Geoscience Canada

William Diller Matthew's Early Years in New Brunswick and the Giant Trilobite

Randall F. Miller

Volume 21, numéro 4, december 1994

URI : https://id.erudit.org/iderudit/geocan21_4art01

Aller au sommaire du numéro

Éditeur(s)

The Geological Association of Canada

ISSN

0315-0941 (imprimé)
1911-4850 (numérique)

Découvrir la revue

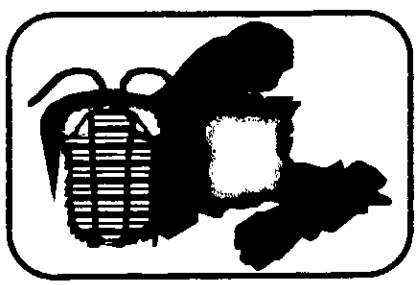
Citer cet article

Miller, R. F. (1994). William Diller Matthew's Early Years in New Brunswick and the Giant Trilobite. *Geoscience Canada*, *21*(4), 153–157.

Résumé de l'article

L'histoire des découvertes de fossilesest tout aussi passionnante et mysté-rieuse que les fossiles eux-mêmes. Lesrécits tel des expéditions de chasse auxdinosaures dans les Badlands de ÃÁÉ-berta de même que l'histoire bien con-nue de la découverte des fossiles deBurgess Shale de Colombie-Britannique constituent des fragmentsde l'histoire canadienne. Alors que cer-tains de ces récits sont de notoriétépublique, d'autres ne sont connus quedes milieux géologiques et viennent en-richir les traités et les notes des coursde géologie. L'histoire de la paléontolo-gie au Nouveau-Brunswtck comportequelques récits de ce genre, malgréqu'une bonne partie des premiers tra-vaux d'exploration n'ait pas été bien do-cumentée jusqu'à maintenant. WilliamDiller Matthew (1871-1930) figure parmiles scientifiques d'envergure de la prov-ince. Jeune paléontologue, il a travaillédans les régions de Frédéricton et deSaint-Jean, et il est associé à la décou-verte de Paradoxides regina, un grandtrilobite que son père a décrit en 1887.Des données provenant de recherchesrécentes et faisant état de détails iné-dits sur la découverte de P. regina nousincitent à réétudier le récit de cettedécouverte.

Articles



William Diller Matthew's Early Years in New Brunswick and the Giant Trilobite

Randall F. Miller
Steinhammer Palaeontology Laboratory
New Brunswick Museum
Saint John, New Brunswick E2K 1E5

ABSTRACT

Many stories surrounding paleontological discoveries are just as exciting and mysterious as the fossils themselves. Canadian history includes accounts of dinosaur hunting expeditions in the Alberta badlands and the often-told story of Walcott's discovery of fossils in the Burgess Shale in British Columbia. While some of these tales make it to the public realm, most circulate only within the geological community, surfacing as anecdotes to enrich textbooks and geology courses. New Brunswick's paleontological history has a few such stories although, until recently, much of the early exploration was not well documented. Included among the province's notable scientists is paleontologist William Diller Matthew (1871-1930) who spent his early years in Saint John and Fredericton and was associated with the discovery of *Paradoxides regina,* a large trilobite described by his father in 1887. It is this story that requires re-evaluation based on recent research that uncovered new details about the discovery of *P. regina.*

