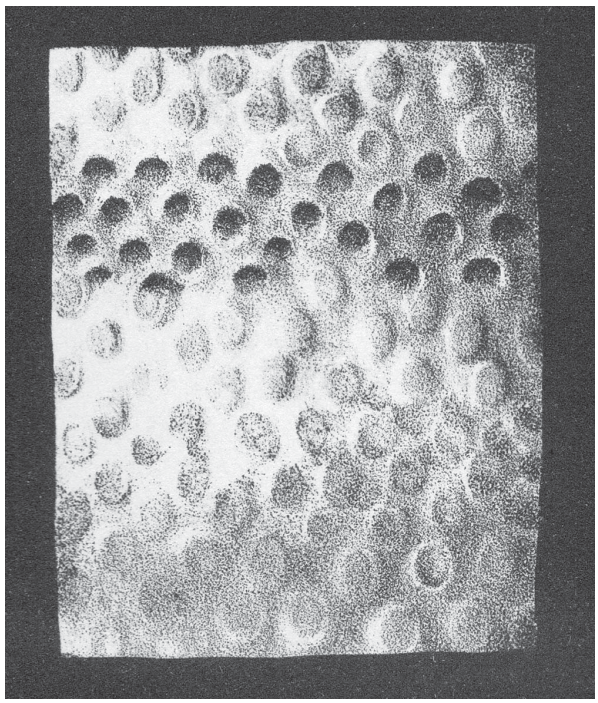

Figure 2. One of the pencil drawings made by Miss G.M. Woodward for Gregory's catalogue of Jurassic bryozoans in the British Museum (Natural History). Showing part of a branch of Terebellaria ramosissima *Lamouroux, this formed pl. 10, fig. 5 in Gregory (1896e). Gregory erroneously believed that the zooids closed by terminal diaphragms were a type of polymorph (dactylethrae) rather than old zooids soon to be covered by the newly budded zooids formed at the edge of the overgrowth close to the top of the figure.*

In 1895, Gregory commenced a series of short papers (Gregory 1895a, b, 1896a, b, c, d) as a prelude to his catalogue of the Jurassic bryozoans in the BM(NH) (Gregory 1896e). One of the main objectives of these publications was to introduce a dozen new species (see Table 1) that were to reappear in the catalogue which he considered would have been an inappropriate channel for the description of new taxa. Two new genera – *Haplooecia* Gregory, 1896c and *Kololophos* Gregory, 1896d – were also first described in these small papers. *Haplooecia* is an objective junior synonym of *Collapora* Quenstedt, 1881, with which it shares *Millepora straminea* Phillips, 1829 as type species (see Illies 1968), while *Kololophos* was based on a misidentified type species, a problem resolved by Martha et al. (2014).

The last of Gregory's short Jurassic papers (Gregory 1896d) introduced the suborder Dactylethrata. The defining character of the suborder is the occurrence of 'dactylethrae', a term used by Gregory to refer to closed zooids, i.e. zooids having terminal diaphragms. To Gregory, Dactylethrata showed dimorphism, with colonies comprising a mixture of autozooids and dactylethrae, the latter sometimes in bands, as in *Terebellaria* Lamouroux, 1821 (Figure 2). Dactylethrata has not been widely adopted; the critique of Walter (1967)

recognised that these 'polymorphs' were heterogeneous, those in *Terebellaria* and *Reticulipora* representing older autozooids with sealed apertures, whereas in other genera they are closed kenozooids.

Although it described only those species represented in the BM(NH) collections, Gregory's Jurassic catalogue (1896e) remained the key reference for anyone seeking to identify bryozoans of this age until 1970 when it was superseded by Bernard Walter's monograph of the Jurassic bryozoans of France (Walter 1970). As a new research student undertaking a doctoral study on Jurassic bryozoans, Gregory's catalogue was my taxonomic introduction but it soon became clear that the BM(NH) specimens he listed under each species name too often consisted of an assortment of several different species, especially for the speciose genus *Berenicea*. Conversely, specimens now considered to belong to the same species were sometimes listed under more than one name, e.g., some specimens of Gregory's own species *Berenicea* [*Hyporosopora*] *sauvagei* Gregory, 1896a were identified as *Berenicea diluviana* Lamouroux, 1821, and others as *Berenicea boloniensis* Sauvage, 1888 (Taylor 1977).

