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A History of Zoology

at

Ohio Wesleyan University: 1844-2021

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2021

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Foreword

My deepening interest in the history of zoology at Ohio Wesleyan began to develop in 2004, following my retirement, when colleague Wendell Patton and I decided to prepare one-page biographical statements on alumni for whom Zoology Department student awards are named. These biographies could then be given to the award recipients so they would have some knowledge of the individual for whom their award is named. Research took place primarily in the OWU Historical Collection in Beeghly Library.

Exposure to this collection led me to volunteer there for 13 years. While involved in various projects, including indexing the *Ohio Wesleyan Magazine*, searching *The Transcript* and its predecessors for notable speakers and performers who appeared on campus over the years and transcribing Minutes of early faculty meetings, I began to collect items related to zoology on campus. As I was writing, two fortuitous events occurred. First, Josh Pletcher, class of 2021, discovered a preliminary draft of a history of the Zoology Department prepared by Edward L. Rice in about 1941. Later, I found another draft history, written by William D. Stull in 1981. After consideration, I decided to continue with my effort while relying on these earlier and extremely useful documents; both are catalogued and located in the Historical Collection.

This history ends with the conclusion of the 2020-21 academic year.

Beginnings

The study of Zoology at Ohio Wesleyan dates back to the institution's earliest days¹. Although OWU was founded in 1842, classes began in 1844. In the first University Catalog, for the 1844-45 academic year, the names of 18 college students and four faculty positions are listed. Rev. Edward Thomson was President and Professor of Moral Science and Belles-Lettres, Rev. Hiram Johnson Professor of Ancient Languages and Literature and Rev. Solomon Howard Professor of Mathematics and Natural Philosophy (basically Physics and Chemistry). The Professorship of Natural Science (Botany, Geology and Zoology) was unfilled. In this first year, courses in Natural History, Chemistry, Mineralogy and Geology were designated as being offered Junior and Senior year. As there were two Juniors and no Seniors enrolled, it is unclear which science courses actually were offered.

The early emphasis on science, with two of the four faculty positions in this area, may be explained, at least in part, by President Thomson's background; in addition to being a Methodist minister, he was also an MD. Following study with a physician in Wooster, Ohio for 18 months, he attended Jefferson Medical College in Philadelphia for a year^{ii, iii}, receiving a diploma (but not an MD) in 1829, allowing him to practice medicine, which he did for at least one year. While a minister in Cincinnati in the mid to late 1830's, he studied at the Cincinnati College of Medicine, from which he received an MD (50).

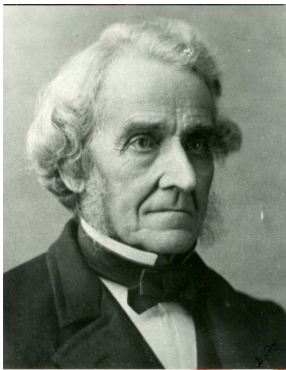


Fig. 1. Frederick Merrick

In 1845, Rev. Frederick Merrick (see Appendices 1, 2; Fig. 1) assumed the Professorship of Natural Science. A New Englander, he was one of many notable OWU faculty who attended Wesleyan University in Middletown, Connecticut. Following his junior year there, in 1836, its President encouraged Merrick to omit his senior year and to become the Principal of Amenia Seminary in New York. In 1838, he became Professor of Natural Science at Ohio University, where he taught for four years before serving as minister of a Methodist Episcopal Church in Marietta, Ohio. Merrick came to Ohio Wesleyan in 1843, as an Agent (fund raiser) and when he joined the faculty two years later, he also served as Acting President for the year until Rev. Thomson actually assumed the position.

All four OWU faculty members were Methodist ministers and most had Master's degrees awarded as an honor, requiring no additional course work, by their undergraduate institutions. None had Ph.D.'s, which were rare at this time. These individuals were broadly trained and could handle appropriately the recitation style commonly used in the classroom. The Catalog of 1845-46 indicates that Merrick taught Freshmen one term each of: Physiology, with weekly lectures on the preservation of health; Zoology; and Botany and lectured on Natural Sciences throughout the Senior year (see Appendix 3). Thus, the first designated Zoology course was taught in Ohio Wesleyan's second year!

The adequacy of Merrick's preparation is indicated further by his appointment as Professor of Chemistry and Botany at Starling Medical College in Columbus, a forerunner of Ohio State's College of Medicine, from 1847-53; he received an honorary MD from Starling in 1848^{iv} (3). This dual appointment helped OWU's financial situation, which was difficult at the time (51). Following Professor Howard's resignation in 1847, Merrick's title was changed to Professor of Chemistry and Natural History. In 1852, he gave up teaching science, becoming Professor of Moral Philosophy and, in 1860, following Thomson's resignation, President of Ohio Wesleyan. In all, Merrick devoted 51 years of service in various and

valuable capacities to OWU, including donating the funds for the establishment and endowment of the Merrick Lectures.

Rev. William L. Harris, who was educated at Norwalk Seminary (Ohio) and was associated earlier with Ohio Wesleyan as a teacher in the Preparatory Department and then as Principal of the Academical Department, assumed the professorship of Chemistry and Natural History in 1852. He remained until 1860, when he became a Secretary of the Methodist Missionary Society and later was elected Bishop. During Harris' tenure, which included term courses in Anatomy and Physiology and Zoology, lectures continued to supplement recitations (2). Harris was succeeded by Rev. Francis S. Hoyt, another Wesleyan alumnus who, in 1865, moved to the Chrisman Chair of Biblical Theology and Literature. As Hubbard indicates in his history of Ohio Wesleyan, the early ministers/professors in the sciences transferred to the more comfortable areas of philosophy or religion whenever possible (12).

Harris and Hoyt were assisted by two Tutors, first Edward C. Merrick (apparently not related to Frederick), an alumnus of Miami University, who served from 1855-57, followed by Rev. Hiram M. Perkins, an 1857 graduate. Perkins (see Fig. 2) remained in the position for five years and was totally responsible for the program in the first year of Hoyt's tenure, before Hoyt actually arrived. For three years during the Civil War, when enrollment was low, Perkins returned to the family farm to raise hogs which were sold to the Union Army. He returned to OWU in 1865, becoming Parrot Professor of Mathematics (and later Astronomy), his real loves.



Fig. 2. Ohio Wesleyan Faculty -- 1892. Note in front row: President James Bashford (4th from L), Clara Conklin (7th from L), Edward Nelson (8th from L); in back row: Hiram Perkins (7th from L), E.G. Conklin (10th from L). (Photo by Bodurtha)

From Ministers to Lay Faculty

Although Perkins was a Methodist minister and a member of the Central Ohio Conference of the Methodist Church, Hubbard (12) indicates that, in contrast to his predecessors, Perkins considered being a member of the clergy a "minor avocation." Thus, with Perkins the transition to lay faculty began.

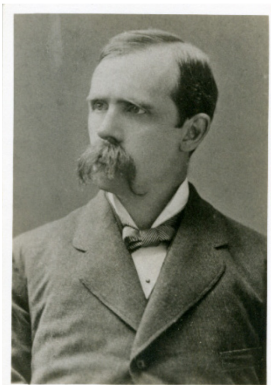


Fig. 3. William Semans

This trend continued with the appointment of William O. Semans (see Fig. 3). Like Perkins, Semans was a member of the class of 1857 but, unlike Perkins, not a minister. Semans held positions as Tutor of Languages at OWU and Professor of Natural Sciences in the Ohio Wesleyan Female College before being appointed Acting Professor of Natural History and Adjunct Professor in Chemistry in 1865. He held the position in Natural History for only 6 years, but continued to serve as Professor of Chemistry and, for a time, Physics, until his death in 1904. Semans became the first lay person to achieve the rank of full Professor at Ohio Wesleyan and the first scientist at OWU to pursue graduate study in a scientific discipline, Chemistry, first at Harvard and later at Michigan.

With the expansion of Chemistry courses, Semans gave up teaching Natural History in 1871. His replacement in the latter was Edward T. Nelson, a member of the class of 1866. Nelson (see Fig. 2) did graduate work at Yale in zoology with Addison Verrill and Sidney Smith and in geology with James and Edward Dana; he also assisted in Mineralogy (12). Nelson taught at Hanover College in Indiana for two years, then returned to OWU as Alumni Professor of Natural History in 1871. While prior individuals taught both Chemistry and Natural History, Nelson's appointment marked the distinct separation of these two areas. He was also a lay person and the first member of the faculty to hold a Ph.D.; his dissertation dealt with the fossil molluscs of Peru. Contributions from alumni were the major source of the endowment for the chair – hence its name – and Nelson was unanimously recommended by the Alumni Association as its first recipient (52). As an interesting aside, the OWU student newspaper at the time, *The Western Collegian*, reports that one of the events held by the local alumni to raise funds for the professorship was a lecture at Williams' Opera House in Delaware by Mrs. Ann Eliza Young, the 19th wife of Brigham Young (49).

Until Nelson, course offerings in zoology had been mostly constant and limited (see Appendices 4, 5), consisting primarily of Zoology and of Anatomy and Physiology or simply Physiology. These courses continued under Nelson, and he added Museum Practice. According to the 1872-73 University Catalog, this was offered throughout the year to interested Sophomores, who were taught to “classify and arrange specimens in the several departments of Natural History.” Topics included General Zoology, Ornithology, Taxidermy and Entomology. In 1875, Comparative Anatomy was offered; this continued only until 1881. Nelson's classes were a mix of recitation and lecture and were very popular with students (43).

In addition to his teaching responsibilities at OWU, Nelson went on extended collecting trips to the Bay of Fundy and Colorado, studied Histology at University College, London, served on the Ohio State Board of Health, was a member of the Executive Committee of the Ohio State Teachers' Association, edited *Fifty Years of History of the Ohio Wesleyan University* which appeared in 1895, and published *Herbarium and Plant Descriptions* the same year. He also taught Sanitary Science (1894-97) and received an honorary MD (1895) from Ohio Medical University, another of the forerunners of Ohio State's College of Medicine (33). Nelson appears to have been a man of enormous energy and diverse interests. Unfortunately, he died in 1897 at age 51, apparently of overwork and heart disease (44). He is also one of the first faculty members for whom we have personal remembrances by colleagues. Richard Parsons, a contemporary of his both as a student and faculty member, writes: “He brought a new spirit into the teaching corps of the institution. Off hand, genial and suggestive, he broke down the ancient

conservatism in many directions. He was greatly liked by the students and was a fine representative of the modern spirit of teaching” (23).

Another reminiscence describes Nelson: “He was at one time a member of the State Board of School Examiners and has also been a member of the executive committee of the OTA [Ohio Teachers’ Association]. At the State Association and in the county institutes is where I knew him best. In the latter, his instruction in physiology was so fine that I have cared to listen to few other instructors in that subject after him; while in physical geography I have never heard his work excelled” (40).

Edwin Grant Conklin, a distinguished 1885 alumnus and later faculty member, provides an extensive description of the sciences and science faculty of that time.

I took all of the courses given by these excellent teachers [Semans and Nelson] and to Nelson in particular I owe the stimulus and encouragement which led me into biology as a profession.

In general their methods of instruction were by means of questions and answers based on the text book, with some interesting, illuminating, and sometimes amusing comments or demonstrations by the professor or his assistant. Professor Nelson had one microscope, a large binocular made by Zentmeyer in ... 1876, and some of his more interested students were permitted to look at a few things with it, but there was no laboratory work in connection with any of his courses. However, he occasionally took small groups of students on collecting trips along the Olentangy and Scioto rivers where we gathered fossils and especially mussels and snails. On our return the latter were boiled, the fleshy parts thrown away, and the shells carefully wrapped up, labelled and put aside for exchange purposes. I cannot remember that we ever dissected an animal or plant, nor that we studied their activities during life. In my junior and senior years I was given charge of the collection of shells in the museum, and thus acquired an interest in molluscs that has never left me. In spite of the lack of laboratory instruction, Professor Nelson’s courses were among the most interesting and profitable ones in the college, and he always had large classes of students. He took an active interest in the work of the State Board of Health, and gave a one-term course in Sanitation, while his Physiology course was especially popular. I took him for my model, for he was a prince among teachers, as well as a genial and helpful friend (5).

In contrast to Conklin’s statements concerning a lack of laboratory work, Rice, in his unpublished history of the department (32), makes a strong argument that observation and experimentation had been occurring since the earliest days of the University, when Merrick taught Natural Science. Nelson, with the introduction of Museum Practice, seems to have begun individual laboratory work. Comparative Anatomy involved dissection of various animals; there is also the suggestion that at least early in Nelson’s career there was study and possible dissection of a cadaver (12, 16). It is probable that laboratory work may well have decreased in Nelson’s later years.

Changes

Scientific Course

Several significant events occurred just prior to and during Nelson's tenure which impacted the sciences and the institution in a significant way. The first of these was the establishment of a Scientific Course. When OWU opened in 1844, there was a single, rigid, four-year course of study which all students followed, the Classical Course, which led to a Bachelor of Arts degree. In 1848, in response to both serious financial difficulties and student interest, a two-year Scientific Course was started for students who did not wish to, or could not afford to, attend for four years (12). This Course actually required a little less science than the Classical Course (see Appendix 4) but soon became the more popular sequence (12), although it offered only a certificate and not a degree upon completion. It briefly became a three year sequence and transitioned to four years in 1867-68 (see Appendix 5). It, like the Classical Course, included few electives, but omitted required Greek. Zoology-type courses required for this option included a term of Anatomy and Physiology and one of Zoology. Graduates received a Bachelor of Science degree. These two Courses and degrees continued until 1910.

Ohio Wesleyan Female College

A second significant change involved the establishment of the Ohio Wesleyan Female College (OWFC) in 1853 and its later union with the University in 1877. When OWU was established, it was an institution for males only. Higher education for women took place primarily in separate institutions; those in central Ohio at the time included the Delaware Female Seminary, the Delaware Female College and Worthington Female Seminary (12). There were a few coeducational colleges, including Oberlin. When the Female College opened on what became known as the Monnett campus, just north of Sanborn Hall it had, like the University, both Classical (4 yr) and Scientific (3 yr) Courses. Both sequences included almost identical requirements in science and math (see Appendix 6) and used the same text-books: the Scientific Course omitted Latin and Modern Languages. Students completing the Classical Course received the Mistress of Liberal Arts (MLA) degree while those finishing the Scientific were awarded a Mistress of English Literature (MLE)^v. The Scientific Course became a four-year program in 1873 and in 1875, shortly before the merger, the first AB and BS degrees were awarded to OWFC graduates.

Comparing requirements for the Scientific Courses in the University (4 Yr) and the Female College (3 Yr) in 1868-69 (see Appendices 5, 6) shows that both required math from Algebra through Trigonometry, as well as Chemistry, Botany, Geology, and Anatomy and Physiology; many courses used the same textbooks. The Course at the University required, in addition, Physics, Surveying, Zoology, and additional Chemistry and Geology. The Female College alone required Book-Keeping.

The Natural Science faculty of the Female College (see Appendix 7) included local individuals (Hills and Semans), recent graduates of the University (Semans, L. M. Albright and Newton), ministers (Mather, L. M. Albright and Patterson) and recent graduates of the Female College (Barkdull and Phelps). As indicated earlier, Semans and Edward Merrick later joined the faculty of the University.

In 1855, two years after opening, the Female College Catalogue states: "We would call special attention to the department of Natural Sciences... By the aid of a skeleton, globes, maps, and plates, the recitations in anatomy, physiology, and astronomy are made interesting and profitable." Thus, attention was paid to equipping the natural sciences.

Following the union of the two institutions, which occurred during President Charles Payne's administration, women had the option of enrolling in the Classical or Scientific Courses or, for a time, in a "Ladies Course," which emphasized language, art and literature. Initially, the great majority of women opted for the "Ladies Course" and were awarded a Bachelor of Literature (BL) degree; however, with time, more and more selected the Classical or Scientific courses and the "Ladies Course" was ultimately dropped. One woman was listed as a Freshman in the Scientific Course in the 1877-78 University catalog; another was the first to graduate from the Scientific Course of the University, receiving a BS in 1881.

Early Teaching Aids, Including the "Cabinets"/Museum

Materials to supplement the teaching of zoology go back to the earliest days of the University. The catalog for 1847-48 states, "The institution is furnished... with specimens for illustrations in Natural History." As Rice (32) points out, two years later the collections came to be called cabinets, a term in common use at the time and referring more to the aggregate of specimens than the furniture housing them. The name change from cabinets to museum occurred in the 1906 University Catalog.

Initially, Natural History and its collection/cabinets were housed in the basement of Elliott Hall (12), the only college building at the time. Thomson Chapel, a three-story building, was erected in 1853 on the site where Slocum Hall now stands. The first gift toward its construction was given by President Edward Thomson (12). Natural Sciences, including a laboratory and the existing cabinets, was relocated to its basement.

The Prescott Cabinet of Natural History was an early and truly significant acquisition. In 1857, William Prescott, MD, of Concord, New Hampshire offered his cabinet of "birds, shells, fossils and minerals" (also including an albino squirrel, albino porcupine and an orangutan.) He stated that: "...you will have a larger number of species of shells than any other College or University in the country, and the collection of fossils, minerals & Geological specimens is so ample that you would soon be able to vie with most of them" (25).

Prescott offered his cabinet for \$3500, plus packing, shipping and other costs (25). The cabinet's value, as estimated by Prescott, was between \$4500 - \$5000, but the poor economy at the time caused him to reduce the price^{vi, vii}. The cabinet was bought late in 1858, with Frederick Merrick pledging to underwrite the purchase if other funds could not be raised (20). The Prescott purchase was much too large for the basement of Thomson Chapel. Prescott (26) estimated that the cabinet would require at least 160 feet of floor space, with multiple rows of shelves. The only place on campus which could accommodate the cabinet was the then chapel, located on the third floor of Thomson Chapel. The Trustees met in January of 1859 to approve the use of the chapel for the cabinets, while ordering that another building be erected for use as a chapel (21).

Following the purchase, Merrick immediately went to Concord, presumably to oversee the packing of the specimens and to travel back with the shipment to insure that it was handled appropriately during the journey by train. Prescott came to Delaware to help with the unpacking and setting up of the cabinet. The collection was augmented later in 1859 by the purchase of a group of mainly Australian birds, valued at \$1000, for \$250 (22). Prescott was also involved in this acquisition.

In 1869, following an increase in students after the Civil War, construction of a stone building was begun east of the other campus buildings. Initially it was known by various names – Alumni Hall, Science Hall

and, finally, Merrick Hall. Its construction was delayed due to a lack of funds; money for its completion was ultimately taken from the endowment and construction was finished in 1873. Merrick Hall became the home of the Natural Sciences for almost 90 years. The third floor, which was to have been the college chapel, instead became the museum. As Hubbart (12) says, “...for the second time a prospective chapel room gave way to the science museum.”

Many significant additions have been made to the museum over the years, only one of which will be mentioned here – the two-headed calf. For many years, this specimen was, for better or for worse, synonymous in students’ eyes with the Zoology Department. It was presented to the University in 1869 by Mr. Burke of the Port Clinton area (36). The scope and nature of these additions, as well as changes in the function of the museum, are well beyond the scope of this endeavor. However, and fortunately, Josh Pletcher, a member of the class of 2021, expects to complete a history of the museum soon.

Early teaching aids that we know of include a skeleton (19), the Zentmeyer microscope and, presumably, the Female College cabinets following the merger of the two institutions. Another significant acquisition consisted of an apparently full set of 114 of Rudolf Leuckart’s wall charts (Wandtafeln), produced between 1877-92. A suggestion of the purchase of the earlier charts is recorded in 1883: “The Science Department has been enriched by several new charts lately received (part of a series) which are exceptionally fine in execution. They are Zoological charts and an invaluable aid to the verbal descriptions from the book” (42). The remainder appear to have been purchased subsequently^{viii}. The charts consist of accurate and beautifully executed anatomical drawings of various animals, their systems and embryology (see Fig. 4). They were used in the department for over 100 years! Most are preserved in the OWU Historical Collection in Beeghly Library.



Fig. 4. Zoology laboratory in Merrick Hall, ca. 1909. Several Leuckart charts are hanging in the background.

Transition to “Modern Biology”

Edwin Grant Conklin

The presidency of Charles H. Payne (1876-88) was marked not only by the union of the Female College with the University, but also by an increase in the size of the student body and faculty and the full recognition of fraternities. These advances set the stage for the transformative presidency of James W. Bashford (1889-1904) (see Fig. 2). Although its impetus is not clear, late in the Payne administration, Delaware native, trustee and former US President Rutherford B. Hayes prepared a report which included the suggestion that the Natural History faculty should be increased by a position^x. This portion of the report was adopted, and in 1891, alumnus Edwin Grant Conklin was appointed Professor of Biology^x. At the same time, Nelson became Professor of Physiology and Geology. The change in name from Natural History to Biology, as will be indicated later, is significant.

Conklin (see Fig. 2) grew up locally and graduated from high school in Delaware. He entered OWU in the fall of 1880, and since he had not had Greek, which was required for admission to the Classical Course, enrolled in the Scientific Course. As indicated in his quotation cited earlier, he came under Nelson's influence and greatly enjoyed Natural History (6). Like a number of his classmates, he took time from his studies to earn money as a teacher in a one-room school and so received his BS in 1885. Following graduation, Conklin accepted a position at Rust University in Holly Springs, Mississippi, where he remained for three years, teaching Latin, Greek (which he had taken for three years in Summer School at OWU), Elocution, English, US History and all of the sciences. As a result of his having taken and taught Greek, he received the AB from OWU in 1886.

