Reginald Marr Brydone (1873–1943) and his scientific animosity with William Dickson Lang (1878–1966)

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1. Introduction

With so few practitioners and so much to study, bryozoology is seldom a contentious branch of science. But in the early years of the 20th century an animosity developed between two palaeobryozoologists – R. M. Brydone and W. D. Lang – who were both studying cheilostome bryozoans from the Late Cretaceous Chalk of England. The dispute between Brydone and Lang must be viewed in the context of differences in their backgrounds, as well as contrasting approaches to the description and illustration of fossil bryozoans. A peak of acrimony was reached in the privately published monograph of Brydone (1929), which was highly critical of Lang's research, referring to him in derogatory terms as a "salaried public servant" (ibid, p. 9).

Whereas the life and works of Lang are reasonably well known, those of Brydone have been scarcely documented. The objectives of this paper are to provide a first biography of Brydone, based on the scant source material that is available, and to discuss the history and likely reasons for his conflict with Lang. On a more general level, the discord between these two bryozoologists epitomises the resentments and tensions that sometimes develop between non-vocational ('amateur') palaeontologists who undertake their work as an unpaid hobby, and vocational ('professional') palaeontologists paid to study fossils.

2. W. D. Lang

As a Fellow of the Royal Society, William Dickson Lang was accorded a posthumous memoir containing a comprehensive account of his life and work (White 1966). In addition, Taylor (2002) and Sendino (2014) have also summarized his ideas about orthogenesis (see below) and the conservation of his material, respectively. Therefore, only a brief biography is given here.

Lang was born in 1878 in the Punjab, India, where his father was an engineer. A year after William's birth, the worsening health of his father forced the family to return to Britain where they made their home in Harrow, NW London. One year later, Lang's father died. Lang's secondary education was received at the famous Harrow School from where he was admitted to Pembroke College, Cambridge University in 1898, reading the Natural Sciences Tripos with Zoology and gaining a Second Class degree in 1902 and an M.A. in 1903. On the first day of October 1902 he entered the employment of the British Museum (Natural History) in South Kensington, London, where he was to spend the rest of his working life. He became Deputy Keeper of Geology in 1927 and Keeper the following year, retiring in 1938 and moving from London to a home he had built for his family in Charmouth, Dorset, apparently never to reappear at the BM(NH). Lang died in Dorset on March 3rd 1966, aged 89. He was survived by his wife Georgiana Catherine Dixon, who he had married in 1908, and their son Geoffrey and daughter Brenda.

Lang developed an interest in the geology and fossils of Dorset as early as 1898 when he was still a Cambridge student. Indeed, outside bryozoology he is best known for his publications on the stratigraphy of the Lias (Early Jurassic) rocks around Lyme Regis. At the BM(NH) he was put in charge of fossil protozoans, sponges, corals, bryozoans and miscellaneous smaller groups. The huge number of bryozoan specimens personally registered into the BM(NH) collections by Lang testify to his hard work and energy as a curator. Despite producing a few publications on Jurassic cyclostomes, his main research focus was on Cretaceous bryozoans, particularly cribrimorph cheilostomes, culminating in a two-part monograph in the guise of a catalogue of cribrimorphs in the BM(NH) collections (Lang 1921, 1922).

Lang was a leading advocate of the theory of orthogenesis, the notion that evolution occurred along predetermined pathways initiated at the start of a lineage, which at least in their later stages were non-adaptive and eventually led to the extinction of the lineage. In the case of cribrimorphs, Lang identified multiple lineages he considered to have

independently undergone increasing calcification of the frontal shield through the Late Cretaceous, culminating in extinction through self-entombment of their zooids (Taylor 2002). Lang supposed that over-calcification occurred after the removal of inhibitions that had prevented it from happening in the early representatives of the lineages. Lang's application of orthogenesis to cribrimorphs represented one of the most complete for any group of fossils (Bowler 1983). However, the tide had turned against the once popular theory of orthogenesis by the time of Lang's work and his ideas were severely criticised by other palaeontologists, Brydone included (see below).

3. R. M. Brydone

Very little has been written about the life of Brydone. The biography below was put together mostly from his obituaries (Ellis 1944; Lang 1944), information provided by his school (Suzanne Foster, pers comm., 6 September 2016), his Oxford college (Jennifer Thorp, pers comm., 9 February 2016), a file of the correspondence he and his widow had with the Sedgwick Museum, and miscellaneous directories. We know of no portrait of Brydone as an adult but he can be seen as a youth in a couple of photographs of Winchester College scholars, one of which is reproduced here (Figure 1).

Reginald Marr Brydone was born on 27th July 1873 in Petworth, a small town in West Sussex, England. His mother was Amy Elizabeth Turner. His father Henry Gray Brydone was one of the four children of James Marr Brydone (1779–1866), a Scottish surgeon with the Royal Navy who was famous for being the first person to sight the Franco-Spanish fleet

Figure 1. Winchester College Scholars photographed in 1889. Brydone, who would have been 15 or 16 years old at the time, is indicated by the white rectangle. Photograph courtesy of the Warden and Scholars of Winchester College.

at the Battle of Trafalgar in 1805. After serving as a Surgeon Superintendent on an Australia-bound convict ship, J. M. Brydone worked for George Wyndham, the son of the 3rd Earl of Egremont of Petworth House, and the Brydone family established its roots in Petworth, Sussex. Reginald's father, H. G. Brydone, became a lawyer. In 1867, he was listed in Kelly's Post Office Directory as solicitor and steward of the honor and manor of Petworth, as well as steward to Lord Leconfield. On his death in 1901 the estate of H. G. Brydone was left to Reginald. This amounted to the not inconsiderable sum of £12,002 1s, which is equivalent to over £1,330,000 in today's money.

In September 1886, R. M. Brydone became a pupil at Winchester College, a prestigious public school in Hampshire established in 1382, initially as a fee paying 'Commoner' but from September 1887 as a scholar, which allowed him the privilege of living in one of the original buildings of the College. Information kindly provided by the Winchester College archivist shows that Brydone was a keen sportsman, playing 'Winchester Fives' (a rare variety of handball), cricket and football, the latter continuing after he had left Winchester when he played for the Old Wykehamist XI. He was also a rower and a gymnast. While at Winchester College he developed an interest in geology through Charles Griffith, an Assistant Master at Winchester between 1859 and 1902. Ellis (1944) recorded that the young Brydone undertook geological fieldwork with Griffith, and the 25th November 1942 edition of the Winchester College journal *The Wykehamist* stated (p. 377): "Together they tramped the greater part of the countryside of Hampshire and the neighbouring counties, searching for specimens". These collecting trips were evidently not in vain as Brydone was awarded a prize for the best collection of fossils at a meeting of the Natural History Society of the College on 25th July 1891. He had previously won a prize for science in 1889 and was subsequently awarded a 'leaving exhibition' on departing the College.

Brydone was admitted to New College, Oxford University in 1892, matriculating with a First in Classics Moderations in 1894. The following year he was elected to a Burdett-Coutts Scholarship, a university award for the study of geology with an annual value at the time of £115. In 1896 he graduated from Oxford with a First in Natural Sciences (Geology). Despite his success in geology, Brydone's subsequent career was as a solicitor, following in the footsteps of his father. Little is known about this side of Brydone's life, although a register of former pupils at Winchester College (Wainewright 1907, p. 457) states that he achieved 1st Class Honours as a solicitor in 1900, was awarded the New Inn Prize and the Mellersh Prize, and at that time was practising his profession at 16 South Audley Street, which is in the exclusive Mayfair district of London. This is consistent with evidence from a census, telephone directories and correspondence showing that Brydone lived in London during the early years of the 20th century: in 1904 he was renting rooms at 152 Cambridge Street, Hanover Square; by 1911 he had moved to Twyford Mansions, Marylebone; and in 1927 to Maybury Mansions, Paddington. The obituary of Brydone in the 20th October 1943 edition of *The Wykemist* (p. 438) notes in addition that he served for many years as Secretary to the Trustees of the Stock Exchange in London.

Brydone acquired a house in Mundesley, Norfolk, to which he retired in 1918 after the onset of periostitis of the femur, a debilitating illness that he was to endure for the rest of

his life. Despite his illness, Brydone wrote a letter dated 4th August 1939 to A. G. Brighton of the Sedgwick Museum, Cambridge reporting that he was able to revisit some localities after about 1923 when he "became able to ride a bicycle after a fashion".

After spending the first sixty years of his life as a bachelor, he married Edith Eleanor Lawford in 1933 (*Cryptostoma eleanorae* Brydone, 1936 was dedicated to his wife). Brydone died ten years later, on 6th August 1943, aged 70, following a few weeks of illness. In his will he left effects to the value of £12,997 15s 5d (equivalent to about £550,000 in today's money) to his widow who remained at Ivy Farm House, Mundesley, with her daughter after Reginald's death.

4. Brydone's publications

Brydone published his first paper privately in 1900. This described the geology and fossils of the Chalk at Trimingham in Norfolk, based on visits he had made there between 1896 and 1900. The style of writing is mature and authoritative, and the young Brydone does not hold back in contesting the work of Clement Reid (1853–1916), a distinguished geologist with the Geological Survey. Thirty-six species of bryozoans are included in a faunal list, many of which were originally described from Rügen in Germany. Brydone (1900, p. 13) noted: "The Polyzoa are so significant that I thought it well to indicate the reported occurrences of the more peculiar forms." The seeds of his future interest and his prolific output as a bryozoan taxonomist can perhaps be found in this statement.

Between 1906 and 1942, Brydone published a further 55 papers: 21 of these concerned the Chalk and its stratigraphy (Brydone 1906a, b, c, d, e, 1908, 1913e, 1914d, e, f, g, 1915, 1917d, 1918c, 1920, 1930a, b, 1931, 1932a, b, c), and one focused on bryozoan nomenclature (Brydone 1941). However, the majority of Brydone's publications comprised descriptions of 'new or imperfectly known' Chalk bryozoans, 30 published in the *Geological Magazine* (1909a, b, 1910a, b, c, d, e, f, 1911, 1912a, b, c, d, 1913a, b, c, d, 1914a, b, c, 1916a, b, c, d, 1917a, b, c, 1918a, b, 1942) and three published privately (Brydone 1929, 1930b, 1936).

Brydone's first taxonomic descriptions of bryozoans appeared in a paper published in 1906 (Brydone 1906e). He introduced 13 new species from the Chalk of Trimingham, Norfolk and elsewhere, one of which – *Membranipora griffithi* – was dedicated to his friend from Winchester, Charles Griffith, who had introduced him to geology. The accompanying figures are tiny and somewhat crude drawings showing small groups of zooids (Figure 2). These figures had apparently been shown to Lang before publication of the paper (see below). To his credit, Brydone paid attention to ovicells and avicularia whenever they were present. On the other hand, the localities of his new species are not always stated, nor are all of the new taxa compared with existing species. This paper sets out the principles Brydone applied to bryozoan taxonomy. In particular, he considered that: "... the rigid application to Cretaceous forms of canons of classification derived from the study of Tertiary and recent forms is very undesirable." (Brydone 1906e, p. 290). He also doubted the wisdom of the then common practise of assigning Cretaceous bryozoans

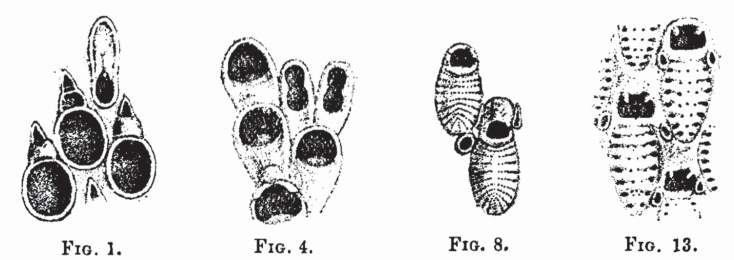


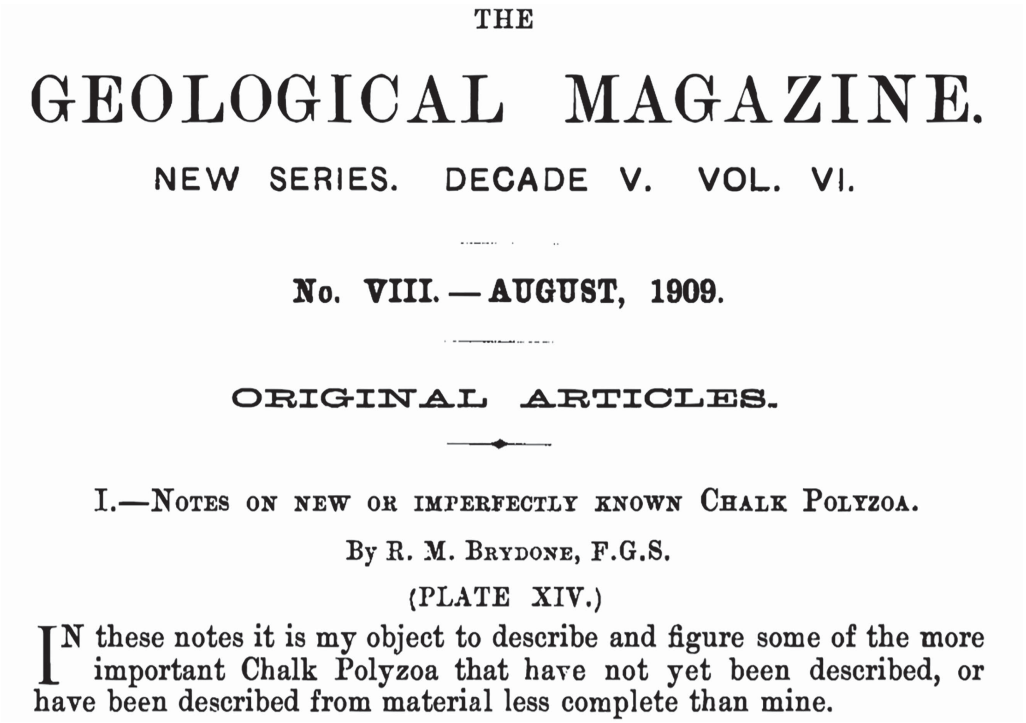
Figure 2. Reproductions of some of the tiny drawings from Brydone's first paper to describe bryozoans (Brydone 1906e). It was these drawings, or their forerunners, that Lang referred to as 'diagrams', much to the displeasure of Brydone. The species illustrated are new, all from the Cretaceous Chalk of Trimingham, Norfolk. They are: Membranipora griffithi *(fig. 1), named for his friend and former master at Winchester College Charles Griffith who introduced him to geology;* Semieschara mundesleiensis *(fig. 4), showing four autozooids, an ovicell (bottom left) and two avicularia (top right);* Cribrilina dibleyi *(fig. 8), a cribrimorph subsequently assigned to* Castanopora *by Lang (1916a); and* Cribrilina gregoryi *(fig. 13), a cribrimorph placed by Lang (1916a) in* Pelmatopora.

to modern species, and on the taxonomic significance of colony-form.