In the preface of his Jurassic catalogue, Gregory explained why he selected bryozoans of this age when cataloguing the BM(NH) collections: he believed that the Jurassic was the best place to seek the ancestors of living bryozoans as the primary lines of divergence were well marked and unobscured by secondary variations that developed subsequently. The Jurassic catalogue was illustrated with line drawings made by Miss G.M. Woodward, the majority in the 11 plates set against black backgrounds. Glass-topped boxes containing the figured specimens accompanied by Miss Woodward's drawings were once displayed in the public galleries of the BM(NH).

Gregory (1896e) introduced two new suborders – Cancellata and Tubulata – in the Jurassic catalogue. Cancellata, although not represented in the Jurassic, were included in the discussion of cyclostome classification. This suborder, which includes the well-known genus *Hornera* Lamouroux, 1821 (see Smith et al. 2008), was distinguished by the presence of cancelli. Unlike most cyclostome suborders, Cancellata has been shown to be monophyletic using molecular evidence (Waeschenbach et al. 2009), although only a small proportion of species have been sequenced and its status may yet be challenged. Gregory also proposed the suborder Tubulata (Gregory 1896e, pp. 39, 41), but this is essentially the same as Tubuliporina Milne Edwards, 1838.

It is worth remarking that Gregory (1896d, e) classified some Jurassic cyclostomes, notably species of *Ceriopora* and *Heteropora*, within the Order Trepostomata, on account of their long, prismatic or cylindrical zooids with apertures crowded on the colony surface and walls that were thin in the axial endozone but thick in the surrounding exozone. The notion that such post-Palaeozoic cyclostomes with free-walled skeletal organizations are directly descended from the free-walled Palaeozoic orders (Palaeostomata), including Trepostomata, has persisted long after the work of Gregory (e.g., Boardman 1984).

The two Cretaceous cyclostome volumes of the BM(NH) catalogue were published in 1899 and 1909 (Gregory 1899, 1909b); Gregory's direct successor at the BM(NH), W.D. Lang, followed these with two volumes covering the Cretaceous cribrimorph cheilostomes

(Lang 1921, 1922). The first cyclostome volume (Gregory 1899), published during Gregory's last year of employment at the BM(NH), described species he assigned to the suborders Tubulata (=Tubuliporina), Cancellata and Dactylethrata. Twenty-five new species were proposed in this volume (Table 1), as well as 4 new genera: *Reticrisina*, *Pergensella*, *Hammia* [nom. nov. for *Stigmatopora* Hamm, 1881] and *Reptoceritites*. *Hammia* was regarded by Voigt (1978) as a synonym of *Pustulopora* Blainville, 1834, while *Reptoceritites* is considered to be a junior synonym of *Reptomultelea* d'Orbigny, 1853 (Taylor 1994). One new species – *Sparsicavea marssoni* – was proposed in the catalogue (Gregory 1899a, p. 397) as a 'nov. nom.'. The figures were again prepared by Miss G.M. Woodward, but in this case assisted by Miss Drake who was responsible for all of the illustrations in the second part of the catalogue (Figure 3).

