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Reverend William F. Lynch: a life in Science and Education

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1. Introduction

The Reverend William Francis Lynch (Figure 1) lived from 1905 to 1960, and published results of research primarily on bryozoans from 1944 to 1960. His scientific career was brief, but his publications on the developmental physiology of bryozoans and ascidians provide a useful legacy in the marine biological literature. Lynch was associated with St Ambrose College in Davenport, Iowa, for close to 40 years, as a student and as a faculty member. Before his graduate studies in Biology at Columbia University, Fordham University, and New York University, Lynch earned degrees in Philosophy, Psychology, and Theology. He was ordained into the Roman Catholic priesthood in 1932. This report provides an overview of Lynch's life and work, but it is a fragmentary one at best, as no archive of Lynch's correspondence or personal papers was preserved. Lynch led a quiet life of service in the church, science and education.

2. Family and Early Years

William Francis Lynch was born on December 7, 1905, the only child of Thomas J. Lynch (1859–1936) and Catherine Elizabeth Martin Lynch (1863–1936), known as Elizabeth.[1]

Lynch was born and grew up in the city of Grand Mound, Iowa.[2] Grand Mound is in

Figure 1. The Reverend William Francis Lynch (Courtesy of St Ambrose University Archives)

Clinton County, about 40 km north of Davenport, Iowa. The town of Grand Mound was plotted and laid out in 1858, and was incorporated as a city in 1884. Its location along the main line of the Chicago and Western Railroad and the historic Lincoln Highway encouraged development and growth.[3] Although small in area, less than 5 sq. km, it was a thriving community during Lynch's youth, with schools, shops and churches serving the surrounding farm areas.[4] As a boy, Lynch attended local public schools and St Ann's School in Grand Mound.[5]

Lynch's parents were born in Clinton County, Iowa, the children of Irish immigrants.[6,7] His parents grew up on their respective families' farms and completed education up to the eighth grade level.[8] Lynch's grandparents were relatively early settlers in Iowa, which had become a state in 1846. Census information reveals that all four of Lynch's grandparents were born in Ireland, but the only detail known is the origin of Margaret Lynch who hailed from County Westmeath, Ireland.[9] In 1852, William's paternal grandparents, James (*ca*. 1808–1893) and Margaret (1822–1890) Lynch, moved to Iowa from Blackstone, Massachusetts, where James Lynch was employed as a fuller in the clothing industry.[10] Thomas was the youngest of five children: James, Catharine and Patrick Lynch were born in Massachusetts; Peter and Thomas were born in Iowa.[11] During the 1850s, the Lynch family operated a small store in DeWitt, Iowa, about 12 km to the east of Grand Mound.[12] Thomas Lynch, William's father, spent his youth working on the family farm which they

established in Olive Township, just west of Grand Mound.[13] James and Margaret Lynch's home was the site of the first mass celebrated in Grand Mound in 1852, long before the establishment of the church of SS. Philip and James in 1876.[14]

William Lynch's mother, Elizabeth Martin, was the second of seven children born to Thomas (1820–1896) and Jane (1827–1897) Martin.[15] All of the children (in birth order), Mary Jane, Elizabeth, Sarah, Thomas, John, Henry and James, were born in Iowa.[16] For much of the 1860s and 1870s, the family lived in Scott County, near Eldridge. In 1877, they moved to Clinton County, near DeWitt, then eventually settled on a farm in Orange Township near Grand Mound.[17] In 1900, after the death of their parents, the census[18] shows Elizabeth living on the farm with her four brothers, prior to her marriage to Thomas Lynch in 1902.[19]

3. College and Graduate Studies

After his early education in Grand Mound, William Lynch enrolled in boarding school at St Ambrose Academy in Davenport in 1922, graduating in 1924.[20] Lynch continued on at St Ambrose College, earning a Bachelor of Arts degree in Philosophy in 1928.[21] As an undergraduate student, Lynch participated in several extracurricular activities: he sang tenor in the chapel choir, was secretary of the Science Club, and in his senior year was president of the Student Council. He was also the secretary of the Apostleship of Prayer and the League of the Sacred Heart, and sacristan for the Sodality of the Blessed Virgin Mary.[22] All students wrote a senior thesis at that time, and Lynch's was entitled "A Peripatetic Interpretation of the Quantum Theory."[23] As the title implies, his thesis dealt with the "philosophic aspects" of "the New Physics", indicating his interest in physics and the sciences in general.

St Ambrose College played a large role in Lynch's education and career. Now St Ambrose University (since 1987), the institution opened as St Ambrose Seminary in 1882 with an enrollment of 33 boys, ages 12 to 23. It was founded and operated by the Diocese of Davenport to offer a Catholic education to those who had completed study at their local parish schools. The majority of students were from Irish and German immigrant families. It was primarily a high school in the 1800s, but college level courses and programs were steadily introduced. When Lynch was a student in the 1920s, the high school division, St Ambrose Academy, operated alongside St Ambrose College in the same building, Ambrose Hall (Figure 2). In 1921, St Ambrose Academy received accreditation as a four-year high school, and in 1927 the four-year college program was accredited. In order to earn and maintain the college accreditation, St Ambrose needed to have more faculty members with graduate degrees.[24] William Lynch would receive his graduate training within that context.

Having completed an undergraduate degree in Philosophy, Lynch next attended the Catholic University of America, in Washington DC. Studying from 1928 to 1932, Lynch earned a Bachelor of Sacred Theology, as well as a Master of Arts degree in Psychology.[25]

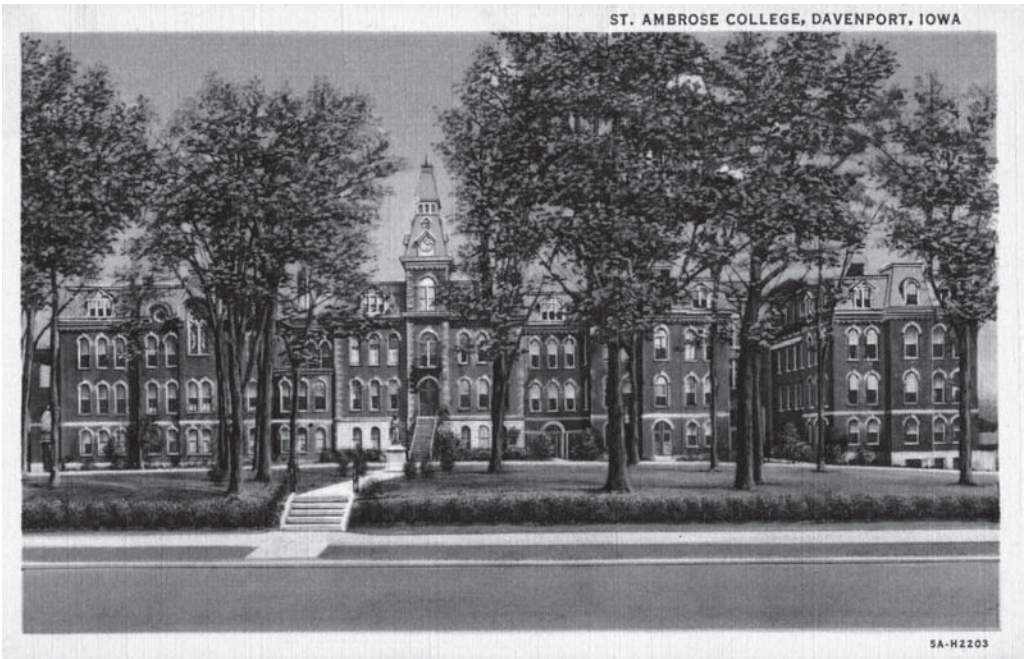

Figure 2. Ambrose Hall (Courtesy of Reverend George W. McDaniel, Ph.D.)

His thesis was on "The Social Treatment of Behavior Problems in the Light of Modern Psychology and Pastoral Theology."[26]

After his graduation, Lynch was ordained into the Catholic priesthood on May 21, 1932, at Sacred Heart Cathedral in Davenport, Iowa.[27] The Reverend William Lynch celebrated his first Solemn High Mass in Grand Mound on May 22, at his family's parish church of SS. Phillip and James.[28] Lynch's first assignment as a priest was Assistant Pastor at St Patrick's church in Iowa City, Iowa.[29] However, by the fall of 1933, the Diocese had reassigned him to St Ambrose Academy as an instructor of physics.[30] Although he was also the Assistant Pastor at St Margaret's church while he taught at the Academy,[31] Lynch's career would center on academia rather than parish ministry.