Following his three years at Rust, Conklin entered the graduate program at Johns Hopkins, where he worked under W. K. Brooks. This experience impacted him significantly: “I cannot begin to describe adequately the stimulus for scholarly work and research which I received at Johns Hopkins. It was as if I had entered a new world with new outlooks on nature, new respect for exact science, new determination to contribute to the best of my ability to ‘the increase and diffusion of knowledge among men’” (10). Conklin spent the summer of 1880 – and more than 60 subsequent ones – at the Marine Biological Laboratory (MBL) at Woods Hole, Massachusetts, also a stimulating environment. For his dissertation, Conklin studied the development and cell lineage of *Crepidula*, a marine snail. During his last year at Johns Hopkins, President Bashford visited him in Baltimore and offered him the position of Professor of Biology at Ohio Wesleyan. This he readily accepted over several other offers, provided that he be permitted to teach evolution. Bashford, who strongly supported this theory, agreed and gave a lecture indicating his support of evolution shortly after Conklin joined the faculty (5). Conklin wrote: “Thanks to his [Bashford's] vision and courage and to the broadmindedness of Trustees, Faculty and Alumni, there has never since been any serious attempt to interfere with the teaching of the truths of Biology at Ohio Wesleyan University” (5). Nelson and Semans also appear to have supported evolution (15, 16) while some of the older members of the faculty did not.

Although Conklin received his Ph.D. only 22 years after Nelson (1891 vs 1869), the focus of biology was changing dramatically during this time. Rather than collecting, classifying and studying intact organisms and their ecology - the focus of Natural History - biologists were now concerning themselves with microscopic and cellular structure. Experimentation was also becoming more common. What was then called “modern biology” had arrived.

Conklin brought his outlook and enthusiasm for biology in general and for lab work in particular, gained both at Johns Hopkins and Woods Hole, to Ohio Wesleyan (5). In turn, OWU supported him by spending \$1,000 to equip renovated space in Merrick Hall with 25 Beck microscopes, a Minot microtome for cutting paraffin sections, Bunsen burners, aquaria, glassware, reagents and various instruments (4, 46). Nelson's facilities for Physiology and Histology also were upgraded.

Conklin's impact on the teaching of biology at Ohio Wesleyan is clear. Laboratories became a major component of courses (see Fig. 4); two or three hours of recitation and six hours of lab became the norm for a course. The opening of University Hall made the first floor of Merrick available for additional biology lecture rooms and labs. The ability to staff the labs was likely due to the utilization of upper class students or recent graduates as departmental assistants (see Appendix 8)^{xi}. Conklin introduced and taught a term of Embryology, using the frog or the chick in alternate years. Also, the Zoology course expanded to emphasize either vertebrates or invertebrates in alternate years. Classes in Evolution and Heredity^{xii} were introduced and a discussion of recent literature was started with a nucleus of important journals in a small library, via an informal, non-credit Journal Club. Finally, credit was introduced for student research. Students were enthusiastic about his approach: "The novelty of Prof. Conklin's new study, biology, is not wearing off. Many students seem to have a passion for it" (47). With the revision and addition of courses, it is important to note that all were electives.

His summers at Woods Hole no doubt provided intellectual stimulation to Conklin and exposed others to his skill and ability as a researcher and teacher. At his invitation, C. O. Whitman, perhaps the most notable American biologist of the time, spoke at Ohio Wesleyan and Conklin, in return, gave a lecture at the University of Chicago (48). Having refused positions at other institutions at higher salaries after arriving at OWU (41), Conklin did move to Northwestern University in 1894. Soon thereafter he went on to the University of Pennsylvania and, in 1908, to Princeton University where he remained throughout the rest of his illustrious career and following retirement in 1935. He published more than 250 books and papers. One of the latter dealt with the observation that in the tunicate, *Styela (Cynthia)*, development is mosaic – specific parts of the egg give rise to specific parts of the embryo. This was in contrast to the regulative development – specific parts of the egg can give rise to almost any part of the embryo – that Hans Driesch had observed in sea urchins. Conklin's work also helped in the transformation of embryology from a tool to study evolutionary relationships to an independent field of study. He maintained his interest in evolution as indicated by numerous publications and lectures. Conklin was recognized nationally (and internationally), serving as the President of the American Association for the Advancement of Science and the American Philosophical Society and was elected to the National Academy of Sciences, the highest national recognition an American scientist can receive. He appeared on the cover of *TIME Magazine* in 1939 (see Fig. 5). A Princeton colleague, E. G. Butler, said in a memoir, "He was a productive and distinguished scientist; a wise philosopher; a vigorous intellectual leader of his generation; truly, one of the great men of his time" (1). The Edwin G. Conklin Medal award was established by the Society for Developmental Biology in 1995 to recognize individuals in this field for their outstanding contributions to research and mentorship of students. Conklin maintained ties with OWU, speaking at commencement and writing articles for the *Ohio Wesleyan Magazine*. Certainly E. G. Conklin is one of Ohio Wesleyan's most distinguished graduates in zoology!

Following Conklin's departure, zoology entered a brief period of instability and decline. Maurice A. Bigelow, an 1894 graduate, stayed on as an Instructor in Biology for 1894-95; he and Nelson were aided by three student assistants. In 1895, two individuals were considered for Conklin's position, both with recent Ph.D.'s from the University of Munich. One was Albert Mann, a Methodist minister who had served in that position for 8 years before pursuing graduate work in botany. The other was Edward L.

Rice, a zoologist. Apparently, Mann was chosen for the position because he was a minister (39). Not surprisingly, as Rice (32) points out, the focus in offerings shifted from Zoology (one year) to Botany (two years), although Nelson continued his course work in Physiology and Histology. By 1896-97, botany and zoology offerings were clearly separated, although under the heading of Department of Biology. Nelson's death in February of 1897 resulted in Mann being assisted in Biology by Charles Shaw as Instructor in Zoology^{xiii}. This general pattern continued in 1897-98, although Zoology and Physiology (Histology had disappeared from the heading, but was offered in combination with Embryology) were now listed together and taught by John Murlin, an 1897 alumnus. Further separation into two departments: Botany, and Zoology and Physiology occurred in 1898, as Mann's title shifted from Professor of Biology to Professor of Botany. For the first time Zoology existed as a department.



Fig. 5. E.G. Conklin on the cover of TIME Magazine, July 3, 1939.

Edward L. Rice

Stability returned to zoology offerings when Edward L. Rice joined the faculty in 1898 as Professor of Zoology (see Fig. 6), having also been hired by President Bashford. Details of the hiring and his acceptance of the position following his earlier attempt are not clear. Rice was a New Englander, having grown up in Connecticut where his father was a noted Professor of Geology at Wesleyan University. Following graduation from Wesleyan, where he was elected to Phi Beta Kappa, Rice studied at the University of Berlin, then received his degree from the University of Munich. Before coming to OWU, he taught briefly at his alma mater and at Allegheny College.



Fig. 6. Edward Rice in 1898, the year he joined the faculty. Note the elegant drawings of the amphibian circulatory system on the blackboard and portions of Leuckart charts above.

Mann apparently became an embarrassment to the University due to his perceived inappropriate interest in some of the married women in town and so was granted a leave for 1899-1900 to find another position (39); he subsequently resigned. Botany then entered a period of instability, with courses handled by a recent graduate (Amos Plowman, 1899) and an undergraduate (Earl Golding, 1901) with, apparently, some assistance from Rice (32). Lewis Westgate, a geologist who joined the faculty in

1900, taught a single course in Botany for several years. In 1910, Botany returned to join with zoology and the department title shifted to that of Biology although, as Rice (32) points out, no botany courses were actually offered. Stability returned to botany with the hiring of Claude O'Neal in 1913; in 1920, the two departments became separate again at O'Neal's request (32).

Although Rice was of the same scientific generation as Conklin, Zoology underwent changes following the absorption of Physiology and Histology. For several years, the department was titled Zoology and Physiology. Physiology continued to be taught and the 1899 catalog mentions the acquisition of a myograph, used to study muscle contraction. Several curricular changes occurred: General Biology was replaced by separate introductory Zoology courses for those interested, or not, in science; for about 10 years in the early 1900's, the non-science course title shifted to General Biology. Comparative Anatomy reappeared and Bird Study was introduced, while Invertebrate Morphology, Evolution, and Heredity disappeared for a time. Entomology and Animal Behavior were taught in 1906-07, but they also disappeared for quite some time. Assistants and Fellows (see Appendix 8) provided teaching support to Rice; several of these individuals earned Master's degrees with him.

In 1910, a significant change in University requirements began when much of the rigidity of the Classical and Scientific Courses was replaced with distribution requirements and the election of a major. The BS and BA degrees were retained, with mathematics and a greater concentration of natural science courses required for the former (45). Initially, 20 hours of credit and the approval of courses by the department chair was required for a Zoology major, but this was soon replaced with specific requirements of a year of General Zoology (the introductory course for science majors) and a year of combined Vertebrate Anatomy and Embryology. In 1919, further modification of requirements occurred with still more flexibility; the curriculum became much more similar to that of today (45). All students took the same few required courses, had choices to meet distribution requirements and completed requirements for one of many majors. Graduates all received the BA degree.

Additional course changes occurred in Zoology, with Heredity and Evolution reappearing in 1918 and Field Zoology, Advanced Ecology, Parasitology, and Zoology Seminar, this last required for majors, in the 1920's. The expansion of the curriculum was made possible thanks to the addition of Allen C. Conger to the Department in 1923. Conger (see Fig. 7) was a Phi Beta Kappa alumnus, class of 1908, who had taught at Wilmington College and Michigan State prior to returning to OWU. He had received a Master's from Ohio State and done additional graduate work at the University of Michigan. His primary interest was field work and so he took over the teaching of Field Zoology, Entomology, Bird Study, Parasitology and Ecology, while also handling the Heredity and Evolution courses. Conger published a popular series of articles on Ohio birds in the *Ohio Wesleyan Magazine* in the late 1920's. In 1933, when he became University Registrar, a part-time position he held until his retirement in 1953, his load in the department was understandably reduced. Several of the field courses were not particularly popular and so disappeared from the curriculum; Bird Study was the exception.

Like Conklin, Rice was a strong proponent of evolution and, as a church member himself, he saw no conflict between it and religion. He, too, had Bashford's agreement that he was free to support and teach the theory. A few years after arriving at OWU, Rice began a weekly series of lectures on evolution each spring, open to townspeople as well as the campus community. These presentations were well attended and expanded gradually from three to 8 or more sessions. In 1924, Rice served as Vice-

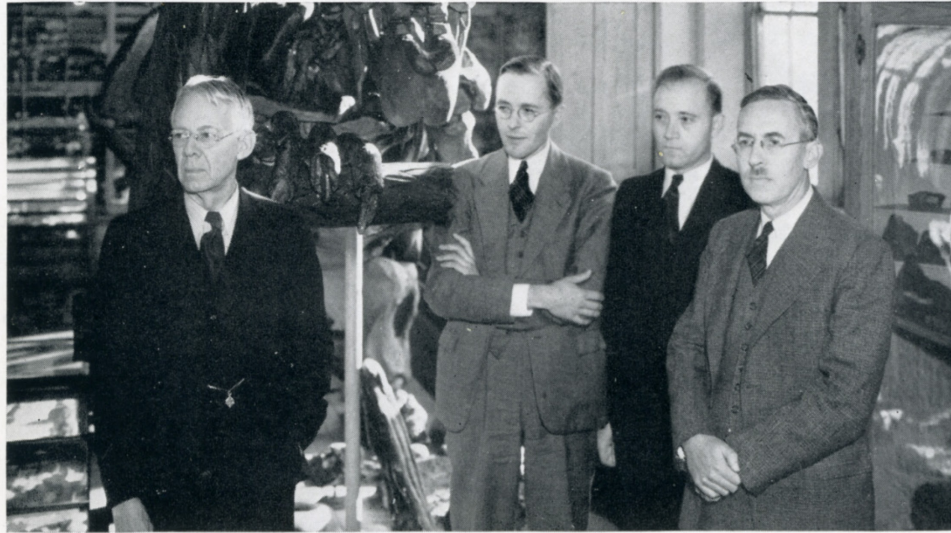


Fig. 7. Zoology and Geology faculty -- 1940. L to R - Edward Rice, John Cooper (Geology), William Hahnert, Allen Conger. Photo taken in the museum in Merrick Hall.

President and Chair of the Zoology section of the American Association for the Advancement of Science, a major umbrella organization of scientists; this was probably the highest position an American zoologist could hold at the time. In this role, Rice delivered a highly regarded address on "Darwin and Bryan – a Study in Method," which was published subsequently (30). With his strong support of evolution, Rice was involved in the defense of John Scopes, a high school biology teacher who was on trial for teaching human evolution in school; this was against the law in Tennessee. The famous Scopes trial, which attracted national attention, was held in Dayton, Tennessee, in 1925, with William Jennings Bryan as the prosecutor and Clarence Darrow representing Scopes. Rice was invited and planned to testify for the defense, but the judge ruled that scientific testimony would not be permitted.

Rice was well liked and highly regarded by students, as evidenced by the dedication of several *Le Bijou's* (college yearbooks) to him. He broadened students' knowledge by exposing them to new research via a Science Club (which faded and then revived over the years), a senior seminar for majors, and by bringing to campus such notable events as the film, "The Cultivation of Living Tissue" by Dr. Canti of London in 1930 (18). He encouraged students to attend summer field stations via what has come to be known as the Rice Summer Scholarship (see 32 for more information), which is still awarded. Not surprisingly, numerous stories were told about him, including several related to cats. It was common practice nationwide at this time for the cats used for dissection in Comparative Anatomy to be procured locally, rather than from a biological supply company. Rice often rode his bicycle to and from campus and carried his books and papers in a large, dark cloth bag. Students used to speculate that he carried stray cats in it as well – on the way to meet their demise. At one point during the 1920's, Rice was in need of cats and offered \$1.00 to any of his students who brought one in. A few fellows in need of some funds saw a cat in town, caught and chloroformed it, and contacted Rice to say they had a specimen - only to discover, much to their dismay, that it was the Rice family's pet. They did not receive the dollar (9)!

A significant role which Rice assumed was to serve as pre-medical advisor for many years^{xiv}, beginning in about 1914. That he did this in his usual excellent way is clear: a letter from a medical school admissions officer, apparently written in the early 1930's says: "For the past several years we have been tabulating the success or failure in this medical school of students coming from various colleges. Our chief reason

for this study is, of course, the bearing it may have on the problem of improving the quality of our student body and reducing the number of students we find it necessary to drop. We thought it would be of interest to you to know that the students you have sent us during the past nine years have shown a conspicuously small mortality rate. May we express our appreciation of the training of your students and especially of your judicious recommendation to us of only those students who are qualified both intellectually and personally for the pursuit of medical work" (31). This was in an era when roughly only one of every 4 students admitted to medical school graduated. Over the course of his career, over 600 students whom he recommended were admitted to medical schools (34). The Brown-Rice Premedical Fund was established in 1950, a gift from alumnus, physician and long-time University Trustee, Dr. John Edwin Brown. This endowment benefits the departments of Chemistry, Physics and Zoology, the sciences needed for admission to medical school. Further recognition from alumni physicians came in 1954, at a reunion on campus honoring Rice, which almost 100 of them attended.

While Rice played a major role as pre-medical advisor, it should be emphasized that at the same time he was encouraging and recommending students, both men and women (see Fig. 8), for graduate work, teaching posts and other positions. The department was far more than a medical school pipeline. One such non-physician alumnus was Paul B. Sears, who graduated in 1913. Sears received his Master's from the University of Nebraska in 1915, and his observations there on the causes and effects of the Dust Bowl led to his continuing interest in ecology and conservation. Following receipt of his Ph.D. from the University of Chicago, Sears was on the botany faculty of a number of institutions, including the University of Oklahoma and Oberlin College. He concluded his career at Yale, where he established the graduate program in conservation. Sears was one of the outstanding conservationists and environmental scientists in the US, the author of numerous books and papers and was selected Eminent Ecologist of the Year in 1965 by the Ecological Society of America - this major Society's top award. Sears continued ties with OWU, including giving a commencement address.



Fig. 8. Zoology students -- 1915.

Another distinguished alumna of the Rice era was Esther Carpenter, who graduated in 1925. She received her Master's from Wisconsin and her Ph.D. from Yale in 1932, where she worked with the country's outstanding experimental embryologist of the time, Ross G. Harrison. Carpenter went on to have a long and distinguished career at Smith College. Her research focused on the development of the

thyroid gland, both *in vivo* and *in vitro*; she also utilized transmission electron microscopy and radioisotopes in her work.

After years of work, Rice published a well-regarded textbook, *An Introduction to Biology*, in 1935. Following Edmund Soper's resignation as President in late 1937, as the senior member of the faculty, with wide experience on university committees and a reputation for fairness (12), Rice was appointed and served as Acting President for 1938-39. He returned to teaching subsequently (see Fig. 7), and retired in 1941 as Cincinnati Conference Professor of Zoology. However, due to faculty shortages during World War II, he returned and taught from 1942-44. Rice's contribution to, and influence on, the department and university cannot be overstated. Upon his retirement in 1941, alumni came together to honor him with tributes. Edwin Grant Conklin said: "Professor Rice is a shining example of a great teacher, - one who has always taught by example as well as by precept, one in whom the true aim of all education is never forgotten. Himself the son of a great teacher, William North Rice, the influence of the son like that of the father has spread like waves on water in ever widening circles over the lives of men. A sound and conscientious scholar, an accurate and painstaking investigator who honors and is honored by the good old name of 'naturalist,' above all a teacher who by his unselfish devotion to his students has bound them to him in love and admiration, Edward L. Rice has been an outstanding servant of the Ohio Wesleyan University and an honor to the great profession of the Teacher" (8). Further recognition of his contributions to the University came in the naming of Bigelow-Rice Hall for him. Rice died in 1960 and, not surprisingly, willed his body to science. Although not nearly as prolific a researcher as Conklin, Rice was well known and highly regarded by zoologists in the US.

William F. Hahnert

Following Conger's reduction in teaching when he became Registrar, William F. Hahnert (see Fig. 7) joined the department in 1934. Hahnert was a Phi Beta Kappa alumnus of DePauw, received his Ph.D. at Johns Hopkins, where he worked on protozoan physiology, and then taught briefly at the University of North Carolina at Greensboro before coming to Ohio Wesleyan. Upon Rice's retirement, Hahnert took over the teaching of Comparative Anatomy and Embryology as well as Parasitology and Invertebrate Zoology. He also served as Chair of the Department and Pre-Medical Advisor for many years. Having spent a summer at the MBL at Woods Hole early in his career as a National Research Council Fellow, he also went on to serve on the faculty for a number of summers at the Franz Theodore Stone Lab, Ohio State's Biological Station, on Lake Erie. Hahnert who, like Rice, was described as a master teacher (39) retired in 1968 as Cincinnati Conference Professor of Zoology. He then became heavily involved with the Ohio Biological Survey. Hahnert died in 1994.

Upon Rice's retirement in 1941, Nevin Scrimshaw, a 1938 alumnus, joined the Department for a year. Scrimshaw received an MA in Biology and a Ph.D. in Physiology from Harvard, the latter in 1941. He later received an MD from Rochester and an MPH from Harvard and had a long and distinguished career in nutrition as related to Public Health. In both Central America and India, he developed protein-rich products from inexpensive local plants that were nutritionally equivalent to milk, thus aiding the health of millions of children; he also developed a new iodine compound to help eliminate endemic goiter in Central America. Scrimshaw founded MIT's Department of Nutrition and Food Science and was appointed the first James R. Killian Professor and an Institute Professor, a position reserved for MIT scholars of special distinction. He was also elected to the National Academy of Sciences, the Institute of Medicine and the American Academy of Sciences. A colleague said, "...he is probably unchallenged as the most important nutrition scientist and nutrition leader in the world" (14).

Post-Rice

William D. Stull

Bill Stull^{xv} joined the department in 1945 as an Associate Professor just as World War II was ending and following Rice's re-retirement. He was a graduate of Middlebury College, received his Master's degree there also, and then completed his Ph.D. in general physiology at Maryland. Bill had taught for 5 years at Central Methodist College (now University) in Missouri before coming to OWU. Following both the Great Depression and WW II, University finances were tight. Zoology labs were located in the west half of the second floor of Merrick Hall in one large room divided in two by some bookcases and moveable blackboards (see Fig. 9.) Rice had liked this arrangement, as it allowed him to teach two different labs at the same time. However, Hahnert and Stull found this inconvenient, sometimes having to ask students in the other lab to be quiet for a time so they could explain something to their students. A solid partition was built to more fully separate the two labs shortly after Bill's arrival (39).