Gregory's three final contributions to bryozoology appeared after his return from Australia. His short paper of 1907 described, without illustration, a new cyclostome species – *Bicavea rotaformis* (see Taylor 2002) – which was abundant at the base of the *Holaster planus* Zone in the Turonian Chalk of the Isle of Wight. The diagnosis, along with figures, had apparently been written seven years previously for the second volume of the Cretaceous catalogue but Gregory wanted to hasten its publication because the species was to be cited in a forthcoming memoir on the Chalk of the Isle of Wight (Rowe 1908). As with his Jurassic catalogue, Gregory published a short paper (Gregory 1909a) specifically to introduce the 25 new species that would be described more fully and illustrated in Volume 2 of the Cretaceous catalogue (Gregory 1899b). The only new taxon first described in the catalogue itself is the genus *Tholopora* to which Gregory assigned seven species, many of which he had previously placed in *Radiopora* d'Orbigny, 1849.

Volume 2 of the Cretaceous catalogue (Gregory 1909b) contained an extensive introduction. This includes a long review of previous classifications of cyclostomes, culminating in Gregory's own classification which is paraphrased in Table 2. He seems inadvertently to have introduced the family Terebellaridae in this classification, the name appearing only once in Gregory's works (Gregory 1909b, p. xli), without comment or indication of its novelty. Terebellaridae, which was included in his suborder Dactylethrata, has not been adopted by subsequent authors. By 1909, Gregory's confidence in Dactylethrata had diminished: "The Dactylethrata prove to be a less coherent group than I expected in 1896; but the isolation of the families is probably due to their specialized structure, for the presence of the supporting elements led to the development of large zoaria, which diverged at once along very different lines." (Gregory 1909b, p. xi).

4. Approach to bryozoan taxonomy

Having studied fossil cheilostomes for his paper on Palaeogene bryozoans (Gregory 1893), Gregory was cognisant with the greater taxonomic difficulties presented by cyclostomes. He remarked on the fewer morphological characters available in cyclostomes, making it "..at first sight almost impossible to diagnose species while even the genera appear to vary to a hopeless extent" (Gregory 1895a, p. 223). On the same page he