Even while he was at St Patrick's for a year, Lynch continued his education, taking courses in psychology at the University of Iowa, in Iowa City.[32] In the late 1930s and 1940s, Lynch's education took him away from Iowa to New York City. For the summers of 1938, 1939 and 1940, Lynch attended Columbia University, taking courses in botany, physiology, chemistry and mathematics.[33] Lynch's studies at Columbia mark a definite turn towards a career in science.

Lynch next attended Fordham University, a Catholic university also in New York, where he completed a Master of Science degree in Biology in 1941. His thesis, titled "A Cytological Investigation of the Chromosome Number and Morphology of *Polemonium van Bruntiae*", was on a flowering plant commonly known as Jacob's ladder.[34] Lynch's next endeavour was studying biology at New York University (NYU) under the renowned

Figure 3. Horace Wesley Stunkard (Courtesy of New York University Archives, Portrait Files)

parasitologist Horace Wesley Stunkard (Figure 3).[35]

Lynch found his studies at New York University challenging but rewarding. Lynch had a cordial relationship with Stunkard and other faculty members at NYU. Lynch wrote in 1942, "Dr. Stunkard, the head of the biology department, has always been very kind and friendly towards me." Lynch believed that the faculty spoke with him more comfortably than with other graduate students, perhaps because he was a priest.[36] He published his first scientific article in 1944 with Stunkard, "A new anoplocephaline cestode, *Oochoristica anniellae*, from the California limbless lizard."[37]

Lynch was a student at NYU when the United States entered the Second World War, and the Bishop of Davenport wrote to Lynch in July 1942 that they needed him back at St Ambrose, with so many priests away serving as chaplains in the military.[38] Lynch was stricken at the thought of interrupting his doctoral program, especially since he had not yet taken his qualifying exams. Even more troubling to Lynch was that the St Ambrose administration wanted him to teach physics at the college rather than high school level, and he did not have the advanced mathematics needed for this undertaking.[39] The Bishop, the most Rev. Henry Rohlman, had known Father Lynch for many years, and was sympathetic to his situation. He granted permission for Lynch to remain at NYU for "at least the coming year."[40] Lynch worked as a graduate assistant in biology at NYU from 1942 to 1946, thereby lowering expenses and enabling the Diocese to hire someone else in Davenport.

While at NYU, Lynch began his study of bryozoans, which would be a lifelong pursuit. He was introduced to bryozoology by Mary Dora Rogick (Figure 4), a bryozoan scholar who was a professor at the College of New Rochelle, in New Rochelle, New York.[41] An acknowledgement in Lynch's doctoral dissertation thanks "Dr. M.D. Rogick." In a letter dated August 1949, Lynch specifically thanks Rogick for "starting me off on this field."[42] While he was studying at NYU, Lynch lived at the rectory of the Church of the Blessed Sacrament in New Rochelle, New York, less than a km from Rogick's home. As shown in a collection of letters from the 1940s and 1950s, Rogick became a friend and advisor to Lynch as he finished his doctoral work and returned to teach college level biology at St Ambrose. Additionally, Rogick and Lynch overlapped as visiting investigators at the

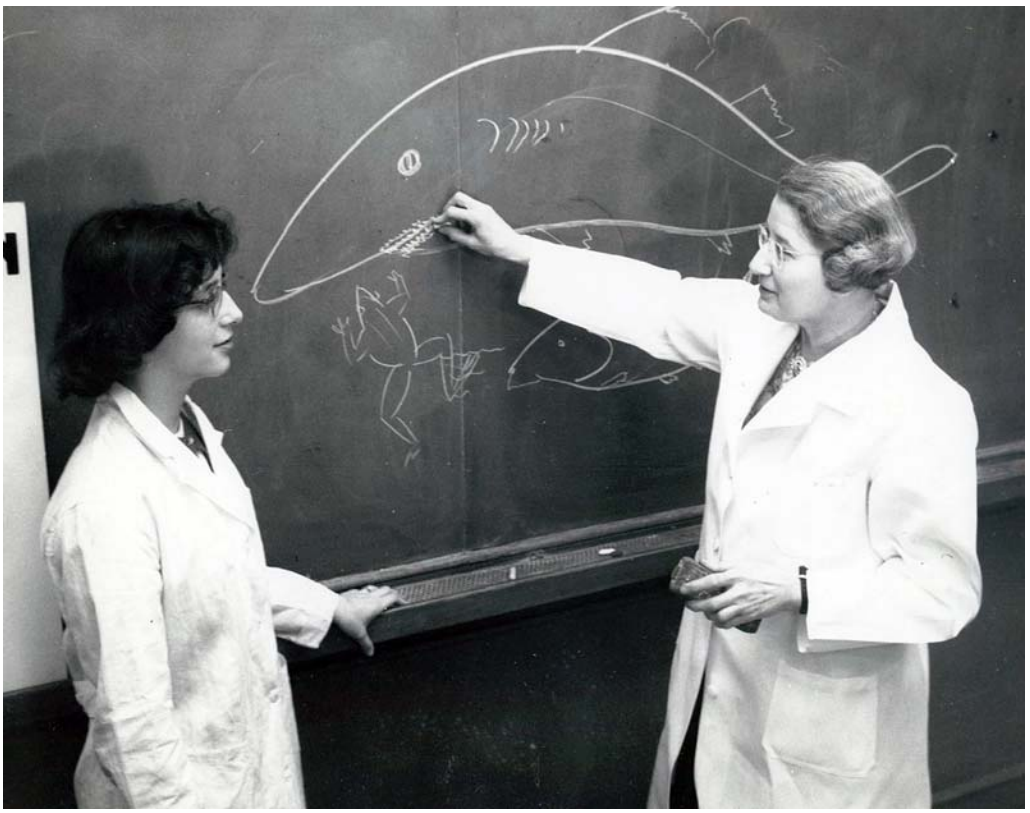

Figure 4. Mary Dora Rogick (Courtesy of Archives, College of New Rochelle)

Marine Biological Laboratory at Woods Hole, Massachusetts, during the summer of 1946.

Lynch spent the summers of 1944 and 1945 at the U.S. Fishery Laboratory in Beaufort, North Carolina, doing his doctoral research. Apparently, working on the marine bryozoan *Bugula neritina* was acceptable to Professor Stunkard. His dissertation topic was "The Behavior and Metamorphosis of the Larvae of *Bugula neritina* (Linnaeus)".[43]

As Lynch finished his degree at NYU, he again encountered conflict between the demands of the Diocese and the scientific world in which he had lived for the past few years. Lynch was uncomfortable with his assignment to come back to St Ambrose and assist with spiritual direction in McAuley Hall, an off-campus dormitory, in addition to teaching. Lynch would have preferred to spend more time revising his thesis for publication, and perhaps writing another paper. He asked, at least, to live on-campus, where he would have easier access to the science laboratories. Lynch also inquired whether he could be assigned to teach at another institution with "greater opportunities for scientific research."[44] The Most Reverend Ralph L. Hayes, the Bishop of Davenport who succeeded Rohlman, replied that Lynch was to put the needs of the Diocese first: return to St Ambrose College, live off-campus at McAuley Hall, and make sacrifices when it came to his scientific publication.[45]

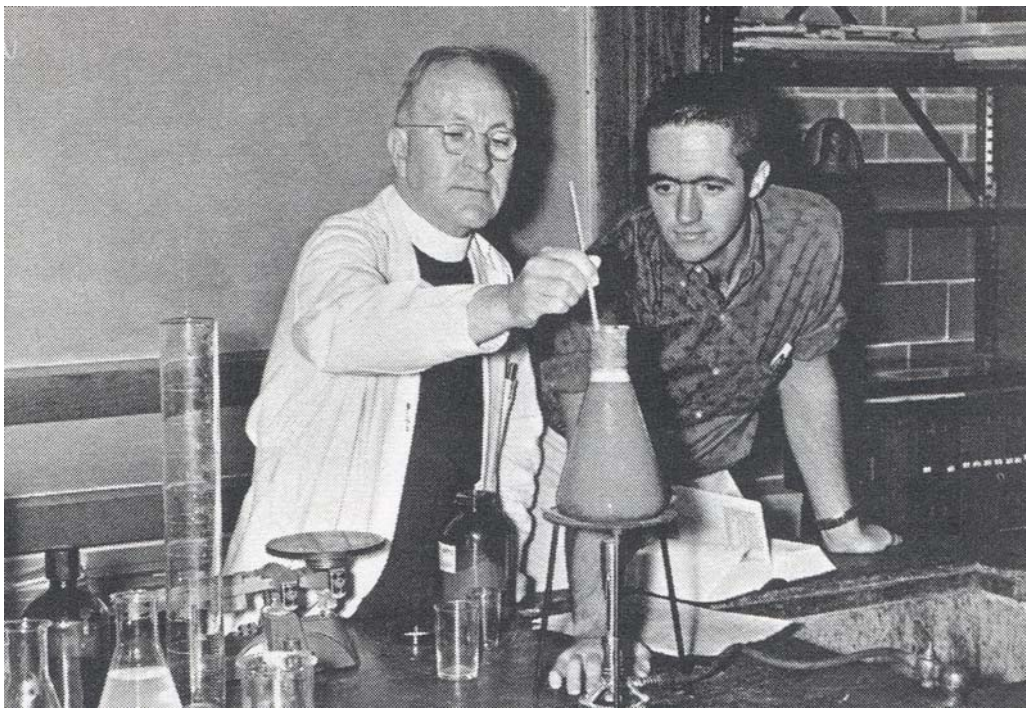

Figure 5. Reverend Lynch in the classroom (Courtesy of St Ambrose University Archives)