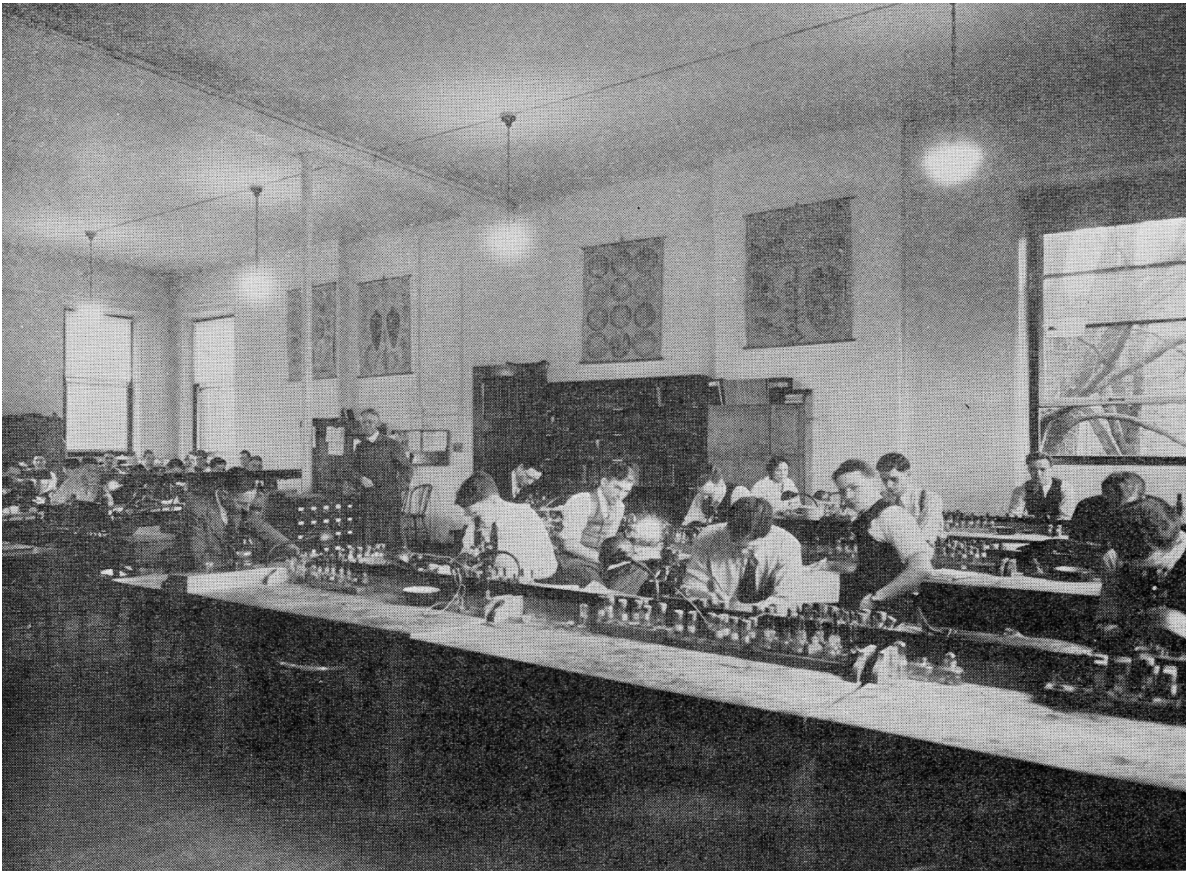


Fig. 9. Zoology laboratory in Merrick Hall -- 1930's. Labs for two courses could be held at the same time in this large room.
(Photo by Manchester)

A large influx of veterans following the end of the war resulted in heavy teaching loads. During one semester, Bill (see Fig. 10) had 27 contact hours, including three lecture sections of the same course and reported, understandably, that he sometimes wondered in the third lecture if he was repeating what he had just said (39). The greater number of students led to increased demands in the Registrar's Office,

and so Conger's departmental load decreased. Hahnert took over teaching Heredity and Evolution while Stull did likewise with Bird Study. Two individuals, Robert Hunter and Virginia Crowl, assisted with labs; they were the last of the department fellows. Additional help and flexibility came with the hiring of Clifford Berg in 1947. Berg was an ecologist, with particular interests in limnology and entomology and reintroduced courses in this latter area and in Vertebrate Ecology and added Zoological Methods. As Stull indicates (39), the titles of long-taught courses were much the same as in the 1890's, but content had changed to reflect new knowledge.

Several notable changes occurred in the late 1950's. Ornithology replaced Bird Study as the course title. George Burns, Professor of Botany, developed a course in Genetics; while this served majors in both Botany and Zoology, it did not become cross-listed in Zoology until 1979, when a zoologist began to teach it. Heredity and Evolution remained as a Zoology course, becoming Evolution in the early 1970's.

A significant impact on all of science occurred with the launch by the Russians of the first artificial satellite, Sputnik, in the fall of 1957. This shattered the complacency of the US with respect to its scientific capabilities and led to an increased interest in, and money applied to, scientific research and education, including greatly increased funding for the National Science Foundation (NSF).

Bill took advantage of these resources by applying for and receiving at least two NSF grants in the early 1960's to support summer institutes for high school science teachers at OWU. His interest in the education of teachers is further indicated by his serving as a leader of summer institutes for college biology teachers at the University of Minnesota and, as a consultant in 1966, in Jodhpur, India.

Coincident with the launch of Sputnik in 1958, Zoology entered the age of more modern biology with the hiring of Joseph Hichar, a neurophysiologist and Harvard Ph.D. Up to this time, the department's focus was principally morphological, but Hichar introduced a General Physiology course. An NSF Instructional Equipment Grant supported the purchase of a high-speed centrifuge, Warburg apparatus and spectrophotometers to help equip the laboratory for this course. Hichar's replacement in 1960 was Donald Smith, who continued General Physiology and also taught the methods course, dealing with experimental design and data analysis.

During his tenure at OWU, Bill Stull taught a wide variety of courses including General Zoology, Comparative Vertebrate Anatomy, Vertebrate Ecology, Heredity and Evolution, Ornithology, Vertebrate Physiology and Human Physiology. (Following Nelson's death, this last course was offered by Physical Education faculty for many years, but returned to Zoology during Stull's tenure.) He also taught for several summers in the 1960's and early 70's at the Stone Laboratory on Lake Erie. Bill had an extremely wide range of interests and knowledge – from ion movements in kidney cells to bird migration to a naturalist's understanding of fresh water stream communities.

One of his many contributions to the department followed a trip to the Galapagos Islands in 1973, under very rustic conditions – the ship, the *Calicuchima*, was a crudely converted WW II minesweeper. He believed that giving students the opportunity to experience some of the places and organisms that Darwin saw would be a mind-opening experience. Thus, he developed the forerunner of the Island Biology course and took the first group of students to the islands in the winter of 1974. The travel agent who helped with the arrangements and accompanied the group was so impressed that she wrote the President of OWU, saying: "Professor Stull...is one of the finest educators I have ever met. He held the respect, love, and admiration of each one of his students..." (11).

Unlike the days of Rice and Hahnert, when a single individual served as Chair for an extended period, the position began to rotate among members of the department. It was also difficult for the chair to take a provided course reduction and so various members of the department each took on a small part of the chair's responsibilities, e.g., managing endowed funds or the library budget, keeping track of declared majors, etc.. This was made possible by minimal turnover of the faculty for an extended period of time and mutual trust.

Stull's impact on the department and university was significant. Robert Lisensky, the Vice President for Academic Affairs in the late 1960's and early 1970's said he initiated "...exciting conversation on curricular innovation', and gave him credit for 'making the department one of the strongest at the university, in no small part because of the working environment Bill established.' 'Stull', he said, 'provided gentle but needed encouragement to Vice Presidents, students, and colleagues alike'" (27). Bill's strong teaching and many contributions to the university were recognized when he received the Bishop Herbert Welch Meritorious Teaching Award in 1973. Perhaps unusually, Bill felt he was most effective as a teacher later in his career.



Fig. 10. Zoology faculty -- 1975. L to R - Jim Freed, Anne Fry, Aubrey Bradshaw, Jim Parker, Bill Stull, Wendell Patton, Denny Radabaugh. Photo taken in the museum in Bigelow-Rice.

While the departmental budget had increased over time, faculty felt the need to spend money wisely. Where possible, live animals for labs were not ordered from biological supply companies but were collected locally – Planaria from Delaware Run, tadpoles from nearby ponds and pill bugs from faculty family wood piles. Simple equipment was constructed by faculty, with Stull being an especially

competent carpenter and electrician, either in a small shop in the basement of Bigelow-Rice or, later, in a larger, consolidated shop in the basement of Elliott Hall, staffed part-time by local craftsman Dale Bowman, which existed for several years.

Those of us in the department at the time learned many useful things from Bill. One was the potential side benefit of supervising student research projects! Mark Shipps, a 1970 graduate, worked with Stull on a study of both scientific and avocational interest to both involving the effect of temperature on the distribution of two species of bass, Smallmouth and Northern Largemouth. Smallmouth were found in more northern waters than Northern Largemouth. It had been postulated that colder water temperature inhibited the feeding, and thus the likely distribution, of the Northerns while Smallmouth were more tolerant of colder environments. Classes at the time continued well into June and Bigelow-Rice Hall, where Zoology and Botany were located, was not air conditioned (and would not be until many years later). The bass, which were collected from a local pond by Shipps, were kept in large aquaria in Stull's office/lab. Bill was able to convince Buildings & Grounds that the fish would survive only in an environment cooler than the ambient temperature in the room and so a window air conditioner was installed. Bill cannibalized an old refrigerator and used the cooling apparatus to create an immersible cooling coil in the test aquarium. Results indicated that temperature did affect feeding, as postulated, and thus likely impacted distribution of the two species (35). Buildings & Grounds apparently forgot about the air conditioner, which remained following the conclusion of the project. The rest of the faculty were somewhat envious of this more comfortable environment in Stull's office on hot days in June and over the summer and wished that we, too, had had students working on bass!

Bill retired in 1977 as Alumni Professor of Zoology. At this time, his students, colleagues and friends established the William D. Stull Award in his honor. This award is given to a student who performs curatorial duties in the OWU Zoology Museum. Also at about this time, Bill became interested in wood carving and applied his close knowledge of birds to this endeavor. His truly masterful, painted carvings were recognized by at least one award. A "Bill Stull bird" is a prized possession of many of his friends and colleagues. Stull died in 2007 at age 94.

Bigelow-Rice Hall

With the departments of Botany (later Botany-Bacteriology and still later Botany-Microbiology), Geology, and Zoology in Merrick Hall, crowding had been an issue for some time. In the late 1940's, additional teaching space was created when the Museum was compressed into the north half of the top floor (13). With the increase in staff, space became a still more major constraint. An additional lab for Zoology was created in the basement of Merrick in a former storage area (39).

Although the need for additional space and improved facilities for science had been recognized in the 1920's, with at least preliminary drawings of a single, large structure, the Great Depression and World War II delayed construction. Ultimately, the first of two science buildings, Bigelow-Rice Hall, was dedicated and opened in 1962, housing the departments of Botany-Bacteriology and Zoology. A major contributor, William F. Bigelow, 1905, the editor of *Good Housekeeping* magazine, requested that the building be named in honor of his brother, a biologist, Dr. Maurice A. Bigelow, 1894, and Dr. Edward L. Rice^{xvi}. In observance of the dedication of the building, a major event, "A Symposium on the Prospects for the Experimental Control of Human Evolution," organized by Dr. Tracy Sonneborn of Indiana University and supported by NSF, was held on campus in April of 1963. Speakers included several of the outstanding biologists of the time: Salvador Luria, Edward Tatum, Robert De Mars, Guido Pontecorvo and Hermann Muller (Tatum and Muller had received Nobel Prizes and Luria would). Discussants were

George Klein, Waclaw Szybalski, Kenneth Atwood and Rollin Hotchkiss. It is reported that the term “genetic engineering” was first used here, by Hotchkiss^{xviii} (53). Over 1000 scientists and others attended the symposium; its proceedings were edited by Sonneborn and published (37).

In Bigelow-Rice, space constraints were lifted, at least for a time. Zoology offices and labs were located on the third floor while Botany-Bacteriology was on the second. Two larger classrooms, shared darkroom and animal facilities, and a few offices and research labs were on the ground floor. The secretary, who served both departments, had her office in the cramped but serviceable biology library on the second floor; she also was the librarian.

Aubrey S. Bradshaw

When Clifford Berg left in 1953, Aubrey Bradshaw (see Fig. 10) was hired. Brad, a limnologist, received both his BA and MA from Kentucky and had begun work on his Ph.D., first at Ohio State and later at Cornell. He had taught at Transylvania College for 13 years before coming to OWU. Under him, Vertebrate Ecology became general Ecology, later Animal Ecology, and he continued the teaching of Entomology. Although invertebrates were typically covered in an introductory course, Entomology and Parasitology were the two upper levels dealing with the invertebrates. An upper level Invertebrates course was reintroduced in 1962, and was taught primarily by Brad until his retirement in 1975. In the early 1970's a focus of the lab in the second semester of the introductory course was experimental design; for Bradshaw's sections, this meant racks of water-filled bottles containing *Daphnia*, an organism that he had used for his own research. He was very active in the Ohio Academy of Science, serving as President in 1973-74. Brad died in 1991. In 2017, the Brandt Museum of Zoology's insect collection was named for him. His influence on former students is indicated by the naming of a new species of leafhopper, *Polyamia bradshawi*, in his honor (7).

John N. Chase

Conger's retirement, together with enrollment increases, led to a faculty addition in 1956. John Chase (see Fig. 11), a WW II veteran and 1949 Phi Beta Kappa alumnus, was hired, a hope of Hahnert's that was ultimately realized. Chase received a Master's degree from Harvard, having worked with Alfred S. Romer, likely the most outstanding paleontologist and comparative anatomist of the day. Married and with a family, John had taught at several Eastern prep schools but resumed graduate work, again with Romer, following his appointment at OWU (38), receiving his Ph.D. in 1963. With Chase, the department now had four full-time faculty.

During the 1963-64 academic year, John served as Visiting Lecturer in Zoology at King's College, University of Newcastle-upon-Tyne in England, while a colleague there with similar research interests, Alec Panchen, taught zoology at OWU for the year (see Appendix 9). Newcastle was at the forefront of the study of continental drift and so must have been an exciting place to spend a year. John also served as a US Agency for International Development (USAID) consultant in the mid-1960's for summer institutes for Indian college teachers in Bombay (now Mumbai), India.

At OWU, Chase taught Comparative Vertebrate Anatomy, Heredity and Evolution/Evolution and Vertebrate Zoology, in addition to an introductory course. While it existed in the late 1960's and early 1970's, he headed the science component of a very popular, year-long multidisciplinary course for freshman honor students titled, Science and the Human Condition. His drawings on the blackboard in his Comparative Anatomy class were exceptionally clear and elegant. As Bill Stull indicates, probably his

favorite course was Vertebrate Zoology: “He seemed to have more than his usual bounce the terms he taught it. It gave him a chance to get out in the field, to slog through marshes, to sieve streams and to introduce his students to the songs of frogs and toads on midnight forays into mosquito infested swamps. By the end of the course there were tanks and aquaria of fish, frogs and turtles” (38).

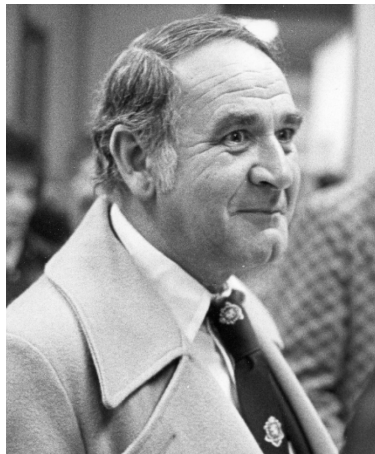


Fig. 11. John Chase

John was an excellent teacher, as indicated by his being only the fifth recipient of the Bishop Herbert Welch Meritorious Teaching Award. He also served as Pre-Medical Advisor for several years following Hahnert’s retirement. He was liked and highly respected for his genuine interest in people, whether students, faculty colleagues or others as well as for his understanding of the institution. This led to his popular selection as Vice President for Academic Affairs (later Provost) in 1974. His untimely death in 1977 at age 53, following a series of heart attacks, was a major loss. With contributions from family, alumni, colleagues and friends the vertebrate zoology laboratory (SCSC 301) was dedicated to him in 2007; a scholarship for a student in the biological sciences, preferably zoology, is also named for him.

Up until the mid-1970’s, the department did not have a technician/laboratory coordinator. Thus, individual faculty did their own ordering of supplies, took care of any live animals they might have for a course or research, and set up and tore down the labs for their courses. This was inefficient and began to take more faculty time as labs became more complex and also inhibited the development of more modern labs. The administration became convinced of our need and so we joined Chemistry and Botany in having such a position. Certainly consolidating ordering saved money, efficiencies were realized in terms of equipment maintenance and repair and, most importantly, labs could become more complex. We have been fortunate with the individuals who have occupied this position; they have proven immeasurably competent and freed up faculty for other endeavors (see Appendix 10).

Post-Stull

Wendell K. Patton

The department was awarded an additional position in 1962 and hired Patton (see Figs. 10, 12), who was a Hamilton graduate, with a Master’s from Ohio State. His Ph.D. was from the University of Queensland (Australia) in marine biology, supported in part by a Fulbright award. Wendell had spent two years between receiving his Ph.D. and coming to OWU as a Visiting Instructor at Duke. Earlier, he had taken the Invertebrates course at the MBL and spent two summers as a research assistant with the US Fish and Wildlife Service, also in Woods Hole. He had the good fortune to start his career in the newly opened Bigelow-Rice facility rather than in Merrick.

Initially, Patton taught Parasitology, which had been offered from the late 1920’s until the 1950’s, as well as introductory courses. The second semester of the introductory course became Animals and Their Environment in the early 1970’s, and was a class which Wendell particularly enjoyed teaching. When Bradshaw retired in 1975, Patton took over the upper level Invertebrates course as well. At about this same time, he introduced a course in Marine Biology, which involved a several-day trip to the University

of Delaware Marine Station in Lewes, Delaware. Wendell returned to the Great Barrier Reef numerous times on leaves to continue his studies on the symbiotic relationships between the corals and the crustaceans and other organisms living in close association with them. As parasitology evolved as a field, he incorporated immunology into the course, as reflected in its updated title, Parasites and Immunity. He also taught the Island Biology course, with its trip to the Galapagos Islands, several times. Still another hallmark was his offering of a seminar on Plant-Animal Interactions (with David Johnson), and an Honors course on Biology and Tropical Nations (with John Gatz). His broad interests, excellent teaching, and contributions to OWU were recognized by his receiving the Welch Teaching Award in 1986, and his appointment as the Ella Fulton Dunham University Professor of Zoology. Patton retired in 2000 but taught new seminars for several years. Also, he has continued research on clam shrimp and on the diversity and interactions of other animals living in the vernal pools at the Stratford Ecological Center just south of Delaware.

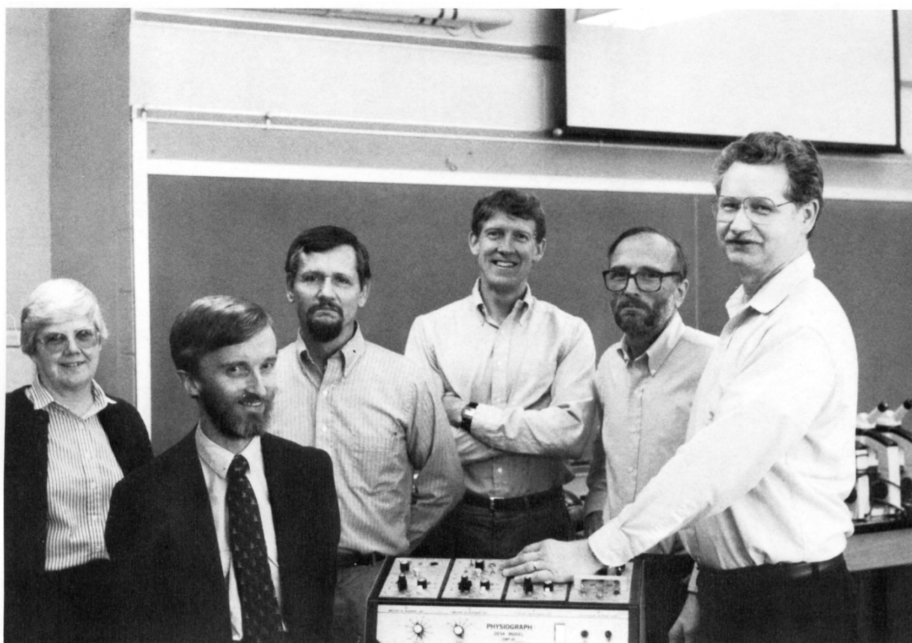


Fig. 12. Zoology faculty -- 1989. L to R - Anne Fry, Jed Burt, Denny Radabaugh, John Gatz, Wendell Patton, Jim Freed

Especially before the advent of the Internet, the department served as a source of information on animals for the campus and Delaware communities. Common questions included, “I found this (specimen produced) in my house; is it a termite?” or “I have a pesky raccoon in my back yard. Do you have a live trap I could borrow to try to catch it?” or “I have a question about my Science Fair project...” For a number of years, up until at least the 1980’s, members of the department would get calls in the fall about squirrels staggering, and with apparent neurological problems, in the area of the Edwards Gymnasium parking lot. At that time, there was a row of apple trees along the north side of the lot. We would assure callers that the squirrels were basically fine but were feeling the effects of alcohol after eating apples that had fallen to the ground and fermented!

James M. Freed

After Donald Smith left in 1967, the physiology course was taught for a couple of years by short-term replacements (Bangalore Vasu and James Deck). In 1969, the position was filled by Jim Freed, a graduate of McPherson College, with an MS and Ph.D. from Illinois. Freed (see Figs.10, 12) had worked in the lab of C. Ladd Prosser, one of the outstanding comparative physiologists of the day. Jim had taught for two years at Manchester College after receiving his MS. He, too, had spent a summer at the MBL and several weeks on the *Alpha Helix*, a research vessel, in the Gulf of Alaska. His research dealt with biochemical adaptations of both aquatic vertebrates and invertebrates to environmental changes in temperature. At OWU, he began by teaching an introductory course for non-majors as well as General Physiology; over time, the latter evolved first into Cellular Physiology and later into Cell and Molecular Biology.

When George Burns retired from the Botany and Bacteriology Department in 1979 and the University was in the midst of a hiring freeze, Jim volunteered to teach Genetics, a core class for both Zoology and Botany and Bacteriology students. The course now became cross-listed in the two departments. He introduced an optional lab component for the class in 1992. He also taught Human Physiology and, later, a semester of Human Anatomy and Physiology.