RÉSUMÉ

L'histoire des découvertes de fossiles est tout aussi passionnante et mystérieuse que les fossiles eux-mêmes. Les récits tel des expéditions de chasse aux dinosaures dans les *Badlands* de l'Alberta de même que l'histoire bien connue de la découverte des fossiles de *Burgess Shale* de Colombie-Britannique constituent des fragments de l'histoire canadienne. Alors que certains de ces récits sont de notoriété publique, d'autres ne sont connus que des milieux géologiques et viennent enrichir les traités et les notes des cours de géologie. L'histoire de la paléontologie au Nouveau-Brunswick comporte quelques récits de ce genre, malgré qu'une bonne partie des premiers travaux d'exploration n'ait pas été bien documentée jusqu'à maintenant. William Diller Matthew (1871-1930) figure parmi les scientifiques d'envergure de la province. Jeune paléontologue, il a travaillé dans les régions de Frédéricton et de Saint-Jean, et il est associé à la découverte de *Paradoxides regina,* un grand trilobite que son père a décrit en 1887. Des données provenant de recherches récentes et faisant état de détails inédits sur la découverte de *P. regina* nous incitent à réétudier le récit de cette découverte.

WILLIAM DILLER MATTHEW – YOUNG SCIENTIST

William (Will) Diller Matthew (Fig. 1), born February 19, 1871 in Saint John, New Brunswick, is remembered as one of the great vertebrate paleontologists of the early 20th century. His life and achievements have recently been recounted by his son-in-law, the equally great vertebrate paleontologist Edwin Colbert (1992). At the American Museum of Natural History in New York, Will distinguished himself and contributed significantly to the development of the museum and the study of mammalian fossils. His *Climate and Evolution* (Matthew, 1915) became a landmark publication. Among his colleagues were many of this century's most influential paleontologists, including Henry Fairfield Osborn, George Gaylord Simpson, and Charles Schuchert.

Although his work took him to the United States, Will remained a Canadian citizen. He gained his early experience in paleontology and geology in his native New Brunswick. Under the tutelage of his paleontologist father, Dr. George Frederic Matthew, and his professor, Dr. Loring Woart Bailey at the University of New Brunswick in Fredericton, Will began a productive scientific career. Upon graduation in 1889 at the age of 18, the University Monthly referred to "W.D. Matthew the genius of '89" (University Monthly, University of New Brunswick, November 1889, v. IX, p. 7-8). He then entered Columbia School of Mines in New York that same year.

William Matthew grew up in a city without a university, but Saint John was home to an energetic and influential Natural History Society with a strong geological component (Miller and Buhay, 1988). Will's father George was a founding member of the Society in 1862, served for a time as president, and was always a driving force in its development. Likewise, Will's mother Katherine Diller Matthew was actively involved in the Society (Fig. 2). We know that, by the age of 11, Will was a contributor to the Society. His first specimen donation (1882) recorded in the Society's first bulletin, however, was not a rock, but "A spotted lizard or salamander from Dark Lake" (*Bulletin of the Natural History Society of New Brunswick*, n. 1, p. 14). Numerous specimens gathered by the younger Matthew eventually made their

way into the collections of the Natural History Society of New Brunswick (Table 1) and into his father's collection, showing that Will was an observant and knowledgeable paleontologist long before his professional career began.

> It is noteworthy how early his childish enthusiasm led him to observe and collect shells and stones, how earnestly he perfected his reading and composition, and with what delight his parents watched his rapid progress.
>
> In his early teens he had already entered with serious zeal into the building of an extensive collection of recent and fossil molluscs; combing the ballast of ships from foreign ports, exploring the rocks and beaches of his neighbourhood, exchanging with friends and helping in the accumulation of his father's collection...
>
> His summers were spent in study in the field with his professors and with his father on the geological history of areas near St. John. (Camp, 1969, p. 263)

Will graduated from high school in 1884 at the age of 13. His parents thought he was too young to attend university in Fredericton, so he was apprenticed to work in a Saint John law office for three years, after which he moved to Fredericton. During those years, in letters written to his mother, Will showed his keen interest in natural history and his abilities as a "museum" curator.

