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George Robert Vine (1825-1893): stay maker, bryozoologist and fossil dealer

Caroline J. Buttler,* Patrick N. Wyse Jackson[†] and Tom Sharpe*

**National Museums and Galleries of Wales, Cathays Park,
Cardiff CF10 3NP, Wales, UK.*

[†]Department of Geology, Trinity College, Dublin 2, Ireland

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1. Introduction

George Robert Vine (1825-1893) (Figure 1), was a Sheffield-based stay or corset maker and amateur naturalist who specialised in the study fossil bryozoans and Coal Measures plants. He published about 75 papers on Bryozoa between 1877 and 1893. In particular an ambitious series of British Association reports on British fossil and Recent faunas are his most valuable contribution to bryozoological research, and he is principally remembered today as the author of the Order Cryptostomata.

This paper presents a brief biography of this illusive amateur palaeontologist, gives an assessment of his bryozoological work, and describes his activities as a fossil dealer who specialised in micropalaeontological preparations. Examination of 59 letters sent to Dr Philip B. Mason (a doctor from Burton-on-Trent) by Vine, and now housed in the National Museums and Galleries of Wales gives a valuable insight into Vine's fossil dealership and some of the problems that he experienced during the late 1880s and 1890s. Much of our present information comes from these letters, which are herein referred to as the "Vine-Mason letters". The date cited in footnotes and elsewhere refers to the date the letter was written by Vine.



Figure 1. George Robert Vine, senior (1825-1893)
(*Photograph courtesy Sheffield Libraries, Archives, and Information; Local Studies Section*)

Additionally we discuss the present whereabouts of his collections and manuscripts associated with him and his family, and give an extensive bibliography.

2. Biographical sketch

Very little is known of the background and early life of George Robert Vine. His son in two obituaries and a subsequent book about Attercliffe, Sheffield where they lived, provides some information¹ while more is available in a short notice of his death published in *The Sheffield and Rotherham Independent*.² These are the main sources of our information given below. Further gleanings have been obtained from an autobiographical piece which Vine recounted his early life³ and from the Census return for 1881.

George Robert Vine was born in Hassops, Portsea, just north of Portsmouth on the south coast of England on 20th October 1825, into a poor family. His father was a mariner. He received no formal education beyond national school; however George Robert developed an interest in poetry, and many years later he could still recite long portions of his favourite passages. He was not keen on mathematics - a failing that was to haunt him later in life.

Vine left school before the age of thirteen and began a series of jobs, that included a butcher's boy and then a grocer's boy. However, these occupations did not give him satisfaction, and he would indulge his passion for learning by purchasing as many books as his meagre wages could allow. He taught himself Greek and Latin, and became interested in poetry, history and science. He then turned his hand to journalism. Vine produced papers on Martin Luther, published poetry: *Poems by a Factory Lad*, and wrote semi-political articles for the paper *The Free Inquirer*. By all accounts he did not find this financially rewarding and after a period of some instability when he took up a trade - that of stay making, he accepted a position as the manager of a corset factory in Athlone, Ireland in 1855.

In Athlone Vine developed an interest in geology and he spent some time studying the Carboniferous Limestone fossils found in the local quarries,⁴ as well as researching the nature of the peat bogs that were plentiful in the Irish midlands. Athlone is situated on the River Shannon which flows north-south through the midlands of Ireland. During the late 1850s when Vine was in residence it was an important centre for woollen manufacturing.⁵ This was because the town had the benefits of a close indigenous source of wool, plenty of water necessary for manufacturing and dying processes, links to foreign markets via a navigable river and the port of Limerick, as well as links to the domestic markets of Dublin via Shannon Harbour and the Grand Canal.

While in Ireland he married Elizabeth McKenzie,⁶ and their eldest child Elizabeth was born there in 1859, probably at their home on Castlemaine Street. In 1861 Vine and his

wife and daughter left Ireland and settled in Middlesex, where their son George Robert (Figure 2) was born in 1862, and their younger daughter Alice on 13th February 1864.⁷ Vine still remained somewhat unsettled and became involved in the struggle for workers' rights.



Figure 2. George Robert Vine, junior (1862-1940)

(Photograph courtesy Sheffield Libraries, Archives, and Information; Local Studies Section)

During the late 1840s and early 1850s Britain experienced a rapid industrial development and associated urban expansion. Large numbers of men and women were brought into the industrial workforce as rural migrants, and sought work in the cities. Various elements in this workforce sought social and educational improvements, and Vine, being young and idealistic was one of them. He came into contact with other radicals and reformers such as William James Linton (1812-1898), Giuseppe Mazzini (1805-1872) and Lajos Kossuth (1802-1894). Linton was an engraver who did much fine work for the *London Illustrated News* and subsequently became a noted illustrator of children's books in the United States. Mazzini, an Italian patriot who sought a united republic of Italy while in exile in London, shared republican views with Kossuth, a Hungarian activist against Austrian rule, who lived in London. Vine was also involved in the Chartist movement which was active in industrialised Britain from the 1830s. This movement sought votes for all men over 21 years of age and fairer parliamentary representation. By the late 1840s the movement which had been taken over by radicals had simply fizzled out. In the 1850s, as his son mentions in his obituary, Vine himself recognised his need to settle down and provide for his family.

He moved briefly to his hometown of Portsmouth, before taking a position as manager



*Figure 3. Grave and headstone of George Robert Vine, senior and his wife Elizabeth.
(Photograph: P.N. Wyse Jackson)*

of a stay and crinoline warehouse in Granville Street, Park in Sheffield in 1865. He was to remain in Sheffield for the remainder of his life. After only two years the warehouse business folded and he moved to the adjacent suburb of Carbrook where he established his own stay manufactory at Alexandria Terrace Dun Street (now Dunlop Street), while still continuing to write articles for *The Sheffield Post* on topics such as “Wages and Prices”. Two years later he moved to another house at Luther Place in Attercliffe where he initiated his scientific researches, which ultimately became a consuming passion and a source of some valuable income. By 1875 he was in residence and business at 112 Hill Top, Attercliffe which remained his home and his workshop for the last eighteen years of his life.⁸ He was later joined in the business by his two daughters who were both described as “Stay Makers Assistant” in the returns of the 1881 census. We are uncertain as to how he sold his products, but suspect that he would have supplied local shops such as John Banner Ltd, a General Drapers and Ladies’ Outfitters, situated close by at 620-626 Attercliffe Road.⁹

He was a hard and dedicated worker; his evenings were spent studying bryozoans and he rarely took a holiday. In 1875 he spent a few days at the holiday resort at Cleethorpes near the Humber Estuary, and returned twice, in 1879 and 1882, for day visits. Cleethorpes was a popular holiday destination for the Yorkshire hinterland and its industrial towns.

From Sheffield it was easily reached via the railway which passed eastwards through the towns and villages of Worksop, Blyton and Kirkton in Lindsey, north above the Lincolnshire Wolds, and southwards to the port of Grimsby, and beyond where it terminated at Cleethorpes. One can imagine Vine disembarking the train with his collecting paraphernalia and heading directly to the sea shore and rocky pools, where he must have cut an unusual sight. Even on his infrequently-taken holidays Vine engaged in bryozoan research – he wrote up the bryozoan fauna of this part of the east coast of England in one of his final papers.

From an early age his parents instilled in him a strong sense of the importance of religion and this never left him. He was an active member of the Methodist congregation at Clifton Street in Sheffield for a number of years between 1867 and 1875 when he would occasionally preach at Sunday worship.¹⁰ He always acknowledged the importance of Sunday school training in the furtherance of his education and in later life he served his local community as a teacher and superintendent at the Leigh Street Baptist Church Sunday School for seventeen years from 8th October 1876 until 1893.¹¹

According to his son he was still working on his beloved bryozoans up to two days before his death. On Tuesday 8th August 1893 at 1.20 am George Robert Vine died at home in Sheffield after an illness that had lasted several months, and which had resulted in his being confined to his bed from the preceding 14th July. Surrounded by his family, he whispered “All right; good night” just before his death. He was buried two days later on Thursday 10th August at Tinsley Park Cemetery, close to his home (Figure 3).¹² This cemetery was one of many in Sheffield at the time, having opened *c.* 1880.