Early in his career, Jim attended auctions of government surplus materials, purchasing items of potential use to the department. Among these were good and strong scissors, some of which are still in use, and lots of olive colored gauze, likely left over from WW II or the Korean War. As computers were introduced, first for personal use and later as part of laboratory instrumentation, Jim assumed the role of resource person for the department, guiding his colleagues with knowledge and patience as we gained proficiency. Most significantly, with his excellent administrative and organizational skills, he served as Director of State Science Day, then held on the OWU campus, from 1980-92 as the number of participants increased from 200 to over 800. He later coordinated sponsored awards for this event; support for scholarships and cash prizes increased from \$1,000 to a remarkable \$350,000 during his tenure. Jim also served as Pre-Health Professions Advisor for a short time. He retired in 2001 as Cincinnati Conference Professor of Zoology. In retirement, Jim wrote an autobiography of his first 30 years and became an expert in genetic genealogy. Freed died in 2019.

Anne E. Fry

Following Hahnert's retirement and a one-year interim appointment (Richard Young), Anne Fry (see Figs. 10, 12) was hired in 1969 (the same year as Freed) to teach Embryology, soon to become Developmental Biology, and an introductory course. She was a Mount Holyoke alumna, with an MS from Iowa. Anne had been an Instructor at Carleton College for two years before pursuing a Ph.D. in a four-college cooperative program headquartered at the University of Massachusetts, focusing on amphibian metamorphosis. She, too, spent a summer at the MBL, taking the Embryology course. Over time, Anne also taught Human Structure and Function and first one, and then both, semesters of Human Anatomy and Physiology. Her research focused on changes in the digestive tracts of herbivorous and carnivorous tadpoles during metamorphosis. She received the Welch Teaching Award in 1976. A study room in the Hobson Science Library was named in her honor thanks to a gift from alumna Marianne Haenlein Alciatti (1978).

Anne served as Pre-Health Professions Advisor from 1982 until 2005, up to and for a year following her retirement in 2004, as Helen Whitelaw Jackson University Professor of Zoology. From 2006-18, she

volunteered in the OWU Historical Collection in Beeghly Library. She was made an Honorary Alumna in 2015.

The first full-time female faculty member at OWU and the first to teach Natural Science (together with History and Rhetoric) was Clara Conklin (see Fig. 2) in the 1880's. Several women taught Zoology full time for 1-3 years each from 1910-23 and two taught briefly during WW II. In addition, several female Departmental Fellows/Master's students also doubtless served as role models for women students. Having females as faculty or fellows indicates how supportive Rice was, since women serving as full time faculty or graduate students in the sciences was not a particularly common practice at this time. When Anne joined the department in 1969, she was the first full-time female faculty member in Zoology in roughly 25 years. When she began, there were three other full-time women faculty in the sciences and mathematics: Violet Meek in Chemistry, Marjorie Ferster in Mathematics and Jane Decker in Botany-Bacteriology. All three of these individuals came in the mid-1960's – Jane in 1964 (although in a significant visiting or part-time role for several years, finally becoming full-time in 1973), Marjorie in 1965, and Violet in 1966. So, for one year, in 1969-70, there were four women in STEM areas; this quickly decreased to three when Marjorie left in 1970. Having these role models no doubt supported female science and mathematics students. Interestingly, the number of women decreased to two when Violet Meek left Chemistry in 1980 to enter the administration, and only increased again when Barbara Andereck joined Physics and Astronomy in 1985 and Karen Fryer was hired as a geologist in 1986. Fortunately, these numbers have continued to increase.

Dennis C. Radabaugh

Denny Radabaugh (see Figs. 10, 12) graduated from Albion College and then entered the Wildlife Biology program at Ohio State; he quickly realized that his interest lay more in the area of animal behavior and so he moved to the Zoology program at OSU, where he received both his MS and Ph.D. His graduate research dealt with aggressive behavior in ring doves and learning in fish. In the fall of 1970, the OWU department had a one-year visiting position to replace Wendell Patton, who was on leave in Australia for the year continuing his research on the Great Barrier Reef.

Student Boards had come into being as the result of faculty action in the spring of 1970. The Boards, consisting of majors selected by their peers, were to help department faculty determine policies, independently evaluate faculty for retention, merit, tenure and promotion and meet with candidates and make recommendations to the department when new faculty were hired. With the year-long vacancy, and presumably to draw a larger field of applicants, the department faculty had asked the Student Board to suggest a new course they would like to see offered rather than insisting that the person must teach Parasitology. The Board talked informally with majors and concluded that an Animal Behavior course would be desirable. This, plus an introductory course, fit Radabaugh perfectly and he was hired. Although Wendell returned the next year, the department was the beneficiary of an NSF College Science Improvement Program (COSIP) grant for the sciences, which included introducing investigative labs into introductory Zoology courses. This grant allowed Denny to continue in his visiting role for another year. The Student Board was enthusiastic about Radabaugh's teaching and contributions to their education and thus took it upon themselves to gather data and to make a case to the Provost, Robert Lisensky, to add a position to the Department^{xviii}. The Provost was persuaded. Thus, Denny's position was converted to a regular appointment. It is interesting that the Student Board never divulged the role they played to Radabaugh or to most of the rest of the department. He found out about it totally coincidentally from a friend, who also happened to be a friend of a member of the Board

and was told by the student what they had done; this individual later told Denny. As Radabaugh says, “I never forgot the debt I owed the students” (29).

Denny went with Bill Stull on the first trip with students to the Galapagos Islands. As he reports (29), this was before the islands became a tourist destination. When they arrived on the first island, San Cristobal, the travel agent accompanying the group, which also included some older adults whom Bill Stull had encouraged to come to help fill the ship, walked over to a nearby Ecuadorian naval installation and persuaded the commander to assign two dump trucks to carry the group to the top of the island. Several folks decided to walk down, not realizing that it was a 14 mile trek. Fortunately, the worst result was blisters! When Stull retired in 1977, he asked Radabaugh if he would be willing to take on teaching what was then a seminar; Denny agreed and under his guidance it became a full unit course, Island Biology. Radabaugh taught it several times with some interesting experiences – leaving a plane via emergency slides at a remote part of an airport in Panama in response to a bomb threat and spending extra time in Ecuador due to lost passports. The course was later taught by others, including Patton, who included it in their schedules as an overload. This course continues today as one of the hallmarks of the department.

In addition to Animal Behavior and Island Biology, Radabaugh’s teaching load over the years included both of the introductory courses for majors as well as Human Structure and Function and, once, a course in vertebrate natural history. Over the years, he also taught a wide variety of seminars, served as Pre-Medical advisor for almost 10 years and as Pre-Veterinary Medical advisor for 30 years. His excellent teaching and contributions to the institution were recognized by his receiving the Welch Teaching Award in 1990. Denny retired in 2008 as Alumni Professor of Zoology.

A number of Zoology majors over the years brought animals with them to campus. Some inquired immediately if they could house them somewhere in the department while others tried to keep them (illegally) in the dorms, but brought them to the department when discovered. For whatever reason, in the 1980’s especially, there was significant interest in reptiles. Sometimes these escaped, much to the consternation of the Bigelow-Rice housekeeping staff who never knew what to expect when they opened a door. An Arizona kingsnake went missing for several months before it appeared in the Botany greenhouse. Radabaugh recalls (28) teaching a class in a lab on the top floor of Bigelow-Rice that had a sliding door beside the blackboard at the front of the room; the apparatus for producing distilled water for the building was located behind the door. At one point, a student in the class tentatively raised a hand and asked, “Is there supposed to be a snake looking out of the closet?” Another escapee caught! Greg Colwell, 1991, set up a habitat for his old-world chameleons in a storage room on the bottom floor of Bigelow-Rice; escapees from here frequently made their way into Professor of Botany Jon Sanger’s office close by.

A. John Gatz

In 1975, when Bradshaw retired and Chase entered the administration full-time, the University was in the midst of a faculty hiring freeze. However, Chase accepted the administrative post only with the understanding that one of the vacant positions in the department would be filled. This led to the hiring of John Gatz (see Fig. 12) in 1975. Gatz had graduated from Dickinson College, where he worked on spotted salamanders, and spent his college summers at the Chesapeake Biological Laboratory where he studied the effects of heated discharge water from electric power stations on estuarine organisms. He received his Ph.D. from Duke in ecology, specifically the ecomorphology (how structure influences the ecological role) of fishes. This interest, together with serving as a teaching assistant in both ecology and

a combined comparative anatomy/embryology course, enabled him to teach both Bradshaw's and Chase's key upper level classes (Animal Ecology and Comparative Vertebrate Anatomy) as well as the introductory course for non-majors. Animal Ecology became Population and Community Ecology in the mid 1990's.

John soon included Evolution in his teaching schedule. Slightly later, after participating in a trip with Denny to the Galapagos Islands, which included the emergency slide exit of the plane in Panama, he became part of the ongoing teaching rotation for this course. He, like Denny, had some other interesting experiences: on a ship which held only 10 passengers, rounding the uninhabited north end of Isabela Island, they came across 15 or so Ecuadorian soldiers who had been left there on a training mission but had missed their rendezvous with a ship which was to have picked them up. They had no food or water and had survived for a couple of weeks by eating cactus flowers. John's now overcrowded ship took the soldiers to another, inhabited island.

In 1983, following his own visit to Tanzania and Kenya a year earlier, he taught Biology of East Africa which included a trip to the region. More recently, beginning in 2012, he offered this class several times as a Travel-Learning course. Human Anatomy was introduced in 2016, and taught by John after students applying to some health and allied health graduate programs could not fulfill the requirement for this pre-requisite course on campus^{xix}. In 1983-84, Gatz spent a year as a visiting faculty member at the Oak Ridge National Laboratory, including serving as the GLCA Oak Ridge Science Semester faculty member in the fall. John has also team-taught Honors courses with Wendell Patton on Biology of First and Third Worlds and with Dick Hawes (Health and Human Kinetics) on Nutrition for Health and Fitness and Exercise for Health, Fitness and Performance. Over the years, he has also offered a variety of seminars.

Following Nancy Murray (Botany-Microbiology), John served as Chief Health Professions Advisor for 9 years and retired in 2019 as Albert M. Austin Professor of Natural Sciences.

Beginning in the late 1970's, Ohio Wesleyan received two significant tracts of land in Delaware County which serve as wilderness preserves. One, of 55 acres, located northeast of campus in a rural area, is the gift of Robert and Elizabeth Bohannon. The second, of 80 acres, is found in the more highly developed southern part of the county, and was given in three stages by Dr. and Mrs. John Kraus. While both are predominantly beech-maple forest, the Bohannon property lies over Ohio black shale and contains a river flood plain, while the Kraus gift includes two ponds, a deep ravine and a field laboratory and is situated over limestone. Both preserves are used for laboratory field trips as well as for student and faculty research. The Kraus endowment supports scholarships for student research.

Thomas E. Stege

When Ohio Wesleyan started a nursing program in 1975 with the goal of improving enrollment, these students needed not only the introductory zoology course for science majors but also, as sophomores, a year-long course in human anatomy and physiology. The department received a new position for the latter and Tom Stege was hired. Tom was a Denison graduate who received an M.Ed. from Ohio University and a Ph.D. from Tulane University's School of Medicine. In addition to Anatomy and Physiology, Tom also taught the introductory course for non-majors. His research interest was the metabolism of alcohol by the human liver; he is most likely the first person in the department to have had research supported by federal grants^{xx}. As one might imagine, student interest in matters related to alcohol was significant; in response, Tom offered a large seminar on the biology of alcoholism. In 1983,

he decided to move on to another opportunity. As a result, Anne Fry began to teach the first semester of Human Anatomy and Physiology and Jim Freed the second.

Edward H. Burt, Jr.

When Bill Stull retired in 1977, Jed Burt was hired. Jed (see Fig. 12) had been interested in birds since childhood, continuing this interest at Bowdoin College as an undergraduate, and in both his Master's and Ph.D. research at the University of Wisconsin – Madison. Prior to joining the department, Jed had taught for a year on a visiting appointment at the University of Tennessee. Bill Stull was delighted finally to have a trained ornithologist teaching that class and noted that the course itself (first taught by Rice in 1902) might be one of the oldest continually offered ornithology courses in the country (39).

The University was in the midst of a serious financial crisis in the early 1980's, due to a decline in enrollment. In 1982, the faculty approved the recommendations of a faculty committee which included the elimination of a few departments and in others, including Zoology, the loss of a position. As Jed was the only untenured member of the department, the position to be eliminated was his. However, Tom Stege's decision to leave meant that Jed's position was saved.

Over the course of his career and in addition to Ornithology, Jed also taught an introductory course for non-majors with lab, Genes, Evolution, and Society, as well as Animals and Their Environment, and Entomology and became one of the faculty in the Island Biology rotation. One of the highlights of his introductory course was the day that Jed, in appropriate dress and in the Bayley Room of Beeghly Library, portrayed Sir Charles Lyell reading excerpts from Charles Darwin's writings on evolution to the Linnean Society of London in 1858. In conjunction with the English Department, Jed developed and taught Scientific Writing, where students learned to prepare not only scientific papers and grant proposals but also newspaper articles about their research or interest. Jed believed strongly that students should be involved directly in research; numerous individuals worked with him, typically on some aspect of avian biology, via freshman tutorials, independent studies or summer research. He also believed that students should attend and present their results at scientific meetings. Jed established a non-credit seminar for students involved in research in the department, where they could exchange ideas. He was also instrumental in starting the Zoology Lecture Series, which ultimately became the Science Lecture Series. In the 1990's his research, with colleagues Jann Ichida (Botany-Microbiology) and David Lever (Chemistry), began to focus on the role of bacteria and fungi in feather degradation. He and Jann received two patents as a result of this work. He played a significant role in writing successful grants to NSF which funded student research during the summer and the institution's original scanning electron microscope and newer scanning transmission electron microscope. As one of the directors of the OWU Honors Program, Jed worked tirelessly to attract and retain top students. For his contributions, Jed received not only the Welch Teaching Award from the University in 2006, but also, in 2011, he was honored as the Ohio Professor of the Year by the Carnegie Foundation for the Advancement of Teaching and the Council for Advancement and Support of Education (CASE). In 2016, he was made an Honorary Alumnus of Ohio Wesleyan.

Jed was a prolific scholar, writing 4 books, over 50 scientific papers with 26 student co-authors and three papers on teaching methodology. The Delaware Bird Club was founded by him in 1986. Jed was held in high regard by fellow ornithologists: he served as president of American Ornithologists' Union, the Association of Field Ornithologists and the Wilson Ornithological Society. He also received the Margaret Morse Nice Medal of the Wilson Ornithological Society for lifetime contributions to ornithology. Jed retired in 2014 as Cincinnati Conference Professor of Zoology and died in 2016.

Enrollment improved during the presidency of David Warren. However, in 1986, the Trustees decided that it would be more efficient financially if three pairs of departments were combined, at least for a three-year period. One of these pairs was Botany-Microbiology and Zoology^{xxi}, which for this time existed as the Department of Biological Sciences, although faculty were still listed in the Catalog as holding positions in one of the two disciplines; the two disciplines basically functioned independently. What the trustees failed to recognize was that a larger department requires more administrative effort and therefore more released time from teaching for the Chair. Savings in terms of supplies and equipment were also minimal or non-existent. All three pairs of departments were uncoupled in 1989.

Also in 1989, Zoology along with the other science departments and mathematics benefited from a three-year \$1.6 million grant from the Pew Charitable Trusts, with emphasis on recruiting students, especially women and minorities, into careers in teaching and research. The Carolinas-Ohio Science Education Network (COSEN) consortium included Duke University, Davidson, Denison, Furman, Kenyon, Oberlin and Wooster, in addition to OWU. Students were encouraged to participate in research early in their careers, especially at another institution, and to pursue graduate work at Duke (24). At Ohio Wesleyan, Roy Patton, a scientist at the USDA laboratory in Delaware, served as a mentor to minority students (see Appendix 11). Women in Science (WinS) was also established on campus as a part of this grant. The program continued for several more years, with additional support from Pew as well as the participating institutions.

Carol A. Park

In 1991, when Jim Freed was still teaching it, Cellular Physiology became Cell and Molecular Biology. Although molecular biology had become a significant component of modern biology, neither Jim nor anyone else in the department was a trained molecular biologist. He also had a full teaching load with Genetics and Human Anatomy and Physiology II. Therefore, the department applied for an additional position in molecular biology, which was granted. Carol Park, who had received her BS from Kent State and MS and Ph.D. from Ohio State and who had taught part-time in both Botany-Microbiology and Zoology in 1992-93, was hired full-time in Zoology in 1993. Cell and Molecular Biology, which she taught, was cross-listed in Botany-Microbiology. A year later, she and Jerry Goldstein in Botany-Microbiology, initiated a half-unit, cross-listed course in Molecular Techniques, and in 1995-96, Carol developed and taught Immunology, a full-unit course also cross-listed with Botany-Microbiology. She also taught a section of the introductory course for majors. Carol left the University in 1999.

In the 1990's, Ohio Wesleyan was one of only three institutions to receive three grants from the Howard Hughes Medical Institute. All of the science departments and mathematics benefitted from the \$1,850,000. Zoology's portion of the awards was used to upgrade facilities (hood installation in the Introduction to Cell Biology Laboratory), purchase equipment for molecular biology, immunology and the new laboratory component of the Genetics course (electrophoresis apparatus and fluorescence and phase contrast microscopes). Broader benefits included summer research opportunities for students and support for students to attend off-campus conferences or symposia. Students doing summer research presented the results of their work to their peers at an on-campus symposium in the fall; this was the beginning of what is now the Patricia Belt Conrades Summer Science Research Symposium.

Marten J. Edwards

Marten Edwards joined the department in 1999 to teach Cell and Molecular Biology and Immunology. He was a graduate of Reed College who had served in the Peace Corps in Tonga, worked on the cleanup of the Exxon Valdez oil spill in Prince William Sound, Alaska and then received his Ph.D. in entomology at the University of Arizona. Marten had just completed a Post-Doctoral fellowship in genetics at Case Western Reserve University and is likely the first zoology faculty member to have completed a Post-Doctoral Fellowship. He involved students in his research on the reproduction of *Aedes* mosquitos with the goal of interfering with the transmission of human diseases such as malaria and yellow fever. A few students were able to do research with him in the summer in the Czech Republic. Marten was also instrumental in beginning the grant-writing process to NSF for the laser confocal microscope, which was successful. He left OWU in 2002, as his wife, a Ph.D. botanist, could not find a position in this area.

Sally M. Waterhouse and Laura M. Tuhela-Reuning

The department has relied on part-time faculty, especially since the mid-1960's, to teach essential courses and/or labs when regular faculty members were on leave (sabbatical) or when there was a particular need (see Appendix 12). Two individuals have served in that capacity long-term.

Sally Waterhouse first taught in 1989, filling in for Jed Burt when he had unexpected surgery. She began teaching more regularly in 1992, primarily Animals and Their Environment and Human Structure and Function, the one semester course mainly for Physical Education/ Human Health and Kinetics majors. The name of the latter course was changed to Human Anatomy and Physiology in 2007 to better reflect its content. She also co-taught Island Biology before retiring in 2008 as Part-Time Assistant Professor of Zoology. Sally worked part-time in student advising and retention through 2010.

Laura Tuhela-Reuning (see Fig. 13) was hired in 1997 as the technician for the newly installed scanning electron microscope, which was procured thanks to an NSF grant written by Jed Burt and several other faculty in Botany-Microbiology and Geology. Laura subsequently became a part-time faculty member in Botany-Microbiology and Zoology and in 2002-03 began to offer a course in Electron Microscopy that is cross-listed in Zoology, Botany-Microbiology and Geology-Geography. She has also worked with students doing independent studies, as well as faculty. Laura was involved in the successful application to NSF for the scanning transmission electron microscope, has directed the Summer Science Research Program and taught Introduction to Cell Biology. She is currently a Part-Time Professor.

Schimmel – Conrades Science Center

By the mid-1990's, it was apparent that existing science facilities – Bigelow-Rice and Stewart Halls - (the latter also known earlier as New Science and Science, which had opened in 1969), were no longer adequate. Several factors were at play: expansion of faculty and curriculum, including laboratories in new courses; the need to house new equipment, much of it the result of the Hughes and various NSF grants; inadequate facilities for increasingly more common student research projects; and, importantly, the fact that the mechanical, electrical and plumbing systems of both buildings had reached the end of their life spans. In addition, several competing institutions had just completed new or updated science facilities.

Planning for OWU's Science Initiative, part of the Campaign for Ohio Wesleyan, got underway in 1994. A resource team from Project Kaleidoscope, supported in part by NSF, visited campus initially. Further,

pairs of OWU science faculty went to see other campuses with new facilities to determine what might be appropriate for us. A committee including a representative from each science department and chaired by Dick Fusch, Associate Dean of Academic Affairs, handled the planning. Ultimately, Stewart Hall, which had been an F-shaped building, was expanded by a diagonal new wing which included the enclosure of what is now the atrium, and was totally renovated, as was Bigelow-Rice. The two buildings were connected via a sheltered walkway. All of the expansion and renovation took place while classes and labs were still being held, thanks to the willingness of faculty and students to move classes and offices as needed and to put up with incessant jackhammering, much dust, and other distractions. Zoology and Botany-Microbiology moved from Bigelow-Rice to the former Stewart Hall in the summer of 2003, enjoying the new facilities, perhaps especially the increased lab space, so that different courses did not have to share a lab during a semester. The now-consolidated Science Library and Mathematics were located in Bigelow-Rice. The dedication of the \$35 million facilities, took place in the fall of 2004. The Science Center is named for its major donors: Paul and Cleo Schimmel and George and Patsy Conrades^{xxii}.

Transition II

Prior to Wendell Patton's retirement in 2000, the department had experienced an extended period of faculty stability. Six of the seven members (Patton, Freed, Fry, Radabaugh, Gatz and Burttt) had each been at OWU for more than 20 years. Wendell's retirement signaled the beginning of a transition to what is now an entirely new department. Up until this time, almost all faculty were themselves graduates of liberal arts colleges; this has now shifted so that a greater proportion are alumni of larger institutions. Coinciding with institutional expectations, faculty are more heavily involved in research, typically providing students opportunities to become involved in ongoing projects either during the academic year or in the summer, the latter thanks at least in part to support from the Summer Science Research Program. These individuals have built upon and significantly extended the existing strengths of the department.