In 1909 the first of the series *Notes on new or imperfectly known Chalk Polyzoa* was published in the *Geological Magazine* (Brydone 1909a) (Figure 3). This and subsequent papers were only a few pages in length and were illustrated by plates comprising typically retouched photographs of bryozoans and occasional line drawings. Among these papers, Brydone (1917a) is particularly interesting in the present context as it contains the first criticisms of Lang's newly published revisions of Cretaceous cribrimorphs (Lang 1916a, b). While agreeing with Lang's opinion that the characters distinguishing between the two extant genera previously used for Cretaceous cribrimorphs – *Cribrilina* and *Membraniporella* – are not of generic significance, he was understandably sceptical of Lang's creation of more than 50 new Cretaceous genera to replace them. Brydone bemoaned the complete lack of figures and the brevity of the generic and specific descriptions in Lang's papers. The impossibility of recognizing Lang's genera is clear from Brydone's next two papers (Brydone 1917b, c) in which he continued to place new Cretaceous cribrimorph species into the Recent genera *Cribrilina* and *Membraniporella* rather than attempting to use Lang's new Cretaceous genera.

When he had recovered sufficiently from his illness, Brydone resumed publishing on Chalk bryozoans. The fruits of his labours were the three-part *Further notes on new or imperfectly known Chalk Polyzoa* (Brydone 1929, 1930b, 1936), published privately and printed by Dulau & Co. Ltd. of 32 Old Bond Street, London. Yet more new species were introduced, especially of the ubiquitous '*Membranipora*', and some of his previously published species were revised (as Medd 1965 has pointed out, all of the species assigned by Brydone to *Membranipora* must be transferred to other genera). The monograph features 42 plates of retouched photographs.

The Appendix to the current paper lists all of the 452 bryozoan species and varieties introduced by Brydone.



THE

GEOLOGICAL MAGAZINE.

NEW SERIES. DECADE V. VOL. VI.

No. VIII. — AUGUST, 1909.

ORIGINAL ARTICLES.

I.—Notes on new or imperfectly known Chalk Polyzoa.

By R. M. Brydone, F.G.S.

(PLATE XIV.)

IN these notes it is my object to describe and figure some of the more important Chalk Polyzoa that have not yet been described, or have been described from material less complete than mine.

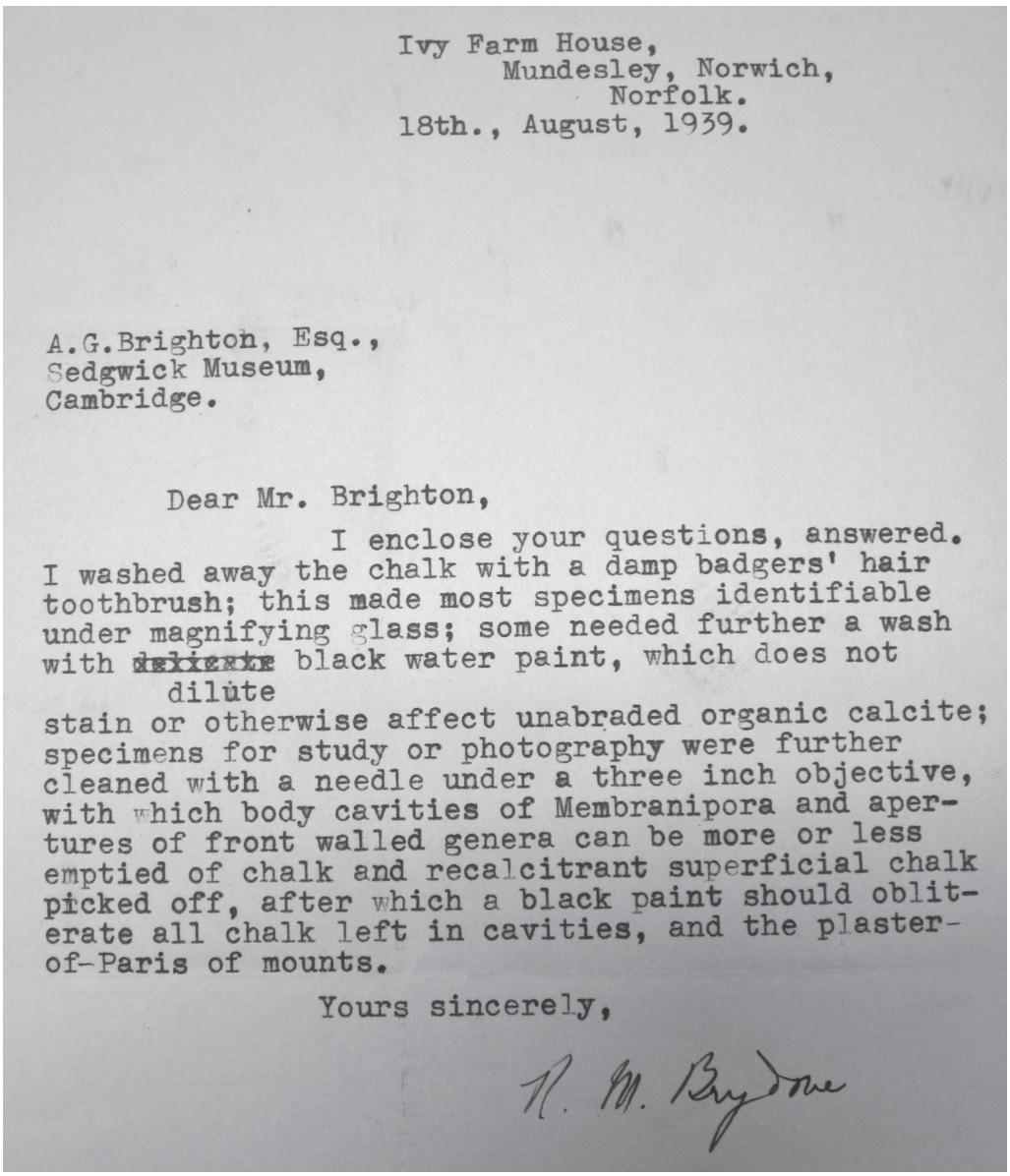
Figure 3. Title and opening paragraph of Brydone (1909a), the first of the long series of papers published in the Geological Magazine *describing Chalk bryozoans.*

5. The conflict between Brydone and Lang

Brydone's self-published monograph

While Lang's view of his conflict with Brydone must be understood from the contents of his letter to Edwards (see below), Brydone's side is made explicit from the Introduction to his three-part, privately published monograph (Brydone 1929, 1930b, 1936) (a letter in the Sedgwick Museum archive written by Brydone to A.G. Brighton and dated 18th July 1942 mentions that he was preparing a fourth part). Brydone devoted no fewer than seven pages to criticising Lang in this work. The areas of criticism were: (1) orthogenesis; (2) introduction of new taxa without figures; (3) usefulness of brief diagnoses; (4) interpretation of colony-forms; (5) intraspecific variability; (6) observation of minute features; and (7) use of staining.

(1) Orthogenesis. Lang's elaborate view of orthogenesis has been detailed elsewhere (Taylor 2002). Without mentioning Lang's name, Brydone is scornful in his criticism of Lang's interpretation of bryozoan evolution in terms of orthogenesis and the progressive removal of inhibitions to over-calcification:



Ivy Farm House,
Mundesley, Norwich,
Norfolk.
18th., August, 1939.

A.G.Brighton, Esq.,
Sedgwick Museum,
Cambridge.

Dear Mr. Brighton,

I enclose your questions, answered. I washed away the chalk with a damp badgers' hair toothbrush; this made most specimens identifiable under magnifying glass; some needed further a wash with ~~dexixxxx~~ dilute black water paint, which does not stain or otherwise affect unabraded organic calcite; specimens for study or photography were further cleaned with a needle under a three inch objective, with which body cavities of Membranipora and apertures of front walled genera can be more or less emptied of chalk and recalcitrant superficial chalk picked off, after which a black paint should obliterate all chalk left in cavities, and the plaster-of-Paris of mounts.

Yours sincerely,

R. M. Brydone

Figure 4. Signed letter from R. M. Brydone to A. G. ('Bertie') Brighton of the Sedgwick Museum, Cambridge, offering advice about the cleaning and staining of Chalk bryozoans.

"A theory of this kind is almost as elusive as a Christian Science argument. It starts by assuming a general tendency to secrete a hard skeleton. That assumption may be described as plausible on the ground that many animals succeed in doing it. It may also be described as improbable on the ground that many animals do not do so or only do so to a neglibible extent. The theory then proceeds to assume the existence of an inhibition. Here we at once part company with reality. An inhibition being wholly negative is incapable of demonstration: it is purely imagined

and extremely vague. How, for instance, is the inhibition imposed, and by what power?" (Brydone 1929, p. 6).

The ridicule continues:

"Hard skeletons become a menace instead of a strength or protection….Life is really gradual suicide. The jelly-fish and the slug take rank in the highest moral class as either being free from all desire for suicide or having got the desire under very effective control." (Brydone 1929, p. 7).

(2) Introduction of new taxa without figures. Brydone (1929) repeated his earlier criticism (Brydone 1917) of Lang (1916a, b) in which new taxa were introduced without illustration. Accompanied by nothing more than a very brief description, this rendered Lang's new species unidentifiable. An unfortunate consequence of Lang's inadequate descriptions was that a couple of species created by Brydone – *Membraniporella altonensis* Brydone, 1918a and *M. pyramidalis* Brydone, 1917b – turned out to have been described already by Lang (1916a, b) as *Thoracopora costata* Lang, 1916b and *Tricephalopora obducta* Lang, 1916a, respectively, if the synonymies given by Lang (1921, 1922) are to be accepted. Brydone (1929, p. 8) went on to assert: "… there is ample justification for refusing to recognise any recent description of a Polyzoon unaccompanied by a figure.." With some justification, Brydone objected to the habit of Lang, and J. W. Gregory before him, of publishing 'pre-emptive' short descriptions of new species in journal papers before providing more comprehensive and illustrated descriptions of the same species in their catalogues of bryozoans in the British Museum (Natural History): "The procedure is perhaps least commendable when it is adopted by salaried public servants, and the cream of the work they have been paid to do is not enjoyed by their employers but is skimmed for the private advantage of some publisher." (Brydone 1929, p. 9). In fact, Lang's (1916a, b) 'descriptions' take the form of a series of hierarchically arranged 'Tabular Diagnoses', from subfamilies to genera to species. Unaccompanied by figures, they are of little use for identifying cribrimorph species.

(3) Usefulness of brief diagnoses. Brydone (1929, p. 8) was scathing in his criticism of Lang's brief taxonomic diagnoses, stating: "It is not indeed possible for these diagnoises to constitute definitions of any species: they do not contain a single word referring to an individual character, much less any word describing any individual character; and a species without any individual character is obviously no species. It is no exaggeration to say that dozens of different species might fall within every word of any of these "diagnoses"….If Lang's "diagnoses" are to be accepted as valid descriptions of species we must regard precision and thoroughness as unscientific and foolish."

(4) Interpretation of colony-forms. Brydone took issue with Lang who created different species for otherwise identical bryozoans if they are found encrusting a hard substrate or are unattached, as well as his use of the term 'erect' as a synonym of 'free'. With regard

to the former, he pointed out that colonies of the commonest Chalk cribrimorph, *Cribrilina* [*Pelmatopora*] *gregoryi*, could be found either encrusting or free.