4. Teaching Career

Lynch, of course, did return to Davenport where he taught biology at St Ambrose College for the remainder of his life (Figure 5). Building on his earlier classroom experience as a physics instructor, he progressed from assistant professor in 1946–47 to associate professor in 1947–51, then was a full professor from 1951–60.[46] He was welcomed back to St Ambrose in 1946 by Monsignor Ulrich Hauber (Figure 6), the chair of the biology department, who had been the president of the College from 1926–1930.[47] Lynch eventually took over as chair of biology after Hauber's death in 1956.[48]

Lynch and Hauber taught together in Lewis Hall, the St Ambrose science building which was constructed during Hauber's presidency. Their former students recalled that Hauber and Lynch complemented each other well: Hauber was brusque, while Lynch was quiet and reflective. With Lynch teaching laboratory courses, Hauber focused more on the college's agricultural program. Lynch's students, especially ones who prepared for and applied to medical school, appreciated his efforts as an advisor.[49] In a letter to Rogick in November 1948[50] Lynch discussed the courses he taught. That semester he was teaching *Genetics, Comparative Anatomy, Personal and Communal Hygiene*, and *Human Anatomy and Genetics*. In the spring semester he anticipated the same courses, except teaching *General Physiology* instead of *Genetics*. As reflected in their correspondence,

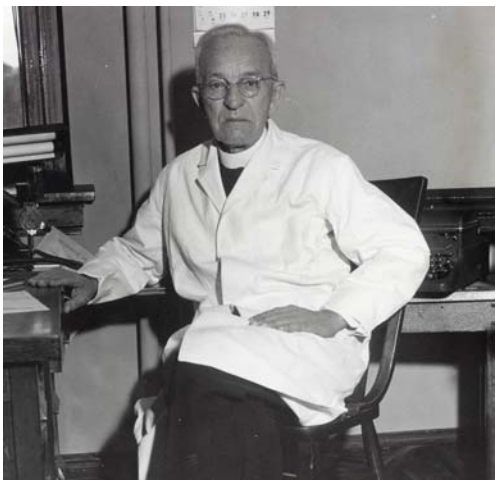

Figure 6. Monsignor Ulrich Albert Hauber (Courtesy of St Ambrose University Archives)

Rogick and Lynch both seemed to enjoy teaching undergraduates. In Rogick's *General Zoology Laboratory Manual*,[51] intended for introductory level students, she acknowledges Lynch's assistance with the frog parasitology section. Rogick and Lynch were dedicated educators, but they were also grateful for the opportunity to do summer field work at the Marine Biological Laboratory.

5. Research and the Community at the Marine Biological Laboratory

Lynch published fifteen scientific articles, primarily about bryozoans, detailed in Appendix 1. The list introduces us to his scholarly work as a biologist. Lynch's studies have been cited continuously over the years. The published version of his dissertation, in the *Biological Bulletin*,[52] is currently his most cited work.

Lynch's work at the Marine Biological Laboratory (MBL) in Woods Hole, Massachusetts (Figures 7 and 8), and the community of scientists there, featured prominently in his scientific life. Lynch's mentor Horace Stunkard and bryozoan colleague Mary Rogick were investigators and members of the Corporation of the Marine Biological Laboratory. Lynch was in residence at MBL for the summers of 1946, 1951, 1952, 1955, 1956, and 1960. At first he occupied space provided by Professor Stunkard, but later he received funding from the National Science Foundation to provide for his summer research needs at MBL. At St Ambrose, Lynch was highly regarded for his scholarship, and his community was immensely proud when he was elected to the Corporation of the Marine Biological Laboratory in 1956. News reports in Iowa celebrated that Lynch was the first ordained priest to be voted into the MBL Corporation,[53] though the archives of the MBL did not make any special note concerning his election. Upon close inspection of the MBL Annual Reports, however, the Rev. Anselm Keefe, O.Praem., a priest professor at St Norbert College in De Pere, Wisconsin, is listed as a member of the Corporation in the 1922 Annual Report.[54]

As a scientist, Lynch was complex and occasionally contradictory. There exists a continual thread of cautiousness and humility throughout his publications and correspondence. Lynch was deeply concerned about proper identification of species he studied, and apparently had little confidence in his ability to provide accurate identifications. For his dissertation on *Bugula neritina* conducted at Beaufort, Lynch asked Professor A. S. Pearse of Duke University to identify this bryozoan in spite of the fact that this species stands out strikingly compared with its congeners.[55] In his subsequent work at Woods

Figure 7. Lillie entrance to main building of the Marine Biological Laboratory (Courtesy of Collin H. Johnson)

Figure 8. View of Eel Pond from Marine Biological Laboratory looking toward St Joseph's church (hidden behind trees) and bell tower (Courtesy of Dean E. Wendt)

Hole, Lynch used *B. flabellata* (= *B. simplex*) following earlier work by Grave, but was troubled about the correctness of Grave's identification in a lengthy letter to Mary Rogick[56] and in his December 1949 publication on the behavior of *Bugula* larvae.[57] Lynch had similar misgivings about the true identity of the local *B. turrita*, a second species used in his Woods Hole studies, and feared there might exist confusion with European species. Lynch laid out his concerns about identification for his readers, but he failed to follow the sound advice given by Mary Rogick to include detailed drawings of the adult colony so that other workers would have some firm data to form a judgment on what species was used.

As an experimentalist, Lynch followed standard procedures of the time. His descriptions of experimental protocols were often lengthy, but sometimes vague. For example, he gave the reader little idea of how the range of concentrations of a substance to be tested was determined. This problem also worried Lynch, who mentions in apology in his 1958 *Journal of Experimental Zoology* paper [58] that he overlooked a 1950 paper of Heilbrunn and Wilson that would have led him to use more dilute solutions of vitamin A, a substance whose effect on metamorphosis he reported on in the 1958 paper. In a letter to Mary Rogick[59], he complains of the difficulty of assembling his observations for publication as his "notes were in the form of a diary." In fact, his papers often read like loosely constructed narratives rather than the concise, tightly focused pieces we are accustomed to in scientific writing of the present time. In the presentation of data, Lynch sometimes indicated variance in the data by reporting standard deviations. But in the analysis of his results, he does not include information on the statistical significance of any differences observed between treatments, but rather relies on trends in interpreting his findings.

Lynch was acutely aware about discrepancies between observations made in the laboratory and behavior of the organism in the field.[60] He was careful to alert readers to this issue. Lynch points out that Grave[61,62] reported that *B. flabellata* occurred in the Eel Pond (Figure 8), but not Vineyard Sound (separated by about 90 m) and that *B. turrita* occurred in Vineyard Sound, but not the Eel Pond. Furthermore, attempts by Grave to transplant the two species between these sites were unsuccessful. From these observations, Lynch warns his readers that, while larvae can be extremely sensitive to various factors, physical and/or chemical, presented in isolation in laboratory experiments, there are so many variables at play in the field that it is "extremely difficult to isolate specific ones as causative agents of ecological distribution".[63]

As Lynch's career matured, he moved further and further away from attempts to reconcile laboratory results with actual distributions and behavior. He used the laboratory to study processes more at the physiological level popular at the time. Lewis Victor Heilbrunn (Figure 9)[64] of the University of Pennsylvania was an influential figure in general physiology in America who spent summers at Woods Hole. Heilbrunn was most noted for his theories on the role of calcium ions in cellular signaling pathways. Lynch picked up this general theme of studying regulation by the action of synergistic and antagonistic agents, and he focused on extrinsic factors either inhibiting or accelerating metamorphosis of bryozoan and later also of ascidian larvae. Lynch hypothesized that