Amy L. Downing

Amy (see Fig. 13) is a Phi Beta Kappa alumna of Lawrence University who received her M.Sc. and Ph.D. from the University of Chicago in Ecology. Following an interim year (Kevin Johnson), she was hired to teach Invertebrate Zoology and Marine Biology. Amy has also taught Animals and Their Environment and, more recently, Organisms and Their Environment, an introductory course cross-listed with Botany-Microbiology which took the place of both Animals and Their Environment and Environmental Plant Biology; this has reduced by one the number of introductory courses required for some of the major sequences in both departments. Shortly after her arrival, she developed a new course in Conservation Biology and, more recently, Biodiversity and Society, a new (currently temporary) introductory course for non-majors. When John Gatz started teaching Human Anatomy in 2016, Amy took over Population and Community Ecology. She has also taught Island Biology.

Amy's research deals with freshwater ecosystems, including the effects of manipulation of the diversity and composition of pond food webs and has been supported by NSF; she has also been involved in a number of international collaborations. Several students have worked with her. Amy has been one of the directors of the OWU Honors Program and is currently Alumni Professor of Zoology. She received the Sherwood Dodge Shankland Award for Encouragement of Teachers in 2007 and the Welch Teaching Award in 2021, the first member of the department to receive both of these accolades.



Fig. 13. Zoology faculty and staff -- 2021, l. to r - Eric Gangloff, Lisa Tabak (Laboratory Coordinator), Danielle Hamill, Laura Tuhela-Reuning (Part-time), Ramon Carreno, Tami Panhuis, Dave Markwardt, Amy Downing

Danielle R. Hamill

When Jim Freed retired in 2001, he was teaching Genetics and the second semester of Human Anatomy and Physiology while Anne Fry was teaching the first semester of Human A & P and Developmental Biology. These were unusual combinations of courses, resulting both from the necessity to have A & P covered when Tom Stege left and interests of the faculty. To offer a position with the much more natural combination of Genetics and Developmental Biology, Anne volunteered to give up teaching the latter and to take on the second semester of A & P.

Danielle Hamill (see Fig. 13), also a Lawrence University graduate (although she and Amy were there at different times), worked as a research assistant before undertaking her Ph.D. in cell biology at the University of Kansas, which she completed with Honors. While there, she also took the Embryology course at the MBL. Danielle then served as a Post-Doctoral Research Associate at the University of Oregon, studying cell division mutants in the nematode, *C. elegans*. At Ohio Wesleyan, she has continued her research on cell division in *C. elegans* and other nematodes, receiving a grant from the National Institutes of Health to support this work. Danielle also was a major contributor to the NSF grant for the scanning laser confocal microscope.

Her courses have included Introduction to Cell Biology, Genetics with the accompanying optional lab, and Developmental Biology. She is currently Professor of Zoology, advises students interested in Physical Therapy, and received the Sherwood Dodge Shankland Award for Encouragement of Teachers in 2009.

Ramon A. Carreno

Ramon was hired in 2002 to teach Parasites and Immunity, which was taught most recently by Wendell Patton. A Canadian, Ramon (see Fig. 13) received his BS from the University of Toronto, an MS from Lakehead University and his Ph.D. from the University of Guelph, all in Ontario. He then served as a postdoctoral researcher, first at Guelph, where he worked on detection methods for *Cryptosporidium*, a protozoan parasite, and later at the University of California – Davis, where he studied the molecular

systematics of nematode parasites of vertebrates. At OWU, Ramon has continued his work on parasitic diseases of wildlife, specifically on the systematics of parasitic nematodes of arthropods, birds and mammals. His research has been supported by an NSF grant and has involved students; he participated in writing the successful grant to NSF for the scanning transmission electron microscope.

In addition to Parasites and Immunity, Ramon has also taught Entomology, Invertebrate, Evolution, Tropical Biology (with David Johnson) and is part of the Island Biology teaching rotation. He has also taught both semesters of the introductory courses. Ramon is currently Professor of Zoology and advises students interested in Veterinary Medicine.

David D. Markwardt

Following Marten Edwards' departure in 2002, the molecular position was filled temporarily by Lucas Koffler. Dave Markwardt (see Fig. 13) joined the faculty in 2003; he received both his BS in Zoology and Ph.D. in Pharmaceutical Sciences from the University of Wisconsin – Madison and was a post-doctoral fellow in Genetics there as well. At OWU, Dave has taught Introduction to Cell Biology, the advanced Cell and Molecular Biology course, Immunology and has recently developed a new introductory course for non-majors on Cancer Biology.

Dave's current research utilizes various molecular techniques to investigate genes that play a role in the formation and function of the cell wall in the fungus, *Saccharomyces cerevisiae*, with the goal of developing more effective anti-fungal drugs. He is a member of the Honors Board, has recently taken over from John Gatz as the Chief Health Professions Advisor, and is the Herbert L. and Margaret Wright DuPont Associate Professor of Zoology. Dave received the Sherwood Dodge Shankland Award for Encouragement of Teachers in 2012.

Sarah M. Leupen

When Anne Fry retired in 2004, the department decided to eliminate the year-long Human Anatomy and Physiology sequence, to replace it with a one-semester Human Physiology class and to add a course in Comparative Physiology. Sarah Leupen, an Oberlin graduate with a major in Neuroscience, a Ph.D. in Neurobiology and Physiology from Northwestern and a Postdoctoral Fellowship in Reproductive Endocrinology from Harvard Medical School was hired. Sarah later added an introductory course in Animal Reproduction for non-majors and also taught Organisms and Their Environment. She left the University in 2010.

Shala J. Hankison

Shala Hankison (see Fig. 14), a 1995 OWU alumna and Zoology major, joined the department in 2008 as the replacement for Denny Radabaugh. She had received an MS from Ohio University, a Ph.D. in Biological Sciences from Clemson University and was a Postdoctoral Associate with Alison Bell at the University of Illinois at Champaign-Urbana. Shala's research focuses on the role of animal behavior as an evolutionary mechanism; she is particularly interested in how sexual selection in fish, especially female mating preferences, help shape population divergence and speciation. Students have been involved in this research.

In addition to Animal Behavior, Shala also teaches Organisms and Their Environment, Evolution, and

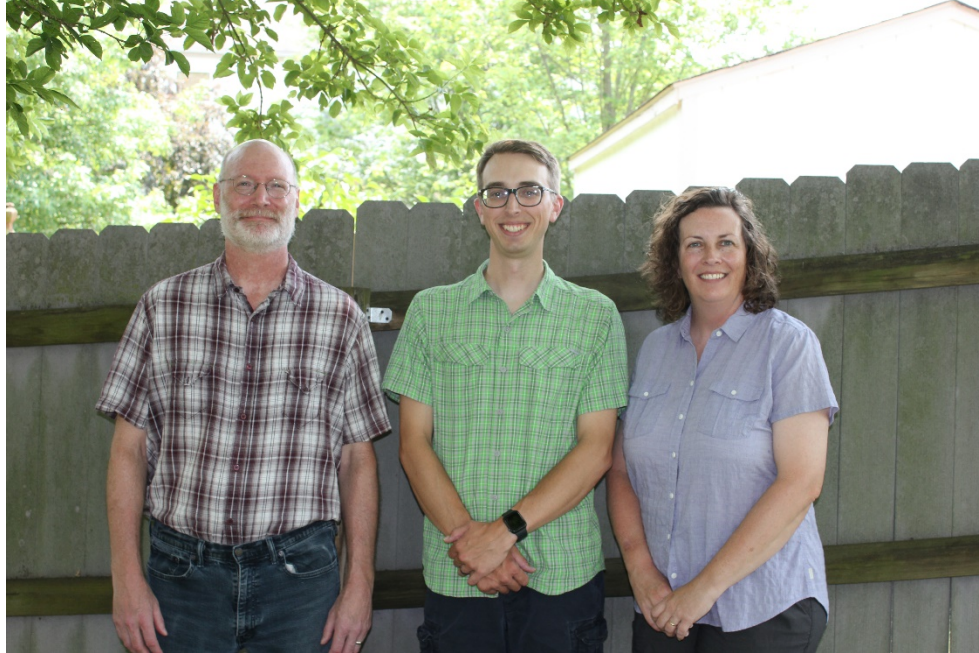


Fig. 14. Zoology faculty and staff -- 2021, II. L to R - Dan Seufert (occasional Part-time and Asst. Lab Coordinator), Dustin Reichard, Shala Hankison

is part of the teaching rotation for Island Biology. She is currently Associate Professor of Zoology and received the Sherwood Dodge Shankland Award for Encouragement of Teachers in 2016.

Tamara M. Panhuis

Following Sally Waterhouse's retirement, Tami Panhuis (see Fig. 13) was hired in 2009 to teach the one-semester Human Anatomy and Physiology course (Dan Seufert (see Fig. 14), taught it in the intervening year) and, a year later following Sarah Leupen's departure, Human Physiology. Subsequently, she has also taught Evolution and is part of the teaching rotation for Island Biology.

Tami received her Bachelor's degree from Maryland in Zoology and Life Sciences and a Ph.D. in Evolutionary Biology from the University of California, Riverside. She subsequently held three Postdoctoral Fellowships at the University of Washington, the University of California-Riverside and the University of North Carolina School of Medicine. Tami's research interest is in the area of evolutionary biology, specifically on the evolution of fish placenta traits; several students have worked in her lab. She is currently Associate Professor of Zoology.

Scott A. Kelly

When Tami Panhuis began teaching Human Physiology in addition to Human Anatomy and Physiology, this left no room in her schedule for Comparative Physiology. Thus, Scott Kelly was hired in 2011. Scott graduated from Drury University with majors in Biology, Chemistry and Environmental Studies and completed an MS in biology from Missouri State University. His Ph.D. from the University of California, Riverside was in biology with an emphasis in exercise and evolutionary physiology. He then completed a Postdoctoral Fellowship at the University of North Carolina, Chapel Hill working on genetic and

environmental determinants of voluntary exercise in mice. This continued to be a major focus of his research.

In addition to Comparative Physiology, now titled Ecological and Evolutionary Physiology, Scott taught Organisms and Their Environment, Human Biology and was part of the teaching rotation for Island Biology. With the addition of a second section of Human Physiology, he also added that course. Scott left OWU in 2020.

Dustin G. Reichard

Following Jed Burt's retirement, Dustin (see Fig. 14) joined the department in 2015, having received his Bachelor's degree from St. Mary's College of Maryland and his Ph.D. from Indiana University in Bloomington. He also completed an NSF Postdoctoral Fellowship at the University of California, Davis and the University of Texas at Austin. In addition to Ornithology, Dustin teaches Organisms and Their Environment, an introductory course in Animal Reproduction, Evolution and a new course in Behavioral Endocrinology.

His research focuses on the evolution of animal communication and sexual selection, with an emphasis on birds. He has utilized Dark-eyed Juncos and House and Carolina Wrens to investigate the structure and function of vocalizations, specifically soft ones used in aggression and courtship and also in female song. A more recent interest focuses on hormonal mechanisms underlying behavior in free-living birds. Students are involved in this research, utilizing over 200 nest boxes in the Delaware area. Currently Dustin is Assistant Professor of Zoology.

Eric J. Gangloff

Eric was hired in 2019 as an Assistant Professor of Zoology following John Gatz's retirement. Eric (see Fig. 13) is a graduate of Cornell, with a Master's from the University of Denver and a Ph.D. from Iowa State. He held a postdoctoral appointment at Iowa State and was most recently a Post-Doctoral Research Fellow at the Station d'Ecologie Théorique et Expérimentale du CNRS in France, where he studied the effects of environmental changes on animals, specifically how alterations in temperature and oxygen availability affect the physiology, performance and reproduction of a species of lizard. Field work, laboratory experiments and molecular techniques are utilized in his studies.

Eric is teaching Human Anatomy and Physiology, Human Anatomy, and a new Herpetology course.

Covid-19 brought significant changes to the teaching of zoology. Following Spring Break in 2020, students did not return to campus and teaching and learning suddenly became totally remote. Faculty and students adapted quickly to finish the semester, with major adjustments made for exams, labs and independent studies. Some exams became open book. Labs varied depending on the specific course, from analysis of provided or previously collected data to preparation of research proposals instead of actual projects to providing film clips or photos of experiments performed by faculty which students then interpreted. Independent studies ended early or, in some cases, were continued by the supervising faculty member with results provided to the student.

The 2020-21 academic year resulted in new challenges, with some classes totally remote but most a combination of many students in-person with a few remote. The latter posed particular issues with respect to labs, as the typical in-person labs in most cases were not suitable for students working

remotely. Also, Covid-19 precautions meant that in-person lab capacity was reduced, leading in some cases to abbreviated sessions with two student cohorts each having a one and a half hour lab rather than the usual three hours. In other instances, the two groups had lab simultaneously in different rooms with the instructor moving back and forth between them. A return to all in-person teaching and learning is much anticipated!

Final Comments

Zoology faculty over the years appear, in general, to have been, or be, very good teachers and contributors to the University. This certainly seems to have been the case for Nelson, E. G. Conklin while he was here and, definitely, Rice. More recently, with the advent of the Welch Teaching Award in 1963 and the Shankland in 1964, the department has been well represented in terms of recipients. Chase, Stull, Fry, Patton, Radabaugh, Burt and Downing have received the former to date and Downing, Hamill, Markwardt and Hankison the latter. Patton and Fry held University Professorships while they existed. Further, Zoology faculty, perhaps disproportionately, have been elected by their peers to major faculty committees such as Governance, Faculty Personnel and Academic Policy (and its successors.) Again, going back to Nelson, faculty have conducted research and published; this has evolved as University expectations have increased, new faculty have held postdoctoral appointments and have received start-up funds to equip a research laboratory. This has also provided increased opportunities for students to gain research experience.

Over at least the last 25 years, Zoology has typically ranked third in terms of number of majors in the University, behind only Economics and Psychology (17). Students have found the department and its courses stimulating and applicable to their varied interests and needs. Many recent alumni have entered graduate and professional schools while others have become secondary school teachers, naturalists, conservation educators, research associates, zookeepers, animal care specialists and Peace Corp volunteers. The department has also appealed to and been supportive of women students, going back to the days of the Female College and following its merger with the University. Certainly Rice, and those who followed, supported women as they pursued graduate and professional degrees as well as other positions in the field. Currently, there are significantly more female majors than male, perhaps due at least in part to the number of female role models in the department.

Zoology at Ohio Wesleyan has had a long and distinguished history. Almost exactly 100 years after it and Botany separated in 1920, resulting from Botanist Claude O'Neal's request (32), they will combine again in 2021 to form a Department of Biological Sciences^{xxiii}. During this 100 years, the focus of biology has shifted from emphasizing the type of organism studied, i.e., microorganisms, plants or animals to levels of organization, e.g., molecules, cells, populations. However, it has also been the case that when these separated departments have combined at other institutions, the focus on animals has tended to dominate while that on plants especially has declined. Hopefully, the new department will find a reasonable balance. And, also hopefully, it will continue to find a way to appeal to those students specifically interested in plants or microbes or animals, a definite strength of the previous arrangement.

Footnotes

ⁱ The focus here is on the college and the Ohio Wesleyan Female College; it excludes the Preparatory Department and other non-college entities.

ⁱⁱ There is some confusion about whether Thomson attended medical school at Jefferson or at the University of Pennsylvania. Thomson's son, in his biography of his father, indicates that it was Jefferson (50). This is confirmed by an Edward Thompson (likely a misspelling) or Thomson, from Wooster, Ohio being listed as a student at Jefferson in 1828-29. No Edward Thomson/Thompson is listed as a student at Penn in the nineteenth century. This information was supplied by Archivists at each institution, Joseph-James Aheern at Penn and Kelsey Duinkerken at Jefferson.

ⁱⁱⁱ Jefferson Medical College is now the Sidney Kimmel Medical College at Thomas Jefferson University.

^{iv} 1850 is frequently cited as the year Merrick received the honorary MD. However, the Starling Medical College Catalog for 1848-49 indicates that this occurred in 1848.

^v Matriculation cards and the Ohio Wesleyan Alumni Directory 1846-1927, record the MLA and MLE graduates of the Female College as having received the BL degree

^{vi} Both Williams (52) and Hubbart (12), in their histories, place the value at \$10,000; however, the basis of this valuation is unclear.

^{vii} In action taken by the faculty at its June 6, 1859 meeting, a recommendation was made to the Trustees that, due to the low price at which Prescott sold the cabinet, it be called "The Prescott Cabinet."

^{viii} Rice (31) suggests that E. G. Conklin was responsible for the acquisition of the Leuckart charts. The charts are first mentioned as a teaching aid in the 1899-1900 University Catalog.

^{ix} While Hubbart (12) appears to have had access to Hayes' report, it seems to have been lost subsequently. It is possible that the impetus for the study may have been the perception, as expressed in the *The Practical Student* of Sept 21, 1893, p 1, "For a long time the impression has been abroad that Ohio Wesleyan was weak in scientific work."

^x Although Conklin is often described as the first Professor of Biology, Nelson actually held this position for the year 1890-91.

^{xi} Many of these assistants went on to earn doctorates and were, themselves, distinguished zoologists/biologists. For example, Harold Heath, 1893, who had several biological drawings on exhibit at the Chicago World's Fair in 1893, completed his Ph.D. with E. G. Conklin at the University of Pennsylvania and was Professor of Zoology at Hopkins Marine Station of Stanford University,

^{xii} Interestingly, Thomas Hunt Morgan, the noted geneticist who worked on fruit flies, was a contemporary of Conklin's in graduate school at Johns Hopkins.

^{xiii} Shaw is included in the list of faculty in the 1896-97 University Catalogue as Assistant in Zoology, but is listed under Biology as Instructor in Zoology. This may be the result of his taking over teaching Nelson's courses following the latter's death.

^{xiv} One of President Bashford's goals was for OWU to become a true university, with post-graduate programs in law, medicine and theology. The only one which came to fruition was medicine. In 1896, Ohio Wesleyan took over the College of Physicians and Surgeons in Cleveland from the then University (now College) of Wooster. While the medical curriculum and faculty were listed in the University catalog and medical students sometimes included in *Le Bijou*, this experiment ended in 1910. The medical school then became affiliated with that of Western Reserve University.

^{xv} As I knew and/or worked with Bill Stull and the faculty following him personally, I am using first or nicknames of these individuals.

^{xvi} At some point, William F. Bigelow's name replaced that of his brother.

^{xvii} The term, genetic engineering, was clearly used by Hotchkiss in his discussion (see p. 40 of Sonneborn's (37) book).

^{xviii} At this time, decisions regarding faculty positions were made administratively, without faculty committee input.

^{xix} Although The Vertebrates, subsequently renamed Vertebrate Anatomy, was offered, this was not sufficient. Human Anatomy had not been taught since the phasing out of the year-long, integrated Human Anatomy and Physiology course (begun when the Nursing program was initiated) in 2004.

^{xx} These grants were funded by the National Institute on Aging and the National Institute of Alcohol Abuse and Alcoholism, both components of the National Institutes of Health (NIH).

^{xxi} The other combined pairs were English and Humanities-Classics and Philosophy and Religion.

^{xxii} The building was originally named the Conrades-Wetherell Science Center; the name was changed to the Schimmel-Conrades Science Center in 2010.

^{xxiii} This merger was decided upon in the summer of 2020.

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Acknowledgments

I would like to thank a number of individuals who contributed in a significant way to this project:

Carol Holliger who, as the Archivist of Ohio United Methodism and my “boss” while volunteering in the Ohio Wesleyan Historical Collection in Beeghly Library, provided invaluable suggestions and encouragement. Later, she kindly scanned the photos and incorporated them into the text.

Eugene Rutigliano, the Curator of the OWU Historical Collection, who was most helpful, patient and accommodating, especially during the pandemic.

David Soliday, Instructional Technologist in Information Services, who patiently helped me learn the basics of the Visio program, which I used for Appendix 3, answered numerous questions and provided significant assistance.

Retired Zoology colleagues Wendell Patton, Dennis Radabaugh and John Gatz who answered my questions as well as providing encouragement, suggestions and interesting anecdotes.

Current zoologists who also kindly answered my questions and provided information, often during the hectic days of Covid-19, and who graciously gathered for group photos during the summer.

Corinne Lyman and Nancy Murray who carefully read the text and made helpful suggestions.