(5) Intraspecific variability. In Brydone's opinion, Lang used minor differences of no taxonomic value to differentiate between some of the species he published in 1916 (Lang 1916a, b). Small differences in zooidal length, for example, were not significant as this character could be observed to vary within a single colony. "We do not make separate species of men or brachiopods or corals for every difference in their length" (Brydone 1929, p. 10). Likewise, Brydone considered Lang's taxonomic use of differences in numbers of spines and sizes of avicularia to be unjustifiable.

(6) Observation of minute features. Brydone was troubled by Lang's observation and use of minute pores – pelmata – in the costae for his family Pelmatoporidae: "I am unable to concur at all in his observations of the presence of conspicuous or very regular pelmata.." (Brydone 1929, p. 12). Even if pelmata are present, Brydone believed that because they are invisible under a 'pocket magnifier', they are 'disqualified' for use in making distinctions between species. Of course with the benefit of modern microscopy including SEM, it is now clear that pelmata are indeed present in many Cretaceous cribrimorphs and should not be neglected.

(7) Use of staining. Brydone believed that Lang's habit of permanently staining specimens may have introduced artefacts, explaining not only the existence of pelmata but also of some of the apparent avicularia described by Lang. What appear to be cavities could be simply unevenly stained patches. For Brydone (1929, p. 13) staining ".. is a practice which I must deprecate. Anyone who has experimented on the application of stains to organic calcite–as, for instance, in marking (or trying to mark) fossils with their localities in ink–knows how erratically the stain behaves, and how unreliable, therefore, must any theories be which are based on appearances resulting from the application of stains to calcite. It must be obvious that a specimen which has been artificially stained cannot be a type of any species intended–as presumable fossil species are intended–for the reception of fossils in their natural state. You might almost as well stain a bluebell black and call it a typical bluebell."

It seems somewhat contradictory of Brydone to write a letter to A. G. Brighton dated 18th August 1939 with the advice that Chalk bryozoans should be washed and subsequently stained with black water-colour paint (Figure 4). Perhaps in the ten years between his adverse comments about staining and the writing of this letter he had a change of opinion?

Lang's letter to Edwards about Brydone

The clearest insight into dispute between Brydone and Lang, at least from Lang's standpoint, can be obtained from a letter written by Lang in 1944 to his successor as Keeper of Geology at the British Museum (Natural History), Wilford Norman Edwards

(1890–1956), concerning a draft obituary of Brydone (Lang 1944). This letter was formerly taped to the inside of the museum library's bound copy of Brydone's three privately published papers but now resides in the archives (Figure 5). Because of the importance of the letter in understanding the relationship between Brydone and Lang, an entire transcript is given below.

Lias Lea
Charmouth
Bridport
3. xi. 1944

Dear Edwards,

I enclose a draft of an obituary of Brydone, in which I have incorporated the information you have so kindly collected for me and sent with your letter this morning.

Would you mind looking this through, and if you approve of it, perhaps it would be as well not to wait for the date of B[rydone]'s birth (which only matters for the sake of future researchers, who would turn to an obituary in a scientific journal first of all if they wished to find this out), and if the Geol. Soc. [Geological Society of London] are in a hurry, could you send it to them?

If you have comments to make, will you return the draft to me with your criticisms, that I may consider them?

It has long been on my conscience that, probably by lack of perception and tact, I alienated Brydone's material from the museum; and on having to write this obituary, I have been trying to remember exactly all my dealings with him. I can only recall that I met him twice. On the first occasion (when of course I did not know how sensitive he was) I caused him considerable annoyance by calling his drawings 'diagrams'. It was his drawings for the figures on pp. 293–300 of the Geol. Mag. 1906, dec 5, vol iii, which Dr Henry [Woodward] sent round to Gertrude W. [Woodward] to touch up, and Brydone brought to me (I suppose at Dr H's request) for my comment. This was (as far as I remember) that the diagrams seemed rather woolly and would be better if the detail could be brought out. Probably B[rydone] had drawn them under a camera lucida with great care, and since they were meant to represent the actual appearance of the specimen, my careless expression 'diagram' offended him. It was a bad beginning, but too trivial for the consequences, if it led to the Museum losing B[rydones]'s stuff! He told me then (or about then, possibly by letter) that he would give the museum types or at least named material of his new species, and he did so with the earliest new species he described.

I feel more culpable for probably having been the cause of Dr Henry's discontinuing B[rydone]'s articles on new Chalk Polyzoa, in the Geol. Mag. (but see post-script. Could it have been Rastall? but I think not). After several of these had appeared, Dr H[enry Woodward] asked me if I thought he had better continue them. Of course I did not advise him one way or the other, but tried to give him as disinterested a view of their value as I could – which was not easy since I was the immediate victim of the disadvantages arising, as I thought, from the articles. They were these: undoubtedly it was desirable to monograph the Chalk Cheilostomes so that the new British forms should have names for reference. But Brydone was not monographing in the full sense, [he] merely named, describing, figuring what he considered new forms, and only to some extent comparing them with previously described species. This looked like giving the succeeding monographer a deal of trouble in addition to having to do what Brydone has left undone. Also

I considered that for this thorough work B[rydone]'s descriptions and figures were inadequate, as without supplementary diagrams, the photographs did not show sufficient detail (e.g. the presence or absence and number of spines surrounding the apertures). Had I been more experience in monographs and monographers, I might have thought less of their troubles and more of the convenience of Chalk-workers who needed names of Chalk fossils for me during their life-times, more than scholarly monographs next century perhaps. All I know is that Dr H[enry Woodward] did discontinue the series as a sequel to his conversation with me, and it is natural that (if Brydone could have known that Dr Henry asked my advice) he should have concluded that I dissuaded Dr H, and felt justified in his arrogance. As you know, he continued his publication on his own.

The other time I met him was when he happened to be in the museum, and must have had something to say or show to me, because in conversation he mentioned that he had a lot of material of a new form I had just described – *Semimultelea dixoni*. I asked him to give the museum some. In a few days he sent it but it turned out to be an already described form (which we were very glad to have) quite different form that I described. That interview was quite smooth, as far as I remember.

Once again, I wrote to him acknowledging a copy of his map and paper on the Hampshire Chalk, telling him how much I admired the work, but suggesting that it might be improved by colouring the zones so as to correspond with Rowe's maps. I suppose I consciously trod on a corn, for it brought a snappy and tart reply. You will say that it was tactless to mention Rowe – but how was I to know?

I can't remember corresponding with him besides, only writing to thank him for sending me his "Further Notes of new… Chalk Polyzoa, Part I." I did not comment on his prefatory remarks except to say that we did not seem to agree altogether in our conclusions. I hoped someday to discuss them. This correspondence was unilateral.

I imagine Brydone's bark was much worse that his bite, and his letters less polished (like Jukes Browne's) than his conversation.

He may, too, have had that feeling, which I am sure Buckman suffered from, that the amateur is at a disadvantage compared with a man whose position is assured by the office he holds. It is true that Buckman's bread and butter depended to some extent on his reputation, while Brydone's did not. But Brydone's reference to the 'salaried public servant' in his damnatory preface shows I think that he felt this disadvantage. Undoubtedly having one's position assured does (though it shouldn't) make it easier to express one's opinions freely in scientific papers.

Of course I have often considered answering Brydone's criticisms; but on reading over his introduction have quailed at the magnitude of the task. My work – more, my whole outlook, is one huge fallacy (as Spath remarked of Hyatt's 'Genesis of the Anatidae'). Once one began a defence, it would never end, like even a small controversy. I has hoped that by now some other worker would have gone over the ground and pronounced on how far Brydone's criticisms are justified. For if one takes the trouble to sift out what is merely querulous (like the "salaried public servant"), what is trivial, what is technical (the use of 'type-specimen'), what is due to misunderstanding, and, then is a residuum of criticism which should be taken seriously, but could only be appreciate and appraised by specialists working over the same ground. I had expected and intended Thomas to carry on my work; but he dissipated himself in immediate matters and miscellaneous correspondence; and a specialist cannot be a driven horse.

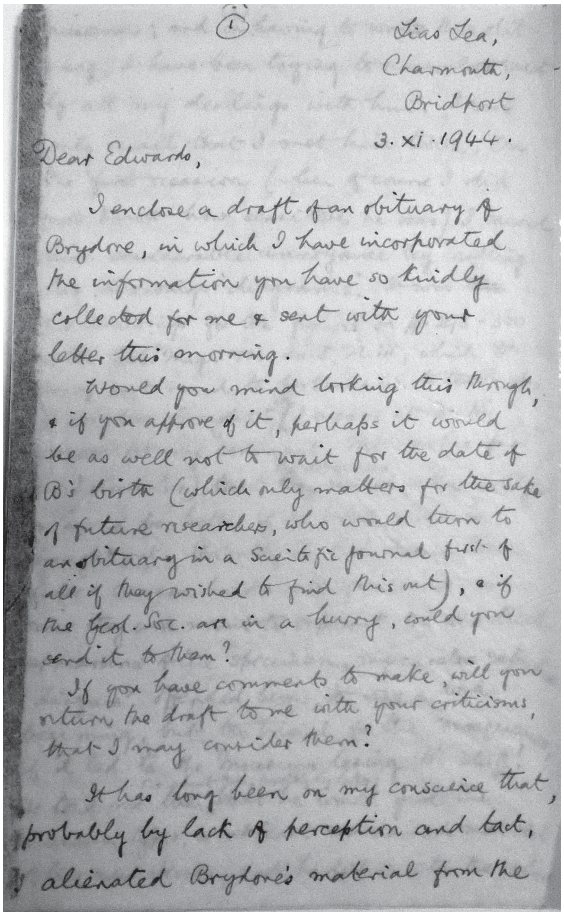
I am afraid that what began as a post-script, or at the most a excursus, upon the loss to the B.M. of Brydone's collections, has become elongated into an 'apologia pro vita sua in rebus

Brydoneis'. I hope you don't mind acting as my confessor, and if I have sinned in giving Brydone just cause of offence, you will put it down to my inexperience and lack of tact, not to malice, and absolve me –

Yours sincerely

W. D. Lang,

P.S. I can't make my memory about H. H. Woodward and Brydone's publications tally with the dates. Brydone's papers in the Geol. Mag left off in 1918 (when he was ill). His (undated) damnatory publication was acknowledged by me in 1930. He says then that a change in editorship broke his series in the Geol. Mag. When did Dr H. die?



1

Lias Lea,
Charmouth,
Bridport
3.xi.1944.

Dear Edwards,

I enclose a draft of an obituary of Brydone, in which I have incorporated the information you have so kindly collected for me & sent with your letter this morning.

Would you mind looking this through, & if you approve of it, perhaps it would be as well not to wait for the date of B's birth (which only matters for the sake of future researches, who would turn to an obituary in a Scientific journal first of all if they wished to find this out), & if the Geol. Soc. are in a hurry, could you send it to them?

If you have comments to make, will you return the draft to me with your criticisms, that I may consider them?

It has long been on my conscience that, probably by lack of perception and tact, I alienated Brydone's material from the

Figure 5. First page of the crucial letter written by Lang to W. N. Edwards, Keeper of Geology at the British Museum (Natural History), about the recently deceased Brydone. The letter explained his fraught relationship with Brydone and the reason why Brydone's fossil collections went to the Sedgwick Museum rather than the BM(NH). NHM Library and Archives, Palaeontology collection MSS LAN.

While Lang's main motive for writing this letter was to obtain Edward's permission to submit for publication his obituary of Brydone, it also served as a vehicle for Lang to describe his poor relationship with Brydone. Their adversity was doubtless the reason why Brydone's large important fossil collection, including numerous type bryozoans, was donated in the late 1930s to the Sedgwick Museum in Cambridge rather than to the British Museum (Natural History). For example, judging by correspondence in the Sedgwick Museum the first batch of specimens described by Brydone in his 1916–8 *Geological Magazine* papers was collected by a private car dispatched from Cambridge sometime soon after 8th July 1938. The label accompanying a small display of fossils donated by Brydone states that his donation of 37,659 fossils represents the largest number of fossils originating from a single collector in the Sedgwick Museum. Brydone also donated material to the British Geological Survey, and to museums in Norwich and Ipswich.

The letter not only provides the only significant statement of Lang's side of his dispute with Brydone, but also contains the only documentation of face-to-face meetings between the two. According to Lang, albeit with the possibility of some memory lapse, the two protagonists met only twice. Their first meeting occurred at some unspecified date in the first years of the 20th century, presumably in about 1905, when Brydone visited Lang to obtain his comments on some illustrations of bryozoans that were eventually published in 1906 (Brydone 1906e). Unfortunately, Lang referred to these illustrations as 'diagrams', implying that they were stylistic representations when in fact they were probably accurate drawings made using a camera lucida. The sensitive Brydone evidently took umbrage to this faux pas. Nevertheless, Lang's account of his second meeting with Brydone, again on an unknown date but probably on or very soon after 1906 to judge by the fact that it occurred just after Lang had described the eleid cyclostome *Semimultelea dixoni* Lang, 1906 (now *Reptomultelea dixoni*, see Taylor 1994), seems to have passed off without any animosity. Indeed, in 1910 Brydone dedicated a new species – *Membranipora langi* Brydone, 1910c – to Lang, suggesting that the two meetings did not seriously dent Brydone's regard for Lang.