Figure 9. Lewis Victor Heilbrunn (Courtesy of the Marine Biological Laboratory Archives)

Figure 10. Sister Florence Marie Scott (Courtesy of the Marine Biological Laboratory Archives)

stimulating factors might cause release of calcium and, conversely, inhibiting factors blocking calcium release. Following Heilbrunn, Lynch suggested that in the case of *Bugula* spp calcium triggers muscle contraction that, in turn, initiates eversion of the internal sac, the first morphogenetic movement in metamorphosis. While alternative explanations were discussed, Lynch returned to this hypothesis as the most plausible one.[65]

Lynch expanded his interests beyond *Bugula* and bryozoans to introduce a comparative framework by using parallel studies of the metamorphosis of *Amaroecium constellatum*, a colonial ascidian. He described *Bugula* and *Amaroecium* as being "as different from one another as a horse and a starfish".[67] Curiously, in modern day phylogenetic thinking most systematists now consider bryozoans and ascidians even further phylogenetically separated than are mammals and asteroids.[68] The selection of *Amaroecium* over alternatives also available locally is in some ways a logical choice and in other ways an intriguing one. Both *Bugula* and *Amaroecium* were commonly occurring and reproductively active during the summer season and colonies were procured by and provided to resident investigators by the MBL Supply Department. The larvae of both have certain similar features making them amenable to laboratory studies of settlement and metamorphosis. In this sense, studying *Amaroecium* would seem logical. It is interesting to note that work on the developmental biology of metamorphosis of *Amaroecium* was being conducted at MBL by Sister Florence Marie Scott (Figure 10), Professor of Biology at Seton Hill College in Johnstown, Pennsylvania.[68] Sister Florence Marie studied at the MBL for many

years. During this time, she produced seven papers on the metamorphosis of *Amaroecium*. Lynch and Scott overlapped at MBL during all six of the summer seasons he spent there. It seems reasonable that the two met, likely numerous times. Both had Catholic Church vocations and both worked on metamorphosis of marine invertebrates. Yet Lynch is neither acknowledged nor his work cited in any of Scott's publications. Lynch cites Scott only twice.[69] Finally, according to the archivist at Seton Hill University, and the Community Archivist for the Sisters of Charity of Seton Hill, there exists no correspondence between the two in Sister Florence Marie's files.[70]

6. Personal life

The Rev. Lynch was active in many professional societies. In addition to his membership in the Corporation of the Marine Biological Laboratory, mentioned earlier, Lynch belonged to the Iowa Academy of Science, the New York Academy of Science, the American Association for the Advancement of Science, the American Society of Zoologists, the American Microscopical Society and Sigma Xi. He participated in the activities of the American Institute of Biological Sciences.[71] He was a member of the Albertus Magnus Guild, a society of Catholic scientists founded in 1953 to advance the quality of science scholarship at Catholic institutions and to counter the notion that the Catholic Church was hostile towards scientific research.[72] In 1958, when the faculty of St Ambrose College formed a chapter of the American Association of University Professors, Lynch served on the executive board.[73]

The 15th International Zoological Congress in 1958 was a high point for Lynch both personally and professionally. He was one of only 71 scientists from the U.S. invited to speak, a fact which was celebrated by his community at St Ambrose. More remarkably, Lynch was one of twenty participants seclected by the U.S. Office for Naval Research and the American Institute of Biological Sciences to receive free transportation via military airplane.[74] After Lynch spoke at the Congress in London, he wrote to Mary Rogick with a detailed review, reporting on the science and the social events, and the many colleagues that he had met there, including John Ryland, who spoke at the conference immediately preceding Lynch.[75] Though Lynch had many colleagues, we have details only about his friendship with Mary Rogick. Their correspondence became steadily less formal as the years went on. The letters give glimpses of Lynch as a person, such as his habit of swimming every day, and they mention the other bryozoan researchers with whom he corresponded. They discussed teaching, the bryozoan research that they were engaged in, acquaintances in common from MBL, and general news of their lives. In another letter,[76] Lynch suggested to Rogick that they write a paper together, but that collaboration never took place.

In addition to Mary Rogick, Lynch corresponded with bryozoan researchers all over the world, including Ryland in the United Kingdom, and S. Oda and H. Oka in Japan. Twenty years before the establishment of the International Bryozoology Association in 1968, Lynch wrote to Rogick the following: "…there are so few of us interested in the

Bryozoa. I think we ought to form a society or a union of some kind."[77]

While Lynch's professional life was based in Davenport, he regularly visited his family in Grand Mound. After the death of his parents in 1936, only his cousin Alfred J. Lynch (1896–1979) remained in town, on his father's side of the family. However, the Martins, Lynch's mother's family, were a large extended family in the Grand Mound area. Lynch often spent time at the home of his cousin J. Melvin Martin, son of his uncle James. The youngest of Melvin's six children, Mrs Esther Martin Flammang remembers him warmly. Mrs Flammang recalls him as calm, soft spoken and very humble, interested in those around him but not speaking of himself. Several times a month, "Fr Lynch" would visit Melvin's family for Sunday dinner, and spend the afternoon chatting with relatives and playing the piano. Particular memories are his enthusiasm for swimming and a habit of drinking 6 to 7 glasses of Grand Mound water at a time, while complaining of disliking the taste of Davenport's water. He was greatly respected by his family members and welcomed into their lives. Lynch did not often celebrate Mass outside of the St Ambrose campus, but he did conduct the funeral service for his mother, and the wedding of Melvin Martin's daughter, Mary Colette Martin Conroy. Lynch was planning to officiate at the marriage ceremony of Esther Martin, as well, but his untimely death occurred a few weeks before the wedding.[78]

In the evening of Monday, December 5, 1960, William Francis Lynch died suddenly at Mercy Hospital in Davenport. He had suffered a massive gastric hemorrhage, complicated by a small duodenal ulcer and acute hepatitis with deficient coagulation.[79] Colleagues, students and relatives were stunned and saddened; no one had been aware of his poor health at the time.[80] He was mourned on campus, with services at the college's Christ the King Chapel on Friday morning, and burial at Calvary Cemetery in Grand Mound on Friday afternoon (Figure 11).[81] A large number of mourners, from the college and Grand Mound, attended a reception in his memory in Davenport.[82] He was remembered for his diversity and balance of character – as a dedicated scientist, a caring educator, and beloved member of their community.[83]

Figure 11. Gravestone of Reverend Lynch in Calvary Cemetery, Grand Mound, Iowa (Courtesy of Amanda Jane Deutsch)

7. Acknowledgements

The authors are especially grateful to Mrs. Esther Martin Flammang of Grand Mound, Iowa, for sharing her family memories of Father Lynch. We would also like to express our appreciation for the generous assistance and guidance of the Rev. George W. McDaniel, PhD., Chancellor of the Diocese of Davenport, Iowa. The authors also thank and acknowledge help given by the following: Judith Winston, International Bryozoology Association and Virginia Museum of Natural History; Mary Kathryn (Kathy) McCreary Byers and Heather Lovewell, St Ambrose University; Carrie Hintz, Columbia University; Patrice Kane, Fordham University; Denise Anderson, University of Iowa Libraries, Iowa City; Ashley Jones, New York University Archives; Sr. Martha Counihan, OSU, College of New Rochelle, New York; Jane Stoeffler, Catholic University of America, Washington, D.C.; Diane Rielinger, Marine Biological Laboratory Library; Richard Weaver, Spring Hill College, Mobile, Alabama; Helen Fay Green, Grand Mound, Iowa; Ann Soenksen, the Central Community Historical Society in DeWitt, Iowa; Michael J. Kearney, Clinton, Iowa; Marilyn Galloway, Grand Mound, Iowa; Dean E. Wendt, California Polytechnic State University, San Luis Obispo, California; Amanda Jane Deutsch, Harvard College Class of 2010; Nancy Cohen Deutsch, Bettendorf, Iowa; Constance Rinaldo, Ernst Mayr Library, Museum of Comparative Zoology, Harvard University; Helene Ferranti and Collin Johnson, Museum of Comparative Zoology, Harvard University.