> I have been arranging my shells now and then. I have quite a number of shells which came from Buenos Ayres (?). I got them in ballast. (April 26, 1885 *in* Colbert, 1992, p. 18)
>
> I counted my specimens a couple of days ago and found out that I have over 500 specimens. I have about 275 minerals, 100 shells and 128 fossils. I also have about 20 curiosities, *etc.* This is just a hasty count and when I have a catalogue, that I am making, finished I will send you a more exact account of them. (March 5, 1885 *in* Colbert, 1992, p. 19)

While his mother was away, Will and his father remained at home to look after the house. The family lived on Princess Street in south-end Saint John until 1890, a street built on the Cambrian rocks of such interest to the Matthews. Specimens attributed to both W.D. Matthew and G.F. Matthew in the New Brunswick Museum (NBM) paleontology collection include numerous Cambrian invertebrates from the Saint John region collected in 1887 at Seely Street, a short walk from their Princess Street home, and in 1887 and 1888 at Porters Brook, Ratcliffe Brook, and Hanford Brook east of the city. When the Matthews moved to "Hillside," the family home on Summer Street from 1890 to 1909 (Fig. 3), they lived around the corner from the Seely Street collecting locality. Notes in the NBM archives (Matthew, George Frederic, Papers, box 2; Notebooks, Item 8, Notebook of William Diller Matthew, *ca.* 1888) indicate that Will made his first trip to Hanford Brook in 1888. It would seem that Will made good use of the years between high school and university (1884-1887) for they appear to be among his busiest fossil collecting periods. In 1892 Will returned at his father's request to Han-

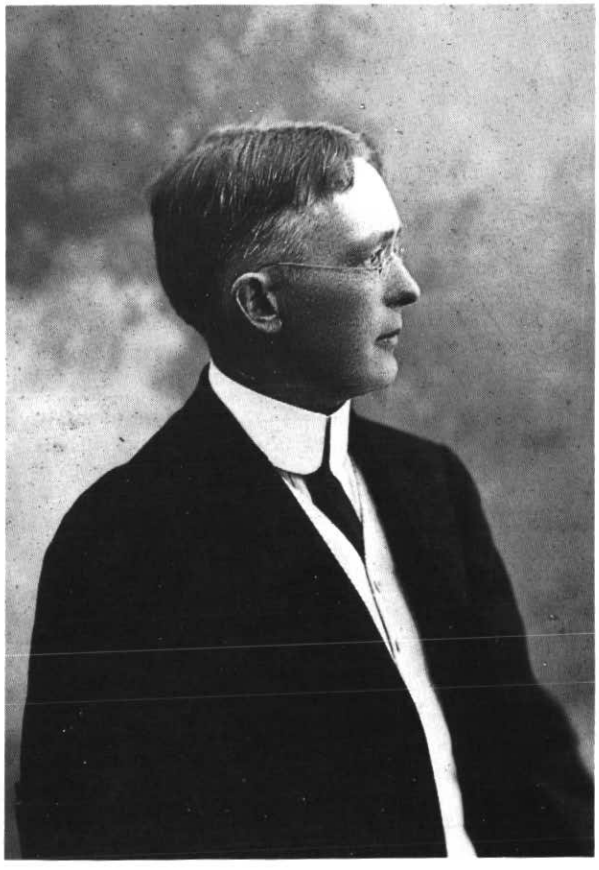


Figure 1 *William Diller Matthew, 1916 (NBM Collection 994.10.15).*

Figure 2 *Katherine Diller Matthew and George Frederic Matthew,* circa *1920 (NBM Collection 991.10.34).*

ford Brook where he collected fossils and undertook work that led to one of his early papers on Cambrian phosphate nodules (Matthew, 1893a):

> ..in the summer of this year, 1892, I sent my son, W.D. Matthew, there [Hanford Brook] to search for better examples [of *Olenellus*]. Though unsuccessful in this quest, he found remains of other forms of trilobites in lower beds of the Cambrian... (Matthew, G.F., 1892, p. 34)

Among the specimens collected, Will found and described his first new species *Protolenus elegans* W.D. Matthew, which his father included in his paper erecting the new genus *Protolenus* (Matthew, G.F., 1892; 1984). Hanford Brook and the other sites noted above were important collecting localities for G.F. Matthew and are still sites of active research.