3. Work on bryozoans

During the mid-1800s there developed a proliferation of provincial literary and scientific societies,¹³ to which men such as Vine became attracted. He was to become closely associated with a number of Sheffield-based organisations later in life. He was co-founder and first President of Sheffield Microscopical Society and a member of the Sheffield Naturalists’ Club (1882-1891),¹⁴ the Yorkshire Geological and Polytechnical Society (1883-1893), and the Sheffield Literary and Philosophical Society. He would no doubt engage in the geological debates of the day, and was a popular lecturer himself who gave talks on diverse subjects such as Coal Measure plants, Carboniferous geology, Hugh Miller, origins of coal, zoophytes,¹⁵ collecting postage stamps (a pastime he took up in the latter years of his life),¹⁶ and wells and well-boring.¹⁷ Towards the end of his life his contribution to local science was appropriately acknowledged by the Yorkshire Naturalists’ Union which elected him to Honorary Membership at their meeting in Scarborough on 14th November 1891.¹⁸

As we have seen Vine’s interest in palaeontology was first fostered when he worked

in Ireland – during which time he investigated the local geology and assembled a collections of Lower Carboniferous fossils. We know from his letters that he collected a great deal of material over the next 25 years.

However his interest in micropalaeontology and in particular in bryozoans was ignited around the year 1875 when he received some fossil material from Scotland and Northumberland from the Rev. Walter Howchin (c. 1845-1937) of Morpeth.¹⁹ These were given in exchange for some theological magazines. With the assistance of Howchin, Vine familiarised himself with the nature of foraminiferans, but he was unable to solicit much help with the bryozoans, a group which initially puzzled him.²⁰

What is somewhat surprising is that a humble stay or corset maker of Sheffield should have rapidly become an influential figure in the study of bryozoans, at a time when such leisurely activities were generally preserved for the wealthier classes. He published his first scientific paper in 1876 and by the time of his death some seventeen years later had published over seventy papers (see Appendix 1). This publication record is quite remarkable considering that he continued to run his own business at the same time.

On 18th February 1881 Vine was in London to receive one of two awards from the Lyell Fund for that year from the Geological Society of London. Its President, Robert Etheridge seems to have been a strong supporter of Vine's initial forays into the world of bryozoology, as was Professor Philip Duncan of University College, London the recipient of the Wollaston Medal at the same ceremony. In making the presentation Etheridge said of Vine in his citation:

In making this award the Council were actuated in part by the wish to express their sense of the value of your researches upon the fossil Bryozoa of the Palaeozoic rocks, as evinced especially by your published writings on the Diastoporidae, an exceedingly difficult group, and in part by their desire to assist you in the further prosecution of your investigations.²¹

It must have been a very proud moment for George Vine. In the company of eminent geologists such as Archibald Geikie and H.G. Seeley, he stood up and responded:

I receive through you this token of recognition, on the part of the Council, of my humble labours, with mingled feelings of pleasure and pride. I cannot, at present understand the reason why I should be selected as one of the recipients of the Lyell Fund. ...I shall do my utmost to fulfil the higher promise which my hitherto crude efforts have awakened. When, some years ago, I began to study the Carboniferous Polyzoa, I wrote to Prof. Duncan, F.R.S., asking for certain information respecting these Polyzoa; he wrote me back word saying that he did not know much about the species himself, and he did not think that there were many men in England who did; but he counselled me to go and work and find out for myself, and then he and others would be glad to know.

I may differ from many of you in the future, but I shall hope to do so in such a manner as to show that I do not forget that we are fellow-students and at the same time gentlemen.²²

Two years earlier Duncan had persuaded the British Association to establish a committee to report on fossil Polyzoa. Its members were himself and Vine as Secretary. It would not have been difficult for Duncan to persuade his eminent colleagues to fund the work of this committee – he was after all President of Section C (Geology) for that year. What is surprising is that Vine should have found patronage from this body. In 1879 the British Association awarded the Fossil Polyzoa committee the sum of £10-0-0, and renewed this figure for the next four years up until 1884. Duncan acted as Chairman of the committee in 1879 and 1880 and was replaced by the Sheffield naturalist Dr Henry Clifton Sorby between 1881 and 1884.²³ In that year a similar sum was granted for the study of Recent Polyzoa and in the three years between 1889 and 1891 £10-0-0 was awarded for the study of Cretaceous Polyzoa, under the chairmanship of H. Woodward. In total the committee received £90 from the British Association, most of which was probably given to Vine to support his research. He was later to acknowledge:

“most of my scientific work has been carried on by means of small grants from the Royal Society, and from the British Association – you will understand I am not in an independent position.”²⁴

There can be no doubt that the Secretaryship of the British Association committees that reported on bryozoans gave George Vine a position of some authority in bryozoological circles. He was soon corresponding widely and exchanged material with other bryozoologists including George Busk,²⁵ Eliza Jelly²⁶ and John Young in Britain and E.O. Ulrich and J.M. Nickles in the United States. He also received material for identification from University academics who wished to improve the holdings of their institutions. These included Professors Judd of London and Hughes of Oxford.²⁷ He also corresponded with various amateur enthusiasts including George Shrubsole a chemist from Chester, with whom he collaborated on a paper concerning Silurian bryozoans,²⁸ with Mr Thomas Jesson who sent him specimens from the Greensand of Cambridge,²⁹ Mr Thomas John George (*fl.*1880-1904) who supplied material from the Jurassic of Northampton²⁹ and Mr H.J. Euson, F.G.S. who had obtained specimens from the boring at Gayton also in Northamptonshire.³¹ From these fellow scientists he received much bryozoan material.

It is perhaps easy to dismiss the work of Vine as being somewhat poor in quality. Indeed, when one compares his work with contemporary works published by George Busk and Arthur William Waters it appears poorly executed and badly illustrated. Most of Vine's papers were illustrated with drawings executed by his son, who had studied Art, as well as science. While none of the published versions are actually signed, a number of characteristic mauve coloured copies interleaved in offprints now in Cardiff and London

bear the younger Vine's signature. Vine junior had distinctive handwriting which was somewhat blocky in style and contrasted sharply with that of his father, which was an untidy copper-plate style. Other unpublished illustrations, of inferior draftmanship, also found interleaved in some of these offprints, were probably drawn by Vine himself. Good quality illustrations, drawn by professional draftsmen (including Arthur Humphries Foord who later worked on Irish Carboniferous cephalopods), were used to illustrate his papers published by the Geological Society. One must imagine that these were paid for by the Society and not by Vine.

Recent examination and assessment of his work on Carboniferous faunas has shown that many of his taxonomic determinations are doubtful; his descriptions were short, and his illustrations are very poor. He erected a large number new species and varieties (see Appendix 3), many of which were based on limited populations and sample sizes – some of his taxa are now regarded as tenuous.³² There is also some evidence to suggest that in his eagerness to describe British faunas he created nomenclatural problems elsewhere.³³ A detailed reassessment of his specimens which may be held in various museum collections (see below) is required to fully assess the validity of many of his taxa.

However, before dismissing his work as worthless, one must remember that he worked purely in his own free time – which must have been limited – and given his output his contribution is really rather remarkable. He wrote extensively on Carboniferous bryozoans particularly from Lancashire and Yorkshire. He is best remembered as being the author of the Order Cryptostomata which he proposed in 1884, and the series of comprehensive reports for the British Association that described all the fossil bryozoans of the Great Britain known at that time. Such an undertaking was ambitious. The reports totalled some 570 printed pages, and remain as a testimony to Vine's energy and infectious enthusiasm for bryozoans. He is also remembered in the specific name *Pinnatopora vinei*, erected by Ulrich in 1888, and in the name of the genus *Vinella* Ulrich, 1890, a Silurian ctenostome.³⁴ This would suggest that Ulrich forgave Vine his publishing his manuscript name *Streblotrypa* a few years earlier.³⁵

4. Fossil dealership

George Vine ran a business dealing in fossils from his home at 112 Hill Top, Attercliffe, Sheffield from about 1880. The business was jointly run with his son George Robert, junior³⁶ who was a mathematics teacher and later headmaster of Hunters Bar Primary School, and subsequently of Huntsman's Gardens School, both of which were in Attercliffe. The latter school was of an unusual design, in that all 1,250 pupils could be seen simultaneously from the headmaster's desk!³⁷ Vine and his son specialised in the preparation and supply of micro-palaeontological specimens. Whereas Vine senior was primarily concerned with bryozoans, his son was interested in forams and ostracodes (see Appendix 2), they also supplied echinoderms, gastropods, sponges and annelids.