During the early years of the 20th century when politeness and good manners were held in high esteem, it is unlikely that face-to-face meetings between scientists such as Lang and Brydone would have become incendiary. Nor is it likely that Lang's correspondence with Brydone was sufficient to cause the rift, even though it is clear that Lang's comments may not have been well-received by Brydone, notably his suggestion to use the same zonal colouring scheme as that employed by Rowe in his geological maps. Instead, a more important contributory factor to the problems between the two bryozoologists may be found in Lang's account of the discontinuation of Brydone's publications in the *Geological Magazine*. Although Lang claimed not to have beeen responsible for this action, Brydone apparently believed that Lang's advice to the editor, Henry Woodward, had led to him to decline publication of further submissions from Brydone. According to Lang, when consulted by Woodward he offered no opinion on whether or not to discontinue the series. However, Lang's letter does imply that he might have told Woodward of his dislike of Brydone's approach to species description. The termination of Brydone's publications in

the *Geological Magazine* more or less coincided with a period of serious illness in 1918, which must have left him feeling particularly aggrieved and all too willing to seek a scapegoat. Interestingly, Brydone's own explanation (Brydone 1929, p. 5) for the discontinuation of his series in the *Geological Magazine* was that between 1918 and 1920 when he was able to resume his work the editorship of the journal had changed and there was "..no space available in it." (Brydone 1929, p. 5). Henry Woodward (1832–1921) was the sole editor of the *Geological Magazine* until the end of 1918 (Anon. [Obituary] 1921) when he was joined in this role by R. H. Rastall (1871–1950; see obituary written by Bulman 1950). Perhaps significantly, whereas Woodward was a palaeontologist, Rastall was an economic geologist and petrologist with a "distaste" for palaeontology (Bulman 1950, p. 75). Also worth noting is the fact that, according to Bulman (1950), *Geological Magazine* narrowly escaped extinction in 1918, which might have led to a changed publication policy and greater stringency on what kinds of articles were accepted.

Contrasting approaches to bryozoan research

Whatever factors led to the animosity between Brydone and Lang, one thing is clear – they had very different approaches to the descriptive taxonomy of bryozoans. The contrast is manifested in several ways: mode of acquiring material, illustration, creation of supraspecific taxa, scope of study, and attention to the published literature.

Lang's major and later works on bryozoans all concerned Late Cretaceous cribrimorphs from Britain and elsewhere in Europe; his earlier publications from the period before 1916 were more taxonomically adventurous, covering anascan cheilostomes as well as a few cyclostomes, mostly of Late Cretaceous age but with some descriptions of Jurassic and Early Cretaceous species. In contrast, Brydone focused almost entirely on Late Cretaceous cheilostomes from Britain. Lang had the large international collections of the British Museum (Natural History) at his disposal and there is little indication that he undertook any significant collecting of his own of cribrimorphs. In particular, he made use of continental European material purchased from, or donated by, F. Canu (France), A. Fric (Bohemia) and A. Laur (Germany), as well as various collectors of English Chalk fossils, such as A. W. Rowe (1858–1926), C. T. A. Gaster (1887–1963), F. J. Möckler and the grocer and prison warder William Gamble who sold the BM(NH) large quantities of bryozoans collected from the area around Chatham in Kent (see Lang 1921, pp. lxxii–lxxv). In contrast, Brydone seems to have relied entirely on specimens he collected personally, which explains why the majority of the bryozoans he described are from the English Chalk from the counties where he lived, initially Hampshire and subsequently Norfolk.

Regarding illustration, Brydone's early papers featured small drawings of bryozoan zooids (Figure 2). These are the drawings that Lang unwisely called 'diagrams' in conversation with Brydone. However, the majority of Brydone's papers contain photographs of specimens which he apparently took himself. For their time, these are of excellent quality, although there are clear indications of retouching of opesia, spine bases and

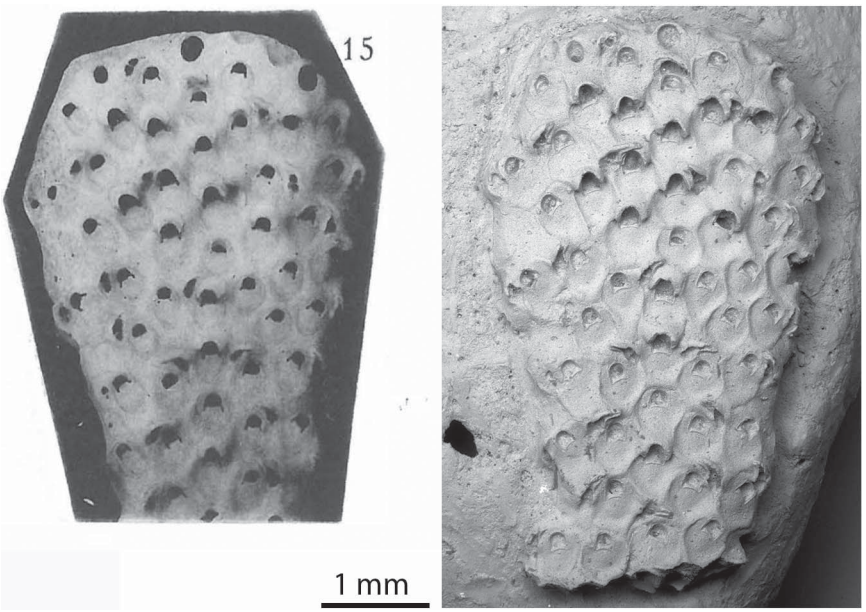


Figure 6. Rhagasostoma gibbosum *(Marsson) as figured by Brydone (1930, pl. 26, fig. 15) compared with a recent SEM image of the same specimen (Sedgwick Museum B36679; Upper Cretaceous,* lunata *Chalk, Trimingham, Norfolk). Note the retouching of Brydone's figure including removal of the background and, importantly, blackening of apertures and opesiules that are filled with white chalk in the specimen itself.*

backgrounds using black ink (Figures 6–7), a practise employed at the same time by the well-known collaborators Canu and Bassler in their papers on bryozoans. Lang never used photographs to illustrate the bryozoans he described. Instead he relied on a combination of ink wash drawings of groups of zooids, executed by Miss Gertrude M. Woodward, and highly stylized diagrams of single zooids that he himself drew (Figure 7). The latter formed a crucial element in his definitions of cribrimorph taxa. Moreover, Brydone (1917a, 1929, p. 8) was also highly critical of Lang's introduction of many taxa without figures (Lang 1916a, b) before figuring the same taxa four years later (Lang 1920).

Although Brydone named a large number of new species – including 'varieties', 472 in total – he refrained from introducing new supraspecific taxa with the exception of three new genera: *Pseudostega* Brydone, 1910d (the replacement name *Pseudostege* Brydone 1918b, proposed because of homonymy with the suprafamilial taxon Pseudostega, is unnecessary), *Rotoporina* Brydone, 1930 and *Volviflustrellaria* Brydone, 1936. In contrast, Lang named a considerable number of new genera, subfamilies and families. A significant proportion of Lang's genera were monospecific when created, and many of his families were monogeneric. It is clear from Brydone's failure to adopt Lang's higher taxa that he did not agree with this taxonomic profligacy.

Reflecting Brydone's own collecting activities, his publications were essentially faunal studies describing the new cheilostome species he found in the Chalk localities that

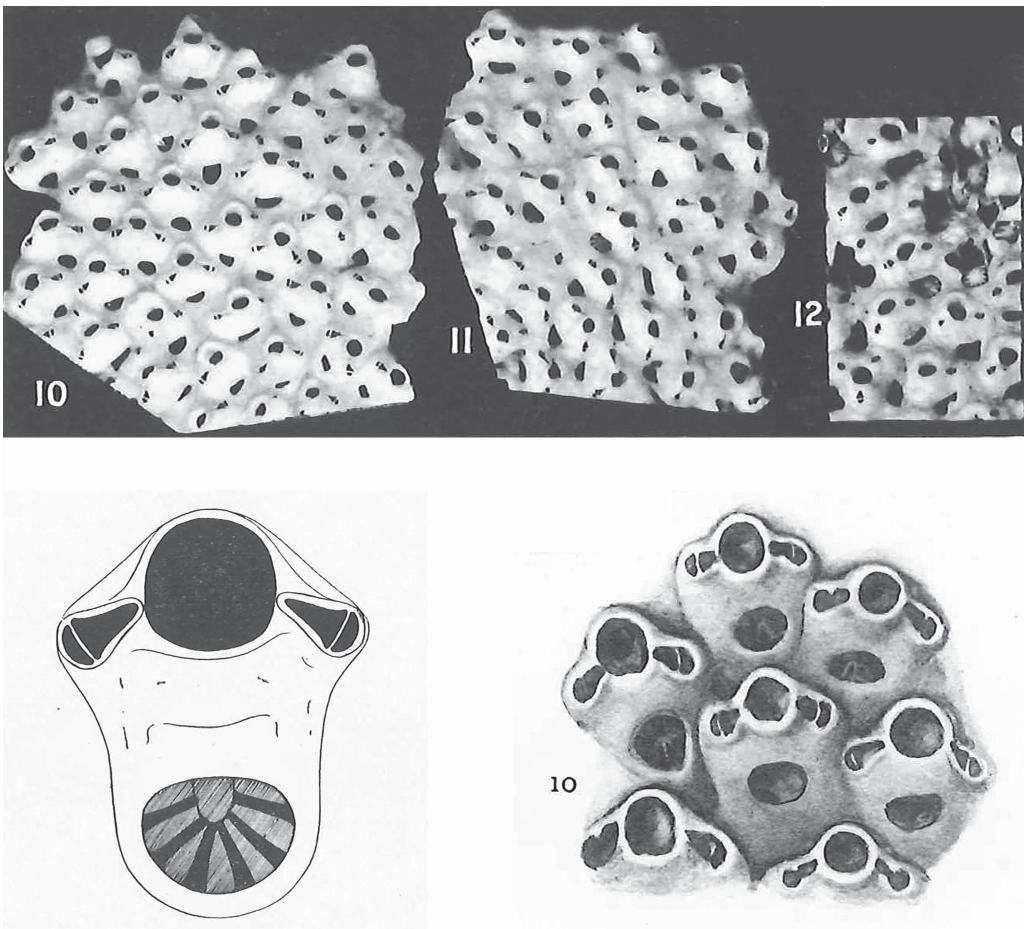


Figure 7. The contrasting styles of illustration employed by Brydone and Lang, exemplified by their figures of Tricephalopora obducta *Lang, 1916a, which was considered by Lang (1922) to be a senior synonym of* Membraniporella pyramidalis *Brydone, 1917b. At the top are three of Brydone's retouched photographs (Brydone 1917b, pl. 9, figs 10–12). Lower left is a typical Lang stylised diagram (Lang 1922, fig. 26), and lower right is one of his ink wash figures drawn by Gertrude M. Woodward (Lang 1922, pl. 1, fig. 10).*

he had personally sampled. There was no attempt at monography in the sense of describing all species from a chosen taxonomic group, although this is not to say that his papers represented random selections of taxa. Indeed, Brydone's three-part monograph dealt successively with species he assigned to specific genera, beginning with the simple yet diverse species of '*Membranipora*' and progressing to species of ascophorans and anascans with well-developed cryptocysts. Brydone's lack of access to significant material from continental Europe (note that he did describe a few species from France; see Appendix) would have made monography impossible. To be comprehensive Brydone would have needed to revise the countless species described by, for example, d'Orbigny

from the French Upper Cretaceous. Here is where Lang had a distinct advantage over Brydone: the BM(NH) collections contained ample topotypic and other bryozoans from localities in continental Europe, including not only France but also The Netherlands, Belgium, Germany, Denmark and Bohemia. It was thus possible for Lang to revise his favoured group, the cribrimorphs, comprehensively. Therefore, the scope Brydone's and Lang's studies of Upper Cretaceous cheilostomes differed greatly. Doubtless Brydone felt his way of working was superior as he had better local knowledge of the stratigraphical and geological contexts of the species described, whereas Lang could claim that his approach was more inclusive and international in scope.

Lang was critical of Brydone for introducing so many new species without sufficient attention to the existing literature. It may be that Brydone did not have easy access to this literature; in any case, even today the descriptions and illustrations of species introduced by d'Orbigny and others are often not easy to use when attempting to identify bryozoans without topotypical material to hand.

6. Conclusions

Brydone does seem to have possessed an abrasive personality and was fond of resorting to sarcasm when criticising the work of others. For example, he was deeply unconvinced of the taxonomic weight placed by Canu and Bassler on characters of the ovicells, stating (Brydone 1936, p. 67): "I strongly suspect that this doctrine of the pre-eminence of the ovicell is really based not on reasoning, but on sentiment, by crediting the very imperfectly conscious Polyzoa (by a sort of pathetic fallacy) with the same sense of modesty as the very self-conscious human race has developed for itself, and equating the ovicell with the loin-cloth." Canu and Bassler were not the only ones to be criticized by Brydone. As is made explicit in the letter of Lang's to Edwards, Brydone also found fault in the work of A. W. Rowe on Chalk stratigraphy (Brydone 1906d, 1914e, 1915).