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Notes

1. Dates from gravestone of Thomas J. and C. Elizabeth Lynch in Calvary Cemetery, Grand Mound, Iowa.
2 'Lynch, Rev. William Frances', *American Men of Science*, J. M. Cattell (ed.), 8th ed. (1949), 1551.
3 'Re-Dedication Services of S.S. Philip & James Church', *Grand Mound Record*, 11 September 1941, newspaper clipping, collection of Mrs Helen Fay Green.
4 Marilyn Galloway, personal communication, 27 July 2010.
5 'Lynch, William', St Ambrose College Scholarship Record (includes high school transcript), courtesy of St Ambrose University Archives.
6 'Obituary of Mrs. Thomas Lynch', *DeWitt Observer*, 1936, newspaper clipping, collection of the Central Community Historical Society, DeWitt, Iowa.
7 'Funeral Service for Thomas Lynch', *DeWitt Observer*, January 7, 1937, newspaper clipping, collection of the Central Community Historical Society, DeWitt, Iowa.
8 a) For the Lynch family, United States of America, Bureau of the Census. *Ninth Census of the United States, 1870*. Census Place: Olive, Clinton, Iowa. Micropublication roll M593_384; page 352A, image 706. b) For the Martin family, United States of America, Bureau of the

Census. *Ninth Census of the United States, 1870*. Census Place: Lincoln, Scott, Iowa. Micropublication roll M593_419: page 449A, image 132. c) Educational information from *1925 Iowa State Census*, Census Place: Clinton County, Iowa. Micropublication roll IA1925_1674, lines 17–19.

9 Birthplace information from gravestone of Margaret Lynch, Calvary Cemetery, Grand Mound, Iowa.

10 United States of America, Bureau of the Census. *Seventh Census of the United States, 1850*. Census Place: Blackstone, Worcester, Massachusetts. Micropublication roll M432_345; image 427.

11 1870 Census, note 8a.

12 Obituary of James Lynch, *DeWitt Observer*, 26 July 1928, newspaper clipping, collection of the Central Community Historical Society, DeWitt, Iowa.

13 United States of America, Bureau of the Census. *Tenth Census of the United States, 1880*. Census Place: Olive, Clinton, Iowa, Enumeration District 298. Micropublication roll 334; page 326A, image 0648.

14 'Re-Dedication Services…', note 3.

15 Dates from gravestone of Thomas and Jane Martin, Calvary Cemetery, Grand Mound, Iowa.

16 *1885 Iowa State Census*, Census Place: Orange Twp., Clinton County, Iowa. Micropublication roll IA1885_169, lines 3–11.

17 Obituary of Thomas Edward Martin, newspaper clipping (no source), 1922, collection of the Central Community Historical Society, DeWitt, Iowa.

18 United States of America, Bureau of the Census. *Twelfth Census of the United States, 1900*. Census Place: Orange, Clinton, Iowa, Enumeration District 28. Micropublication roll T623_426; page 1B.

19 Obituary, note 6.

20 'Lynch, William', note 5.

21 'Lynch, William', St Ambrose College transcript, file no. 894.

22 Student activity information from *1925–26 Catalog of St Ambrose College*, June 1926 and *1927–1928 Catalog of St Ambrose College*, May 1928, as reported by Kathy Byers, St Ambrose College Archives, personal communication, 4 May 2010.

23 W.F. Lynch, 'A Peripatetic Interpretation of the Quantum Theory,' A.B. Thesis in Philosophy, St Ambrose College, Davenport, Iowa, 1928, 48p.

24 McDaniel, George William, *A Great and Lasting Beginning: the First 125 Years of St Ambrose University*, St Ambrose University, Davenport, Iowa, 2006, 284 p.

25 J. M. Cattell (ed.), note 2.

26 Thesis information from Catholic University database of Masters Theses, reported by Jane Stoeffler, Catholic University Archives, personal communication 28 April 2010.

27 Lynch was ordained as a diocesan priest, accountable to the Bishop and the Diocese of Davenport, Iowa. He did not enter a religious order, such as the Society of Jesus (Jesuits), Premonstratensians (Norbertines), etc. Rev. G. McDaniel, personal communication, 29 September 2010.

28 'Reverend William Lynch Sings First Solemn High Mass', newspaper clipping (no source) 1932, collection of the Central Community Historical Society, DeWitt, Iowa.

29 'William F. Lynch 1905–1960', *Proceedings of the Iowa Academy of Science*, **68** (1961), 56.

30 J. M. Cattell (ed.), note 2.

31 Rev. George McDaniel, Diocese of Davenport, Iowa, personal communication, 28 April 2010.

32 Enrollment information from *1933 General Catalog*, University of Iowa, as reported by Denise K. Anderson, Univ. of Iowa Libraries, Iowa City, personal communication 27 April 2010. Course information from Sarah Harris, Univ. of Iowa Registrar's office, personal communication 27 April 2010. Courses taken were *Introduction to General Psychopathology* and *Psychology Seminar in Psychoneuroses*.

33 Information from the Office of the Registrar as reported by Carrie Hintz, Archivist, Columbia University, Butler Library, personal communication, 8 June 2010.

34 'Lynch, Rev. William F.' transcript from Fordham University Office of Academic Records.

35 Horace Wesley Stunkard (1889 – 1998) was a leading parasitologist of his generation and based his career at New York University for 29 years (H. Mehlorn (Bochum), 'In memoriam Horace W. Stunkard (1889–1998)' *Parasitological Research* **76** (1990) 372; W.H. Coil, 'Horace Wesley Stunkard: A Dedication' *The Journal of Parasitology* **72**(3) (1966) 367–368). Stunkard completed his Bachelors degree in 1912 at Cole College in Iowa. He then entered a doctoral program at the University of Illinois where his graduate work was overseen by the eminent parasitologist H.B. Ward. In 1916, he joined the biology faculty at NYU, but in 1917 enlisted in the Army Signal Corp and served in France during World War I. After the war, Stunkard returned to NYU and full time teaching and research until his retirement in 1954, when he moved offices and laboratories to the American Museum of Natural History, an institution that would become his New York base for many years. Stunkard published approximately 300 papers. Most of these are rigorous accounts concerning parasitological matters, but some reveal his concern and respect for colleagues and institutions in more personal ways. For example, Stunkard wrote an account of Libbie Henrietta Hyman as a person and of her bountiful contributions to zoology (H. W. Stunkard, 'In Memorium. Libbie Henrietta Hyman, 1888-1969', *Biology of the Turbellaria*, edited by N. W. Riser and M. P. Morse (New York City, McGraw-Hill Book Company, 1974), xi–xiii.). Similarly, Stunkard wrote a light and highly informative summary of the early days of the American Microscopical Society (H.W. Stunkard, 'Reminiscences of an honorary member of long standing' *Transactions of the American Microscopical Society* **98**(2) (1979), 286–290). In contrast, there are accounts of Stunkard as brusque, if not overtly harsh, in his interactions with some colleagues and students (see D.B. Conn, 'Presidential Address: Parasites on a shrinking planet' *Journal of Parasitology* **95**(6) (2009) 1253–1263).

Horace Stunkard was deeply entrenched in the MBL and for many years spent summers in Woods Hole. As made clear in the text, this affiliation with the MBL was an important link between him and Lynch, in fact, to the point of making Lynch's study there a possibility in the first place. In this light, one must wonder why Stunkard encouraged or approved of Lynch conducting his dissertation research in Beaufort, North Carolina, rather than at MBL. Stunkard is listed in the annual reports of MBL as an Independent Investigator during the summers that Lynch was in North Carolina (1944 and 1945). Species of *Bugula* occur in both locations, although in those years there existed no accounts of *B. neritina,* the subject of Lynch's dissertation research, extending in range as far north as Cape Cod. However, while *B. neritina* has the advantages of larger size and greater pigmentation than *Bugula* spp in the vicinity of Woods Hole, it would have been possible to conduct the same studies in Woods Hole with larvae of another species of *Bugula*, as Lynch actually did throughout the remainder of his career.