Appendices

Appendix 1

Zoology Full-Time Faculty – Ohio Wesleyan University¹

Frederick Merrick

Professor of Natural Science, 1845-47
Professor of Chemistry and Natural History, 1847-52
AM, Wesleyan
MD, Starling Medical College²

William L. Harris

Professor of Chemistry and Natural History, 1852-60
AM, Ohio Wesleyan

Edward C. Merrick

Tutor in Natural Sciences, 1855-57
AB, AM, Miami

Hiram M. Perkins

Tutor in Natural Sciences, 1857-62
AB, AM, Ohio Wesleyan

Francis S. Hoyt

Professor of Chemistry and Natural History, 1860-64³
Professor of Chemistry and Acting Professor of Natural History, 1864-65
AB, AM, Wesleyan

William O. Semans

Adjunct Professor of Chemistry, Acting Professor of Natural History, 1865-67
Professor of Chemistry, Acting Professor of Natural History, 1867-71
AB, AM, Ohio Wesleyan

Edward T. Nelson

Alumni Professor of Natural History, 1871-90
Alumni Professor of Biology, 1890-91
Alumni Professor of Physiology and Geology, 1891-97
AB, AM, Ohio Wesleyan
AM, Ph.D., Yale
MD, Ohio Medical University²

Clara Conklin

Instructor in Natural Science, History and Rhetoric, 1880-84
MLA, Ohio Wesleyan Female College
AM, Ohio Wesleyan

Edwin Grant Conklin

North Ohio Conference Professor of Biology, 1891-94
BS, AB, AM, Ohio Wesleyan
Ph.D., Johns Hopkins

Maurice A. Bigelow⁴

Instructor in Biology, 1894-95
BS, Ohio Wesleyan

Albert Mann

Professor of Biology, 1895-98⁵
Professor of Botany, 1898-99
AB, AM, Wesleyan
Ph.D., Munich

Charles H. Shaw⁶

Instructor in Zoology, 1896-97

John R. Murlin

Tutor in Physiology and Zoology, 1897-98
BS, Ohio Wesleyan

Edward L. Rice

Professor of Zoology, 1898-1910
Professor of Biology, 1910-12
Professor of Zoology, 1912-17
Cincinnati Conference Professor of Zoology, 1917-18
Cincinnati Conference Professor of Biology, 1918-19
Cincinnati Conference Professor of Zoology, 1919-41
Professor of Zoology, 1942-44⁷
AB, Wesleyan
PhD, Munich

Dana B. Casteel

Instructor in Zoology, 1899-1900
AB, Allegheny

John H. Spohn

Instructor in Zoology, 1900-01
BS, Ohio Wesleyan

William B. Herms

Instructor in Zoology, 1906-07
BS, German (now Baldwin) Wallace
MA, Ohio State

Margaret H. Cole

Instructor in Biology and Geology, 1910-12
BS, Ohio Wesleyan

Dorothy Walters Burton

Instructor in Biology, 1916-17
BA, MS, Ohio Wesleyan

Eugene R. Burton

Instructor in Biology, 1916-17
BA, MS, Ohio Wesleyan

Elva A. Pumphrey

Instructor in Biology, 1919-21
BA, MS, Ohio Wesleyan

Jocelyn Tyler

Instructor in Zoology, 1921-23
BA, Oberlin

Allen C. Conger

Associate Professor of Zoology, 1923-34
Alumni Associate Professor of Zoology, 1934-35
Alumni Professor of Zoology, 1935-53
BS, Ohio Wesleyan
MA, Ohio State

William E. Riecken⁸

Assistant Professor of Botany, 1933-34
BA, MA, Ph.D., Indiana

William F. Hahnert

Assistant Professor of Zoology, 1934-38
Associate Professor of Zoology, 1938-47
Professor of Zoology, 1947-55
Cincinnati Conference Professor of Zoology, 1955-68
BA, DePauw
Ph.D., Johns Hopkins

Frederick A. Waterman

Assistant Professor of Zoology, 1938-39
BS, MA, Ph.D., Ohio State

Nevin S. Scrimshaw

Instructor in Zoology, 1941-42
BA, Ohio Wesleyan
MA, Ph.D., Harvard

Elizabeth U. McCracken⁹

Instructor in Botany and Zoology, 1942-43
BA, Wellesley
MA, Ph.D. California

R. Ruth Richards

Instructor in Biology and Zoology, 1943-45
AB, DePauw
AM, Michigan

William D. Stull

Associate Professor of Zoology, 1945-51
Professor of Zoology, 1951-57
Alumni Professor of Zoology, 1957-77
BS, MS, Middlebury
Ph.D., Maryland

Clifford O. Berg

Assistant Professor of Zoology, 1947-49
Associate Professor of Zoology, 1949-53
BA, Luther
MS, Ph.D., Michigan

Aubrey S. Bradshaw

Associate Professor of Zoology, 1953-73
Professor of Zoology, 1973-75
BA, MA, Kentucky

John N. Chase

Instructor in Zoology, 1956-60
Assistant Professor of Zoology, 1960-63
Associate Professor of Zoology, 1963-66
Professor of Zoology, 1966-77
BA, Ohio Wesleyan
MS, Ph.D., Harvard

Joseph K. Hichar

Assistant Professor of Zoology, 1958-60
BS, Pittsburgh
MS, Penn State
Ph.D., Harvard

Donald E. Smith

Instructor in Zoology, 1960-62
Assistant Professor of Zoology, 1962-67
BS, Bloomsburg State
MS, Ph.D., Ohio State

Wendell K. Patton

Assistant Professor of Zoology, 1962-67
Associate Professor of Zoology, 1967-71
Professor of Zoology, 1971-83
Cincinnati Conference Professor of Zoology, 1983-98
Cincinnati Conference and Ella Fulton Dunham University Professor of Zoology, 1998-2000
AB, Hamilton
MS, Ohio State
Ph.D., University of Queensland

Bangalore S. Vasu

Assistant Professor of Zoology, 1967-68
BA, MA, M.Sc., Madras
Ph.D., Stanford

James M. Freed

Assistant Professor of Zoology, 1969-76
Associate Professor of Zoology, 1976-87
Professor of Zoology, 1987-2000
Cincinnati Conference Professor of Zoology, 2000-01
BS, McPherson
MS, Ph.D., Illinois

Anne E. Fry

Assistant Professor of Zoology, 1969-74
Associate Professor of Zoology, 1974-80
Professor of Zoology, 1980-2000
Helen Whitelaw Jackson University Professor of Zoology, 2000-04
AB, Mount Holyoke
MS, Iowa
Ph.D., Massachusetts (Four College Cooperative Ph.D. Program)

Dennis C. Radabaugh

Assistant Professor of Zoology, 1972-76
Associate Professor of Zoology, 1976-82
Professor of Zoology, 1982-98
Alumni Professor of Zoology, 1998-2008
BA, Albion
MS, Ph.D., Ohio State

A. John Gatz

Assistant Professor of Zoology, 1975-82
Associate Professor of Zoology, 1982-86
Professor of Zoology, 1986-2008
Albert M. Austin Professor of Natural Sciences, 2008-19
AB, Dickinson
Ph.D., Duke

Thomas E. Stege

Assistant Professor of Zoology, 1976-83
BA, Denison
M.Ed., Ohio University
Ph.D., Tulane University School of Medicine

Edward H. Burt

Assistant Professor of Zoology, 1977-83
Associate Professor of Zoology, 1983-86
Professor of Zoology, 1986-2001
Cincinnati Conference Professor of Zoology, 2001-14
AB, Bowdoin
MS, Ph.D., Wisconsin

Carol A. Park

Assistant Professor of Zoology, 1993-99
BS, Kent State
MS, Ph.D., Ohio State

Marten J. Edwards

Assistant Professor of Zoology, 1999-2002
BA, Reed
Ph.D., Arizona

Kevin B. Johnson

Assistant Professor of Zoology, 2000-01
BS, Brigham Young
Ph.D. Oregon

Amy L. Downing

Assistant Professor of Zoology, 2001-05
Associate Professor of Zoology, 2005-08
Alumni Associate Professor of Zoology, 2008-10
Alumni Professor of Zoology, 2010-
BA, Lawrence
M.Sc., Ph.D., Chicago

Danielle Hamill

Assistant Professor of Zoology, 2001-06
Associate Professor of Zoology, 2006-12
Professor of Zoology, 2012-
BA Lawrence
Ph.D. Kansas

Ramon A. Carreno

Assistant Professor of Zoology, 2002-07
Associate Professor of Zoology, 2007-16
Professor of Zoology, 2016-
BS, Toronto
MS, Lakehead
Ph.D., Guelph

Lucas D. Koffler

Assistant Professor of Zoology, 2002-03
BS, John Carroll
Ph.D., University of Toledo College of Medicine

David D. Markwardt

Assistant Professor of Zoology, 2003-12
Associate Professor of Zoology, 2012-17
Herbert L. and Margaret Wright DuPont Associate Professor of Zoology, 2017-
BS, Ph.D., Wisconsin

Sarah M. Leupen

Assistant Professor of Zoology, 2004-10
BA, Oberlin
Ph.D., Northwestern

Shala J. Hankison

Assistant Professor of Zoology, 2009 (Spring)-2016
Associate Professor of Zoology, 2016-
BA, Ohio Wesleyan
MS, Ohio University
Ph.D., Clemson

Tamara M. Panhuis

Assistant Professor of Zoology, 2009-16
Associate Professor of Zoology, 2016-
BS, Maryland
Ph.D., California, Riverside

Scott A. Kelly

Assistant Professor of Zoology, 2011-2020
BA, Drury
MS, Missouri State
Ph.D., California, Riverside

Dustin G. Reichard

Assistant Professor of Zoology, 2015-
BA, St. Mary's College of Maryland
Ph.D., Indiana, Bloomington

Eric J. Gangloff
Assistant Professor of Zoology, 2019-
BA, Cornell
MA, Denver
Ph.D. Iowa State

¹ Source: Ohio Wesleyan University Catalogs.

² Other honorary degrees for faculty not included.

³ Absent 1860-61.

⁴ Included in list of faculty for year in Faculty Meeting Minutes for 1894-95, but not in Catalog.

⁵ Listed in Catalog of 1894-95 and in *The Ohio Wesleyan Alumni Directory, 1846-1927* as being on the faculty in 1894, but included in list of faculty in Faculty Meeting Minutes starting in 1895. Rice, in his history also indicates his starting in 1895.

⁶ Included in list of faculty in 1897 Catalog as Assistant in Zoology, but under Biology is listed as Instructor in Zoology.

⁷ Returned to faculty during WW II following retirement in 1941.

⁸ Although appointment listed in Botany Department, also taught Zoology courses.

⁹ Unclear whether she was here for this year only or for 1943-44 as well.

Appendix 2

Full Time Faculty Teaching Zoology Courses¹
(Excludes Visiting and Adjunct Appointments and Botany-Microbiology Faculty Teaching Cross-Listed Courses)

1844-45	Unfilled		
1845-52	F. Merrick		
1852-55	Harris		
1855-57	Harris	E. C. Merrick (T) ²	
1857-60	Harris	Perkins (T) ²	
1860-62	Hoyt ³	Perkins (T) ²	
1862-65	Hoyt		
1865-71	Semans		
1871-80	Nelson		
1880-84	Nelson	C. Conklin	
1884-91	Nelson		
1891-94	Nelson	E. G. Conklin	
1894-95	Nelson	Bigelow ⁴	
1895-96	Nelson	Mann ⁵	
1896-97	Nelson	Mann	Shaw ⁶

1897-98	Mann	Murlin (T) ²		
1898-99	Mann	Rice		
1899-00	Rice	Casteel		
1900-01	Rice	Spohn		
1901-06	Rice			
1906-07	Rice	Herms		
1907-10	Rice			
1910-12	Rice	Cole		
1912-16	Rice			
1916-17	Rice	D. Burton	E. Burton	
1917-19	Rice			
1919-21	Rice	Pumphrey		
1921-23	Rice	Tyler		
1923-33	Rice	Conger		
1933-34	Rice	Conger	Riecken ⁷	
1934-38	Rice	Conger	Hahnert	
1938-39	Rice	Conger	Hahnert	Waterman

1939-41	Rice	Conger	Hahnert				
1941-42	Conger	Hahnert	Scrimshaw				
1942-43	Rice ⁸	Conger	Hahnert	McCracken ⁹			
1943-44	Rice ⁸	Conger	Hahnert	Richards			
1944-45	Conger	Hahnert	Richards				
1945-47	Conger	Hahnert	Stull				
1947-53	Conger	Hahnert	Stull	Berg			
1953-56	Hahnert	Stull	Bradshaw				
1956-58	Hahnert	Stull	Bradshaw	Chase			
1958-60	Hahnert	Stull	Bradshaw	Chase	Hichar		
1960-62	Hahnert	Stull	Bradshaw	Chase	Smith		
1962-67	Hahnert	Stull	Bradshaw	Chase	Smith	Patton	
1967-68	Hahnert	Stull	Bradshaw	Chase	Patton	Vasu	
1968-69	Stull	Bradshaw	Chase	Patton			
1969-72	Stull	Bradshaw	Chase	Patton	Freed	Fry	
1972-75	Stull	Bradshaw	Chase	Patton	Freed	Fry	Radabaugh

1975-76	Stull	Patton	Freed	Fry	Radabaugh	Gatz			
1976-77	Stull	Patton	Freed	Fry	Radabaugh	Gatz	Stege		
1977-83	Patton	Freed	Fry	Radabaugh	Gatz	Stege	Burt		
1983-93	Patton	Freed	Fry	Radabaugh	Gatz	Burt			
1993-99	Patton	Freed	Fry	Radabaugh	Gatz	Burt	Park		
1999-00	Patton	Freed	Fry	Radabaugh	Gatz	Burt	Edwards		
2000-01	Freed	Fry	Radabaugh	Gatz	Burt	Edwards	Johnson		
2001-02	Fry	Radabaugh	Gatz	Burt	Edwards	Downing	Hamill		
2002-03	Fry	Radabaugh	Gatz	Burt	Downing	Hamill	Carreno	Koffler	
2003-04	Fry	Radabaugh	Gatz	Burt	Downing	Hamill	Carreno	Markwardt	
2004-08	Radabaugh	Gatz	Burt	Downing	Hamill	Carreno	Markwardt	Leupen	
2008-09	Gatz	Burt	Downing	Hamill	Carreno	Markwardt	Leupen	Hankison	
2009-10	Gatz	Burt	Downing	Hamill	Carreno	Markwardt	Leupen	Hankison	Panhuis
2010-11	Gatz	Burt	Downing	Hamill	Carreno	Markwardt	Hankison	Panhuis	
2011-14	Gatz	Burt	Downing	Hamill	Carreno	Markwardt	Hankison	Panhuis	Kelly
2014-15	Gatz	Downing	Hamill	Carreno	Markwardt	Hankison	Panhuis	Kelly	
2015-19	Gatz	Downing	Hamill	Carreno	Markwardt	Hankison	Panhuis	Kelly	Reichard

2019-20	Downing	Hamill	Carreno	Markwardt	Hankison	Panhuis	Kelly	Reichard	Gangloff
2020-	Downing	Hamill	Carreno	Markwardt	Hankison	Panhuis	Reichard	Gangloff	

¹ Source: Ohio Wesleyan University Catalogs.

² (T) = Tutor.

³ Absent for 1860-61.

⁴ Included in list of faculty for year in Faculty Meeting Minutes for 1894-95, but not in Catalog.

⁵ Listed in Catalog of 1894-95 and in *The Ohio Wesleyan University Alumni Directory, 1846-1927* as being on the faculty in 1894, but included in List of faculty in Faculty Meeting Minutes starting in 1895. Rice, in his history, also indicates his starting in 1895.

⁶ Included in list of faculty in 1897 Catalog as Assistant in Zoology, but under Biology is listed as Instructor in Zoology.

⁷ Although appointment is listed in Botany Department, he also taught Zoology course(s).

⁸ Returned to faculty during WW II, following retirement in 1941.

⁹ Unclear whether she was here for this year only or for 1943-44 as well.

Appendix 3a. Development and Evolution of Zoology Courses Listed in University Catalogs: 1844 – 2021

This appendix includes primarily permanent courses as temporary offerings were not listed in catalogs until very recently. It includes those offered for various credits, e.g., from 0.25 to 1.25. Courses listed under Zoology may also be cross-listed in another department(s). Recently, a few courses, taught at least in part by zoologists, are listed under a Biology heading. Dates are approximate.

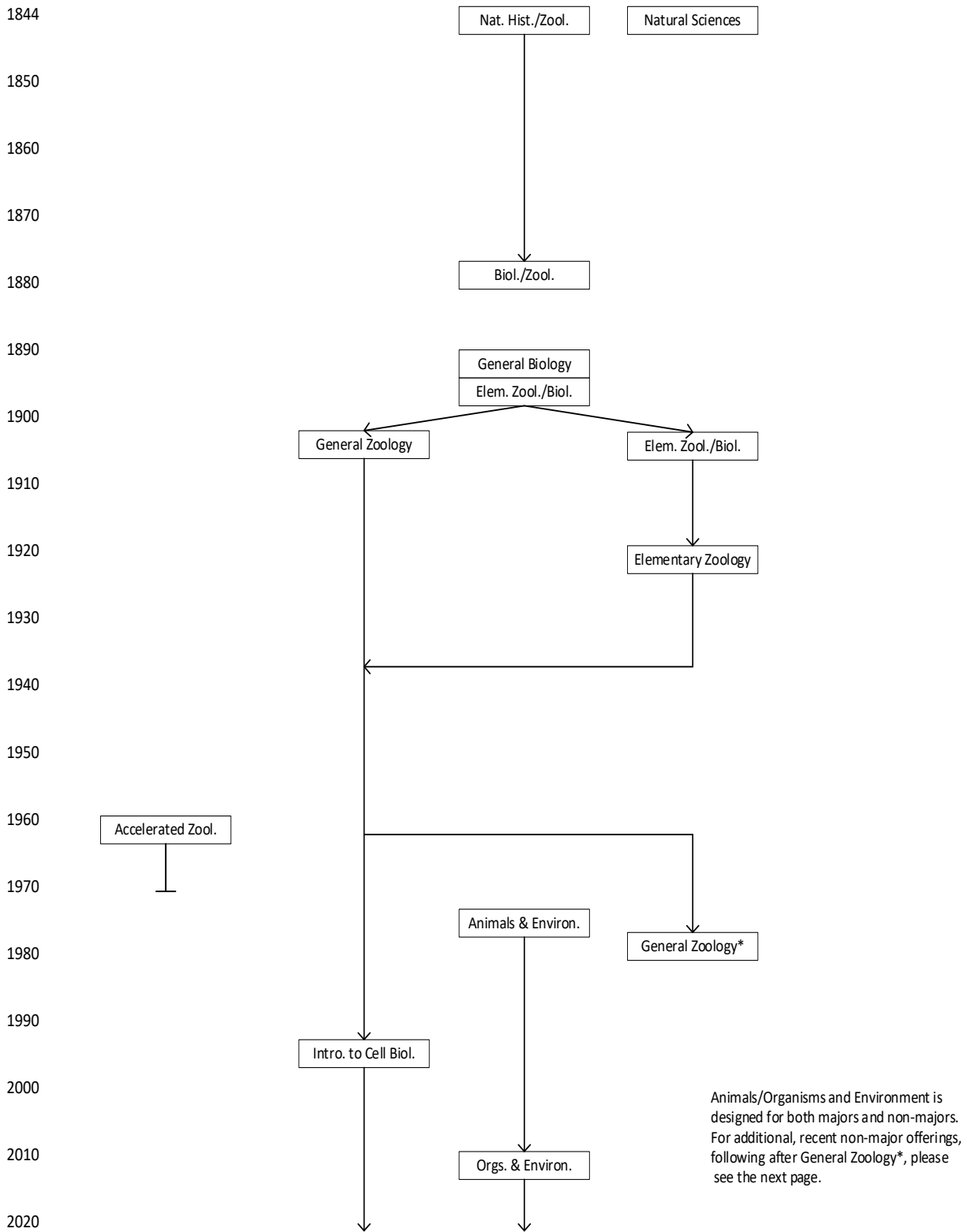
Listing of a course in a catalog does not mean it was actually taught; a few remained in catalogs for some years after last being offered.

In catalogs from 1844 to 1871, only course titles are provided, sometimes with the last name of the author of the textbook used; from 1872 to 1893, general course descriptions are provided under the department heading. This made it particularly difficult to determine the focus of early physiology courses, e.g., vertebrate, human, comparative.

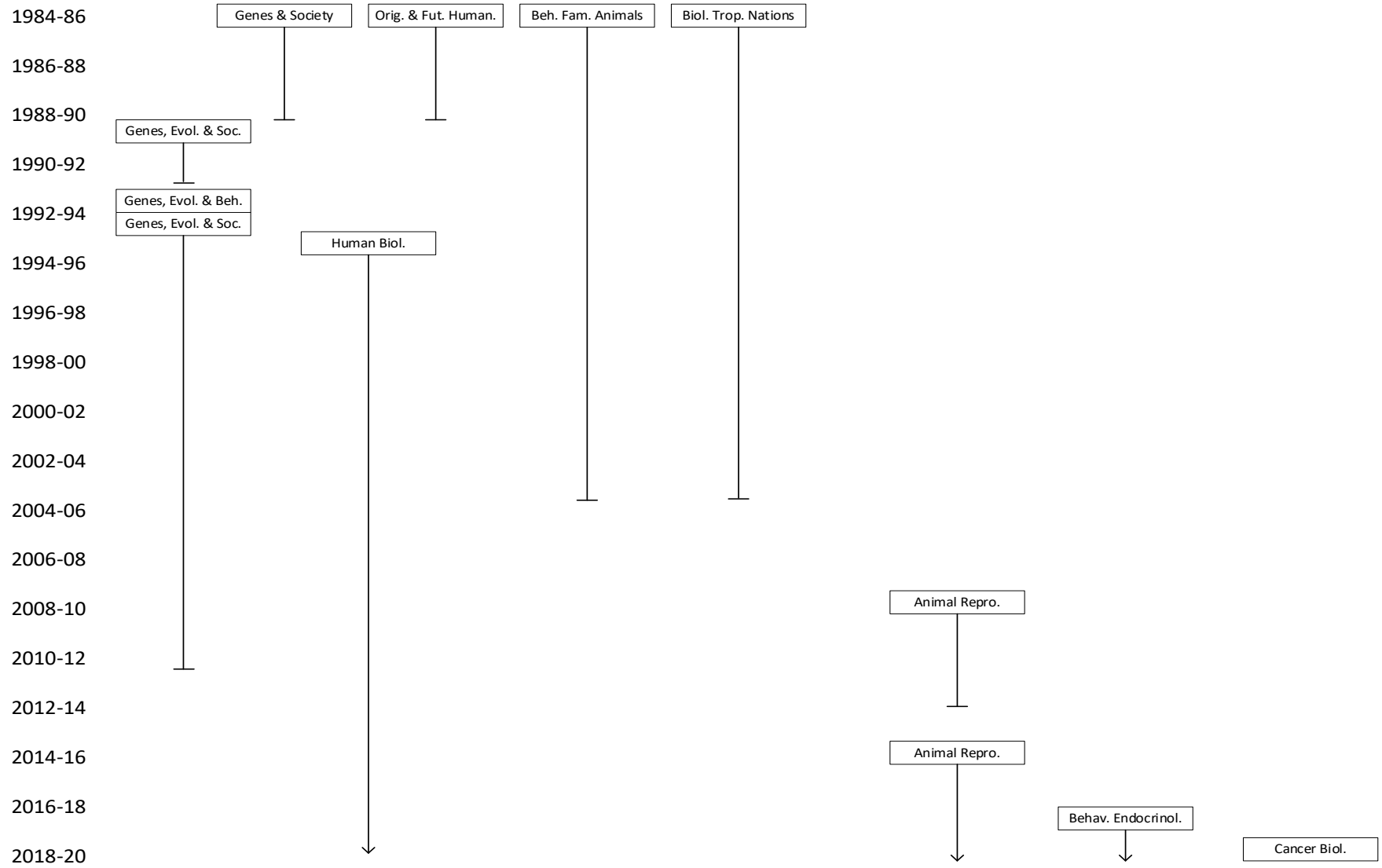
Changes in the titles of ongoing courses which existed for a year or two are typically not reflected here.