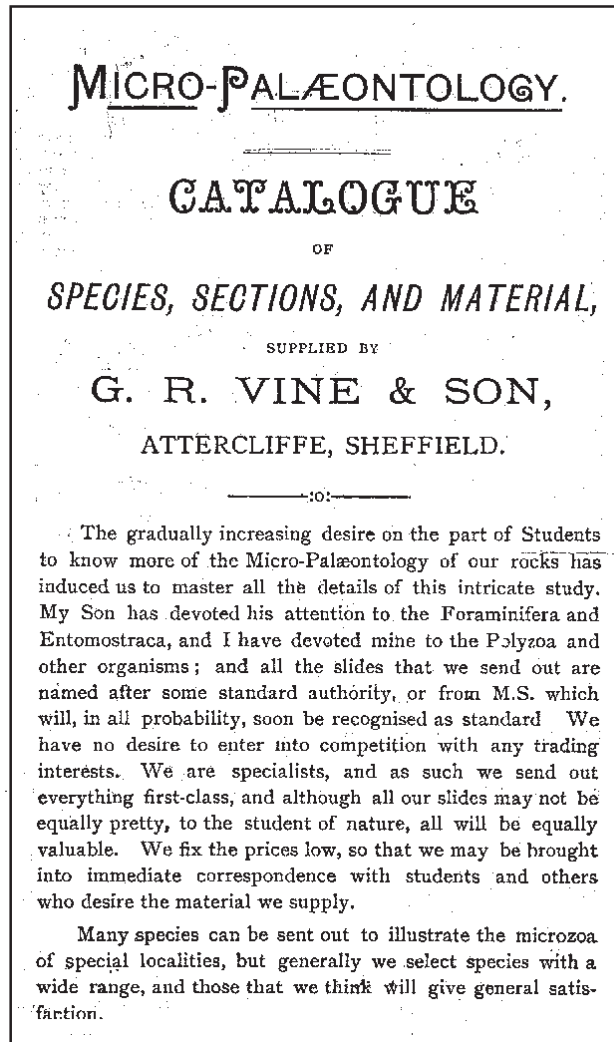


Figure 5. First page of catalogue of micro-palaeontological specimens available from G.R. Vine and Son. (Department of Geology, National Museums and Galleries of Wales)

(Figure 5) some 154 different samples are listed for sale.⁴¹ These include 81 Carboniferous taxa comprising Foraminifera, Ostracoda and Bryozoa. Additionally various Mesozoic and Tertiary foraminifera are also listed, together with dredge material from the voyages of H.M.S. *Challenger* and H.M.S. *Alert*.

In this catalogue Vine explained that he and his son were specialists and although all their slides may not be equally pretty, all were equally valuable. They described their prices as low so that they could be brought into contact with students and others who desired their material. Material was supplied identified with determinations either printed

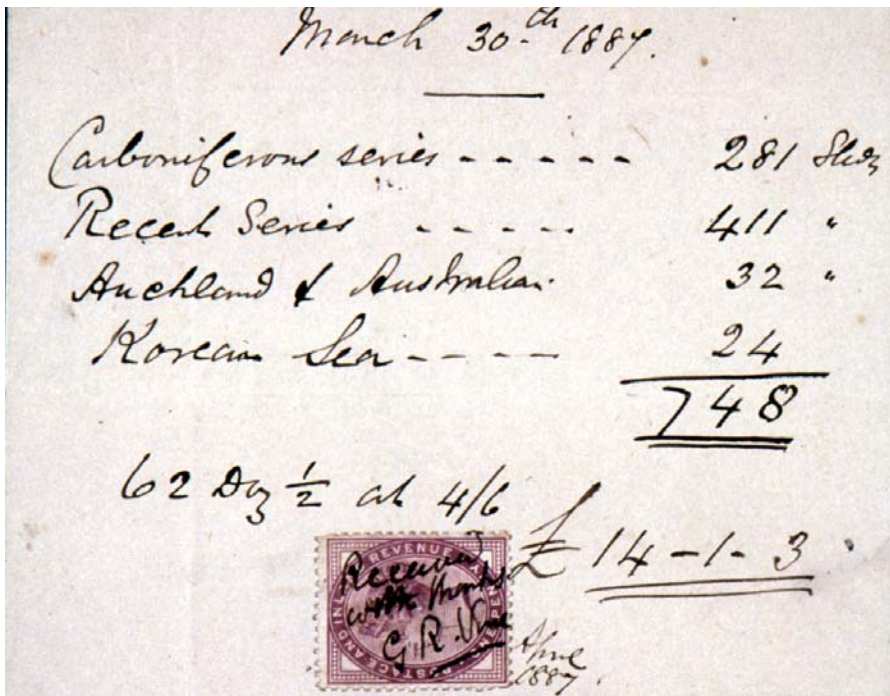


Figure 6. Receipt from G.R. Vine to P.B. Mason 1887
(Department of Geology, National Museums and Galleries of Wales)

on a label marked "G.R. Vine" or some similar wordage, and sometimes dated. The cost of the slides ranged from 5s 6d (27.5 pence) for a dozen bryozoan slides to 4s 6d (22.5 pence) a dozen in the 1880s (Figure 6). Vine regarded his material as being "first class".⁴²

Among his customers were Professor John W. Judd of Imperial College, London who in 1886 purchased about 1000 bryozoan and foraminiferan slides.⁴³ Vine claimed to have sent material to George Busk which was used by him for his monograph on the bryozoans of the Crag,⁴⁴ but given the date of publication of the monograph this is unlikely.

Not only did he sell material but he and his son also prepared, picked, mounted and identified material for others. For this service he charged a rate of between 1 and 2 shillings (5-10 pence) per dozen slides. The higher rate was for forams and ostracodes. We suspect that he was sent a good deal of such material by gentlemen collectors who enjoyed collecting the material and enjoyed examining the curated specimens in their study cabinets, but who did either not enjoy or did not have the time to spend many tedious hours preparing it.

Given the size and nature of the material Vine was dealing in, all of it had to be collected, prepared, picked, mounted and identified in natural light. This often caused him

problems particularly during the short winter days when it was often dark when he returned home from work. He complained that picking Foraminifera in such conditions was virtually impossible⁴⁵ – particularly given his failing eyesight.⁴⁶ Thin sections were prepared in his wife's kitchen or scullery sink.

Between 1886 and 1892 Vine supplied Philip Brookes Mason (2nd January 1842-6th November 1903) a doctor in Burton-on-Trent, with a large quantity of palaeontological material. Mason was an enthusiastic collector of natural history, interested particularly in ornithology and entomology.⁴⁷ Rapidly Mason purchased from Vine a huge collection of fossil and Recent bryozoans. An indication of his enthusiasm for developing his collection can be gauged by the number of specimens that he purchased. In 1886 Vine supplied 16 dozen slide preparations at a cost to Mason of £4/10/9. The following year Mason purchased a staggering 270 dozen slides at a total cost of £60/17/3. This was a large sum of money at that time.

Soon after their business relationship started Vine must have realised that Mason would purchase almost anything that he offered him. Whenever Vine obtained new material a collection was dispatched to Burton-on-Trent. When Vine had decided to no longer study Upper Carboniferous plants he offered Mason his collection together with a series of lantern slides of some specimens – these were naturally purchased.

In 1886 Mason sent Vine a box of Crag and Chalk bryozoans, which we assume he collected himself. These were prepared by Vine and the choicest specimens returned. Certainly Vine would have kept residues of such material sent to him for preparation, and certainly these were offered for sale to others. Later Mason sent material that he had dredged from his yacht while sailing at Roundstone in Connemara in Western Ireland. However, Vine later admitted that the material may have become mixed up, but was relieved when Mason told him that he would be returning to Roundstone the following year and that new material could be obtained.⁴⁸

He was at several times in his life in serious financial difficulty and at one dark period in 1889 he was close to selling all his prized fossil collections. At that time he was supporting a family on an income of 16 to 17/- a week after rent and taxes.⁴⁹ He wrote to Mason in a state of deep despair stating that:

“I find now I shall be obliged from circumstances over which I have no control – failing circumstances &c – to give up almost entirely the study of all but a very small group of organisms. My age (65 next birthday) is one of the causes – and limited means without any pecuniary help from societies is another – and now as age creeps on – unless I give more of my time to my small business – failure will be my last reason for my resolution to stop in time - I have a few papers in hand that I shall try to complete, then I must say goodbye to Palaeontology.”⁵⁰

112 Hill Top, Attercliffe
Shef 2/7/91.

My dear Sir, Accept my sincere
thanks for your kind letter and
enquiries about my health. Thank
God I am about again all right, but
my head still aches at times, but
I am made whole and in my right
mind. That is much more than many
of my neighbours can say who have
suffered from the peculiar "aristocratic
epidemic".