Brydone's final publication in the 1942 volume of the *Geological Magazine* offers particular clues about his personality. This short paper comprises comments on some of the species he had introduced in part 3 of his privately published monograph (Brydone 1936) and was prompted by a letter he had received – and replied to – from "… a Continental fellow-author of works on fossil Polyzoa, especially Cretaceous." (Brydone 1942, p. 62). Brydone agreed to clarify the identities of his new species "… on the understanding that the inquirer accepted as valid any answers which he could not dispute." For whatever reason the fellow author was not named but there can be little doubt that it was Ehrhard Voigt (1905–2004). Brydone's final sentence (ibid, p. 64) states: "I heard from my inquirer in March, 1937, that he could not go into my answers promptly as he was called out for military training, and I have not since heard anything from him." The tone of the second of these three quotations is inappropriately dictatorial, while the third suggests a personal annoyance with Voigt that is hard to justify given the political situation at the time with Europe in the throes of World War 2.

While Brydone may not have been correct in all of his opinions of Lang, he did offer

useful criticisms of Lang's work, especially with regard to Lang's bizarre theories of orthogenesis in cribrimorphs, and the problems caused by naming new species without illustration. By the time Brydone had published his damning comments on Lang's work in 1930, Lang had ceased his research on bryozoans and was probably disinclined to respond. He did, however, pen an obituary of Brydone containing criticisms not generally voiced on such occasions. For instance, Lang contended that more detail was required than is evident in Brydone's photographs for his species to be compared with those already established, and berated Brydone for not supplementing his photographs with diagrams showing further details (Lang 1944). He was also critical of Brydone for not using the same colour scheme as Rowe for the zones in his geological maps of the Chalk, remarking that "… some found him a difficult collaborator. Possibly it made for better understanding in the end that one who held opinions so strongly should publish them categorically and without compromise, rather than discuss them unprofitably with other workers in the same field." (Lang 1944, p. lxvi).

Brydone the Oxford-educated, non-vocational palaeontologist and Lang the Cambridge-educated, vocational palaeontologist engaged in acrimonius disputes over almost all of the areas of Chalk bryozoology where they overlapped. Each had his own way of conducting research, both were strong-willed and there was little room for compromise. While Brydone's work would have been considerably more valuable if it had taken into account the studies of 19th century continental European bryozoologists and had been consolidated into a few more comprehensive taxonomic monographs, Lang's would have benefited by more complete illustrations and a simpler taxonomy not driven by his ideas of orthogenesis.

7. Acknowledgements

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Appendix. Bryozoan species from the Upper Cretaceous named by R. M. Brydone in order of their date of publication.

	Species and Brydone's stratigraphical comments	**Locality**
1.	*Membranipora griffithi* Brydone, 1906b	Trimingham, Norfolk
2.	*Membranipora trimminghamensis* Brydone, 1906b	Trimingham, Norfolk
3.	*Membranipora britannica* Brydone, 1906b Recognisable in *Micraster coranguinum* zone; rare below *Belemnitella mucronata* zone	Trimingham, Norfolk
4.	*Semieschara mundesleiensis* Brydone, 1906b	Trimingham, Norfolk
5.	*Semieschara canui* Brydone, 1906b	Trimingham, Norfolk
6.	*Eschara rowei* Brydone, 1906b	Trimingham, Norfolk
7.	*Cribrilina sherborni* Brydone, 1906b	Trimingham, Norfolk
8.	*Cribrilina dibleyi* Brydone, 1906b	Trimingham, Norfolk
9.	*Cribrilina jukes-brownei* Brydone, 1906b	Trimingham, Norfolk
10.	*Mucronella batheri* Brydone, 1906b	Trimingham, Norfolk
11.	*Semieschara woodsi* Brydone, 1906b Senonian. *Marsupites* zone; mostly base of *Belemnitella mucronata* zone	Trimingham, Norfolk
12.	*Semieschara pergensi* Brydone, 1906b Senonian. Upper *Belemnitella quadrata* zone	Trimingham, Norfolk
13.	*Cribrilina gregoryi* Brydone, 1906b Senonian.*Belemnitella quadrata* zone; appears in *Micraster cortestudinarium*	Seaford
	comparatively rare above *Belemnitella mucronata*	Trimingham, Norfolk
14.	*Homalostega anglica* Brydone, 1909a	Trimingham, Norwich and Sheringham, Norfolk
15.	*Homalostega biconvexa* Brydone, 1909a	Trimingham, Norfolk
16.	*Homalostega cuniformis* Brydone, 1909a	Trimingham, Norfolk
17.	*Membraniporella monastica* Brydone, 1909b	Trimingham, Norfolk
18.	*Membraniporella castrum* Brydone, 1909b	Trimingham, Norfolk
19.	*Cribrilina ostreicola* Brydone, 1909b	Trimingham, Norfolk
20.	*Cribrilina subvitrea* Brydone, 1909b	Trimingham, Norfolk
21.	*Homalostega cuniformis* Brydone, 1909a	Trimingham, Norfolk
22.	*Membranipora humiliata* Brydone, 1910a	Trimingham, Norfolk
23.	*Membranipora anterides* Brydone, 1910a	Trimingham, Norfolk

24. *Membranipora invigilata* Brydone, 1910b	
Micraster coranguinum zone	Gravesend
Possibly *Actinocamax quadratus* zone	Trimingham, Norfolk
25. *Membranipora britannica* var. *præcursor* Brydone, 1910b	Trimingham, Norfolk; Winchester
26. *Membranipora sagittaria* Brydone, 1910c	
Micraster coranguinum zone	Gravesend
Actinocamax quadratus zone	Hampshire
Belemnitella mucronata zone	Isle of Wight
27. *Membranipora dolium* Brydone, 1910c	
Actinocamax quadratus zone	Hampshire
Belemnitella mucronata zone	Bramford, Suffolk; Cromer, Norfolk
28. *Membranipora anguiformis* Brydone, 1910c	Trimingham, Norfolk;
29. *Membranipora langi* Brydone, 1910c	Cromer and Trimingham.
Actinocamax quadratus zone	Hampshire
30. *Membranipora woodwardi* Brydone, 1910d	
Micraster coranguinum zone; *Marsupites* zone; *Actinocamax quadratus* zone	Hampshire
Micraster coranguinum zone	Gravesend, Kent
31. *Membranipora coralliformis* Brydone, 1910d	
Micraster coranguinum zone	Gravesend, Kent; Hampshire
32. *Pseudostega cantiana* Brydone, 1910d	
Micraster coranguinum zone (rare)	Gravesend, Kent Chislehurst, Kent
33. *Rhagasostoma novaki* Brydone, 1910e	
[nom. nov. for *Membranipora depressa* Novak non v.Hagenow]	Trimingham, Norfolk
34. *Rhagasostoma novaki* var. *anglica* Brydone, 1910e	
Belemnitella mucronata zone	Trimingham, Norfolk; Isle of Wight
35. *Cribrilina claviceps* Brydone, 1910e	
Micraster coranguinum zone	Gravesend; Hampshire
Marsupites zone	Hampshire
36. *Cribrilina furcifera* Brydone, 1910e	
Micraster coranguinum zone	Kent
Marsupites zone	Hampshire
Actinocamax quadratus zone	Hampshire; Sussex
Belemnitella mucronata zone	Hampshire
37. *Cribrilina filliozati* Brydone, 1910e	
Actinocamax quadratus zone	Hampshire
38. *Steginopora denticulata* Brydone, 1910f	
Micraster coranguinum zone (rare)	Gravesend, Kent Broadstairs, Kent Kingsgate Bay, Kent Leaves Green (near Bromley), Kent
39. *Steginopora gravensis* Brydone, 1910f	
Micraster coranguinum zone (very rare)	Gravesend
40. *Membraniporella fallax* Brydone, 1910f	
Micraster coranguinum zone	Gravesend
Marsupites zone (dwarf form)	Hampshire

41. *Membraniporella pustulosa* Brydone, 1910f	
All zones from *Micraster coranguinum* to *Belemnitella mucronata*.	
42. *Pavolunulites scandens* Brydone, 1911	
Upper *Micraster cortestudinarium* zone	Sussex
43. *Pavolunulites declivis* Brydone, 1911	Trimingham, Norfolk
Actinocamax quadratus zone	Hampshire; Isle of Wight
44. *Pavolunulites subquadrata* Brydone, 1911	
Upper *Micraster cortestudinarium* zone	Sussex; Isle of Wight; Hampshire
45. *Lunulites marsonni* Brydone, 1911	
[nom. nov. for *L. crassa* (Beissel) non Tenison-Woods]	Trimingham, Norfolk
46. *Discoflustrellaria trimensis* Brydone, 1912a	Trimingham, Norfolk (very rare)
47. *Lateroflustrellaria robusta* Brydone, 1912a	Trimingham, Norfolk
48. *Rhagasostoma sussexiense* Brydone, 1912b	
Upper *Micraster cortestudinarium* zone	Seaford, Sussex Beachy Head, Sussex
49. *Rhagasostoma palpigerum* Brydone, 1912b	
Offaster pilula sub-zone	
Uintacrinus band	Hampshire; Kent
Marsupites band	Hampshire
50. *Semieschara proteus* Brydone, 1912c	
Upper *Actinocamax quadratus; Micraster cortestudinarium; Micraster coranguinum; Holaster planus*	
51. *Membranipora pyrigera* Brydone, 1912d	
Actinocamax quadratus zone; Lower *Belemnitella mucronata* zone; *Micraster coranguinum* zone; *Marsupites* zone	
52. *Membranipora tenebrosa* Brydone, 1912d	
Actinocamax quadratus zone	
53. *Membranipora pellicula* Brydone, 1912d	
Rare in *Offaster pilula* (not below)*; Actinocamax quadratus* subzone; Lower *Belemnitella. mucronata* zone	
54. *Membranipora withersi* Brydone, 1912d	
Actinocamax quadratus subzone	
55. *Mucronella (?) spenceri* Brydone, 1913a	
Offaster pilula zone; *Actinocamax quadratus* zone	
56. *Homalostega cavernosa* Brydone, 1913a	Trimingham, Norfolk
57. *Homalostega vulcani* Brydone, 1913a	Trimingham, Norfolk
58. *Membranipora gravensis* Brydone, 1913b	
Micraster coranguinum zone	Gravesend
59. *Membranipora sparksi* Brydone, 1913b	
Actinocamax quadratus	Sparks' Pit, near Cosham, Hampshire
60. *Membranipora cervicornis* Brydone, 1913b	
Belemnitella mucronata	Portsdown
61. *Membranipora plicatella* Brydone, 1913b	Trimingham, Norfolk
62. *Membranipora aedificata* Brydone, 1913b	Trimingham, Norfolk
63. *Semieschara labiatula* Brydone, 1913c	
Offaster pilula zone (rare)*; Actinocamax quadratus* zone (fairly common)	Trimingham, Norfolk
64. *Semieschara occlusa* Brydone, 1913c	Trimingham, Norfolk

65. *Cribrilina suffulta* Brydone, 1913d	
Micraster coranguinum zone*Uintacrinus* band	Gravesend
66. *Cribrilina cacus* Brydone, 1913d	Trimingham, Norfolk
67. *Cribrilina cicatricifera* Brydone, 1914a	
Micraster coranguinum	Weybourne, Norfolk Gravesend, Kent
68. *Cribrilina vulnerata* Brydone, 1914a	Trimingham and Weybourne, Norfolk
69. *Mollia laminaria* Brydone, 1914a	Weybourne, Norfolk
70. *Homalostega marginula* Brydone, 1914a	
Micraster cortestudinarium	Seaford, Sussex; Dover, Kent
71. *Homalostega nitescens* Brydone, 1914a	Trimingham and Weybourne, Norfolk
72. *Homalostega antecedens* Brydone, 1914a	
Actinocamax quadratus	Shawford, Hampshire; Sussex
. *Offaster pilula*	Sussex
73. *Membranipora simulacrum* Brydone, 1914b	
Micraster coranguinum zone	Kent
Uintacrinus band	Hampshire
74. *Membranipora suffragista* Brydone, 1914b	
Micraster coranguinum zone	Kent; Hampshire
Uintacrinus band; *Marsupites* zone	Hampshire
75. *Membranipora boletiformis* Brydone, 1914b	
Actinocamax quadratus	Shawford, Hampshire
Offaster pilula	Seaford, Sussex
76. *Membranipora cuculligera* Brydone, 1914c	
Micraster coranguinum zone	Hampshire; Kent; Gravesend
77. *Membranipora vestigialis* Brydone, 1914c	
Micraster coranguinum zone	Hampshire; Kent; Gravesend
Offaster pilula	Sussex
78. *Membranipora præcipua* Brydone, 1914c	Trimingham, Norfolk
79. *Membranipora sacerdotalis* Brydone, 1914c	Trimingham, Norfolk
80. *Membranipora subacuminata* Brydone, 1916a	
Belemnitella mucronata	Portsdown
81. *Membranipora studlandensis* Brydone, 1916a	
Belemnitella mucronata	Studland, Dorset
82. *Membranipora demissa* Brydone, 1916a	
Belemnitella mucronata	Studland, Dorset
Micraster cortestudinarium	
83. *Membranipora woodwardi* Brydone, 1910d var. *pinguescens* Brydone, 1916a	
Micraster cortestudinarium	Trimingham, Norfolk
Offaster pilula	Seaford, Sussex
Actinocamax quadratus	
84. *Membraniporella pontifera* Brydone, 1916a	
Micraster cortestudinarium	Hampshire
Micraster coranguinum	Gravesend, Kent
85. *Membraniporella obscurata* Brydone, 1916a	
Micraster cortestudinarium	Seaford, Sussex Hampshire; Kent