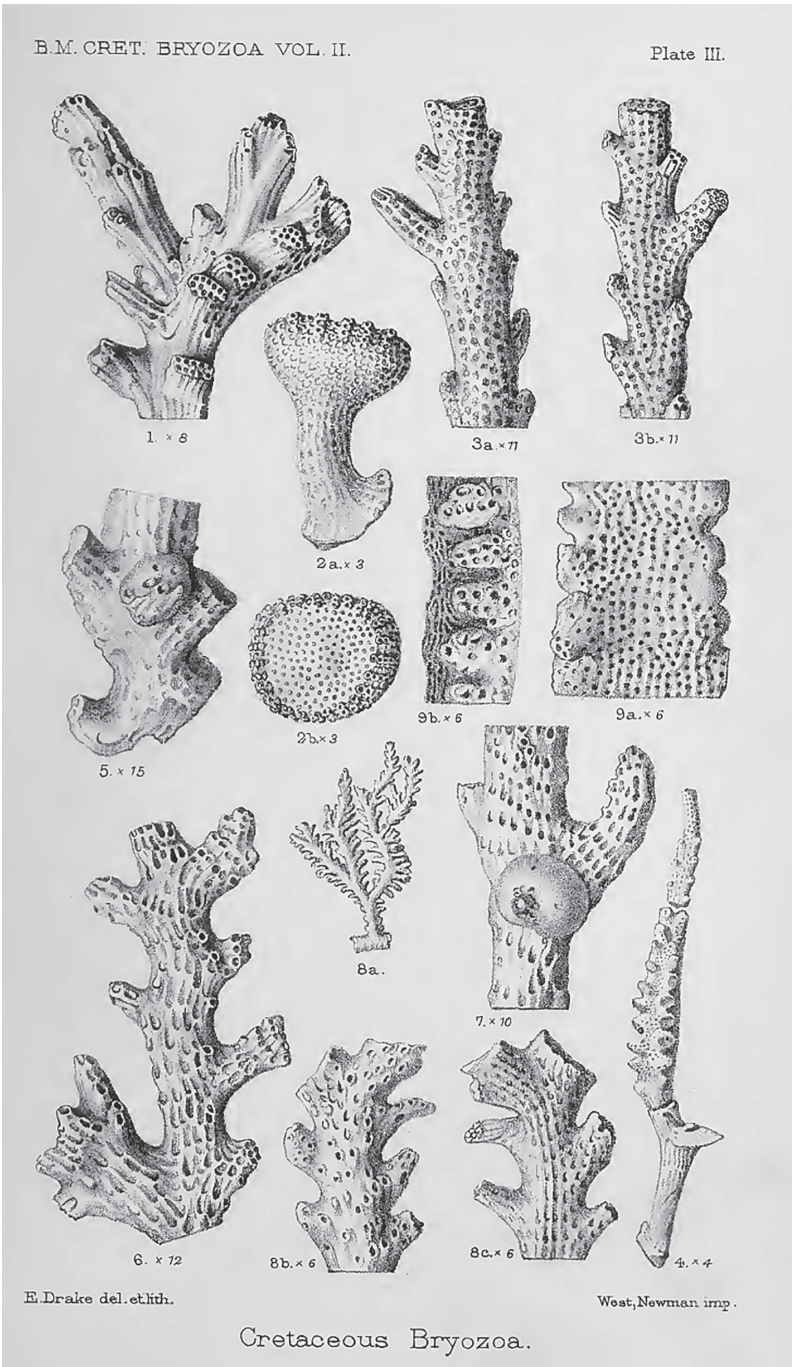

Figure 3. Example of one of the plates from the second volume of Gregory's catalogue of Cretaceous bryozoans in the British Museum (Natural History) (Gregory 1909b). The specimens, mostly of the genus Homoeosolen, *were drawn by Miss Drake.*

contrasted two extreme approaches – founding species on "insignificant and individual variations", or lumping together forms from different geological horizons – advocating a middle ground, albeit one that he acknowledged was difficult to achieve. As early as 1893, Gregory had been especially critical of taxonomic lumping which resulted in some cheilostome species having ranges of almost 100 million years, from the Late Cretaceous to the present day. He wrote: "so far, I have seen no Cretaceous species of Cheilostomata identical with a living one" (Gregory 1893, p. 265).

With regard to cyclostomes, to assist in diagnosing species of *Stomatopora*, and later applied to *Proboscina* and *Berenicea*, Gregory (1895a) devised a 'formula' in which states from 0 to 3 were allocated to each of four characters: peristome (*p*), shape of the zooecia (*c*), length of the zooecia (*l*) and arrangement of the zoarium (*r*). For example, a species with a flush peristome would be scored 0, whereas one with a highly raised peristome would be scored 3, while a score of 1 for zooecial shape would indicate fusiform, and 2 pyriform.

The semiquantitative formula first used by Gregory (1895a) for distinguishing Jurassic species of *Stomatopora* had been abandoned by the time he described their Cretaceous congeners (Gregory 1899, 1909b). He replaced it by measurements of key features such as zooecial length and width, and apertural diameter.

Gregory regarded cyclostome genera as convenient, not completely artificial but unlike the genera of echinoids or mammals (Gregory 1896e). He referred to them as 'circuli' by analogy with a circulus, which is small cluster of individuals congregating around a speaker in the Roman forum: "Most of the individuals in the forum were definitely attached to a particular group; the groups were less·crowded around their margins, and between them people were irregularly scattered and crossed from circulus to circulus" (Gregory 1896e, p. 22). The troublesome transitions between apparently different genera in a single specimen were well illustrated by a drawing (Gregory 1896e, fig. 6) of a colony from the Bathonian of Calvados in which a tubular base – *Diastopora* in Gregory's understanding – gives rise to several vincularian branches with the aspect of *Entalophora* (Figure 4).