Now with regard to the future. I
find that at my time of life it
will be impossible for me to do
all that I could wish in the study
of the Polym. Therefore I shall have
to give up the Mesozoic groups.

Figure 7. Portion of letter from G.R. Vine to P.B. Mason 2/7/1891
(Department of Geology, National Museums and Galleries of Wales)

He offered Mason his collection of macrofossils, which included his prized Irish Carboniferous suite, at a price of 1d or 2d each. Happily Vine's financial plight was discovered by some of his scientific friends who encouraged him to prevail. He was told that he would be a "loss to science", and it is probable that these events forced the reactivation of the Committee on Fossil bryozoans to which the British Association awarded £10 in 1889 and in each of the following two years.

During 1891 when both himself and his wife were suffering from the "peculiar 'aristocratic' epidemic" Vine realised that he would never complete all the projects that he had set out to undertake (see Figure 7). Soon he was trying to sell Mason his personal collection of offprints and other fine bryozoological reference volumes including his copy of Busk's monograph (which he had purchased for 23/-) and a copy of d'Orbigny. Although keen to off load this material he was slightly reluctant to do so, as he hoped that Mason might become a serious student of bryozoans, and was unsure if this would happen.⁵¹

During a period of seven years George Vine supplied Philip Mason with a large volume of fossil material, and over time their relationship went from being purely that of a business relationship to that of friendship. In a letter of mid-1891 Vine opened up and showed his true feelings and appreciation of Mason's patronage:

"The fact is you have been so kind to me in your dealings – that I look upon you as a good personal friend. Had I been able to hound (sic) up or put aside the money paid to me by you I should be rich to day in a moderate way. But that had to go to wipe off all my debts contracted in the interval between 1879- & 1885 – all by your kindly help swept away leaving me now a free man in every sense. I have longed to tell you the above so as to prevent you imagining my importunity in offering you things had other meanings – than those which I have now disclosed to you."⁵²

In the last letter of their correspondence Vine wrote:

"I may now say that your collection of Fossil Polyzoa is now a valuable one and a student ought to be able to make a good head in the study of that most peculiar group."⁵³

It is a measure of how much the family valued the custom of Mason that after the death of Vine, his son sold his father's personal collection of type specimens to him. These specimens are now in Cardiff, while an inferior set was sold to the British Museum in London (these remain at The Natural History Museum).

George Robert Vine was unusual for his time in that he sold micropalaeontological fossil specimens. Judging by the diversity and volume of material supplied to one customer, he must have conducted a reasonably successful business albeit a sideline to his main source of income as a stay-maker. It would be interesting to source other customers and discover if they too, like Mason, were active purchasers of material from the fossil dealer of Attercliffe.

5. Collections and archives

Vine material is held at a number of museums in Britain,⁵⁴ and was acquired either by purchase from Vine himself, or from his son, or from collectors who had bought material from Vine for their own collections. Major collections are held in Bolton Museum; The Natural History Museum, London; The National Museums and Galleries of Wales, Cardiff; Glasgow Museum; and at Sheffield City Museum. Smaller collections of Lower Greensand specimens were presented to the Geological Society by Vine in 1885. These passed to the Geological Museum in 1911 and are now probably at the British Geological Survey at Keyworth in Nottingham if not at The Natural History Museum, London. A collection of French Bathonian bryozoans described by Vine (1888) was presented to Northampton Museum, where we assume they still may be found. In addition the Hunterian Museum in Glasgow contains a collection of approximately 100 Silurian fossils

from Shropshire, including bryozoans, brachiopods, gastropods, crinoids, and arthropods, which was acquired in the 1880s, most likely as a result of Vine's professional friendship with Mr John Young.

Bolton Museum: The Vine specimens in Bolton Museum were acquired as part of the P.B. Mason collection in 1909.⁵⁵ On his death in 1903 Mason's widow dispersed his collections, partly by auction and by direct sales to museums. A letter now at Bolton, from Mrs Mason to Jansen, natural history dealers of London, lists material that she wished to dispose of. Subsequently she bypassed this dealer and liaised with various museums directly herself. The letter refers to 'four microscope cabinets [that] contain the type collection of Bryozoa formed by G.R. Vine Sheffield referred to in his papers of the reports of the British Association for the Advancement of Science. Afterwards he sold to the British Museum a second collection but one greatly inferior to this'. From this, Hancock *et al.* concluded 'that it seems likely that some of Vine's best material may be present at Bolton'.⁵⁶ This is not actually correct as most of the best material, including one cabinet, is now at Cardiff. The collection of 250 Vine bryozoans from Britain and North America purchased by Bolton Museum from Mrs Mason in 1909 is listed in a manuscript catalogue in the museum. Not all this material can now be recognised with certainty in its collections.

The Natural History Museum, London: This institution purchased a collection of 1695 bryozoan specimens from Vine in 1893, which according to Woodward⁵⁷ included specimens referred to in Vine's BAAS reports. It also obtained bryozoans described by Vine (1890) from the Red Chalk in the collection of Thomas Jesson (1850-1928).⁵⁸ This latter collection originally formed part of the Institute of Geological Science collection. Vine's specimens principally comprise thin sections and small zoaria housed in cavity slides – many are labelled on purposely-printed labels in Vine's handwriting. The Bryozoa Section of the Department of Zoology holds a number of Vine's letters to George Busk that are pasted into Busk's 1883-1886 bound volume of Vine's offprints. It also holds a bound volume of his BAAS reports, and some annotated offprints in the Harmer Library (Volumes 20 and 46). These were purchased by S.F. Harmer from the book dealer Dulau and Co. of Soho Square, London. It is possible that these were originally sold by Vine or his son to Dulau. The Palaeontological Library contains a letter written by Vine concerning his collection. In the offprint holdings of the Bryozoa Section of the Department of Palaeontology are found many of Vine's annotated offprints.

National Museums and Galleries of Wales: The Department of Geology at the National Museums and Galleries of Wales (NMW) possesses a microscope slide cabinet (Figure 8) with about 2000 specimens mostly fossil Bryozoa, along with letters, manuscript catalogues, and bound volumes of Vine's papers.

On 17th November 1914, the NMW purchased four cabinets of microscope slides from



Figure 8. Cabinet purchased from P.B. Mason's widow, containing micro-palaeontological specimens from the G.R. Vine collection (Department of Geology, National Museums and Galleries of Wales)

Mrs Mason (only one cabinet remains utilised to house its original material). These include 1270 specimens of fossil Bryozoa (NMW accession number 21.490G); fossil Foraminifera (NMW accession number 21.491G); fossil crustacean (NMW accession number 21.492G); and 124 specimens of rock sections and deep-sea deposits (NMW accession number 21.493G).

At presumably the same time, the NMGW acquired various archives. These included

59 letters and receipts from G.R.Vine to P.B. Mason covering the period 1886 – 1892 referring to the material being purchased by Mason for his collection. There are also two bound volumes of Vine's published papers and a bound volume of Vine's catalogues with the note by P.B. Mason stating 'This was Mr Vines Type Collection and was sold to me before the British Museum has bought his duplicates'. The papers also include a bound volume of manuscript 'Notes on Cyclostomatous Polyzoa Faeroe limestone, Denmark by G R Vine'; a bound volume of British Association Polyzoa Reports 1880-1890, and an index of Polyzoa manuscripts.

Hunterian Museum, Glasgow: This includes Silurian bryozoans, brachiopods, gastropods, crinoids, worms, and arthropods from Shropshire; c. 1880s; 100 specimens.

Sheffield City Museum: Cleevely⁵⁹ notes that Vine material is present at Sheffield City Museum which was presented by G.R. Vine, junior in 1936. FENSCORE lists a considerable volume of material at Sheffield, including c. 600 slides of bryozoans, 250 foraminifera slides and some coelenterates and hydroids. These are predominantly British in origin, but material from Ireland, continental Europe, Africa, Australia, America and Tahiti are also present. 55 slide mounts of foraminiferans are derived from the Challenger expedition, and other material is associated with Miss Jelly and Mr Waters.

Further work is needed to compare Vine's published material with the manuscript catalogues at Cardiff and Bolton, and with the collections housed at these various museums.

Unfortunately there is no trace of Vine's molluscan specimens collected from the Carboniferous of the midlands of Ireland which his son remarked were most important and highly prized by his father.