36 W.F. Lynch to H. Rohlman, 24 July 1942, correspondence files, archives of the Diocese of Davenport, Iowa.

37 Stunkard, Horace W. and William F. Lynch, "A new anoplocephaline cestode, *Oochoristica aniellae*, from the California limbless lizard," *Transactions of the American Microscopical Society* **63**(2) (1944) 165–169.
38 H. Rohlman to W.F. Lynch, 24 July 1942; 27 July, 1942, correspondence files, archives of the Diocese of Davenport, Iowa.
39 W.F. Lynch to H. Rohlman, 26 July 1942; 29 July 1942, correspondence files, archives of the Diocese of Davenport, Iowa.
40 H. Rohlman to W.F. Lynch, 10 August 1942, correspondence files, archives of the Diocese of Davenport, Iowa.
41 Mary Dora Rogick (1906–1964) was a prominent student of marine and freshwater bryozoans who published widely on bryozoans of Antarctic and temperate regions as well as papers on techniques and pedagogy in general (T. J. M. Schopf, 'Mary Dora Rogick'. *The Ohio Academy of Science* **65**(4) (1966), 238–239). She also published two studies on the effects of the 1938 hurricane on bryozoans of the Woods Hole region. Rogick trained in the Midwest, receiving her Ph.D. under the guidance of Raymond Osburn at Ohio State University. Her dissertation was on freshwater bryozoans of Lake Erie. In 1935, she joined the faculty of New Rochelle College where she remained for 28 years ultimately becoming professor and chairman of the Zoology Department. Rogick was skilled at drawing and often created cartoons or used her playful art in the classroom. Her surviving correspondence with Lynch reveals her devotion to and care of her mother (M.D. Rogick to W. F. Lynch, 21 November 1948). The numerous facets of the life of Mary Rogick will be the focus of an upcoming exposition and analysis by Judith Winston.
42 W.F. Lynch to M.D. Rogick, 1 August 1949, collection of Judith Winston.
43 W. F. Lynch, 'The Behavior and Metamorphosis of the Larvae of *Bugula neritina* (Linnaeus)', Ph.D. Dissertation in Biology, New York University, New York City, (1946).
44 W.F. Lynch to R.L. Hayes, 4 September 1946, correspondence files, archives of the Diocese of Davenport, Iowa.
45 R.L. Hayes to W.F. Lynch, 6 September 1946, correspondence files, archives of the Diocese of Davenport, Iowa.
46 Lynch, Rev. William Frances', *American Men of Science*, J. M. Cattell (ed.), 9th ed. (1955) 2, 704.
47 Monsignor Ulrich Albert Hauber (1885–1956) was a priest, biologist and educator who devoted his entire career to St Ambrose College. Hauber was five years old when his family emigrated from Bavaria and settled in Iowa City, Iowa. He entered St Ambrose College in 1901, graduating in 1905. He earned his Ph.D. in Biology at the University of Iowa in 1924. His dissertation was 'An analysis by selection and crossing of genetic factors involved in defective venation, a variable character of the parasitic wasp, *Habrobracon juglandis* (Ashmead)' (published in *Genetics,* 10(2) (1925), 91–116.) Like Lynch, Hauber began by teaching in the high school division at St Ambrose (1908–1914), and later at the college level. He was a member of the biology faculty of the college beginning in 1914 and continuing until his death in 1956. He was the fifth president of St Ambrose College (1926–1930), but preferred teaching and research over administrative duties. Hauber published articles and books on both biological and theological topics, including the textbooks *Essentials of Zoology*, Appleton, New York, 1949, 394 p., and with Sr Ellen O'Hanlon, *Biology: A study of the principles of life for the college student*, Appleton, New York, 1937, 559 p. He was a strong proponent of science education at Catholic institutions. His pamphlet *A Catholic Opinion on the Evolution Theory*,

St Ambrose University, 1925, 32 p. (reprinted by Paulist Press, New York, 1947) was published as a response to religious fundamentalists in the context of the Scopes trial, defending science as consistent with a Catholic worldview. (Sources used for this endnote: McDaniel, George William, *A Great and Lasting Beginning: the First 125 Years of St Ambrose University*, St Ambrose University, Davenport, Iowa, 2006, 284 p.; *American Men of Science*, J. M. Cattell (ed.), 9th ed. (1955), 484.)

48 M.M. Vinje to "Friends and Former Ambrosian Biologists", 4 February 1976, Archives of St Ambrose University.

49 'They Opened the Doors to Medical Schools', *Acorns and Oaks*, November (1967), 1–8.

50 W.F. Lynch to M.D. Rogick, 29 November 1948, collection of Judith Winston.

51 M.D. Rogick, *General Zoology Laboratory Manual*, Mosby, St Louis, 1947, 322p.

52 W. F. Lynch, 'The behavior and metamorphosis of the larva of *Bugula neritina* (Linnaeus): experimental modification of the length of the free-swimming period and the responses of the larvae to light and gravity', *Biological Bulletin* **92**(2) (1947), 115–150.

53 a)'St Ambrose Biology Professor is Honored' newspaper clipping (no author, no source), archives of the Diocese of Davenport; b)'Funeral Rites Conducted for Father Lynch', *The Ambrosian News* **27**(9) 9 December 1960, 1; and c) 'William F. Lynch 1905–1960', *Proceedings of the Iowa Academy of Science*, **68** (1961) 56.

54 William Lynch was not the only Roman Catholic clergy or vowed person (i.e., Brothers and Sisters) to study at the MBL during the early part of the twentieth century. The annual reports of the MBL provide a list by name and institutional affiliation of those either classified as Independent Investigator, Beginning Investigator, Research Assistant, Library Reader, or Student (and, if student, in which course). The report for each year is published in an issue of *Biological Bulletin* the following year. We surveyed this data from 1920 through 1966 for individuals who self-identified as Catholic clergy or vowed persons by using the title of Reverend, Father, Brother or Sister. Eighty-four individuals were found, some occurring in multiple categories over the course of their stays at the MBL. In total, they are listed as follows: investigators – 5 men, 16 women; library readers – 3 men, 2 women; students – 26 men, 35 women. Some such as Joseph Cassidy, Anselm Keefe, William Lynch, Elizabeth MacDonald, and Florence Marie Scott studied or conducted research at the MBL over multiple years and even multiple decades in some instances. Keefe, Lynch, and Scott were made members of the Corporation and Scott was elected a Trustee the year prior to her death. It is apparent that the MBL community was a welcoming one. Part of the reason for this is found in its leadership and their families. Frank Rattray Lillie (1870–1947) was assistant director of the MBL from 1900–1908, director from 1908–1925, and president from 1925–1942 (F.R. Lillie, '*The Woods Hole Marine Biological Laboratory*' 1944, University of Chicago Press, Chicago, Illinois). Lillie was a scholar and scientific statesman who was based during the academic year at the University of Chicago, where he was initially a Ph.D. student of C.O. Whitman (1842–1910). Whitman was chair of zoology at Chicago and also the first director of the MBL. Lillie's and Whitman's contributions are central to the early evolution of the MBL. Frank Lillie married Frances Crane on 29 June 1895 and, after a brief honeymoon, they traveled to the MBL, where Lillie conducted research and spent summers for fifty-five years (M.P.L. Barrows, '*Frances Crane Lillie 1869-1958*' no date, privately published). Frances Crane Lillie's father, Richard Teller Crane, was a wealthy Chicago manufacturer and Frances grew up in a family with three sisters and two brothers. Over the years, she was especially close to her brother Charles who provided encouragement and moral support for Frances' interests in attempting to enhance the

lives of the working class. Charles also had immense impact on the MBL by providing funds for the first brick laboratory building (Crane Laboratory). Frances' socio-political strong views and actions often put her at odds with her equally strong willed father and she became considered the black sheep of the family by most except Charles. Frances earned a medical degree, but did not develop a medical practice. Instead she focused on her societal causes and raising a family which included natural born and adopted children. One of these adopted children was a son, Karl Christopher, who was blind from birth. The family was constantly on the move between academic years in Chicago, a farm they owned in Wisconsin, and summers at the MBL.

Frances converted to Catholism in 1920 (J.A. McLaughlin, '*St Joseph's Church Woods Hole, Massachusetts, a History 1882–1982*.' St Joseph's Church, Woods Hole, Massachusetts). Her faith was a strong one, but she did not insist on the conversion of her children, largely at the request of her husband. She did, however, compile a set of readings from the Douay-Rheims Bible that dealt with poverty and blindness and she dedicated it to Karl Christopher (F.C. Lillie, '*The Poor in the Christian's Bible*' 1938, privately published, Chicago, Illinois). Frances was a conspicuous presence in the Woods Hole community owing to her husband's prominence, her outspoken ways, and her good deeds. Situated at the west end of the Eel Pond is Woods Hole's only Catholic church, St Joseph's. The church was built at a time when an influx of Irish occurred in conjunction with factory work at the newly established Pacific Guano Company. The Catholic population again increased when construction extended the Old Colony railroad to Woods Hole for serving, in part, the guano factory. And, finally, the Catholic population continued to grow with the development of large estates as many Irish entered in the construction and service industries. Frances Crane Lillie gave money for the building of a bell tower immediately across the street from the church and facing out on the Eel Pond from which it could be seen by those at the MBL (Figure 8). Land for the tower was given by a local family and funds for two bells were contributed by others as well. The bells are named "Pasteur" and "Mendel" for two Roman Catholic scientists of world fame. The tower was dedicated on 31 July 1930. At this event, Mrs Charles R. Crane presented a gift of a statue of St Theresa, "The Little Flower", for the garden surrounding the bell tower. Frances Crane Lillie provided monies to maintain this garden – a garden planted with flowers associated with the Virgin Mary. In an effort to further strengthen the tie between the church and the laboratory, Frances Lillie gave to the church property at 23 High Street that was called "Mendel House" and was intended to serve as living quarters for priests who visited the MBL for study or research. The house was subsequently sold in 1976.