86. *Membranipora missilis* Brydone, 1916b	
Marsupites	Well, Hampshire
Offaster pilula	Sussex
Actinocamax quadratus	Brighton
87. *Membranipora fannia* Brydone, 1916b	
Actinocamax quadratus	Shawford, Hampshire
88. *Membranipora cupolata* Brydone, 1916b	Trimingham and Weybourne, Norfolk
89. *Membranipora vectensis* Brydone, 1916b	
Holaster planus	Isle of Wight
90. *Membranipora fascelis* Brydone, 1916c	
Micraster coranguinum	Gravesend, Kent
Marsupites	Hampshire; Kent
91. *Membranipora faustina* Brydone, 1916c	
Micraster cortestudinarium	Basing, Hampshire
92. *Membranipora feronia* Brydone, 1916c	
Actinocamax quadratus	Shawford, Hampshire
Belemnitella mucronata	
93. *Membranipora flacilla* Brydone, 1916c	
Belemnitella mucronata	Weybourne, Norfolk
94. *Membranipora flammia* Brydone, 1916c	
Actinocamax quadratus	Shawford, Hampshire
95. *Membranipora flora* Brydone, 1916c	
Micraster cortestudinarium	Seaford, Sussex
96. *Membranipora fluonia* Brydone, 1916d	
Belemnitella mucronata	Weybourne, Norfolk
97. *Membranipora fonteia* Brydone, 1916d	
Belemnitella mucronata	Weybourne, Norfolk
98. *Membranipora cubitalis* Brydone, 1916d	
Belemnitella mucronata	Weybourne, Norfolk
99. *Membranipora fulgora* Brydone, 1916d	
Belemnitella mucronata	Weybourne, Norfolk
100. *Membranipora furina* Brydone, 1916d	
Belemnitella mucronata	Weybourne, Norfolk
101. *Membranipora crateroides* Brydone, 1917a	
Belemnitella mucronata	Weybourne and Norwich, Norfolk
102. *Membraniporella tæniata* Brydone, 1917a	
Actinocamax quadratus	East Dean and Shawford, Hampshire
103. *Membraniporella bitubularis* Brydone, 1917a	
Micraster cortestudinarium	Seaford, Sussex; Green, Kent
104. *Cribrilina tumuliformis* Brydone, 1917a	
Micraster coranguinumUintacrinus band	Leaves and Gravesend, Kent
105. *Cribrilina seafordensis* Brydone, 1917a	
Micraster cortestudinarium	Seaford, Sussex
106. *Membraniporella thoraciformis* Brydone, 1917b	
Actinocamax quadratus	Shawford and Portsdown, Hampshire
107. *Membraniporella manonia* Brydone, 1917b	
Belemnitella mucronata	Portsdown, Hampshire

108. *Membraniporella transligata* Brydone, 1917b	Coltishall, Trimingham and Weybourne, Norfolk
109. *Membraniporella pyramidalis* Brydone, 1917b	Trimingham, Norfolk
110. *Cribrilina transita* Brydone, 1917c	
Uintacrinus band	Brighton, Sussex; Broughton, Hampshire
111. *Cribrilina t-formis* Brydone, 1917c	
Offaster pilula	Rottingdean, Sussex
Echinocorys scutatus var. *depressus*	
112. *Cribrilina bramfordensis* Brydone, 1917c	
Actinocamax quadratus	Bramford, Suffolk
113. *Membraniporella subcastrum* Brydone, 1917c	
Echinocorys. scutatus var. *depressus*	Rottingdean, Sussex
114. *Membraniporella gabina* Brydone, 1917c	
Actinocamax quadratus	Freshwater, Isle of Wight
115. *Cribrilina repleta* nom. nov. (Renames *Cribrilina suffulta*, Brydone, 1913d)	
Micraster coranguinum	Soberton, Hampshire
116. *Cribrilina galanthis* Brydone, 1917c	
[nom. nov. for *Cribrilina gregoryi* Brydone, 1913d]	
117. *Membraniporella altonensis* Brydone, 1918a	
Holaster planus	Alton, Hampshire
118. *Membraniporella shawfordensis* Brydone, 1918a	
Actinocamax quadratus	Shawford, Hampshire
119. *Membraniporella bedhamptonensis* Brydone, 1918a	
Belemnitella mucronata	Bedhampton, Hampshire, Isle of Wight
120. *Membraniporella trimensis* Brydone, 1918a	
Belemnitella mucronata	Trimingham, Norfolk
121. *Pseudostege concursa* Brydone, 1918b	
Actinocamax quadratus Belemnitella mucronata	Shawford and Portsdown, Hampshire
122. *Cellepora (?) diastoides* Brydone, 1918b	Trimingham, Norwich and Weybourne, Norfolk
123. *Membranipora seafordensis* Brydone, 1918b	
Micraster cortestudinarium	Seaford, Sussex
124. *Membranipora multifissa* Brydone, 1918b	
Micraster coranguinum	Gravesend, Kent
125. *Membranipora sevingtonensis* Brydone, 1918b	
Micraster coranguinum	Sevington, Hampshire
126. *Membranipora sandalina* Brydone, 1918b	
Micraster coranguinum	Gravesend, Kent
127. *Membranipora hebens* Brydone, 1929	
Actinocamax quadratus	Hampshire
128. *Membranipora eastonensis* Brydone, 1929	
Actinocamax quadratus	Isle of Wight
129. *Membranipora repetita*	Trimingham, Norfolk
130. *Membranipora pudica* Brydone, 1929	
E. scutatus var. depressus	Sussex
131. *Membranipora verecunda* Brydone, 1929	
Actinocamax quadratus	Portsdown, Hampshire
132. *Membranipora thanetiana* Brydone, 1929	
Marsupites	Margate, Kent

133. *Membranipora walthamensis* Brydone, 1929	
Actinocamax quadratus	Hampshire
134. *Membranipora tactimargo* Brydone, 1929	
Actinocamax quadratus	Hampshire
135. *Membranipora arcana* Brydone, 1929	
Belemnitella mucronata	Isle of Wight
136. *Membranipora conficiens* Brydone, 1929	Trimingham, Norfolk
137. *Membranipora initialis* Brydone, 1929	
Offaster pilula (cinctus band*)*	Sussex
138. *Membranipora clairensis* Brydone, 1929	
"Upper" *Actinocamax quadratus*	Droxford, Hampshire
139. *Membranipora exhauriens* Brydone, 1929	
Belemnitella mucronata	Hampshire, Isle of Wight
140. *Membranipora exhauriens* var. *sheringensis* Brydone, 1929	Weybourne, Norfolk
141. *Membranipora exhauriens* var. *apotheca* Brydone, 1929	
"Upper" *Belemnitella mucronata* basal	Weybourne, Norfolk
Belemnitella mucronata	Hampshire, Isle of Wight, Meudon (France)
142. *Membranipora flaminia* Brydone, 1929	
Porosphaera beds	Trimingham, Norfolk
143. *Membranipora flavia* Brydone, 1929	
Micraster coranguinum quadratus	Trimingham, Norfolk
144. *Membranipora fornax* Brydone, 1929	
Micraster cortestudinarium	Sussex
145. *Membranipora alrensis* Brydone, 1929	
Marsupites	Hampshire, Sussex
Micraster coranguinum	Isle of Wight
146. *Membranipora bightonensis* Brydone, 1929	
Offaster pilula	Hampshire
147. *Membranipora doliola* Brydone, 1929	
Belemnitella mucronata	Hampshire
148. *Membranipora capedo* Brydone, 1929	
basal *Belemnitella mucronata*	Hampshire
149. *Membranipora nanula* Brydone, 1929	
Porosphaera beds	Trimingham, Norfolk
150. *Membranipora fastigii* Brydone, 1929	
Micraster coranguinum	Isle of Wight
151. *Membranipora manorialis* Brydone, 1929	
Higher *Micraster coranguinum*	Hampshire
152. *Membranipora rupensis* Brydone, 1929	
Marsupites	Black Rock, Brighton, Sussex
153. *Membranipora portus* Brydone, 1929	
Offaster pilula	Newhaven, Sussex
154. *Membranipora arretonensis* Brydone, 1929	
Actinocamax quadratus	Arreton, Isle of Wight
155. *Membranipora farringensis* Brydone, 1929	
Actinocamax quadratus	Isle of Wight
156. *Membranipora acuum* Brydone, 1929	
basal *Belemnitella mucronata*	Hampshire
157. *Membranipora meudonia* Brydone, 1929	Meudon, France

158. *Membranipora gimensis* Brydone, 1929	
Porosphaera beds	Trimingham, Norfolk
159. *Membranipora sussexiensis* Brydone, 1929	
Micraster cortestudinarium	Sussex
160. *Membranipora michelensis* Brydone, 1929	
Micraster coranguinum	Micheldever, Hampshire
161. *Membranipora adunca* Brydone, 1929	
Marsupites	Alresford, Hampshire
162. *Membranipora inhospita* Brydone, 1929	
Marsupites	Sussex
163. *Membranipora brightonensis* Brydone, 1929	
Marsupites	Sussex
164. *Membranipora pererrans* Brydone, 1929	
Marsupites	SussexKent
165. *Membranipora roedeanensis* Brydone, 1929	
Echinocorys scutatus var. depressus	Roedean, Sussex
166. *Membranipora dunensis* Brydone, 1929	
Actinocamax quadratus	Downend, Isle of Wight
167. *Membranipora twyfordensis* Brydone, 1929	
Actinocamax quadratus	
168. *Membranipora palpebra* Brydone, 1929	Trimingham, Norfolk
169. *Membranipora palpebra* var. *nuntians* Brydone, 1929	Weybourne, Norfolk
170. *Membranipora mundesia* Brydone, 1929	
Porosphaera beds	Trimingham, Norfolk
Sponge beds	
171. *Membranipora cuckmerensis* Brydone, 1929	
Micraster cortestudinarium	Sussex
172. *Membranipora ossuaria* Brydone, 1929	
Micraster cortestudinarium	Sussex
173. *Membranipora chyngtonensis* Brydone, 1929	
Micraster cortestudinarium	Chyngton, Sussex
174. *Membranipora foslia* Brydone, 1929	
Micraster cortestudinarium	Sussex
175. *Membranipora hopensis* Brydone, 1929	
Micraster cortestudinarium	Sussex
176. *Membranipora comes* Brydone, 1929	Fécamp, France
177. *Membranipora sevingensis* Brydone, 1929	
Micraster coranguinum	Hampshire
178. *Membranipora walleriana* Brydone, 1929	
Micraster coranguinum	Hampshire
179. *Membranipora lutriana* Brydone, 1929	
Actinocamax quadratus	Hampshire
180. *Membranipora albida* Brydone, 1929	
Belemnitella mucronata	Whitecliff Bay, Isle of Wight
181. *Membranipora bramensis* Brydone, 1929	
Actinocamax quadratus	Bramford, Suffolk
Belemnitella mucronata	
182. *Membranipora putamen* Brydone, 1929	Trimingham, Norfolk
183. *Membranipora caminus* Brydone, 1929	Trimingham, Norfolk
184. *Membranipora perspicata* Brydone, 1929	Trimingham, Norfolk

185. *Membranipora transaviculata* Brydone, 1929	
Marsupites	Hampshire; Kent
186. *Membranipora transpinosa* Brydone, 1929	
Offaster pilula	Sussex
187. *Membranipora fufla* Brydone, 1929	
Offaster pilula	Sussex
188. *Membranipora exsanguis* Brydone, 1929	
Micraster cortestudinarium	Sussex Hampshire
189. *Membranipora index* Brydone, 1929	
Micraster cortestudinarium	Sussex Hampshire
190. *Membranipora torpedo* Brydone, 1929	
Coniacian	Fécamp, France
191. *Membranipora cantiana* Brydone, 1929	
Marsupites	Margate, Kent
192. *Membranipora scotneiensis* Brydone, 1929	
Echinocorys scutatus var. depressus	Sutton Scotney, Hampshire
193. *Membranipora pertenera* Brydone, 1929	
Offaster pilula	Sussex
194. *Membranipora hursleiensis* Brydone, 1929	
Actinocamax quadratus	Hursley, Hampshire
195. *Membranipora prætermissa* Brydone, 1929	
196. *Membranipora procurrens* Brydone, 1929	
197. *Membranipora taenialis* Brydone, 1929	
basal *Belemnitella mucronata*	Hampshire
198. *Membranipora benensis* Brydone, 1929	
basal *Belemnitella mucronata*	Bembridge Down, Isle of Wight
199. *Membranipora pyriporina* Brydone, 1929	
Belemnitella mucronata	Isle of Wight
200. *Membranipora fulcra* Brydone, 1929	
Micraster cortestudinarium	Sussex
201. *Membranipora riensis* Brydone, 1929	
Marsupites	Rye Common, Hampshire
202. *Membranipora margatensis* Brydone, 1929	
Marsupites	Margate, Kent
203. *Membranipora bradingensis* Brydone, 1929	
"lower" *Belemnitella mucronata*	Brading, Isle of Wight
204. *Membranipora retrorsa* Brydone, 1929	
Sponge beds	Trimingham, Norfolk
205. *Membranipora surculus* Brydone, 1929	Trimingham, Norfolk
206. *Membranipora middletonensis* Brydone, 1929	
"lower" *Belemnitella mucronata*	Isle of Wight
207. *Membranipora protensa* Brydone, 1929	
"lower" *Belemnitella mucronata*	Isle of Wight
208. *Membranipora aftonia* Brydone, 1929	
Belemnitella mucronata	Isle of Wight
209. *Membranipora retusa* Brydone, 1929	
Actinocamax quadratus	Bramford, Suffolk