6. Conclusions

George Robert Vine was unusual in that he became an acknowledged expert in the study of fossil bryozoans, and a proponent of microscopical techniques in their study during the late Victorian period. He was unusual because he hailed from a working class background, yet was a recipient of awards and financial aid from the premier geological and scientific societies in Britain including the Geological Society of London, the British Association for the Advancement of Science, and the Royal Society. He produced a large body of published work including a fine series published by the British Association (see Appendix 1).

However, he was unable to rise above his working class roots and join the scientific establishment through membership of these august societies. This may have been because

he, or they felt that it was not proper for such men to gain, for example, Fellowship of the Geological Society. This would explain why none of his papers were actually communicated by him in person to the Society.⁶⁰ Social exclusion is difficult to prove, and Vine's non-membership of such organisations may have been purely as a result of his financial state. Membership of the British Association cost £2 in the first year and £1 subsequently – a considerable sum for a Sheffield corset-maker.

Surprisingly his death passed with little notice, other than two obituaries penned by his loyal son and a notice published in the Sheffield and Rotherham Standard. Even the Yorkshire Geological Society, to which he submitted many fine papers on bryozoans, published no obituary. The Geological Society of London who had honoured him with the Lyell Fund made no mention in their Proceedings of his passing.

Nevertheless, Vine's fine body of work on bryozoans remains encapsulated in his large number of publications and in his collections which are now housed in various museums in Britain. To bryozoologists his name is forever linked with the stenolaemate Order Cryptostomata which he erected in 1884.

7. Acknowledgements

We are most grateful to Gaynor Boon (Sheffield City Museum), Dr Paul Taylor (The Natural History Museum), Dr Matthew Parkes (Geological Survey of Ireland), Michael Holmes (Sorby Natural History Society) Alan Howell (formerly of Bolton Museum) and Mary Spencer Jones (The Natural History Museum) for help during the preparation of this paper. Ryan O'Connell of London, who is a direct descendant of George Robert Vine, kindly supplied us with considerable information on him and his family. Gaynor Boon brought to our attention the portrait of Vine now in the Sheffield Local Studies Library. Permission to reproduce this portrait and that of George Vine junior was kindly granted by Mike Spick.

Appendix 1. Bibliography of G.R. Vine, senior (only papers on bryozoans and other fossil organisms are listed here)

1860

Mountain Limestone Fossils. *The Geologist* **1860**, 463.

1876

On the discovery of macrospores in Carboniferous sandstone. *Hardwicke's Science Gossip* **12**, 247-248.

1877

Chapters on Carboniferous Polyzoa. *Hardwicke's Science Gossip* **13**, 108-110, 152-156, 220-222, 271-274.

1878

The genus *Fenestella*: its history, development, and range in space and time. *Hardwicke's Science Gossip* **14**, 247-251, 274-276.

1879

Physiological character of *Fenestella*. *Hardwicke's Science Gossip* **15**, 50-54.

On *Palaeocoryne* and the development of *Fenestella*. *Hardwicke's Science Gossip* **15**, 225-229, 247-249.

On Carboniferous Polyzoa and *Palaeocoryne*. *Report of the Forty-ninth meeting of the British Association for the Advancement of Science (Sheffield, 1879)*. John Murray, London, pp. 350-351.

1880

A Review of the Family Diastoporidae for the purpose of classification. *Quarterly Journal of the Geological Society of London* **36**, 356-361.

A Review of the Family Diastoporidae for the purpose of classification. *Geological Magazine* (n.s.) Decade 2 **7**, 323. [Abstract of communication to the Geological Society of London, 12th May 1880]

A Review of the Family Vincularidae, Recent and Fossil for the purpose of classification. *Geological Magazine* (n.s.) Decade 2 **7**, 381. [Abstract of communication to the Geological Society of London, 23rd June 1880]

Report of the Committee, consisting of Prof. P.M. Duncan and Mr. G.R. Vine, appointed for the purpose of reporting on the Carboniferous Polyzoa. *Report of the Fiftieth meeting of the British Association for the Advancement of Science (Swansea, 1880)*. John Murray, London, pp. 76-87.

On the Carboniferous Polyzoa. *Geological Magazine* (n.s.) Decade 2 **7**, 501-512. [Reprinted version of previous item - British Association report presented at Swansea.]

1881

Second report of the Committee, consisting of Prof. P.M. Duncan and Mr. G.R. Vine, appointed for the purpose of reporting on Fossil Polyzoa. *Geological Magazine* (n.s.) Decade 2 **8**, 471-477; 509-519. [Abridged version of British Association report, published in full in 1882]

Notes on the Carboniferous Polyzoa of North Yorkshire. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **7**, 329-341.

Further notes on the family Diastoporidae, Busk, species from the Lias and Oolite. *Quarterly Journal of the Geological Society of London* **37**, 381-390.

Silurian uniserial Stomatopora and *Ascodictya*. *Quarterly Journal of the Geological Society of London* **37**, 613-619.

1882

Notes on the Polyzoa of the Wenlock shales, Wenlock limestone, and shales over the Wenlock limestone. *Quarterly Journal of the Geological Society of London* **38**, 44-68.

Notes on the Polyzoa of the Wenlock shales, Wenlock limestone, and shales over the Wenlock limestone. From material supplied by G. Maw, Esq., F.L.S., F.G.S. *Geological Magazine* (n.s.) Decade 2 **9**, 43. [Abstract of communication to the Geological Society of London, 7th December 1881]

- The Silurian species of *Glaucanome* and a suggested classification of the Palaeozoic Polyzoa. *Proceedings of the Geological Society of London* **38**, 245. [G.W. Shrubsole and G.R. Vine]
- Notes on the *Annelida tubicola* of the Wenlock shales, from the Washings of Mr. George Maw, F.G.S. *Quarterly Journal of the Geological Society of London* **38**, 377-392.
- Notes on the *Annelida tubicola* of the Wenlock shales, from the Washings of Mr. George Maw, F.G.S. *Geological Magazine* (n.s.) Decade 2 **9**, 377. [Abstract of communication to the Geological Society of London, 7th June 1882]
- The Silurian species of *Glaucanome* and a suggested classification of the Palaeozoic Polyzoa. *Geological Magazine* (n.s.) Decade 2 **9**, 381. [Abstract of communication to the Geological Society of London, 21st June 1882] [G.W. Shrubsole and G.R. Vine].
- The Diastoporidae, or the natural history of a family type. *Hardwicke's Science Gossip* **18**, 81-83, 146-147, 244-247.
- Second report of the Committee, consisting of Prof. P.M. Duncan and Mr G.R. Vine, appointed for the purpose of reporting on the Carboniferous Polyzoa. *Report of the Fifty-first meeting of the British Association for the Advancement of Science (York, 1881)*. John Murray, London, pp. 61-176.

1883

- Notes on the corals and bryozoans of the Wenlock shales. *Proceedings of the Geological Society of London* **39**, 69-70.
- Third report of the Committee, consisting of Dr H.C. Sorby and Mr G.R. Vine, appointed for the purpose of reporting on fossil Polyzoa, Jurassic species—British area only. *Report of the Fifty-second Meeting of the British Association for the Advancement of Science (Southampton, 1882)*. John Murray, London, pp. 249-266.
- Notes on the Carboniferous Polyzoa of West Yorkshire and Derbyshire - (an attempt to identify Phillip's species). *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **8**, 161-174.
- Notes on the Carboniferous Entomostracea and the Foraminifera of the North Yorkshire shales. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **8**, 226-239.
- Notes on the corals and bryozoans of the Wenlock shales. (Mr Maw's Washings). *Geological Magazine* (n.s.) Decade 2 **10**, 190. [Abstract of communication to the Geological Society of London, 21st February 1883]

1884

- Micro-palaeontology of the Northern Carboniferous shales. I. Introduction: Foraminifera, &c. *The Naturalist* (n.s.) **10** (110), 37-40.
- Fourth report of the Committee, consisting of Dr H.C. Sorby and Mr G.R. Vine, appointed for the purpose of reporting on fossil Bryozoa. *Report of the Fifty-third meeting of the British Association for the Advancement of Science (Southport, 1883)*. John Murray, London, pp. 161-209.
- Further notes on new species, and other Yorkshire Carboniferous Polyzoa described by Prof. John Phillips. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **8**, 377-393.
- Micro-palaeontology of the Northern Carboniferous shales. II. Polyzoa of the Redesdale Shales, Northumberland. *The Naturalist* (n.s.) **10** (111), 61-66.
- Micro-palaeontology of the Northern Carboniferous shales. III. The Ostracoda, *Monticulipora*, and Miscellaneous Forms: Redesdale Shales, Northumberland. *The Naturalist* (n.s.) **10** (113),

97-103.