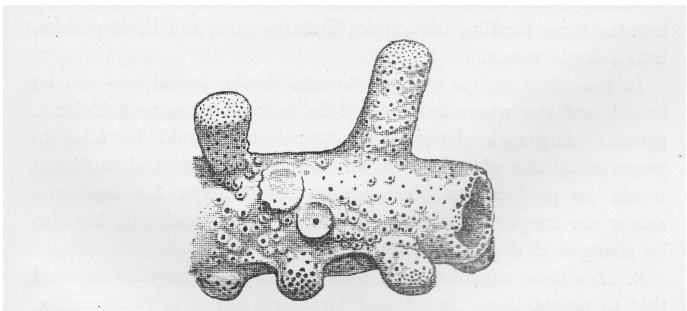

Fig. 6.—A *Diastopora* giving off shoots in the condition of *Entalophora*. Bathonian: Ranville. D. 2221.

Figure 4. Jurassic bryozoan colony showing the apparent transition between two distinct genera, which Gregory (1896e) referred to as Diastopora *and* Entalophora. *In reality, this is a colony of* Collapora *with a cavariiform base, that probably grew around a perished cylindrical substrate, producing multiple erect branches.*

Gregory paid attention to gonozooid morphology but failed to understand the utility of these polymorphs in cyclostome taxonomy, particularly for difficult genera like '*Berenicea*'. To complicate matters, he gave two different names to gonozooids: 'gonoecia' formed by the modification of single zooids, and 'gonocysts' produced as expansions within the colony, not single zooids (Gregory 1896e, p. 12). Judging by his figures, gonoecia are simple gonozooids, whereas gonocysts are more complex gonozooids that envelop neighbouring autozooids (compare Gregory 1899, figs 2 and 3). In his final publication, Gregory (1909b) defended his separation of gonoecia from gonocysts in the face of the criticism meted out by Harmer (1896). However, it is very clear from the gonozooids figured in the Jurassic catalogue (Gregory 1896e) that Gregory had a muddled idea of the distinction between the two types.

5. Conclusions

In the period between 1893 and 1909, J.W. Gregory contributed significantly to the taxonomy of Jurassic–Eocene bryozoans, publishing three books and 11 papers. Even though Gregory was an enthusiastic field geologist, it seems that he collected few, if any, of the bryozoans he described. Instead, these overwhelmingly comprised material that had been acquired by the BM(NH) through donations, purchases and bequests.

Gregory was influenced in his bryozoan research by Thomas Hincks, who is acknowledged in the preface of his Jurassic catalogue (Gregory 1896e), and more particularly by Randolph Kirkpatrick, his colleague based in the Department of Zoology at the BM(NH). Kirkpatrick worked mainly as a sponge biologist, becoming an established expert in this field, before achieving unwanted notoriety with his 'Nummulosphere' theory which claimed that all crustal rocks, as well as meteorites, were formed primarily of nummulite foraminifera. On the other hand, there is more than a hint of animosity in Gregory's publications towards his contemporary A.W. Waters. Gregory (1909b, p. xx), for instance, was dismissive of Waters' criticism of his inconsistent use of the term cancelli.

According to Leake (2011), Gregory left the British Museum (Natural History) because he could see little prospect of promotion. This could well have been the case but two other factors may have played their roles. It would be fair to characterize Gregory as an expansive, 'broad brush' scientist rather than one who delights in handling tiny details of the kind that mark out the most successful taxonomists. Thus, his job at the BM(NH) as a taxonomist and curator may not have been well suited to his scientific temperament. Furthermore, it is unlikely that the BM(NH) would have given him the complete freedom to partake in regular expeditions to the farthest corners of the globe, especially as he rose through the ranks and shouldered more managerial burdens. Gregory's achievements as an explorer and geologist were sufficient to warrant an impressive memorial plaque in Church of St Michael at Woodham Walter (Figure 5), near Maldon in Essex where his wife and parents were buried (Leake 2011).

Figure 5. Plaque in the Church of St Michael at Woodham Walter, Essex, commemorating the achievements of John Walter Gregory in exploration and geology.

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Table 1. List of all new bryozoan species proposed by J.W. Gregory.