210. *Membranipora wintonensis* Brydone, 1929	
Holaster planus	Winchester
211. *Membranipora secutrix* Brydone, 1929	
Offaster pilula	Sussex
212. *Membranipora gabinia* Brydone, 1929	
Offaster pilula	Sussex
213. *Membranipora formicaria* Brydone, 1929	
"lower" *Belemnitella mucronata*	Isle of Wight
214. *Membranipora calva* Brydone, 1929	
Sponge beds	Trimingham, Norfolk
215. *Membranipora branscombensis* Brydone, 1929	
Rhynchonella cuvieri	Branscombe, Devon
216. *Membranipora berriensis* Brydone, 1929	
Rhynchonella curieri	Branscombe, Devon
217. *Membranipora comptonensis* Brydone, 1929	
Holaster planus	Compton Bay, Isle of Wight Hampshire
218. *Membranipora pecoris* Brydone, 1929	
Micraster cortestudinarium	Stockbridge, Hampshire
219. *Membranipora follis* Brydone, 1929	
Micraster cortestudinarium	Sussex
220. *Membranipora intricata* (Lonsdale, 1850) var. *bellica* Brydone, 1929	
Micraster cortestudinarium	Sussex
221. *Membranipora alveolus* Brydone, 1929	
Micraster cortestudinarium	Sussex
222. *Membranipora fécampensis* Brydone, 1929	
Micraster cortestudinarium	Sussex Fécamp, France
223. *Membranipora trulla* Brydone, 1929	
Coniacian	Fécamp, France
224. *Membranipora galatea* Brydone, 1929	
Offaster pilula	Sussex
225. *Membranipora dolina* Brydone, 1929	
Offaster pilula	Sussex
226. *Membranipora passerina* Brydone, 1929	
Actinocamax quadratus	Hants
227. *Membranipora octavia* Brydone, 1929	
Actinocamax quadratus	Hants
228. *Membranipora aftonensis* Brydone, 1929	
Belemnitella mucronata	Isle of Wight
229. *Membranipora paucimutata* Brydone, 1929	Trimingham, Norfolk
230. *Membranipora famelica* Brydone, 1929	Trimingham, Norfolk
231. *Membranipora subfulgora* Brydone, 1929	
"lower" *Belemnitella mucronata*	Isle of Wight
232. *Membranipora alumensis* Brydone, 1929	
"lower" *Belemnitella mucronata*	Alum Bay, Isle of Wight
233. *Membranipora scalprum* Brydone, 1929	
Belemnitella mucronata	Weybourne, Norfolk
234. *Membranipora fluonia* var. *galba* Brydone, 1929	
Porosphaera beds	Trimingham, Norfolk

235. *Membranipora plebicola* Brydone, 1929	
Porosphaera beds	Trimingham, Norfolk
236. *Membranipora galeria* Brydone, 1929	Trimingham, Norfolk
237. *Membranipora faviola* Brydone, 1929	Trimingham, Norfolk
238. *Membranipora pollex* Brydone, 1929	Trimingham, Norfolk
239. *Membranipora galvia* Brydone, 1929	Trimingham, Norfolk
240. *Membranipora repugnans* Brydone, 1929	Trimingham, Norfolk
241. *Membranipora gerana* Brydone, 1929	Trimingham, Norfolk
242. *Membranipora catinus* Brydone, 1929	Trimingham, Norfolk
243. *Membranipora gegania* Brydone, 1929	
Porosphaera beds	Trimingham, Norfolk
244. *Membranipora vittata* Brydone, 1929	Trimingham, Norfolk
245. *Membranipora vittata* var. *gemina* Brydone, 1929	
Porosphaera beds	Trimingham, Norfolk
246. *Biflustra transposita* Brydone, 1929	
Offaster pilula	Hampshire
Echinocorys scutatus var. depressus	Sussex
247. *Biflustra transgemmata* Brydone, 1929	
Actinocamax quadratus	Isle of Wight
	Hampshire
248. *Biflustra filicosa* Brydone, 1929	
basal *Belemnitella mucronata*	Isle of Wight
249. *Biflustra genucia* Brydone, 1929	Meudon, France
250. *Biflustra roborata* Brydone, 1929	Trimingham, Norfolk
251. *Biflustra infundibulum* Brydone, 1929	Trimingham, Norfolk
252. *Discoflustrellaria senonensis* Brydone, 1929	
Echinocorys scutatus var. depressus to basal *Belemnitella mucronata*	
253. *Discoflustrellaria senonensis* var. *vaccina* Brydone, 1929	
basal *Belemnitella mucronata*	Isle of Wight
254. *Discoflustrellaria senonensis* var. *nodensis* Brydone, 1929	
"lower" *Belemnitella mucronata*	Nodewell, Isle of Wight
255. *Lunulites tenax* Brydone, 1929	
basal *Belemnitella mucronata*	Hampshire
"upper" *Actinocamax quadratus*	
256. *Lunulites tenebrosa* Brydone, 1929	
Actinocamax quadratus	Hampshire
257. *Lunulites incumbens* Brydone, 1929	
258. *Membranipora devonica* Brydone, 1930	
Rhynchonella cuvieri	Branscombe, Devon
259. *Membranipora insultans* Brydone, 1930	Weybourne, Norfolk
260. *Membranipora cubitalis* (Brydone, 1916d) var. *bicavata* Brydone, 1930	
261. *Membranipora taverensis* Brydone, 1930	
Belemnitella mucronata	Taverham
	Drayton
	Cringleford, Norfolk
262. *Vincularia glycera* Brydone, 1930	
Micraster cortestudinarium	Sussex
263. *Vincularia glycera* var. *gorgo* Brydone, 1930	
264. *Vincularia glycera* var. *gracilla* Brydone, 1930	

265. *Vincularia vertebralis* Brydone, 1930	
"upper" *Actinocamax quadratus*	Isle of Wight
"lower" *Belemnitella mucronata*	
266. *Vincularia weybournensis* Brydone, 1930	Weybourne, Norfolk
267. *Vincularia weybournensis* var. *sussexiensis* Brydone, 1930	
Micraster cortestudinarium	Sussex
268. *Vincularia anguina* Brydone, 1930	
Micraster coranguinum	Isle of Wight
269. *Vincularia henstingensis* Brydone, 1930	
Actinocamax quadratus	Hampshire
270. *Vincularia candyana* Brydone, 1930	
Actinocamax quadratus	Hampshire
271. *Vincularia glaphyra* Brydone, 1930	Trimingham, Norfolk
272. *Vincularia glaucia* Brydone, 1930	Trimingham, Norfolk
273. *Vincularia præcursor* Brydone, 1930	
Holaster planus	Hampshire
274. *Vincularia grania* Brydone, 1930	Weybourne
275. *Vincularia inconspicua* Brydone, 1930	
Porosphaera beds	Trimingham, Norfolk
276. *Vincularia tegminula* Brydone, 1930	
Porosphaera beds	Trimingham, Norfolk
277. *Vincularia tegmen* Brydone, 1930	
"Lower" *Belemnitella mucronata*	Isle of Wight
278. *Vincularia gygæa* Brydone, 1930	
Holaster planus (the *Vectensis* bed)	Isle of Wight
279. *Vincularia harmonia* Brydone, 1930	
Echinocorys scutatus var. *depressus*	Sussex
280. *Vincularia supercilium* Brydone, 1930	
basal *Belemnitella mucronata*	Sussex
Offaster pilula	Isle of Wight
281. *Vincularia allas* Brydone, 1930	
Porosphæra beds	Trimingham, Norfolk
282. *Vincularia brightonensis* Brydone, 1930	
Marsupites	Sussex
283. *Vincularia hecuba* Brydone, 1930	
*"*Lower*" Belemnitella mucronata*	Isle of Wight
284. *Vincularia hecate* Brydone, 1930	Meudon, France
285. *Vincularia hecamede* Brydone, 1930	
Actinocamax quadratus	Isle of Wight
286. *Vincularia lesueurina* Brydone, 1930	
basal *Belemnitella mucronata*	West Hampshire
287. *Vincularia caveina* Brydone, 1930	
*"*Lower*" Belemnitella mucronata*	Isle of Wight
288. *Vincularia hedyle* Brydone, 1930	Meudon, France
289. *Vincularia helena* Brydone, 1930	Weybourne, Norfolk
290. *Vincularia hegemone*	Weybourne, Norfolk
291. *Vincularia helice* Brydone, 1930	Trimingham, Norfolk
292. *Vincularia foricula* Brydone, 1930	Trimingham, Norfolk
293. *Onychocella disparilis* var. *hellotis* Brydone, 1930	Weybourne, Norfolk
294. *Onychocella disparilis* var. *helvia* Brydone, 1930	
Porosphaera beds	Trimingham, Norfolk

295. *Onychocella substrumulosa* Brydone, 1930	Weybourne, Norfolk
296. *Onychocella heraclea* Brydone, 1930	Weybourne, Norfolk
297. *Onychocella herennia* Brydone, 1930	Trimingham, Norfolk
298. *Onychocella hercyna* Brydone, 1930	
Porosphaera beds	Trimingham, Norfolk
299. *Onychocella altonensis* Brydone, 1930	
Holaster planus	Alton, Hampshire
300. *Onychocella hersilia* Brydone, 1930	
Micraster cortestudinarium	Sussex
301. *Onychocella hermione* Brydone, 1930	
Micraster cortestudinarium	Sussex
Micraster coranguinum	Isle of Wight
302. *Onychocella hermione* var. *protendens* Brydone, 1930	
Micraster cortestudinarium	
303. *Onychocella hesione* Brydone, 1930	
Micraster coranguinum	Hampshire
304. *Onychocella hestia* Brydone, 1930	
Micraster coranguinum	Hampshire
Offaster pilula	Isle of Wight
Actinocamax quadratus	
305. *Rhagasostoma intelegans* var. *incarcerata* Brydone, 1930	Weybourne, Norfolk
306. *Rhagasostoma intelegans* var. *testudinaria* Brydone, 1930	
Micraster cortestudinarium	Sussex
307. *Rhagasostoma subgibbosum* Brydone, 1930	
basal *Belemnitella mucronata*	Hampshire Isle of Wight
308. *Rhagasostoma gibbosum* (Marsson) var. *weybournensis* Brydone, 1930	Trimingham, Norfolk
309. *Rhagasostoma sheringense* Brydone, 1930	Weybourne, Norfolk
310. *Rhagasostoma trimense* Brydone, 1930	Trimingham, Norfolk
311. *Rhagasostoma trulla* Brydone, 1930	Trimingham, Norfolk
312. *Onychocella mimosa* Brydone, 1930	
Porosphaera beds	Trimingham, Norfolk
313. *Onychocella miscens* Brydone, 1930	Trimingham, Norfolk
314. *Latereschara hantonensis* Brydone, 1930	
Holaster planus	Alton, Hampshire
315. *Latereschara cuckmerensis* Brydone, 1930	
Micraster cortestudinarium * (Rowe's lower fourth of the *Micraster coranguinum* zone)	Sussex
316. *Latereschara proboscidea* Brydone, 1930	
Basal *Belemnitella mucronata*	Hampshire, Isle of Wight
317. *Latereschara ovigera* Brydone, 1930	Trimingham, Norfolk
318. *Latereschara saltans* Brydone, 1930	Trimingham, Norfolk
319. *Rotiporina culveriana* Brydone, 1930	
Holaster planus	Isle of Wight
320. *Rotiporina altonensis* Brydone, 1930	
Holaster planus	Hampshire
321. *Rotiporina altonensis* var. *sublævis* Brydone, 1930	
Micraster cortestudinarium	
322. *Rotiporina roborata* Brydone, 1930	
Uintacrinus chalk	Hampshire, Kent, Sussex
Offaster pilula	
Actinocamax quadratus	