The Silurian species of *Glauconome* and a suggested classification of the Palaeozoic Polyzoa. *Quarterly Journal of the Geological Society of London* **40**, 329-332 [with G.H. Shrubsole].

Polyzoa (Bryozoa) found in the boring at Richmond, Surrey, referred to by Prof. J.W. Judd. *Quarterly Journal of the Geological Society of London* **40**, 784-794.

Notes on some Cretaceous Lichenoporidae. *Quarterly Journal of the Geological Society of London* **40**, 850-864.

Polyzoa (Bryozoa) found in the boring at Richmond, Surrey, referred to by Prof. J.W. Judd. *Geological Magazine* (n.s.) Decade 3 **1**, 377. [Abstract of communication to the Geological Society of London, 25th June 1884]

Notes on some Cretaceous Lichenoporidae. *Geological Magazine* (n.s.) Decade 3 **1**, 384. [Abstract of communication to the Geological Society of London, 25th June 1884]

Notes on species of *Ascodictyon* and *Rhopalonaria* from the Wenlock shales. *Annals and Magazine of Natural History* **80**, 77-89.

1885

Fifth and last report of the Committee, consisting of Mr H.C. Sorby, F.R.S. and Mr G.R. Vine, appointed for the purpose of reporting on fossil Polyzoa. *Report of the Fifty-fourth meeting of the British Association for the Advancement of Science (Montreal, 1884)*. John Murray, London, pp. 97-219.

On *Phyllopora* and *Thamniscus* from the Lower Silurian rocks near Welshpool, Wales. *Quarterly Journal of the Geological Society of London* **41**, 108-113.

Notes on species of *Phyllopora* and *Thamniscus* from the Lower Silurian rocks near Welshpool, Wales. *Geological Magazine* (n.s.) Decade 3 **2**, 90. [Abstract of communication to the Geological Society of London, 14th December 1884]

Notes on the Polyzoa and Foraminifera of Cambridge Greensand. *Proceedings of the Geological Society of London* **41**, 101-102.

Notes on the Polyzoa and Foraminifera of Cambridge Greensand. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **9**, 10-29.

Notes on the Polyzoa and Foraminifera of Cambridge Greensand. *Geological Magazine* (n.s.) Decade 3 **2**, 280-281. [Abstract of communication to the Geological Society of London, 15th April 1885]

Notes on the Yoredale Polyzoa of North Lancashire. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **9**, 70-98.

Micro-palaeontology of the Northern Carboniferous shales. IV Polyzoa, Entomostraca, Gastropoda, and Miscellaneous organisms of the Skelly Gate Shales, Northumberland. *The Naturalist* (n.s.) **10** (117), 207-212.

Micro-palaeontology of the Northern Carboniferous shales. V Upper Carboniferous Shales, Northumberland, Yordale: Foursknes, 'Inghoe', Lowick. Polyzoa and Entomostraca. *The Naturalist* (n.s.) **10** (122), 312-318.

Luminous wood. *The Naturalist* (n.s.) **10** (123), 340-341.

1886

Notes on the Polyzoa of the Wenlock shales, Etc. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **9**, 179-201.

Notes on the Palaeontology of the Wenlock shales of Shropshire. (Mr. Maw's washings, 1880).

Proceedings of the Yorkshire Geological and Polytechnic Society (n.s.) **9**, 224-248.

Report of the Committee, consisting of Dr H. Woodward, Mr G.R. Vine, Dr P.M. Duncan, H.C. Sorby and C.E. de Rance, appointed for the purpose of reporting on Recent Polyzoa. *Report of the Fifty-fifth meeting of the British Association for the Advancement of Science (Aberdeen, 1885)*. John Murray, London, pp. 481-680.

1887

Notes on the distribution of the Entomostraca in the Wenlock Shales. Mr. Maw's washings. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **9**, 393-405.

Jurassic Polyzoa in the neighbourhood of Northampton. *Journal of the Northamptonshire Natural History Society and Field Club* **4**, 202-211.

Notes on classifications of Cyclostomatous Polyzoa; old and new. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **9**, 316-362.

Notes on a species of *Entalophora* from the Neocomian clay of Lincolnshire. *Annals and Magazine of Natural History Series 5*, **19**, 17-19.

Notes on the Polyzoa and other organisms from the Gayton Boring, Northamptonshire. *Journal of the Northamptonshire Natural History Society and Field Club* **4**, 255-266.

Fossil Polyzoa in Lincolnshire. *The Naturalist* (n.s.) **12** (138): 18.

1888

Notes on the classification of the Palaeozoic Polyzoa. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **11**, 20-44.

A Monograph of Yorkshire Carboniferous and Permian Polyzoa. Part I. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **11**, 68-85.

Notes on the Polyzoa of Caen and Ranville now preserved in the Northampton Museum. *Journal of the Northamptonshire Natural History Society and Field Club* **5**, 1-24.

1889

Notes on British Eocene Polyzoa. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **11**, 154-169.

A monograph of Yorkshire Carboniferous and Permian Polyzoa. Part II. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **11**, 184-200.

Further notes on the Polyzoa of the Lower Greensand and the Upper Greensand of Cambridge. Part II. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **11**, 250-275.

1890

Notes on the Polyzoa and Microzoa of the Red Chalk of Yorkshire and Norfolk. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **11**, 363-398.

A monograph of the Polyzoa (Bryozoa) of the Red Chalk of Hunstanton. *Quarterly Journal of the Geological Society of London* **46**, 454-486.

A monograph of the Polyzoa (Bryozoa) of the Hunstanton Red Chalk. *Geological Magazine* (n.s.) Decade 3 **7**, 234. [Abstract of communication to the Geological Society of London, 26th March 1890]

1891

Report of the Committee, consisting of Dr H. Woodward, Mr G.R. Vine, T. Rupert Jones and Dr

H.C. Sorby, appointed to prepare a report on the Cretaceous Polyzoa. *Report of the Sixtieth meeting of the British Association for the Advancement of Science (Leeds, 1890)*. John Murray, London, pp. 378-396.

Notes on some new or but little known Eocene Polyzoa from localities. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **12**, 52-61.

British Palaeozoic Ctenostomatous Polyzoa. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **12**, 74-93.

1892

Notes on Polyzoa of the zones of the Upper Chalk. *Report of the Sixty-first meeting of the British Association for the Advancement of Science, (Cardiff, 1891)*. John Murray, London, pp. 656-659.

Notes on Polyzoa found at Cleethorpes in 1875, 1879, and 1882. *The Naturalist* **17** (198), 5-11.

Fossil Polyzoa; further additions to the Cretaceous lists. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **12**, 149-161.

1893

Report of the Committee, consisting of Dr H. Woodward, Mr G.R. Vine, T. Rupert Jones and Dr H.C. Sorby, appointed for the completion of a report on the Cretaceous Polyzoa. *Report of the Sixty-second meeting of the British Association for the Advancement of Science (Edinburgh, 1892)*. John Murray, London, pp. 301-337.

Notes on the Polyzoa, *Stomatopora* and *Proboscina* groups, from the Cornbrash of Thrapston, Northamptonshire. *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) **12**, 247-258.

Appendix 2. Bibliography of G.R. Vine, junior (only scientific papers and papers of local history are listed here)

1880

Natural History of the district (of Sheffield). *Report of the Forty-ninth meeting of the British Association for the Advancement of Science (Sheffield, 1879)*. John Murray, London, p. 101.

1898

On some Miocene Foraminifera from Australia. *Transactions and Annual report of the Sheffield Microscopical Society* for 1897-1898, pp. 6-9.

1913

Tinsley forty years ago. *Ward's Local Annual* for 1913, p. 9.

1914-1916

Attercliffe: past and present. *Ward's Local Annual* for 1914, pp. 5-19; 1915, pp. 5-31; 1916, 5-31.

1932-1936

The story of old Attercliffe. Ward Bros, Sheffield (1932-1936), 333 pp.

Old Attercliffe and Carbrook. *Transactions of the Hunter Archaeological Society* **3**, 80-84.