Taxon	Period	Stratigraphy (locality)
Membranipora buski Gregory, 1893	Eocene	Headon Beds (Isle of Wight) and London Clay (Highgate)
Membranipora crassomuralis Gregory, 1893	Eocene	Barton Beds (Barton) and Bracklesham Beds (Bracklesham)
Membranipora tenuimuralis Gregory, 1893	Eocene	London Clay (Highgate etc)
Membranipora virguliformis Gregory, 1893	Eocene	London Clay (Highgate)
Membranipora disjuncta Gregory, 1893	Eocene	London Clay (Highgate)
Lunulites transiens Gregory, 1893	Eocene	Barton Beds (Barton) and Bracklesham Beds (Bracklesham etc.)
Biselenaria offa Gregory, 1893	Eocene	Barton Beds (Barton)
Cribrilina vinei Gregory, 1893	Eocene	London Clay (Sheppey)
Micropora cribriformis Gregory, 1893	Eocene	Barton Beds (Barton)
Onychocella magnoaperta Gregory, 1893	Eocene	Brockenhurst Beds (Brockenhurst)
Schizoporella magnoaperta Gregory, 1893	Eocene	Barton Beds (Barton)
Schizoporella magnoincisa Gregory, 1893	Eocene	London Clay (Copenhagen Fields)
Adeonellopsis wetherelli Gregory, 1893	Eocene	London Clay (Fareham etc.)
Adeonellopsis incisa Gregory, 1893	Eocene	London Clay (Haverstock Hill)
Lepralia lonsdalei Gregory, 1893	Eocene	Bracklesham Beds (Bracklesham)
Umbonula bartonense Gregory, 1893	Eocene	Barton Beds (Barton)
Umbonula calcariformis Gregory, 1893	Eocene	London Clay (Fareham)
Teichopora clavata Gregory, 1893	Eocene	Barton Beds (Barton)
Meniscopora bigibberra Gregory, 1893	Eocene	Bracklesham Beds (Huntingbridge)
Conescharellina clithridiata Gregory, 1893	Eocene	London Clay (Highgate etc)
Mucronella angustooecium Gregory, 1893	Eocene	Barton Beds (Barton) and London Clay (Fareham)
Smittia tubularis Gregory, 1893	Eocene	London Clay (White Conduit House)
Idmonea bialternata Gregory, 1893	Eocene	London Clay (Islington)
Hornera farehamensis Gregory, 1893	Eocene	London Clay (Fareham)
Entalophora tergemina Gregory, 1893	Eocene	London Clay (Sheppey)
Heteropora glandiformis Gregory, 1893	Eocene	Barton Beds (Barton) and Bracklesham Beds (Bracklesham)
Membranipora jurassica Gregory, 1894	Cretaceous*	
Onychocella bathonica Gregory, 1894	Cretaceous*	
Proboscina cunningtoni Gregory, 1895b	Jurassic	Fuller's Earth (Bruton) and Cornbrash (Corsham)
Berenicea sauvagei Gregory, 1896a	Jurassic	Bradford Clay (Bradford)
Berenicea portlandica Gregory, 1896a	Jurassic	Portland Oolite (Tisbury)