323. *Rotiporina decorata* Brydone, 1930	
Echinocorys scutatus var. *depressus*	Sussex
324. *Rotiporina subangulata* Brydone, 1930	
Actinocamax quadratus	
basal *Belemnitella mucronata*	
"Lower" *Belemnitella mucronata*	
325. *Rotiporina antrifera* Brydone, 1930	
Basal and "lower" *Belemnitella mucronata*	Hampshire Isle of Wight
326. *Rotiporina shidensis* Brydone, 1930	
*"*lower*" Belemnitella mucronata*	Isle of Wight
327. *Rotiporina trimensis* Brydone, 1930	Trimingham, Norfolk
328. *Porina goldfussi* Brydone, 1930	Meudon, France
329. *Porina goldfussi* var. *meudonensis* Brydone, 1930	
Not below "Lower" *Belemnitella mucronata*	
330. *Porina hipparchia* Brydone, 1930	
Junction of *Actinocamax quadratus* and *Belemnitella mucronata*	
331. *Porina portuosa* Brydone, 1930	
Echinocorys scutatus var. *depressus*	Hampshire
332. *Porina aftonensis* Brydone, 1930	
Actinocamax quadratus	Hampshire Isle of Wight
basal *Belemnitella mucronata*	
333. *Porina francorum* Brydone, 1930	Meudon, France
334. *Porina craterica* Brydone, 1930	Meudon, France
335. *Porina hippolyte* Brydone, 1930	Meudon, France
336. *Porina diversa* Brydone, 1930	Weybourne, Norfolk
337. *Porina hortensia* Brydone, 1930	Trimingham, Norfolk
338. *Porina historis* Brydone, 1930	Trimingham, Norfolk
339. *Porina horatia* Brydone, 1930	Trimingham, Norfolk
340. *Porina vesicosa* Brydone, 1930	Trimingham, Norfolk
341. *Porina hostilia* Brydone, 1930	Trimingham, Norfolk
342. *Porina acutimargo* Brydone, 1930	Trimingham, Norfolk
343. *Porina acutimargo* var. *laminata* Brydone, 1930	
Porosphaera beds	Trimingham, Norfolk
344. *Porina sussexiensis* Brydone, 1930	Brighton, Sussex
345. *Porina allantica* Brydone, 1930	Trimingham, Norfolk
346. *Porina socia* Brydone, 1930	
"Lower" *Belemnitella micronata*	Isle of Wight
347. *Porina tenuimuralis* Brydone, 1930	
"Middle" *Belemnitella mucronata*	Studland and Lulworth, Dorset
348. *Porina subvalligera* Brydone, 1930	Meudon, France
349. *Porina scoriacea* Brydone, 1930	
"Lower" *Belemnitella mucronata*	Isle of Wight
350. *Porina nodensis* Brydone, 1930	
"Lower" *Belemnitella mucronata*	Isle of Wight
351. *Porina secreta* Brydone, 1930	
Echinocorys scutatus var. *depressus*	Sussex
352. *Porina secreta* var. *ovingensis* Brydone, 1930	
353. *Porina lapidosa* Brydone, 1930	Trimingham, Norfolk
354. *Porina maculata* Brydone, 1930	
"Lower" *Belemnitella mucronata*	Isle of Wight

355. *Porina lata* Brydone, 1930	
Porosphaera beds	Trimingham, Norfolk
356. *Porina subfragilis* Brydone, 1930	
"Lower" *Belemnitella mucronata*	Isle of Wight
357. *Porina impendens* Brydone, 1930	Meudon, France
358. *Porina offa* Brydone, 1930	
"Lower" *Belemnitella mucronata*	Isle of Wight
"Middle" *Belemnitella mucronata*	Studland, Dorset
359. *Porina subarticulata* Brydone, 1930	Trimingham, Norfolk
360. *Systenostoma asperulum* (Marsson) var. *præcox* Brydone, 1930	
Belemnitella mucronata	
361. *Systenostoma asperulum* (Marsson) var. *parisiensis* Brydone, 1930	Meudon, France
362. *Membranipora eleanoræ* Brydone, 1936	Eaton and Taverham, Norfolk
363. *Membranipora suffolcia* Brydone, 1936	
Top of zone of granulated *Actinocamax quadratus*	Bramford, Suffolk
364. *Membranipora shavensis* Brydone, 1936	
Actinocamax quadratus	Hampshire
365. *Membranipora perincerta* Brydone, 1936	
Micraster cortestudinarium	Sussex
366. *Latereschara proboscidea* Brydone, 1930 var. *expansa* Brydone, 1936	
367. *Onychocella devoniensis* Brydone, 1936	
Cidaris beds of *Rhynchonella cuvieri*	Branscombe, Devon
368. *Onychocella introversa* Brydone, 1936	
Belemnitella mucronata	
Micraster cortestudinarium	
Micraster coranguinum	
Marsupites	
369. *Onychocella testudinaria* Brydone, 1936	
Micraster cortestudinarium	Sussex
	Kent
	Hampshire
370. *Onychocella hantoniensis* Brydone, 1936	
E. scutatus var. *depressus*	Sussex
Basal *Belemnitella mucronata*	Isle of Wight
Actinocamax quadratus	Hants
Actinocamax quadratus-Belemnitella mucronata junction	Bramford, Suffolk
371. *Onychocella norfolcia* Brydone, 1936	
"Middle" *Belemnitella mucronata*	Catton, Weybourne and
Porosphaera beds	Trimingham, Norfolk
Basal *Belemnitella mucronata*	
372. *Onychocella quadraticola* Brydone, 1936	
Actinocamax quadratus	Hampshire
373. *Onychocella alticollis* Brydone, 1936	
Micraster coranguinum	Isle of Wight
374. *Onychocella eleanoræ* Brydone, 1936	Trimingham, Norfolk
375. *Onychocella bassleri* Brydone, 1936	
Micraster cortestudinarium	Sussex
376. *Onychocella quadraticola brightoniensis* Brydone, 1936	
Uintacrinus chalk to lower *Echinocorys scutatus* var. *depressus*	
Mainly *Marsupites*	

377. *Onychocella cuckmeriensis* Brydone, 1936	
Micraster cotestudinarium zone	
*(Rowe's lower fourth of the *Micraster coranguinum* zone)	Sussex
378. *Onychocella alrensis* Brydone, 1936	
Micraster coranguinum	Hampshire
379. *Onychocella longæva* Brydone, 1936	
Actinocamax quadratus	Hampshire Isle of Wight
Belemnitella mucronata	Mendon, France
380. *Onychocella incrustata* Brydone, 1936	
"Lower" *Belemnitella mucronata*	Isle of Wight
381. *Onychocella trimensis* Brydone, 1936	Trimingham, Norfolk
382. *Onychocella punctula* Brydone, 1936	Trimingham, Norfolk
383. *Onychocella parallela* Brydone, 1936	Trimingham, Norfolk
384. *Onychocella sheringensis* Brydone, 1936	Weybourne, Norfolk
385. *Onychocella advena* Brydone, 1936	Meudon, France
386. *Onychocella roborata* Brydone, 1936	Trimingham, Norfolk
387. *Rhagasostoma inelegans* (Lonsdale) var. *angliæ* Brydone, 1936	
Belemnitella mucronata	Trimingham and Norwich,
Marsupites	Norfolk
Porosphaera beds	Bramford, Suffolk
388. *Rhagasostoma gravense* Brydone, 1936	
Micraster coranguinum	Gravesend, Kent
389. *Rhagasostoma gibbosulum* Brydone, 1936	
"Lower" *Belemnitella mucronata*	Isle of Wight
390. *Rhagasostoma vectense* Brydone, 1936	
"Lower" *Belemnitella Belemnitella mucronata*	Isle of Wight
391. *Rhagasostoma precursor* Brydone, 1936	
Porosphaera beds	Trimingham, Norfolk
392. *Rhagasostoma calceolum* Brydone, 1936	
'Probably *Porosphaera* beds'	Trimingham, Norfolk
393. *Rhagasostoma calceolum* Brydone, 1936 var. *attoneanum* Brydone, 1936	
394. *Rhagasostoma gimense* Brydone, 1936	
Porosphaera beds Sponge beds	Trimingham, Norfolk
395. *Rhagasostoma procurrens* Brydone, 1936	
Micraster cortestudinarium	Sussex
396. *Rhagasostoma marsupitium* Brydone, 1936	
Marsupites	Sussex
Uintacrinus chalk	
Actinocamax quadratus	
Belemnitella mucronata	Isle of Wight
397. *Rhagasostoma irrostratum* Brydone, 1936	
Belemnitella mucronata	Weybourne, Norfolk
398. *Rhagasostoma pendens* Brydone, 1936	
399. *Rhagasostoma anglicum* Brydone, 1936	
400. *Semieschara tridentula* Brydone, 1936	
Upper *Actinocamax quadratus*	
401. *Semieschara rottingensis* Brydone, 1936	
402. *Semieschara acuum* Brydone, 1936	
"Lower" *Belemnitella mucronata*	Alum Bay, Isle of Wight
403. *Semieschara clausula* Brydone, 1936	
Micraster cortestudinarium	Sussex
	Devon
Micraster coranguinum	Hampshire
404. *Semieschara quadriconvexa* Brydone, 1936	Trimingham, Norfolk
405. *Semieschara cattoniana* Brydone, 1936	

406. *Semieschara cattoniana* Brydone, 1936 var. *gimense* Brydone, 1936	
Belemnitella mucronata	
407. *Semieschara norvicia* Brydone, 1936	Hartford and Catton, Norfolk
	Portsdown, Hampshire
Basal *Belemnitella mucronata*	Alum Bay, Isle of Wight
"Lower" *Belemnitella mucronata*	
408. *Semieschara norvicia* Brydone, 1936 var. *carisiana* Brydone, 1936	
409. *Semieschara latepatens* Brydone, 1936	
"Lower" *Belemnitella mucronata*	Isle of Wight
410. *Semieschara manicosa* Brydone, 1936	
Porosphaera beds	Trimingham, Norfolk
411. *Semieschara scopulorum* Brydone, 1936	
Basal *Belemnitella mucronata*	Isle of Wight
412. *Semieschara hartfordensis* Brydone, 1936	
"Lower" *Belemnitella mucronata*	Hartford, Catton and
	Cley, Norfolk
413. *Semieschara glavensis* Brydone, 1936	
Belemnitella mucronata	Cley, Norfolk
414. *Semieschara accrescens* Brydone, 1936	
Porosphaera beds	Trimingham, Norfolk
415. *Semieschara globator* Brydone, 1936	
Sponge beds	Trimingham, Norfolk
416. *Semieschara æquipartita* Brydone, 1936	Trimingham, Norfolk
417. *Semieschara inclinata* Brydone, 1936	Weybourne and Catton,
	Norfolk
418. *Semieschara arrensis* Brydone, 1936	
Actinocamax quadratus	Isle of Wight
419. *Semieschara tumefacta* Brydone, 1936	
420. *Semieschara tertia* Brydone, 1936	
Holaster planus	Hampshire
421. *Semieschara tuftonensis* Brydone, 1936	
Micraster coranguinum	Hampshire
422. *Semieschara walthamensis* Brydone, 1936	
Actinocamax quadratus	Bishop's Waltham and
	Portsdown, Hampshire
423. *Semieschara alumensis* Brydone, 1936	
"Lower" *Belemnitella mucronata*	Isle of Wight
424. *Semieschara henrici* Brydone, 1936	Studland, Dorset
425. *Semieschara subpunctulata* Brydone, 1936	
Belemnitella mucronata	Hartford and Catton, Norwich
426. *Semieschara peropaca* Brydone, 1936	Trimingham, Norfolk
427. *Tylopora lorea* (Lang) *hantoniensis* Brydone, 1936	
Holaster planus	Hampshire
428. *Semieschara microporina* Brydone, 1936	
"Lower" *Belemnitella mucronata*	Isle of Wight
429. *Micropora bedensis* Brydone, 1936	
basal *Belemnitella mucronata*	Hampshire
430. *Micropora multicrescens* Brydone, 1936	
Porosphaera beds	Trimingham, Norfolk
431. *Micropora monticula* Brydone, 1936	Trimingham, Norfolk

432. *Puncturiella norviciensis* Brydone, 1936	Trimingham, Norfolk
433. *Puncturiella norviciensis* var. *ordinata* Brydone, 1936	
434. *Puncturiella norviciensis* var. *spinulata* Brydone, 1936	
435. *Puncturiella superba* Brydone, 1936	Trimingham, Norfolk
436. *Homalostega hartfordensis* Brydone, 1936	Hartford, Norwich
437. *Homalostega punctilla* Brydone, 1936	Hartford, Catton and Trimingham, Norwich
438. *Homalostega sussexiensis* Brydone, 1936	
Micraster cortestudinarium	Sussex
439. *Cryptostoma wollianum* Brydone, 1936	
440. *Cryptostoma sub-batheri* Brydone, 1936	Weybourne, Eaton, Hartford and Catton, Norfolk
441. *Cryptostoma compactum* Brydone, 1936	
Porosphaera beds	Trimingham, Norfolk
442. *Cryptostoma corallinum* Brydone, 1936	
Lower and middle *Belemnitella mucronata* chalk	Norfolk
443. *Cryptostoma globidecus* Brydone, 1936	
Lower and middle *Belemnitella mucronata* chalk	Norfolk incl. Trimingham
Porosphaera beds	Norfolk,
444. *Cryptostoma sheringense* Brydone, 1936	Weybourne, Norfolk
445. *Cryptostoma lagenale* Brydone, 1936	Weybourne and Overstrand (erratics), Norfolk
446. *Cryptostoma aviculigerum* Brydone, 1936	Weybourne, Norfolk
447. *Cryptostoma eleanoræ* Brydone, 1936	Trimingham, Norfolk
448. *Cryptostoma* (?) *bifrons* Brydone, 1936	Meudon, France
449. *Cryptostoma* (?) *carinatum* Brydone, 1936	Meudon, France
450. *Cellepora accumulate* (Hagenow) var. *bellicosa* Brydone, 1936	
Porosphaera beds	Trimingham, Norfolk
451. *Terebripora robusta* Brydone, 1936	Trimingham, Norfolk
452. *Herpetopora comptoniensis* Brydone, 1936	Chloritic Marl

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