**Appendix 3. Some new bryozoan taxa described by G.R. Vine, senior.
[Modern accepted names where known are given in square brackets]**

ORDER

Cryptostomata Vine, 1884

GENERA

Arcanopora Shrubsole and Vine, 1882 [= *Sulcoretepora* d'Orbigny, 1849]

Pinnatopora Shrubsole and Vine 1884 [= *Penniretepora* d'Orbigny, 1849]

SPECIES

Diastopora cricopora Vine, 1881 [= *Reptomultisparsa cricopora* (Vine, 1881)]

Diastopora oolitica Vine, 1881 [= *Reptomultisparsa oolitica* (Vine, 1881)]

Diastopora ventricosa Vine, 1881 [= *Reptomultisparsa ventricosa* (Vine, 1881)]

Stomatopora dissimilis Vine, 1881 [= *Corynotrypa dissimilis* (Vine, 1881)]

Stomatopora dissimilis Vine var. *compressa* Vine, 1882 [= *Corynotrypa dissimilis* (Vine, 1881)]

Stomatopora dissimilis Vine var. *elongata* Vine, 1882 [= *Corynotrypa dissimilis* (Vine, 1881)]

Stomatopora elongata Vine, 1882 [= *Corynotrypa elongata* (Vine, 1882)]

Ascodictyon radiciforme Vine, 1882

Ascodictyon stellatum Nicholson and Etheridge, 1877 var. *siluriense* Vine, 1882

Spiropora intermedia Vine, 1882 [= *Mitoclema intermedia* (Vine, 1882)]

Spiropora regularis Vine, 1882 [= *Mitoclema regularis* (Vine, 1882)]

Hornera? *delicatula* Vine, 1882

Polypora? *problematica* Vine, 1882

Ptilodictya lonsdalei Vine, 1882

Ptilodictya interporosa Vine, 1882

Phylopora phillipsia Vine, 1883

Thamniscus dubius (King) var. *carbonaria* Vine, 1883

Heterotrypa delicatula Vine, 1883

Diplotrypa petropolitana var. *petropolitanaforma* Vine, 1883

Streblotrypa nicklisi Vine, 1884

Pinnatopora ornata Vine, 1885

Pinnatopora simplex Vine, 1885

Thamniscus gracilis Vine, 1885

Rhombopora vinculiformis Vine, 1885 [= *Baculopora megastoma* (M'Coy, 1844)]

Streblotrypa minuta Vine, 1885

Entalophora striatopora Vine, 1885

Entalophora gigantopora Vine, 1885

Diastopora cretacea Vine, 1885

Diastopora cretacea var. *lineata* Vine, 1885

Diastopora fecunda Vine, 1885

Lichenopora? *paucipora* Vine, 1885

Membranipora dumerelli Audouin var. *cantabrigensis* Vine, 1885

Notes

- 1 G.R. Vine, jr., 'In memoriam. George Robert Vine', *The Naturalist* (n.s.) 18(220) (1893), 333-335; Anon. 'Notes and News [Notice of death of G.R. Vine]', *The Naturalist* (n.s.) 18(218) (1893), 282; Anon. 'A Prince among Men', *Hartley's Attercliffe Almanak*. Hartley & Son, The Attercliffe Press, Sheffield (1894), 117-121 [Almost certainly also by G.R. Vine, junior]. This useful source of local information was published annually between 1880 and 1898. See also G.R. Vine, *The story of old Attercliffe*. Ward Bros, Sheffield (1932-1936), 333 pp, which remains a valuable source of local history.
- 2 *The Sheffield and Rotherham Independent*, Friday 11th August 1893. The notice of Vine's death at the age of 68 contrasts sharply with the preceding notice which reported the sad death of Mabel Stevens, aged only three, who drowned in a maidening pot. This was a piece of equipment unique to Yorkshire used for washing linen.
- 3 Sheffield Literary and Philosophical Society Lecture, 4th March 1890: *A working man's recollections of passing events during the early part of the last half century*, 3 pp.
- 4 In *The Geologist* for 1860 (p. 463) Vine requested information about identifying Mountain Limestone mollusca. He had by then assembled a collection of some three hundred species from the Athlone area.
- 5 See H. Murtagh, *Athlone*. Irish historic towns atlas; no. 6. Royal Irish Academy, Dublin (1994), 16 pp; 9 sheet maps. The Ordnance Survey 6 inch to 1 mile map of 1912 still shows three woollen factories situated on the riverside.
- 6 She was born in 1825 or 1826 in Ireland; Vine was her second husband, previously she had been married to a Mr Beard. She died 29th May 1901 aged 76 years (see note 12).
- 7 Little is known of Elizabeth his eldest daughter. His younger daughter Alice was born at 44 Cherry Garden St, Bermondsey, London. She married William Henry Wood (1862-1944) an iron moulder of 129 Attercliffe Common on 5 April 1887 at the Baptist Chapel, Townhead Street, Sheffield. She died in 1924 and he twenty years later in Leeds. They had at least one daughter Hilda Evelyn Wood (1898-1984).
- 8 Hill Top Road no longer exists. Hill Top Chapel which no doubt was close-by is still in use as an Anglican Chapel. Attercliffe was a village east of Sheffield which became incorporated into the city during the 1870s. It is reputed to have the oldest haunted public house in Britain. See R. Harman and S. Ogden, *The Attercliffe village trail*. Sheffield East End history trail 2. Hallamshire Press, Sheffield, (1997), 64 pp.
- 9 Harman and Ogden, note 8, p. 30 reproduce an advertisement for Banner's store taken from *The Attercliffe Almanack*. The shop is still standing, and named Banner's, although it is now occupied by smaller retail units, and a museum of wartime Sheffield.
- 10 This church was subsequently destroyed during World War I when it took a direct hit from a bomb dropped during an air raid in September 1916 (Vine 1936, p. 35).
- 11 A mounted photographic portrait of Vine now in the Sheffield Local Studies Library bears the following inscription: "Presented to Mr G.R.Vine BSc / By the teachers of the Attercliffe Baptist Sunday School / As a token of their Appreciation of his services & in memory of his Revered Father / Who was Teacher & Superintendent for seventeen years (Oct 8th, 1876 to 1893) / May 1909". This suggests that his son was also a Sunday School teacher or indeed Superintendent.
- 12 His grave and that of his wife is located in the front row on the right-hand section of the

- graveyard. Walk approximately 100 m up the path to the right from the ornate double chapel at the cemetery entrance, until the junction with a cross-path. Vine's grave is ten up on the right from this point. It is marked with a large headstone with the following inscription: In loving memory of / GEORGE ROBERT VINE / (native of Portsmouth) / who was called home August 8th 1893 / Aged 68 years / "Until the day dawn." / Also of / ELIZABETH. / Wife of the above named / Who entered into rest May 29th 1901 / Aged 76 years / "Peace Perfect Peace.
- 13 S.J. Knell, *The culture of English geology, 1815-1851: a science revealed through its collecting*. Ashgate, Aldershot (2000), xxi + 377 pp.
 - 14 These two societies amalgamated in 1918 to form the Sorby Scientific Society named in honour of the Sheffield scientist Henry Clifton Sorby
 - 15 Lecture, 1st June 1887: What are Zoophytes?: a natural history study. *65th Annual Report Sheffield Literary and Philosophical Society for the year ending Dec. 1887*, pp. 1-7. In this lecture Vine outlined the contributions made to the study of bryozoans by early naturalists such as John Ellis.
 - 16 Lecture, 6th September 1887: The postage stamp, or the history of a fascination. *65th Annual Report Sheffield Literary and Philosophical Society for the year ending Dec. 1887*, p. 40. Vine was a passionate stamp collector.
 - 17 Lecture, 2nd October 1889: Well boring, and the lessons taught by the study of the cores. *67th Annual Report Sheffield Literary and Philosophical Society for the year ending Dec. 1889*, pp. 1-7.
 - 18 Vine was nominated for Honorary Membership by the geologist A.H. Green and the microscopist H.C. Sorby. *The Naturalist* 201, 100-101.
 - 19 R.J. Cleevely, *World palaeontological collections*. London: British Museum (Natural History) and Mansell Publishing Ltd, (1983), 365 pp., notes (p. 156) that Walter Howchin was at one time Professor of Geology at the University of Adelaide.
 - 20 See G.R. Vine junior (note 1), *The Naturalist* 220, p. 334 for a brief discussion of Walter Howchin's influential role in the development of Vine as a micropalaeontologist.
 - 21 R. Etheridge jr., 'Anniversary address of the President', *Proceedings of the Geological Society*, 398 (1881), 35. [This was reprinted in the *Geological Magazine* n.s. Decade 2, 8 (1881), 187.]
 - 22 Anon, Report of Annual General Meeting, 18th February 1881 (namely Vine's response on receiving the Lyell Geological Fund) *Proceedings of the Geological Society*, 398 (1881), 35-36. [In contrast to that of the President's citation which was reprinted in the *Geological Magazine* (see note above), Vine's response was not.]
 - 23 It is interesting to note that Sorby was born in Woodbourn Hall, Attercliffe close to where Vine lived, although he came from an upper class background, quite different to that of Vine (see M.J. Bishop, 'New biographical data on Henry Clifton Sorby (1926-1908)', *Earth Sciences History*, 3 (1984), 69-81). Maybe this explains why Sorby was the Chairman of the Committee while Vine was its Secretary.
 - 24 Vine-Mason letters 1.12.1887. One such grant from the Royal Society was acknowledged by Vine who thanked George Busk who had sat on the committee that awarded these grants. In this letter he outlines the value of this money in allowing him to purchase books and other research materials. See Vine-Busk letters, June 1st 1884 [Department of Zoology, Natural History Museum, London].
 - 25 In 1884 Busk sent Vine some specimens of *Lichenopora* from the Greensand (Vine-Busk letters, June 1st 1884) [Department of Zoology, Natural History Museum, London].
 - 26 See H.S. Torrens and J.E. Winston, this volume. Eliza Jelly and Vine shared a love of bryozoans