THE BIG TRILOBITE

One of the younger Matthew's earliest experiences in paleontology came while exploring Cambrian shales near his home in Saint John when he discovered a giant trilobite, *Paradoxides regina* (Fig. 4). This wonderful story has been told a number of times (including Colbert, 1992; and in a fact sheet "The Largest Trilobite, Canada-New Brunswick Cooperation Agreement on Mineral Development – 1993") and was illustrated for the NBM in 1992 by Will's daughter Margaret Matthew Colbert (Fig. 5).It has Will making his first major fossil discovery at the age of six. This, however, appears unlikely; Will was probably 14 or 15 years old when the discovery was made.

George Matthew had already found many Cambrian fossils around Saint John and had published numerous papers about the rich fauna. In fact, the elder Matthew acted as the Cambrian "expert" for the Geological Survey of Canada. It was Will, however, who made the discovery of the giant trilobite (Fig. 5). Such an impressive specimen must have had an impact on the young scientist. His father later described the find:

> It happened that one of my sons, when collecting fossils from this zone, struck part of one of such great size that he was doubtful it was a trilobite, but on going to the place where he had found it we quarried out the animal out to its extreme and found it was one of unusual size, the largest of the kind then known, and gave it the name of *Paradoxides regina*. The son who made this discovery is Dr. William D. Matthew, now of the [New York] American Museum of Natural History. (from G.F. Matthew notebook reprinted *in* Miller and Buhay, 1990, p. 17)

Unfortunately, George Matthew never published the date the find was made. Previous references to the time of the discovery sometime in 1877 (when Will was six) were based on comments made by his colleague Loring Bailey in a newspaper tribute following George Matthew's death:

> The original specimen, after passing uninjured through a fire in the Custom House, was with Dr. Matthew's residence, in which it was stored, afterwards completely destroyed by the big fire which swept the city, but not until [a] plaster cast of the fossil had been made... (Bailey *in* Saint John Globe, April 12, 1923)

Numerous fires plagued the wooden structures around the harbour at Saint John and it is impossible to determine which fire Bailey refers to at the beginning of the sentence. However, the big fire or Great Fire of Saint John referred to by Bailey swept through the city on June 20, 1877 when Will was six years old, thus establishing the pre-June, 1877 date for the collection of the speci-

Table 1 W.D. Matthew's donations to the museum of the Natural History Society of New Brunswick

1882	A spotted lizard or salamander from Dark Lake
June 1884	Nest of small bird, Darling's Island
November 1885	Collection, 47 species Molluscs
March 1887	15 species Molluscs, chiefly Pulmonifera of New Brunswick
1897	Donation to Library - Pamphlets
October 1901	Series of photographs of fossil remains of Pre-historic horse
March 1905	Collection of Minerals
1909	Sioux Indian stone club from the western United States

Figure 3 *Hillside, the Matthew home in Saint John from 1890 to 1909 (W.M. Matthew Collection, Charleston, South Carolina).*

men. The fire destroyed both the Custom House where George worked and the Matthew family home on Princess Street, which was rebuilt. George Matthew's published description of Will's remarkable discovery appeared in 1888, in the *Transactions of the Royal Society of Canada* for 1887, ten years after Bailey suggests it was discovered (Matthew, G.F., 1888). Such a delayed publication would have been unusual. George Matthew commonly was quick to publish results of his work.