Some courses are not included. Among these are: independent studies, honors research, directed readings and seminars, many of which have had various titles and iterations over the years.

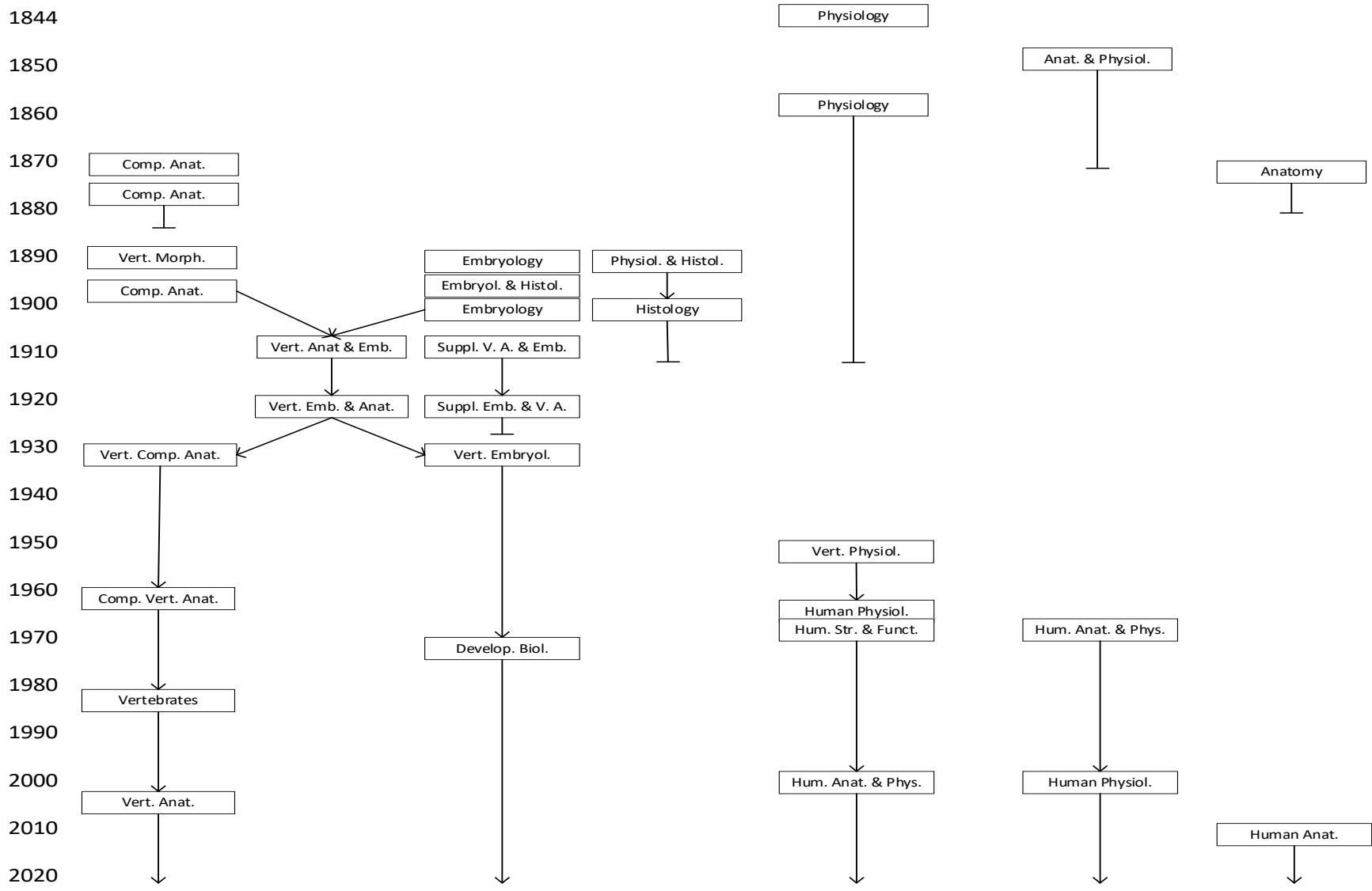
Appendix 3b. Development and Evolution of Introductory Zoology Courses (see 3a for comments.)



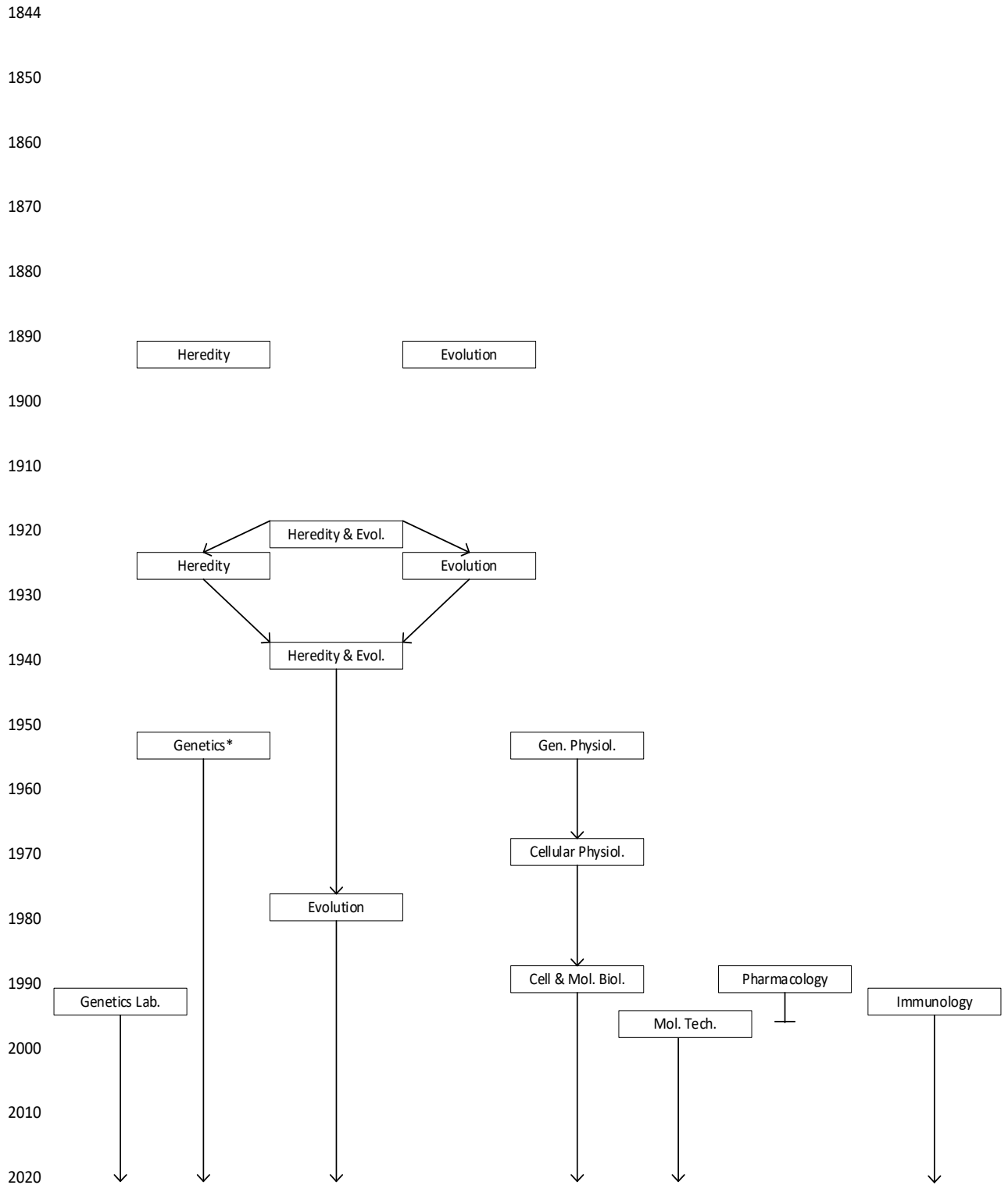
Appendix 3b, cont. Development and Evolution of Introductory Zoology Courses (see 3a for comments). Note change in scale.



Appendix 3c. Development and Evolution of Anatomy, Human Physiology, Developmental Biology and related Courses (see 3a for comments.)

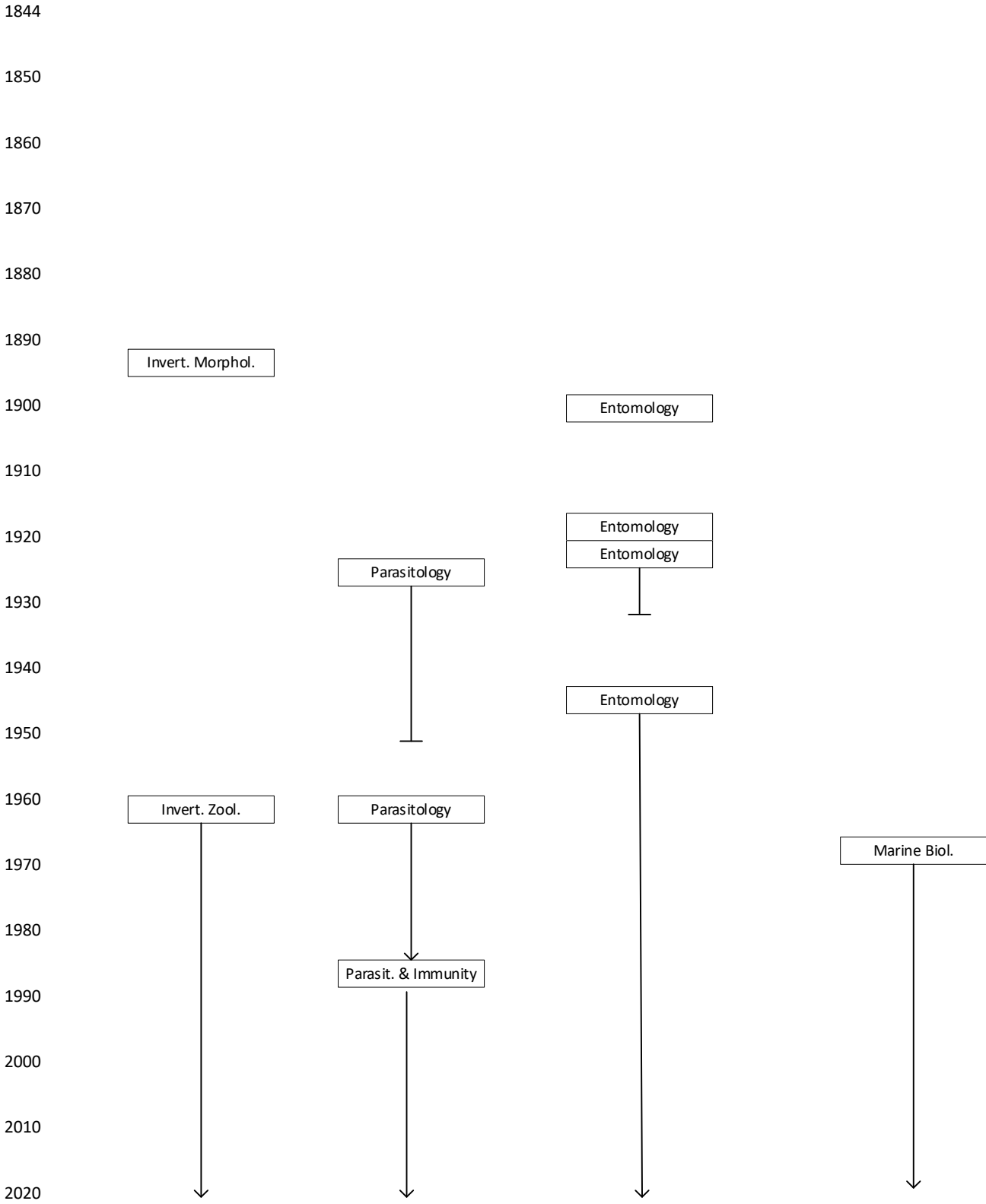


Appendix 3d. Development and Evolution of Genetics, Evolution, Cell and Molecular, Immunology and Related Courses (see 3a for comments.)

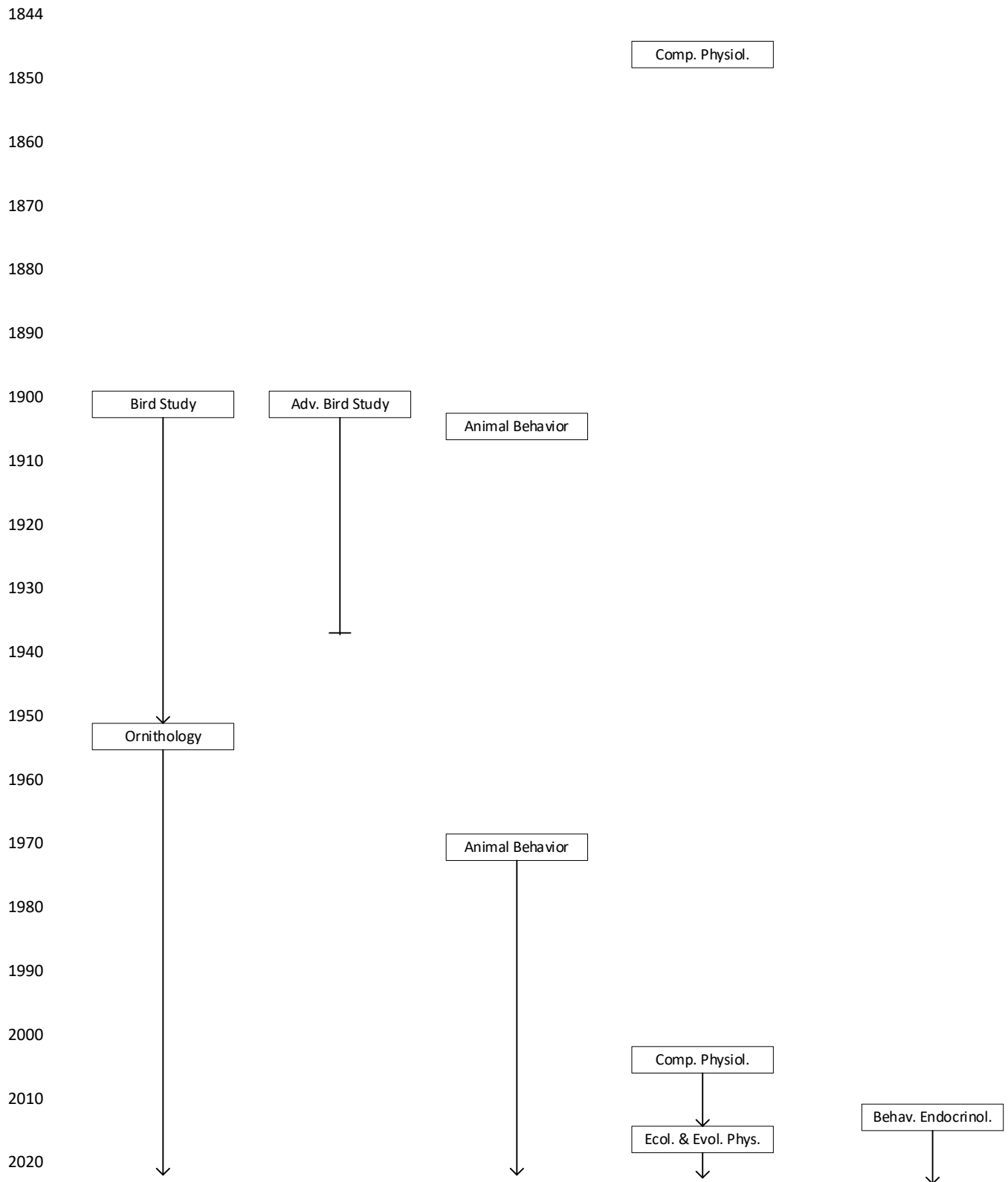


* Genetics was taught by a botanist as a Botany course from 1956-81; by a zoologist, cross-listed in both departments, from 1982-2008 and by members of both departments beginning in 2009.

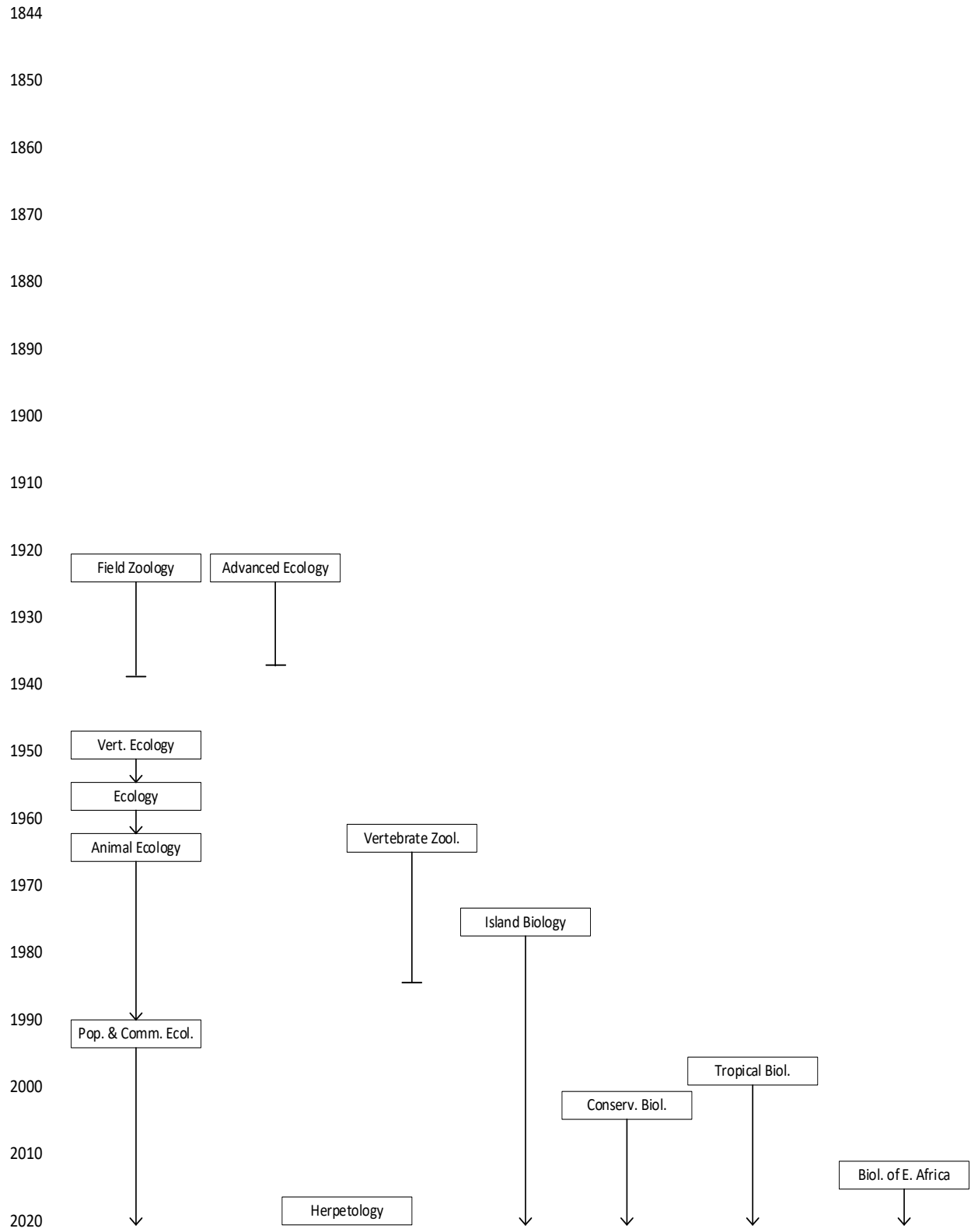
Appendix 3e. Development and Evolution of Invertebrate, Parasitology, Entomology and Marine Biology Courses (see 3a for comments.)



Appendix 3f. Development and Evolution of Ornithology, Animal Behavior, Comparative Physiology and Behavioral Endocrinology Courses (see 3a for comments.)



Appendix 3g. Development and Evolution of Ecology, Island Biology, Tropical Biology, Conservation Biology and Related Zoology Courses (see 3a for comments.)



Appendix 3h. Development and Evolution of Zoological Methods, Experimental Zoology and Electron Microscopy Courses (see 3a for comments.)

1844

1850

1860

1870

1880

1890

1900

1910

1920

1930

1940

1950

Zool. Methods

1960

Exper. Zoology

1970

1980

1990

2000

Electron Microscopy

2010

2020

Appendix 3i. Zoology Courses Offered for Five Years or Less (except as part of an ongoing sequence or initiated recently.)