*erroneously described as Jurassic species

Berenicea parvitubulata Gregory, 1896a	Jurassic	Cornbrash (Rushden), Bradford Clay (Bradford) and Great Oolite (Richmond Boring)
Berenicea coartata Gregory, 1896a	Jurassic	Inferior Oolite (Cotswolds), Great Oolite (Richmond Boring and Bath)
Haplooecia irregularis Gregory, 1896c	Jurassic	Great Oolite (Ancliff), Lincolnshire Limestone (Stamford) and Bathonian (Normandy)
Ceriocava laxata Gregory, 1896c	Jurassic	Inferior Oolite (Leckhampton)
Multiclausa haimei Gregory, 1896d	Jurassic	Great Oolite—Cornbrash, Bajocian (Germany) and Bathonian (France and Austria)
Multiclausa jellyae Gregory, 1896d	Jurassic	Inferior Oolite—Cornbrash and Bathonian (France)
Heteropora laminata Gregory, 1896d	Jurassic	Inferior Oolite (Dorset) and Bradford Clay (Wiltshire)
Heteropora oviformis Gregory, 1896d	Jurassic	Bradford Clay (Bradford)
Theonoa michelini Gregory, 1896e	Jurassic	Bathonian (Langrune)
Stomatopora spicea Gregory, 1899	Cretaceous	Middle Chalk (Chatham)
Berenicea acanthina Gregory, 1899	Cretaceous	Middle Chalk (Chatham)
Berenicea canui Gregory, 1899	Cretaceous	Middle Chalk (Chatham) and Cenomanian (Saxony)
Berenicea spissa Gregory, 1899	Cretaceous	Lower Greensand (Faringdon)
Reptomultisparsa rowei Gregory, 1899	Cretaceous	Upper Chalk (Offham), Middle Chalk, (Chatham), Santonian (Saintes) and Coniacian (Tours and Varennes)
Idmonea alipes Gregory, 1899	Cretaceous	Middle Chalk (Chatham)
Crisina (Tervia) gibbera Gregory, 1899	Cretaceous	Maastrichtian (Bemelen)
Crisina (Tervia) gamblei Gregory, 1899	Cretaceous	Middle Chalk (Chatham)
Entalophora pergensi Gregory, 1899	Cretaceous	Upper Chalk (Bromley), Middle Chalk (Chatham) and 'Chalk Detritus' (Charing)
Entalophora gamblei Gregory, 1899	Cretaceous	Middle Chalk (Chatham)
Clinopora spinigera Gregory, 1899	Cretaceous	'Chalk Detritus' (Charing)
Nodelea cunningtoni Gregory, 1899	Cretaceous	Lower Greensand (Faringdon)
Nodelea durobrivensis Gregory, 1899	Cretaceous	Upper Chalk (Bromley, Gravesend and Clarendon), Middle Chalk (Chatham) and Chalk (Dover)
Reptomultelea sarissata Gregory, 1899	Cretaceous	Upper Chalk (Beachy Head)
Meliceritites lonsdalei Gregory, 1899	Cretaceous	Upper Chalk (Croydon, Salisbury, Gravesend, Britford and East Harnham), Middle Chalk (Chatham), Chalk (Dover,