A second short paper in the *American Journal of Science* also briefly describes *P. regina* (Matthew, G.F., 1887). Although a collecting date is not mentioned here either, reference is made to similar unidentified large trilobite fragments noted in an earlier paper from the same journal (Matthew, G.F., 1885); that paper clearly predates the discovery and subsequent description of the specimen of *P. regina*. The find by Will must, therefore, have been made between the July 1885 and February 1887 publications in the *American Journal of Science*: this corresponds well with an apparently busy collecting period for Will. The full description of *P. regina* was presented to the Royal Society of Canada on May 25, 1887 and appeared in print the next year (Matthew, G.F., 1888). George Matthew decided the trilobite belonged to the genus *Paradoxides*. He described it as a new species, "*regina*," a name given by Dr. Matthew to honour Queen Victoria, whom he considered a good friend of science. Maybe he also meant to give this animal a sense of majesty, for it was a magnificent creature that outsized its relatives in the ancient ocean.

No one knows what happened to the specimen Will and his father collected. Only one fragment of the giant trilobite described in 1887 remains in the Royal Ontario Museum in Toronto (ROM 7899). Presumably Bailey was correct about the specimen being destroyed in a fire, but perhaps it was yet another fire that occurred in the Custom House on March 19, 1892 (NBM Archives, Colwell Collection Shelf 72, Box No. 1, Fire Alarms 1889-1892), not "the big fire which swept the city" (Bailey *in* Saint John Globe, April 21, 1923). George Matthew donated casts of *Paradoxides regina* (NBMG 4004-4006; Fig. 4) to the Natural History Society of New Brunswick in 1888 (Bulletin of the Natural History Society of New Brunswick n. 8, p.

Figure 4 *Plaster cast of* Paradoxides regina *Matthew (NBMG 4004), Forest Hills Formation, Saint John Group, Cambrian, Saint John, New Brunswick. Specimen 38cm long from anterior of cephalon to posterior of pygidium.*

Figure 5 *The Big Trilobite III by Margaret Matthew Colbert depicting Will and George Matthew excavating the trilobite* Paradoxides regina *from Cambrian rocks in Saint John. Taken from a series of six illustrations prepared for the New Brunswick Museum.*

77). The Society's collections became the foundation for the New Brunswick Museum in 1932. Dr. Matthew's plaster copy can be seen on display in the fossil gallery at the New Brunswick Museum.

A CAREER IN PALEONTOLOGY

Following graduation from the University of New Brunswick in 1889, just a few years after finding *P. regina*, Will left for New York to attend the Columbia School of Mines. His first paper was on the crystallography of topaz from Japan, but with his second paper he returned to the study of his native New Brunswick to describe Cambrian phosphate nodules (Matthew, 1893a). While at Columbia, the young geologist turned his attention to hard rock geology, writing his thesis on the igneous rocks of Saint John (Matthew, 1894a,b; 1895; 1896; 1897).

> In 1894 Matthew was a red-cheeked Canadian youth in the department of geology at Columbia. His main interests at that time were in crystallography, in trilobites, and in the structure of the intrusive and effusive rocks of his native country around St. John, New Brunswick. (Gregory, 1931, p. vii)

He returned to Saint John each summer to conduct field work, and presented his results at meetings of the Natural History Society. His papers were later published in the Society Bulletin. Matthew became a Corresponding Member of the Society during his years in New York. His New Brunswick connections remained strong throughout his life, including visits to Saint John and professional correspondence with his father. Between 1892 and 1910, Will wrote at least 44 letters to his father about his geological work (NBM Archives, listed in Miller and Buhay, 1990).

William Matthew eventually turned his full attention to fossils. Even while studying igneous rocks, paleontology continued to bubble under the surface, as the younger Matthew collected and described fossils with his father (Matthew, G.F., 1892) and published his own trilobite paper on *Triarthrus beckii*. This paper included the first description of trilobite antennae (Matthew, 1893b,c). As Colbert (1992) describes, Matthew returned to paleontology full time at the American Museum of Natural History, where he had a distinguished career as a curator and paleontologist. William Matthew eventually moved to the University of California. He died in 1930 and is buried next to his father in a small cemetery at St. Luke's Anglican Church in Gondola Point, near the family summer home on the Kennebecasis River just outside of Saint John.