55 W.F. Lynch, note 52.

56 W.F. Lynch to M.D. Rogick, 23 September 1948, collection of Judith Winston.

57 W. F. Lynch, 'Modification of the responses of two species of *Bugula* larvae from Woods Hole to light and gravity: aspects of the behavior of *Bugula* larvae', *Biological Bulletin* **97**(3) (1949b), 302–310.

58 W.F. Lynch, 'The effects of certain organic compounds and antimitotic agents on metamorphosis of *Bugula* and *Amaroecium* larvae', *Journal of Experimental Zoology* **137**(1) (1958b) 117–152.

59 W.F. Lynch to M.D. Rogick, 29 November 1948, collection of Judith Winston.

60 W.F. Lynch, note 57.

61 B. H. Grave, 'The natural history of *Bugula flabellata* at Woods Hole, Massachusetts, including the behavior and attachment of the larvae', *Journal of Morphology and Physiology*, **49**(2) (1930) 355–383.

62 Benjamin H. Grave (1878–1949) was an invertebrate biologist who studied for many years at the MBL (News and Notes, 'Benjamin H. Grave', *Science* **109**(2834) (1949), 434). He died on January 24, 1949, after falling and fracturing a hip. Grave published on a wide range of topics and organisms focusing on gamete and fertilization biology, embryology, and life histories. He published a single paper on bryozoans (B. H. Grave, 'The natural history of *Bugula flabellata* at Woods Hole, Massachusetts, including the behavior and attachment of the larva' *Journal of Morphology*, **49**(2) (1930), 355–383) that was to be critical to the thinking and studies of Lynch. Grave graduated from Earlham College, Richmond, Indiana in 1903 (www.earlham.edu/publicaffairs/documents/pdf/josephmoorehouse.pdf). He pursued graduate study at Johns Hopkins University and completed a dissertation titled *Anatomy and Physiology of the Wing-shell* Atrina rigida under the supervision of Professor E. A. Anderson. This study was published in 1909 (B. H. Grave, 'Anatomy and physiology of the wing-shell *Atrina rigida', Bulletin of the Bureau of Fisheries* **29** (1909), 409–399, Pls. XLVIII–L.). Later, he became affiliated with several colleges, including most importantly with Wabash College in Crawfordsville, Indiana, where he was on the faculty from 1920 to 1928 and finally with DePauw University in Greencastle, Indiana, until the end of his career. After Grave's death, Lucy Moore Grave, his widow, provided an endowment for scholarships to promote studies at marine biological laboratories, with priority being given to the MBL. The income was shared by Earlham College, Wabash College, and DePauw University (*www.wabash.edu/academics/docs/scholarship07.pdf*). Evidently Grave was active in campus affairs, at least at DePauw, where on Friday, April 15, 1932, he spoke at morning chapel on the topic of the merits of comprehensive examinations for seniors that must be passed before a degree was conferred (' B. H. Grave speaks to Friday chapel on college honors', *The DePauw* **80**(75) (15 April 1932), 1). Grave reported that Wabash College was experimenting that year with requiring such an examination and, understandably, Wabash students were apprehensive of the impact on their senior year activities as well as on prospects for graduation. Grave spoke of contrasting views of a college education consisting of passing a series of courses for which a degree was awarded versus a capstone experience such as a comprehensive examination that required some overall synthesis. In what appeared to be a light-hearted manner, Grave introduced his talk by commenting, "I wish to propose something to think about, but not to be adopted".

The Benjamin H. Grave Collection of unpublished essays on science and religion is deposited at Earlham College, donated by Bartram Cadbury in 1997 (http://www.earlham.edu/library/content/friends/manuscripts/g.html).

63 W.F. Lynch, note 57, pg 306.

64 Lewis Victor Heilbrunn (1892–1959) was a prominent physiologist in the first half of the twentieth century (H. B. Steinbach, 'L. V. Heilbrunn, general physiologist', *Science* **131**(3398) (1960), 397–399). He completed his undergraduate work at Cornell University and his Ph.D., at the age of 22, at the University of Chicago under the supervision of Frank R. Lillie. In 1929, Heilbrunn joined the faculty of the University of Pennsylvania and remained a member of this institution until his death in 1959 from injuries incurred in an automobile accident. He trained over 50 Ph.D. students. The central focus of his research over the years resided in studies of the cytoplasm of cells and, importantly, on the role of calcium ions in cell signaling. The implications of his ideas and research had applicability across a spectrum of biological phenomena. Heilbrunn was a leading figure of the time in physiology and recognized for his ideas on a worldwide level. He was also a controversial figure, however, as his theories were difficult to test convincingly by experimentation given the tools and knowledge of cell biology

available prior to the 1960s. As a graduate student Heilbrunn began an affiliation with the Marine Biological Laboratory that would last the remainder of his life. He was a prominent figure in the community of scholars and their families that flourished during summers at Woods Hole. He was known for his love of children and made time available for talking, swimming, and organizing games and parties with the MBL families. Mary Prentice Lillie Barrows, one of F.R. Lillie's children, tells a charming story of "Heibie" giving Mary and her blind adopted brother Karl swimming and diving lessons (M.P.L. Barrows, '*Moon Out of the Well. Reminiscences*' (1970) privately published). Mary goes on to describe Heilbrunn as "our greatest friend among the grown-ups" (pg 5).

65 Summarized in W.F. Lynch, 'Problems of the mechanism involved in the metamorphosis of *Bugula* and *Amaroecium* larvae', *Proceedings of the Iowa Academy of Science* **67**(dna) (1960) 522–531 and W.F. Lynch, 'Extrinsic factors influencing metamorphosis in bryozoan and ascidian larvae', *American Zoologist* **1**(1) (1961) 59–66.

66 'Roux' Archiv. Priest's work to be German journal'. *The Ambrosian News* **25**(20), 13 March 1959, 3.

67 Hejnol, A., Obst, M., Stamatakis, A., Ott, M., Rouse, G.W., Edgecombe, G.D., Martinez, P., Bagunà, J., Bailly, X., Jondelius, U., Wiens, M., Müller, W.E.G., Seaver, E., Wheeler, W.C., Martindale, M.Q., Giribet, G. and Dunn, C.W. 'Assessing the root of bilaterian animals with scalable phylogenomic methods', *Proceedings of the Royal Society* **B 276**(1677) (2009) 4261–4270.

68 Florence Marie Scott (1902 – 1965) was born in Johnstown, Pennsylvania and entered the Sisters of Charity in 1920 (D.P. Costello, 'Sister Florence Marie Scott', *Biological Bulletin* **133**(1) (1967), 13–14.) She received the Bachelor's degree from Seton Hill College in 1926 and Master's and Doctoral degrees from Columbia University in 1927 and 1935, respectively. She spent 29 summers or parts thereof at the MBL where she was elected a member of the Corporation in 1942 and trustee in 1964 (survey of MBL annual reports from 1920 through 1965). Her scientific pursuits centered on aspects of the development of the compound ascidian, *Amaroecium constellatum* on which she published seven papers. These seven articles constitute her total scientific output known to the authors. Costello also writes of her warm and sympathetic manner and her loyalty to the MBL, its staff and other visiting investigators. Sister Florence Marie Scott's home institution was Seton Hill College where she was an undergraduate and later a faculty member and department chairman. In 1918, the Commonwealth of Pennsylvania approved the charter of Seton Hill College as a four-year institution founded by the Sisters of Charity (http://www.setonhill.edu/about/history.cfm). Now a coeducational university, Seton Hill accepted only women students at first. At the conclusion of World War II, the school opened its doors to returning veterans, who lived on campus and had their own dean. These students could enroll in courses, but could not earn a degree from the college. One returning Navy veteran, Louis "Shy" Shapiro, who enrolled was mentored by Sister Florence Marie (B. Baker, 'WWII Port of Call: Seton Hill' In: *Forward. The Alumni Magazine of Seton Hill University*. Spring/Summer 2009. pp 6–9. Seton Hill University, Greensburg, PA). Shapiro recounts that Sister Florence Marie was very funny and that this characteristic even surfaced in the classroom. But she also had a kindly, caring side. In February of 1947 Shapiro's appendix was removed in an emergency surgery. He remained hospitalized for three weeks, and each day Sister Florence Marie visited him bringing textbooks and tutoring him in every subject he was studying that semester. Never forgetting the care and sensitivity shown by Sister Florence Marie, Shy Shapiro and his family began a tradition of financial support to the