		Wiltshire, Sussex) and Maastrichtian (Maastricht)
Meliceritites fistulata Gregory, 1899	Cretaceous	Middle Chalk (Chatham)
Meliceritites parviarmata Gregory, 1899	Cretaceous	Middle Chalk (Chatham)
Inversaria orbicularia Gregory, 1899	Cretaceous	Upper Greensand (Warminster)
Inversaria laminata Gregory, 1899	Cretaceous	Chalk (Ludsdown and Dover)
Petalopora cunningtoni Gregory, 1899	Cretaceous	Lower Greensand (Faringdon and ?Folkestone)
Sparsicavea wrighti Gregory, 1899	Cretaceous	Upper Chalk (Bromley and Slieve Gallion)
Sparsicavea cicatrix Gregory, 1899	Cretaceous	Coniacian (Les Roches) and Turonian (Villardin and Montoire)
Atagma lonsdalei Gregory, 1899	Cretaceous	Lower Chalk (Sussex)
Cryptoglena gamblei Gregory, 1899	Cretaceous	Middle Chalk (Chatham)
Reptomulticlausa orbignyi Gregory, 1899	Cretaceous	Cenomanian (Le Mans, Saint Jean-la-Foret, Honfleur, Villers and Coulange)
Bicavea rotaformis Gregory, 1907	Cretaceous	*Holaster planus* Zone, Chalk (Isle of Wight)
Multitubigera sulcata Gregory, 1909a	Cretaceous	Maastrichtian (Maastricht)
Discofascigera vinei Gregory, 1909a	Cretaceous	Cambridge Greensand (Cambridge)
Fasciculipora spicata Gregory, 1909a	Cretaceous	Chalk (SE England) and Campanian (Ciply)
Homoeosolen gamblei Gregory, 1909a	Cretaceous	Upper Chalk (Gravesand and Bromley), Middle Chalk (Chatham) and Chalk (Charing, Salisbury, Guildford, Arreton Down)
Homoeosolen virgulosa Gregory, 1909a	Cretaceous	Chalk (Chatham)
Discocytis profunda Gregory, 1909a	Cretaceous	Chalk (Charing)
Desmepora blackmorei Gregory, 1909a	Cretaceous	Upper Chalk (East Harnham)
Desmepora pinnigera Gregory, 1909a	Cretaceous	Upper Chalk (Beachy Head, Dover and Burham), Middle Chalk (Chatham and Rochester) and Lower Chalk (Dover)
Desmepora reussi Gregory, 1909a	Cretaceous	Unter Pläner (Plauen)
Reptomulticava canui Gregory, 1909a	Cretaceous	Neocomian (St Dizier and Vassy)
Reptomulticava fungiformis Gregory, 1909a	Cretaceous	Lower Greensand (Faringdon and Upware)
Defranciopora libiformis Gregory, 1909a	Cretaceous	Maastrichtian (Maastricht)
Ceriopora farringdonensis Gregory, 1909a	Cretaceous	Lower Greensand (Faringdon)
Heteropora keepingi Gregory, 1909a	Cretaceous	Lower Greensand (Brickhill, ?Upware, Coxwell, Faringdon and ?Isle of Wight). Albian (Grandpré)
Heteropora subaequiporosa Gregory, 1909a	Cretaceous	Upper Greensand (Warminster)

Zonatula brydonei Gregory, 1909a	Cretaceous	Lower Greensand (Faringdon)
Discocavea reussi Gregory, 1909a	Cretaceous	Cenomanaian (Gamighügel and Kahlebusch)
Discocavea longiradiata Gregory, 1909a	Cretaceous	Lower Chalk (Lewes)
Bimulticavea simonowitschi Gregory, 1909a	Cretaceous	Grünsand (Essen)
Trochiliopora humei Gregory, 1909a	Cretaceous	Upper Chalk (Gravesend)
Domopora colligata Gregory, 1909a	Cretaceous	Lower Greensand (Faringdon)
Domopora vinei Gregory, 1909a	Cretaceous	Cambridge Greensand (Cambridge)
Domopora virgulosa Gregory, 1909a	Cretaceous	Upper Greensand (Warminster, Charmouth), Cenomanian (Essen) and Lower Quader (Plauen)
Domopora novaki Gregory, 1909a	Cretaceous	Cenomanian, Korycaner Schichten (Kamajk, Zbislav, Kolin, Kank and Jine)
Domopora cantiana Gregory, 1909a	Cretaceous	Upper Chalk (Bromley) and Middle Chalk (Chatham)

Table 2. The classification advocated by Gregory (1909b) for cyclostome bryozoans. The family Terebellaridae was apparently used by Gregory only in this classification. Note that Gregory regarded Cerioporidae, Heteroporidae and Radioporidae as belonging to the trepostomes.

Suborder Tubulata – zooecia simple and tubular; monomorphic	Section A – apertures scattered or in lines	Family Crisiidae Family Diastoporidae Family Idmoniidae Family Entalophoridae Family Eleidae
	Section B – apertures in crowded bands	Family Theonoidae
	Section C – apertures in groups at the ends of fasciculi	Family Fascigeridae Family Osculiporidae
Suborder Cancellata – zooecia with cancelli		Family Petaloporidae Family Horneridae Family Desmeporidae
Suborder Dactylethrata – zoarium provided with dactylethrae		Family Reticuliporidae Family Terebellaridae Family Clausidae