ACKNOWLEDGEMENTS

Thanks are due to Margaret Matthew Colbert for donating her 1992 illustrations of "The Big Trilobite" and to William MacGowan Matthew for donating family photographs to the NBM. Peter Larocque (NBM) helped with the selection of photographs. I have benefited over the years from conversations with Margaret and Edwin Colbert about William and George Matthew, and I thank them. Having wrongly trusted Bailey's newspaper account, I must take some responsibility for previous references to "six year old" William; I appreciate the opportunity to amend this story of early geological investigation in New Brunswick.

REFERENCES

Camp, C.L., 1969, The Letters of William Diller Matthew: The Journal of the West, v. 8, p. 263-290.

Colbert, E.H., 1992, William Diller Matthew, Paleontologist: The Splendid Drama Observed: Columbia University Press, New York, 275 p.

Gregory, W.K., 1931, A biographical sketch of William Diller Matthew 1871-1930: American Museum Novitates, v. 473, p. vii-xi.

Matthew, G.F., 1885, On the probable occurrence of the great Welsh *Paradoxides, P. davidus*, in America: American Journal of Science, v. 30 [July], p. 72-73.

Matthew, G.F., 1887, The great Acadian *Paradoxides*: American Journal of Science, v. 33 [February], p. 388-390.

Matthew, G.F., 1888, Illustrations of the fauna of the St. John Group. N. IV, Part I. Description of a new species of *Paradoxides (Paradoxides regina)*. Part II. The smaller trilobites with eyes (Ptychoparidae and Ellipsocephalidae): Royal Society of Canada, Transactions, v. 5, p. 115-166. [written in 1887]

Matthew, G.F., 1892, *Protolenus* A new genus of Cambrian trilobite: Natural History Society of New Brunswick, Bulletin, n. 10, p. 34-37.

Matthew, G.F., 1984, Illustrations of the fauna of the St. John Group: v. 8, p. 85-129. [written in 1893]

Matthew, W.D., 1893a, On phosphate nodules from the Cambrian of southern New Brunswick: New York Academy of Sciences, Transactions, v. 12, p. 108-120.

Matthew, W.D., 1893b, On antennae and other appendages of *Triarthrus beckii:* American Journal of Science and Art, v. 46, p. 121-125.

Matthew, W.D., 1893c, On antennae and other appendages of *Triarthrus beckii:* New York Academy of Sciences, Transactions, v. 12, p. 237-241.

Matthew, W.D., 1894a, The intrusive rocks near St. John, New Brunswick: New York Academy of Sciences, Transactions, v. 13, p. 185-203.

Matthew, W.D., 1894b, The crystalline rocks near St. John, New Brunswick, Canada: Natural History Society of New Brunswick, Bulletin, n. 12, p. 16-33.

Matthew, W.D., 1895, The effusive and dyke rocks near St. John, New Brunswick: New York Academy of Sciences, Transcations, v. 14, p. 187-217.

Matthew, W.D., 1896, The volcanic rocks of the Maritime Provinces of Canada: Natural History Society of New Brunswick, Bulletin, n. 13, p. 76-83.

Matthew, W.D., 1897, Notes on intrusive rocks near St. John, New Brunswick, Canada: Natural History Society of New Brunswick, Bulletin, n. 15, p. 61-64.

Matthew, W.D., 1915, Climate and Evolution: New York Academy of Sciences, Annals, v. 24, p. 171-318.

Miller, R.F. and Buhay, D.N., 1988, The Steinhammer Club; geology and the foundation for a natural history society in New Brunswick: Geoscience Canada, v. 15, p. 221-226.

Miller, R.F. and Buhay, D.N., 1990, Life and letters of George Frederic Matthew: Geologist and Palaeontologist: Publications in Natural Science, New Brunswick Museum, Saint John, n. 8, 89 p.

Accepted, as revised, 29 October, 1995.