<u>Course Name</u>	<u>Years Offered</u>
Conchology	1861-63
Microscopy	1884-89
Hygiene	1893-96
Economic Zoology	1926-29

Appendix 4

Comparison of Classical (4 Yr) (listed below) and Scientific (2 Yr) (italics) Courses, OWU – 1851-52¹

First Term

Comparative Physiology
Algebra, commenced
 Homer's Iliad, (six books)
 Greek Exercises
 Mythology, (weekly)
 Virgil's Aeneid, (six books)
 Latin Exercises, (Second Part)

Second Term

Zoology
Algebra, completed
 Herodotus
 Greek Antiquities, (weekly)
 Horace, Odes and Epodes

Third Term

Meteorology, Botany
Geometry, Plane and Solid
 Herodotus, continued
 Livy
 Roman Antiquities (weekly)

Freshman Year

Sophomore Year

Chemistry, (imponderables)
Application of Algebra to Geometry
Trigonometry
Mensuration and Surveying
 Xenophon's Memorabilia
 Cicero De Officiis
 Archeology of Lit. and Art (weekly)

} (one
 recitation)

Chemistry continued
Analytical Geometry
 Thucydides
 Cicero De Oratore (elective)
 History of Greek Lit. (weekly)

Mineralogy and Geology
Analytical Geometry completed (elective)
 Thucydides continued
 Tacitus' Histories
 History of Roman Lit. (weekly)

Junior Year

Political Economy
Natural Theology
 Calculus (elective)
 Aeschylus' Prometheus
 Euripides' Alcestis

} (one
 recitation)

Political Science
 History of the Bible
 Mechanics
 Cicero De Natura Deorum (elective)

*Natural Philosophy*²
Moral Science
*Astronomy*²
 Sophocles' Antigone or Electra,
 Plautus' Captives

} (one recita-
 tion, elective)

Senior Year

Mental Philosophy, Vol. I

Mental Philosophy, Vol. II

History of Philosophy
Logic
Elements of Criticism

Analogy of Religion
English Language
Plato's Gorgias

Evidences of Christianity

Rhetoric

Horace: Epistles to Augustus and to
the Pisos

*Ancient Geography and History*³

*Medieval Geography and History*³

*Modern Geography and History*³

¹ Source: Catalogue of the Officers and Students of the Ohio Wesleyan University for the Academical Year 1851-52.

² In Scientific Course, these are prefaced as School, e.g., School Natural Philosophy; however, the same text books are used in both courses.

³ Required for the Scientific Course, but are part of the Preparatory Department curriculum.

In every term of the Classical Course there is a weekly recitation in the Greek Testament, including: Matthew, Mark, Luke, John, Acts, Catholic Epistles and Paul's Personal and Church Epistles.

Appendix 5

Comparison of Classical and Scientific (4 Yr) Courses, OWU – 1868-69¹

(Courses common to both curricula indicated in bold; those only in Classical Course in plain type; those only in Scientific Course in italics; text author by ())

<u>First Term</u>	<u>Second Term</u>	<u>Third Term</u>
Freshman Year		
Greek – Xenophon’s Anabasis; Greek Grammar; Greek Antiquities (Fisk)	Greek – Xenophon’s Anabasis, cont.; Prose Composition (Arnold)	Greek – Xenophon’s Anabasis, completed; Prose Composition
Latin – Caesar (Stuart); Latin Grammar	Latin – Virgil’s Aeneid, commenced; Prose Composition (Arnold); Roman Antiquities (Fiske)	Latin – Virgil’s Aeneid, completed; Prose Composition
History – Sacred (Kurtz); Ancient (Weber)	History – Sacred (Kurtz); Medieval (Weber)	History – Sacred (Kurtz); Modern (Weber)
Mathematics – Algebra, completed (Loomis)	Mathematics – Geometry, commenced (Davies)	Mathematics – Geometry, completed
Elocution	Rhetorical Exercises	Rhetorical Exercises
	<i>Eng. Lang., - Course of Composition and Rhetoric</i> (Quackenbos)	<i>Eng. Lang., – Course of Composition and Rhetoric</i>
<i>Latin – Intro. Latin Book</i> (Harkness)	<i>Latin – Intro. Latin Book, cont; Latin Reader and Latin Grammar</i>	<i>Latin – Latin Reader and Grammar</i> (Harkness); <i>Caesar’s Commentaries</i>
<i>Geography – Ancient Geography</i> (Fiske)	<i>Chronology – Classical Chronology</i>	
<i>Commercial Studies, optional</i>		
Sophomore Year		
Philosophy – Constitution of the United States (Story)	Philosophy – Political Economy (Wayland)	
Latin – Horace’s Odes; Prose Composition		
Mathematics – Trigonometry (Davies)		Mathematics – Analytical Geometry (Loomis); Mensuration and Surveying (Davies)
Chemistry – Chemistry, commenced	Chemistry – Chemistry, completed	Greek – Xenophon’s Memorabilia; Prose Composition
	Greek – Xenophon’s Memorabilia; Prose Composition	Botany – Lessons and Manual (Gray)
	Physiology – Physiology (Huxley)	<i>Geography – Physical Geography</i> (Mitchell)
	<i>Anatomy and Physiology – Physiology</i> (Huxley)	
Elective	Elective	Elective
Hebrew – Hebrew Grammar (Green)	Hebrew – Grammar; Genesis, commenced	Hebrew – Genesis, cont.
German – Grammar, commenced	German – Grammar and Reading	German – Adler’s Progressive Reader
French – Grammar, commenced	French – Grammar and Reading	French – Montesquieu
Greek – Herodotus (Johnson); Prose Composition	Latin – Horace’s Epodes; Prose Composition	Latin – Cicero de Oratore; Prose Composition
		Chemistry – Analytical Chemistry
<i>French, German, or Latin</i>	<i>French, German, or Latin</i>	<i>French, German or Latin</i>

Junior Year

Philosophy – Mental Philosophy (Haven)

English – English Language (Fowler)

Latin – Tacitus' History

Mathematics – Calculus (Loomis)

Elective

Greek – Homer's Iliad

Hebrew – Historical Books

French – Pascal

German – Schiller's Wilhelm Tell

Mathematics – Calculus (Loomis)

French, German or Analytical Chemistry

**Philosophy – Mental Philosophy, Natural
Theology (Lectures)**

**Physics – Mechanics, Hydrodynamics and
Pneumatics** (Olmstead)

Greek – Plato's Apology and Crito

Elective

Latin – Plautus' Captives

Hebrew – Psalms and Prophets

French – Racine

German – Goethe's Iphigenie

French, German, Anal. Chem., or Mineralogy

Philosophy – Moral Philosophy (Wayland)

Latin – Quintilian

Physics – Acoustics and Optics (Olmstead)

Zoology – Manual of Zoology (Tenny)

Elective

Greek – A Greek Tragedy

Hebrew – Prophets, continued

French – Siecle de Louis XIV

German – Goethe's Faust

Chemistry – Analytical Chemistry

French, German, Anal. Chem., or Mineralogy

Senior Year

Philosophy – Logic (Whately); **Analogy of
of Religion** (Butler)

Geology – Geology (Dana)

Law – History of the English Constitution

Geology – Manual of Geology, commenced (Dana)

Elective

Law – Hist of the English Constitution

Biblical – Criticism, Interpretation (Angus)

Philosophy – Rhetoric (Whately)

Latin – Juvenal's Satires

Geology – Manual of Geology, completed

Mathematics – Astronomy (Loomis), *Civil Engineering*

Elective

Law – Intro. To American Law (Walker)

Biblical – Archaeology, Exegesis

**Philosophy – History of Philosophy (Lectures);
Evidences of Christianity** (Hopkins);
Elements of Criticism (Kames)

Law – International Law (Woolsey)

Mathematics – Civil Engineering

Chemistry – Agricultural Chemistry

Elective

Biblical – Anal. of Books of the Scriptures; Exegesis

Greek – A Greek Drama

¹ Source: Catalogue of the Ohio Wesleyan University for the Academical Year 1868-1869

Appendix 6

Comparison of Classical (4 Yr) and Scientific (3 Yr) Courses, Ohio Wesleyan Female College (OWFC) – 1868-69¹
 (Courses common to both curricula indicated in bold; those only in Classical Course in plain type; those only in Scientific Course in italics; text author by ())

First Term

Second Term

Third Term

First Year

Mathematics – Algebra, University, (Davies)

Mathematics – Algebra, University, completed/
finished, (Davies)

Mathematics – Book-Keeping, (Mahew)

English Language – Course of Composition (Quackenbos)

**English Language – Analysis of Milton’s
Paradise Lost** (Boyd);
General History, Ancient,
(Wilson)

English – General History, Modern, (Wilson)

Latin – Caesar, (Anthon)

Latin – Nepos, (Anthon)

Latin – Virgil, (Anthon)

Modern Languages – French Grammar, (Fasquelle)

Modern Languages – French Grammar, (Fasquelle)

Modern Languages – French Grammar and
Reader, (Fasquelle)

Natural Science – Anatomy and Physiology, (Loomis)

Natural Science – Natural Philosophy, (Peck’s
Ganot)

Natural Science – Botany – How Plants Grow,
(Gray)

Second Year

Natural Science – Astronomy, (14 weeks), (Steel); Anatomy
and Physiology, (Loomis); *Chemistry*,
(Porter)

Natural Science – Natural Philosophy, (Peck’s
Ganot); *Physical Geography*,
(Fitch)

Natural Science – Natural History, (Hooker);
*Botany, School and Field
Book*, (Gray)

Latin – Virgil, (Anthon)

Latin – Cicero, (Bullion)

Latin – Livy, (Lincoln)

Modern Languages – French, Dumas’ Napoleon,
(Fasquelle)

Modern Languages – French, De Stael’s Corinne
and Conversation,
(Fasquelle)

Modern Languages – German Grammar,
(Woodbury)

Mathematics – Geometry, Plane, (Davies)

English – General History, Ancient, (Wilson)
Mathematics – Geometry, Solid, (Davies)
Drawing
Belles-Lettres – (Quackenbos)

English – General History, Modern, (Wilson)
Mathematics – Trigonometry, (Davies)
Perspective

Third Year

Mathematics – Geometry, Plane, (Davies)
Natural Science – Chemistry, (Porter)

Modern Languages – French, Racine, (Fasquelle);
German Grammar, (Woodbury)

*Philosophy – Mental Philosophy, (Haven); Analogy
of Religion, (Butler)*

*English Language – History of English Literature,
(Shaw)*

Oil Painting

Mathematics - Geometry, Solid, (Davies)
Natural Science - Physical Geography, (Fitch)

Modern Languages – German, Adler’s Progressive
Reader and Conversation

Belles-Lettres – Rhetoric, (Quackenbos)
*Philosophy – Mental Philosophy, (Haven);
Evidences of Christianity, (Paley);
Moral Science, (Haven)*

Drawing

Mathematics – Trigonometry, (Davies)
Natural Science – Botany, School Field-Book,
(Gray); *Geology, (Dana);
Household Science, (Youman)*
Modern Languages – Schiller’s William Tell and
Conversation

Philosophy – Logic, (Whately)

Perspective
Review of studies of the year

Fourth Year

Philosophy – Mental Philosophy, commenced,
(Haven); Analogy of Religion, (Butler)

English Language – History of English Literature,
(Shaw)

Latin – Horace, (Anthon)

Philosophy – Mental Philosophy, completed,
(Haven); Evidences of Christianity,
(Paley); Moral Science, (Haven)

Philosophy – Logic, (Whately)

Natural Science – Geology, (Dana); Household
Science, (Youman)
Review of studies of the year

¹ Source: Catalogue of the Ohio Wesleyan Female College 1868-69 (check)

Appendix 7

Natural Science Faculty – Ohio Wesleyan Female College¹

William Smith, AB

Professor of Natural Science and Mathematics, 1853-57

Ralph Hills, MD

Lecturer on Physiology and Hygiene, 1853-54

William Smith, AB, AM

Professor of Natural Science and Mathematics, 1857-58

Rev. George Mather, AB

Professor of Natural Science and Mathematics, 1858-60

Rev. George Mather, AB, AM

Professor of Natural Science and Mathematics, 1860-62

William O. Semans, AB, MA

Professor of Natural Science and Mathematics, 1862-65

Caroline Barkdull, MLA

Assistant in Mathematics and Natural Science, 1863-66

Rev. Lewis M. Albright, AM

Professor of Natural Science and Mathematics, 1865-70

Edward Merrick, AM

Assistant in Natural Science and Mathematics, 1866-67

Mrs. E. L. Albright²

Assistant in Natural Science and Mathematics, 1867-69

Angela R. Houghton

Assistant in Natural Science and Mathematics, 1868-69

Almon S. P. Newton, AB, AM

Professor of Natural Science and Latin, 1871-72

Rev. John P. Patterson, AM

Professor of Natural Science, 1872-75

Lucy Herron Parker, AB, AM

Mental Philosophy and Natural Science (no rank given), 1875-76

T. Annette Phelps, MLA

Assistant in Mathematics and Natural Science, 1869-70

Teacher of Mathematics and Natural Science, 1870-71

¹ Sources: Annual Catalogues of the Ohio Wesleyan Female College and Fifty Years of History of the Ohio Wesleyan University, Delaware Ohio, 1844-1894, E. T. Nelson, ed. Institutions awarding degrees not indicated.

² The appropriate Catalogues give her name as Mrs. E. L. Albright. Nelson, in his history of OWU, lists her name as Emma L. Albright. However, several sources indicate she was the wife of Rev. Lewis M. Albright. His (only) wife's name was Eliza D. Albright; her obituary in the West Ohio Conference Journal of 1925 gives her name Eliza Downing Albright. Thus, there appear to be errors concerning her name in the pertinent Catalogues and in Nelson's book.

Appendix 8

Assistants/Fellows in Zoology and Related Areas¹

Edgar A. Bedford, 1895 Assistant in Biology, 1891-92 Assistant in Zoology, 1892-93	Ralph A. Bowdle, x1907 ² Assistant in Physiology and Histology, 1904-05
Harold Heath, 1893 Assistant in Zoology, 1892-93	John D. Roads, 1906 Assistant in German and Zoology, 1905-06
Maurice A. Bigelow, 1894 Assistant in Biology, 1892-93	George S. Irwin, 1906 Assistant in Zoology, 1905-06
Charles C. Berlin, 1895 Assistant in Histology, 1893-95	Howard H. Jewett, 1907 Assistant in Zoology, 1905-07
Frank Montgomery, 1896 Assistant in Biology, 1895-96	Don D. Shira, x1909 ² Assistant in Zoology, 1906-07
Hollis A. Wilbur, 1896 Assistant in Histology, 1895-96	Karl D. Figley, 1908 Assistant in Zoology, 1907-08
Charles H. Shaw, 1897 ³ Assistant in Biology, 1896-97	Allen C. Conger, 1908 Assistant in Zoology, 1907-08
John R. Murlin, 1897 Assistant in Physiology, 1896-97	Henry V. Lacy, 1908 Assistant in Zoology, 1907-08
Jacob J. Coons, 1898 Assistant in Zoology, 1897-98	Joseph I. Taggart, 1909 Assistant in Zoology, 1908-09
Ernest L. Scott, 1902 Assistant in Zoology, 1901-02	John N. Hollister, 1911 Assistant in Zoology, 1908-11
Charles M. Austin, 1903 Assistant in Zoology, 1902-03	Frank T. Cartwright, 1911 Assistant in Zoology, 1908-09 (possibly -11)
J. Albert Zartmann, 1904 Assistant in Zoology, 1903-04	Clarence L. Turner, BA, Ohio Wesleyan Assistant in Biology, 1912-13
Eugene W. Shaw, 1905 Assistant in Botany and Zoology, 1904-05	Fred O. Coe, BS, Ohio Wesleyan Assistant in Biology, 1914-15
William G. Bowers, 1905 Assistant in Zoology, 1904-05	Paul C. Recker, BS, BA, Ohio Wesleyan Assistant in Biology, 1914-15

Eugene R. Burton, BA, Ohio Wesleyan
Assistant in Biology, 1915-16

Robert L. Hunter, BA, Ohio Wesleyan
Fellow/Assistant in Zoology, 1946-47

Dorothy E. Walters, BA, Ohio Wesleyan
Fellow/Assistant in Zoology, 1915-16

Virginia Crowl, BA, Wooster
Fellow/Assistant in Zoology, 1947-49

Harry M. Miller, Jr., BS, Ohio Wesleyan
Fellow in Biology, 1917-18

Elva A. Pumphrey, BA, Ohio Wesleyan
Fellow in Biology, 1918-19

Raymond G. Stone, BA, Kenyon; MA, Ohio Wesleyan
Graduate Assistant in Zoology, 1926-27

Grace Townsend, BS, Miami
Fellow in Zoology, 1927-28

Blanche B. Montgomery, BA, BS, Ohio State
Fellow in Zoology, 1928-29

Helena J. Carpenter, BA, Oberlin
Fellow in Zoology, 1929-31

Kathleen L. Hussey, BA, Mount Holyoke
Fellow in Zoology, 1930-32

Emory S. James, BA, Miami
Fellow in Zoology, 1931-33

Marinda R. Wickham, BA, Ohio Wesleyan
Fellow in Zoology, 1933-34

Mark Freedman, BA, Ohio State
Fellow in Zoology, 1933-34

Nancy Hooker, BA, Connecticut College for Women
Fellow/Graduate Assistant in Zoology, 1936-38

Dorothy V. Clum, BA, Ohio Wesleyan
Fellow/Graduate Assistant in Zoology, 1940-41

¹ Source: Ohio Wesleyan University Catalogs.

² Included in list of faculty in 1897 Catalogue as Assistant in Zoology, but under Biology is listed as Instructor in Zoology.

³ Member of this class, but did not graduate.

Appendix 9

Visiting Appointments in Zoology (likely incomplete)¹

1959-60	Dean G. Dillery	Instructor
1963-64	Alec L. Panchen	Assistant Professor
1966-67	Raymond C. Bowen	Assistant Professor
	G. Robert Lynch	Instructor
1968-69	James E. Deck	Instructor
	Richard E. Young	Assistant Professor
1969-70	James E. Deck	Assistant Professor
1970-71	David Ostrovsky	Assistant Professor
	Dennis C. Radabaugh	Assistant Professor
1971-72	Dennis C. Radabaugh	Assistant Professor
1974-75	James W. Parker	Assistant Professor
1983-84	Robert B. Shabanowitz	Instructor

¹ Source: Ohio Wesleyan Faculty by Departments (prepared by Provost's Office each fall.)

Appendix 10

Zoology Departmental Technicians/Laboratory Coordinators^{1,2}

Lois Francis	1977-79
?	1979-80
Wayne Zipperer	1980-81
Helen Andersson	1981-82
Deborah Ufferman	1982-88
Misty Swonger	1988-89
Beatrice Twesigye	1989-91
Martha Fikes	1991-00
Cynthia Tizzano Blair	2000-07
Cynthia Tizzano	2007-09
Lisa Tabak	2009-
Daniel Seufert (Asst.)	2010-

¹ Sources: Ohio Wesleyan University Directories, personal contact.

² In 1991, the name of the position changed from Technician to Laboratory Coordinator.

Appendix 11

Zoology Adjunct Professors^{1, 2}

Charles R. Krause	1981 – 1991
Roy L. Patton	1989 – 1992
Pam Y. Burt	1993 – 2002
Sally M. Waterhouse	1993 – 1997, 2008 – 2017
Martha E. Fikes	1999 – 2002
Laura Tuhela-Reuning	1999 – 2002
Gregory Watkins-Colwell	2012 –

¹ Source: Ohio Wesleyan University Catalogs.

² Some individuals are listed as both adjunct and part-time faculty for the same time period.

Appendix 12

Zoology Part-Time Faculty (incomplete)^{1, 2, 3}

1965-69	Jeanne B. Hanks	Instructor
1981-82	W. David Peters	Instructor
1985-86	Daniel R. Zeigler	Instructor
1989-90	Sally M. Waterhouse	Instructor
1991-92	Martha E. Fikes	Instructor
	Alice H. Fraenkel	Assistant Professor
1992-93	Carol A. Park	Assistant Professor
	Brady A. Porter	Instructor
1992-03	Sally M. Waterhouse	Instructor
1997-98	Timothy J. Cain	Instructor
1999-00	Stephen W. Chordas, III	Instructor
2002-03	Catherine Boulant	Assistant Professor
2003-08	Sally M. Waterhouse	Assistant Professor
2004-05	Christopher Caprette	Instructor
2002-08	Laura Tuhela-Reuning	Assistant Professor
2005-09	Daniel Seufert	Assistant Professor
2006-07	Robert D. Williams	Assistant Professor
2008-09	Daniel F. Fink	Assistant Professor
2008-11	Laura Tuhela-Reuning	Associate Professor
2009-10	Sally M. Waterhouse	Assistant Professor
2010-15	Daniel F. Fink	Assistant Professor
2011-20	Laura Tuhela-Reuning	Professor
2014-15	Stephanie P. Lyon	Instructor
2014-18	Daniel Seufert	Instructor
2015-16	Thomas Gallagher	Instructor
	Elizabeth M. Schultz	Instructor
2017-19	Benjamin N. Philip	Instructor
2020-21	Daniel F. Fink	Lecturer
	Thomas Gallagher	Instructor
	Benjamin N. Philip	Instructor
	Elizabeth M. Reichard	Instructor

¹ Source: Ohio Wesleyan University Faculty by Departments (prepared by Provost's Office each fall), University Directories and personal communication.

² Individuals listed may not have taught for the entire academic year. The list typically does not include individuals who taught only in winter and/or spring terms/semesters.

³ Some individuals are listed as both adjunct and part-time faculty for the same time period.