- and were by virtue of social standing and gender unable to gain the full accolade of their contemporaries their work truly deserved. They corresponded, exchanged material, and on occasion lent each other obscure volumes on bryozoans that the other had been unable to obtain (see Vine - Busk letters, June 7th 1884) [Department of Zoology, Natural History Museum, London].
- 27 See note 22.
- 28 See G.W. Shrubsole and G.R. Vine, 'The Silurian species of *Glauconome* and a suggested classification of the Palaeozoic Polyzoa', *Quarterly Journal of the Geological Society of London*, 40 (1884), 329-332.
- 29 See G.R. Vine, 'Notes on the Polyzoa and Foraminifera of Cambridge Greensand', *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.) 9 (1885), 10-29, and G.R. Vine, 'Further notes on the Polyzoa of the Lower Greensand and the Upper Greensand of Cambridge. Part II', *Proceedings of the Yorkshire Geological and Polytechnic Society* (n.s.), 11 (1889), 250-275.
- 30 These were described by Vine in 1887. 'Jurassic Polyzoa in the neighbourhood of Northampton', *Journal of the Northamptonshire Natural History Society and Field Club* 4, 202-211.
- 31 See G.R. Vine, 'Notes on the Polyzoa and other organisms from the Gayton Boring, Northamptonshire', *Journal of the Northamptonshire Natural History Society and Field Club*, 4 (1887), 255-266.
- 32 His genera *Pinnatopora* Vine 1883 is now regarded to be a junior synonym of *Penniretepora* d'Orbigny, 1849, while *Arcanopora* Vine, 1883 is identical to *Sulcoretepora* d'Orbigny, 1849. The species *Rhombopora vinculariformis* Vine, 1877 described from the Carboniferous of Great Britain is considered to be a junior synonym of *Baculopora megastoma* (M'Coy, 1844) (see P.N. Wyse Jackson, *Irish Journal of Earth Sciences*, 9 (1988), 198).
- 33 This is highlighted by his short description of a species of *Streblotrypa*. In 1883 J.M. Nickles sent Vine some specimens of *Streblotrypa*, which he said were named *Streblotrypa nicklesi* by Ulrich in manuscript. Unfortunately the following year Vine published the name, but misspelt the trivial name *nicklisi* (Vine 1884), and in doing so also validated Ulrich's manuscript genus *Streblotrypa*. Ulrich's comprehensive description of the genus and species appeared in 1890. (See P.N. Wyse Jackson, P.N. 1991. *Unpublished Ph.D. thesis*, University of Dublin, and Hageman, S.J. *The University of Kansas Paleontological Contributions*, n.s. 4 (1993), 1-13 for alternative arguments regarding the nomenclature of this taxon).
- 34 See E.O. Ulrich, *Bulletin of Denison University*, 4 (1888), 77 for the original description of *Pinnatopora vinei* and E.O. Ulrich, *Journal of the Cincinnati Society of Natural History*, 12 (1890), 173 for the original description of *Vinella repens*.
- 35 See note 26.
- 36 G.R. Vine, Jr. was in 1881 a science and art student; in 1893 a school master at the Central Schools, 50 Leigh St., Sheffield; and in 1896 a board schoolmaster, living at 98 Cowlshaw Road, Sheffield. He was later a headmaster of several schools in Sheffield (see main text). He and his wife Alice had at least one child, a son Robert Saxelby Vine (1891-1916). During World War I he served in the Cambridgeshire Regiment, and reached the rank of Second Lieutenant. He was killed at the age of 25 on Saturday 14th October 1916 during the Battle of the Somme, and left a widow, Elsie. George Robert Vine, Jr. died on 25th August 1940 at 40 Main Avenue, Totley, Sheffield, and left the sum of £791 0s 5d in his will. He was the author of two mathematics textbooks, both of which were published in September 1912: *Experimental mathematics: a first year course for evening continuation classes and upper standards in day*

- schools* Book I. Pitman's mathematical series. Pitman, London, pp. vi+66, and *Experimental mathematics: a second year course for evening continuation classes and upper standards in day schools, with answers*. Book II. Pitman's mathematical series. Pitman, London, pp. 72. These retailed at 7d and 9d respectively. He also wrote a valuable local history *The story of old Attercliffe*. (See note 1).
- 37 Harman, R. and Ogden, S, note 5, p. 35.
 - 38 Vine-Mason letters 19.5.1887.
 - 39 Vine-Mason letters 15.11.1887.
 - 40 Vine-Mason letters 10.10.1888.
 - 41 A copy of this catalogue is in the Vine-Mason archive at Cardiff.
 - 42 Vine-Mason letters 30.11.1886.
 - 43 Note 27.
 - 44 Note 27. George Busk's *A Monograph of the Fossil Polyzoa of the Crag*. Palaeontographical Society, London (1859) remains a valuable source for students of fossil bryozoans even today.
 - 45 Vine-Mason letters 15.2.1888.
 - 46 Vine-Mason letters 4.5.1888.
 - 47 See Cleevely 1983, note 11.
 - 48 Vine-Mason letters 10.7.1888 and 13.7.1888.
 - 49 Vine-Mason letters 2.7.1891. It is interesting to note that as he approached old age he was still living in rented accommodation.
 - 50 Vine-Mason letters 20.6.1889.
 - 51 Vine-Mason letters 9.7.1891. This material was probably purchased by Mason after Vine's death. Much of it was subsequently sold by Mason's widow and is now in Cardiff. See Section 5.
 - 52 Vine-Mason letters 2.7.1891.
 - 53 Vine-Mason letters c. 12.12.1892.
 - 54 See Cleevely 1983, note 11 and the series of FENSCORE reports: E.G. Hancock and C.W. Pettitt (eds), *Register of natural science collections in north west England*, (Manchester, 1981); P. Davis and C. Brewer, *Register of natural science collections in north-east England*, (North of England Museum Service, 1986); M.M. Hartley, A. Norris, C.W. Pettitt, T.H. Riley and M.A. Stier (eds), *Register of natural science collections in Yorkshire and Humberside*, (Leeds, 1987); H.E. Stace, C.W. Pettitt and C.D. Waterston, *Natural science collections in Scotland*, (Edinburgh, 1988); G.P. Walley (ed.), *Register of natural science collections in the midlands of England*, (Nottingham, 1993); and J. Bateman and G. McKenna (eds), *Register of natural science collections in south east Britain* (Cambridge, 1993).
 - 55 See E.G. Hancock, A. Howell and H.S. Torrens, 'Geological collections and collectors of note. 11. Bolton Museum', *Newsletter of the Geological Curators' Group*, 1 (1976), 323-335.
 - 56 See note 42.
 - 57 A.S. Woodward, 'Geology', in H.B. Woodward (ed.), *History of the collections contained in the natural history departments of the British Museum*. Volume 1. (London, 1904).
 - 58 See note 15.
 - 59 See note 15.
 - 60 The bulk of his papers were communicated by P.M. Duncan. Others were delivered by H.C. Sorby, G.W. Shrubsole and H. Jesson.