National Catholic Center for Holocaust Education at Seton Hill University.
69 W. F. Lynch, 'Factors inhibiting metamorphosis in *Bugula* and *Amaroecium* larvae', *Roux' Archiv für Entwicklungsmechanik* **151**(2) (1959a) 164–180.
70 Sr Mary Alma Vandervest, personal communication, 27 July 2010; Sr. Louise Grundish, SC, personal communication 27 July 2010.
71 'In Memoriam'. *Bulletin of the Albertus Magnus Guild* **8**(4) (1961).
72 R.A. Binzley, 'American Catholicism's Science Crisis and the Albertus Magnus Guild, 1953-1969', *Isis* **98**(4) (2007) 695–723; also note 53c.
73 G.W. McDaniel, George William, note 24, pg.167.
74 *The Ambrosian News*, note 66.
75 W.F. Lynch to M.D. Rogick, 10 December 1958, collection of Judith Winston.
76 W.F. Lynch to M.D. Rogick, 1 August 1949, collection of Judith Winston.
77 W.F. Lynch to M.D. Rogick, 23 September 1948, collection of Judith Winston.
78 Esther Martin Flammang, personal communication, 20 September 2010 and 22 September 2010.
79 Death Certificate of Rev. William F. Lynch, Recorder's Office, Scott County, Davenport, Iowa.
80 Mrs Flammang's recollection of Lynch's excessive thirst (i.e., polydipsia) may link with the listed cause of his death being acute hepatitis (E.M.M. Quigley, P.R. Mills, G. Watkinson, R.N.M. Macsween and F. J. Dudley, 'Primary polydipsia and autoimmune-chronic active hepatitis', *Gut* **29**(12) (1988) 1775). One wonders if Lynch knew of his hepatitis and covered up this knowledge not wanting to alarm his family. Alternatively, he may have been unaware at the time that he was gravely ill.
81 Lynch Services Set for Friday', *Davenport Democrat*, 7 December 1960 8.
82 E.M. Flamming, note 78.
83 Father Lynch was Great Scholar, Priest, Human', *The Ambrosian News* **27**(9) 9 December 1960.

Appendix 1. Scientific Works of William F. Lynch

Theses and Dissertation

W.F. Lynch, 1928. *A Peripatetic Interpretation of the Quantum Theory*. A.B. Thesis in Philosophy, St Ambrose College, Davenport, Iowa.

W.F. Lynch, 1932. *The Social Treatment of Behavior Problems in the Light of Modern Psychology and Pastoral Theology*. A.M. Thesis in Psychology, Catholic University of America, Washington, D.C.

W.F. Lynch, 1941. *A Cytological Investigation of the Chromosome Number and Morphology of* Polemonium van Bruntiae. M.S. Thesis in Biology, Fordham University, New York City.

W.F. Lynch, 1946. *The Behavior and Metamorphosis of the Larvae of* Bugula neritina *(Linnaeus)*. Ph.D. Dissertation in Biology, New York University, New York City.

Publications (Excluding Abstracts)

H.W. Stunkard and W.F. Lynch, 1944. A new anoplocephaline cestode, *Oochoristica anniellae*, from the California limbless lizard. *Transactions of the American Microscopical Society* **63**(2), 165–169.

W.F. Lynch, 1947. The behavior and metamorphosis of the larva of *Bugula neritina* (Linnaeus): experimental modification of the length of the free-swimming period and the responses of the larvae to light and gravity. *Biological Bulletin* **92**(2), 115–150.

W.F. Lynch, 1949a. Acceleration and retardation of the onset of metamorphosis in two species of *Bugula* from the Woods Hole region. *Journal of Experimental Zoology* **111**(1), 27–51, pl. 1.

W.F. Lynch, 1949b. Modification of the responses of two species of *Bugula* larvae from Woods Hole to light and gravity: aspects of the behavior of *Bugula* larvae. *Biological Bulletin* **97**(3), 302–310.

W.F. Lynch, 1952. Factors influencing metamorphosis of *Bugula* larvae. *Biological Bulletin* **103**(3), 369–383.

W.F. Lynch, 1955a. Synergism and antagonism in the induction of metamorphosis of *Bugula* larvae by neutral red dye. *Biological Bulletin* **109**(1), 82–98.

W.F. Lynch, 1955b. Phototropic response of *Bugula* larvae in the presence of stimulating and anaesthetic agents. *Proceedings of the Iowa Academy of Science,* **62** (dna), 652–662.

W.F. Lynch, 1956a. Experimental modification of the rate of metamorphosis of *Bugula* larvae. *Journal of Experimental Zoology* **133**(3), 589–613.

W.F. Lynch, 1956b. The effects of moderately low temperatures on the rate of metamorphosis of *Bugula flabellata*. *Physiological Zoology* **29**(2), 212–226.

W.F. Lynch, 1958a. The effect of x-rays, irradiated sea water, and oxidizing agents on the rate of attachment of *Bugula* larvae. *Biological Bulletin* **114**(2), 215–225.

W.F. Lynch, 1958b. The effects of certain organic compounds and antimitotic agents on metamorphosis of *Bugula* and *Amaroecium* larvae. *Journal of Experimental Zoology* **137** (1), 117–152.

W.F. Lynch, 1959a. Factors inhibiting metamorphosis in *Bugula* and *Amaroecium* larvae. *Roux' Archiv für Entwicklungsmechanik* **151**(2), 164-180.

W.F. Lynch, 1959b. Factors influencing metamorphosis of larvae of some of the sessile organisms, pp. 239–241. *In* H.R. Hewer and N.D. Riley (eds.), *XVth International Congress of Zoology, Proceedings*. Linnean Society of London, London.

W.F. Lynch, 1960. Problems of the mechanism involved in the metamorphosis of *Bugula* and *Amaroecium* larvae. *Proceedings of the Iowa Academy of Science* **67** (dna), 522–531.

W.F. Lynch, 1961. Extrinsic factors influencing metamorphosis in bryozoan and ascidian larvae, *American Zoologist* **1** (1), 59–66.

Appendix 2. Annotated Biobibliography of the Rev. William Francis Lynch

'Lynch, Rev. William Francis', *American Men of Science*, J.M. Cattell (ed.), 8th ed. (1949), 1551.
Includes birthplace, information on Lynch's education and scientific career.

'Lynch, Rev. William Francis', *American Men of Science*, J.M. Cattell (ed.), 9th ed. (1955), 704.
Includes information from 8th edition, plus promotion to full professor in 1951.

'St Ambrose Biology Professor is Honored' newspaper clipping (no author, no source). Archives of the Diocese of Davenport.
Reports on Lynch's election to membership in the corporation of the Marine Biology Laboratory (MBL) in 1956. States that Lynch was the first ordained priest elected to corporate membership.

'Roux' Archiv. Priest's work to be German journal'. *The Ambrosian News* **25**(20), 13 March 1959, 3, St Ambrose University Archives.
Discusses Lynch's research, publications, and professional activities.

Obituary of Rev. William F. Lynch, newspaper clipping (no author, no source) 6 December 1960. Collection of the Central Community Historical Society, DeWitt, Iowa.
Appreciation of Lynch's life and work. Mentions Lynch's status as first ordained priest elected to corporate membership at MBL.

'Lynch Services Set for Friday', *Davenport Democrat*, 7 December 1960, 8.
Death notice and funeral details.

'Father Lynch was Great Scholar, Priest, Human', *The Ambrosian News* **27**(9), 9 December 1960, newspaper clipping. St Ambrose University Archives.
Appreciation of Lynch by colleagues and students at St. Ambrose College.

'Funeral Rites Conducted for Father Lynch', *The Ambrosian News* **27**(9), 9 December 1960, 1, newspaper clipping, St Ambrose University Archives.
Appreciation of Lynch's life and work, with detailed account of funeral service.

'Scientific Notes and News', *Science* ns **133** (3447), 20 January 1961, 185.
Brief notice of Lynch's death.

'William F. Lynch 1905–1960', *Proceedings of the Iowa Academy of Science* **68** (1961) 56.
Review of Lynch's life and work, including membership in professional organizations.

'In Memoriam' *Bulletin of the Albertus Magnus Guild* **8** (4), January 1961, clipping. Marnie and John Burke Memorial Library, Spring Hill College, Mobile, AL.
Death notice with review of Lynch's education and activities as a scientist and professor.

'They Opened the Doors to Medical Schools', *Acorns and Oaks*, November 1967, 1–8.
Appreciation of biology professors Lynch, Hauber and others by alumni of St Ambrose College who became medical professionals.