History of Zoology in Indiana

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Introduction

In any present consideration of a century and a half of zoology in Indiana we must recognize, first of all, the splendid work of earlier historians.

In 1916, at the centennial program of the Indiana Academy, Barton Warren Evermann (4), then living in California, gave a very comprehensive account of zoology and zoologists in Indiana to that date. He covered, especially well, (a) the record of the early zoologists, particularly those from Kentucky and from New Harmony, and, (b) the great throng of students and colleagues of David Starr Jordan, of which he, himself, was one of the last. Further reference will be made to Evermann's account.

In 1935, on the occasion of the fiftieth anniversary of the founding of the Academy, Will E. Edington (2) made a further historical resume. Most likely several of us heard and will recall this summary, as well as the reminiscences and biographical notes which he gave during the years in which he was responsible for the memorials for deceased members.

In 1949, Theodore W. Torrey (7) prepared a history of the Department of Zoology at Indiana University. The paper deals especially well with the period of David Starr Jordan. (Note: It would be most useful if other Zoology Departments would prepare corresponding accounts.)

In 1951, Stephen S. Visher (8) compiled a directory of Indiana scientists.

Evermann's Centennial History

Since it is improbable that any of us heard Evermann's paper, or that many of us have read it, a brief summary follows:

The Paris Documents, 1718, state that "from the summit of the hill at Ouiatenon nothing is visible to the eye but prairies full of buffaloes!"

Thomas Hutchins, in 1778, mentions buffaloes as being innumerable northwest of the Ohio River. (This clearly covered Indiana.)

John James Audubon, in April 1809, floated down the Ohio River. He recorded that "buffaloes roamed over the prairies of Indiana and Illinois." He undoubtedly collected birds in Indiana.

Alexander Wilson, the ornithologist, in March, 1810, floated down the Ohio from Pittsburgh to Louisville, met Audubon there and, likewise, must have collected in Indiana.

Constantine Samuel Rafinesque, a teacher of Natural History at Transylvania University in Lexington, Kentucky, 1818-1821, collected and described a number of fishes and molluscs from Indiana.

The New Harmony Community, from 1815 on, attracted a surprising number of men of letters, including zoologists and natural historians, the most important of whom was Thomas Say, who has been called "the Father of American Entomology," "the Father of American Conch-

ology," and "the Father of American Zoology." Say lived at New Harmony from 1825 to 1834. The third volume of his three volume American Entomology was completed there. During these years he described more than a thousand species of insects, some four hundred of which are mentioned specifically as having been found in Indiana. Say's greatest work was, of course, his American Conchology of which five volumes were published before his death in 1834.

Charles Alexander Le Sueur, great French naturalist and world traveller, came to New Harmony in 1825, remaining in this country until 1838. He described many new animal species, including nearly a hundred fishes. It appears that he projected a large work on American Ichthyology but it failed to materialize.

Rufus Haymond, a physician at Brookville, in 1869 published lists of mammals in Franklin County, giving thirty-two species with notes on habits and abundance. He also listed the birds of Franklin County, enumerating one hundred sixty-three species. (Dr. Haymond was a teacher and boyhood friend of Amos Butler who will be discussed later.)

John Collett, in 1873, in a report on the Geology of Lawrence County, called attention to the animal life in caves of southern Indiana. He utilized the aid of A. S. Packard and Edmund Drinker Cope, nationally known zoologists of the time, for the identification of his eyeless fishes, crustaceans and crickets.

Dr. George D. Levette listed, in 1876, nineteen species of univalves and nine species of turtles from northern Indiana lakes, in a report on the depths and temperatures of these lakes.

Undoubtedly, David Starr Jordan was responsible for the greatest impetus even given to zoological investigation in Indiana. He came to Indianapolis in 1874, as a teacher of natural history in the high school. His earliest serious work was his famous story of the "Johnny Darters," written jointly with Herbert Copeland.

The work of Dr. Jordan as an ichthyologist and an administrator is so well known and so well recorded that it needs little elaboration here. He served in the Indianapolis High School, Northwestern Christian University (now Butler University), Indiana University, earlier as professor, later as president, and Stanford University, as president. Much of his monumental contribution to American Ichthyology was made here. Evermann lists, among his students, many whom we recognize as great contributors to Indiana zoology: Herbert Copeland, Alembert W. Brayton, Charles H. Gilbert, Joseph Swain, Seth Eugene Meek, Carl H. Eigenmann, Elizabeth Hughes, Charles L. Edwards, Morton W. Fordice, Barton Warren Evermann, David Kopp Goss, Bert Fesler, Willis S. Blatchley, Charles S. Bollman, William L. Bray, William J. Moenkhaus.

Two items of Evermann's report deserve further mention, one for emphasis, the other for correction.

First, Rafinesque wrote in 1832, while in or near Indiana, "I shall soon come out with my avowed principles about genera and species, partly announced in 1814. . . . The truth is that species, and perhaps genera also, are forming in organized beings by gradual deviations of shapes, forms and organs, taking place in the lapse of time. There is a tendency to deviations and mutations through plants and animals by gradual steps at remote irregular periods. This is a part of the great

universal law of perpetual mutability in everything. . . . Every variety is a deviation which becomes a species as soon as it is permanent by reproduction." This is a remarkably discerning concept of evolution antedating Darwin's *Origin of Species* by nearly forty years.

Second, Evermann fell into the error of referring to Haymond's list of mammals in Franklin County (1869), recording thirty-two species, as the first faunal list of mammals for Indiana.

Actually, Maximilian of Wied wrote on the mammals at New Harmony about 1841. Also, Dr. John T. Plummer of Richmond published, in 1844, a "catalog" of forty-three species of mammals.

Dr. Plummer was an active student of natural history in the middle years of the nineteenth century, then his work almost completely dropped from sight. He was "rediscovered" by Lawrence King (5), while a student at Earlham College. It appears that Dr. Plummer was a versatile writer, having published more than one hundred fifty papers on botany, zoology, geology, medicine, philosophy and religion.

Other Historical Records

Following Evermann's centennial review of zoology in Indiana, another historical account was given by Edington (2) in 1935 on the occasion of the fiftieth anniversary of the founding of the Academy, in an address "There Were Giants in those Days." Edington used his characteristic skill in weaving personal notes concerning Indiana's early scientists into an interesting story of the development of Hoosier science. On this occasion there were several charter members of the Academy present.

In 1949, Torrey's paper "Biology and its Makers at Indiana University" (7) reviewed the earlier contributions by members of the department and described further, the work of some who came later.

Will Scott was one of these. He first came to Indiana as a student at the university's Biological Station. He became an instructor in 1908, a professor in 1921. He was director of the Biological Station from 1920 until his death in 1937. Himself a great teacher and limnologist, he led the aquatic field program in the pattern laid down by Jordan, Eigenmann and Evermann of earlier years. Many former students and associates still remember the warmth and the friendship of Will Scott.

Following the death of Dr. Scott, the station, successively under the direction of William E. Ricker, David Frey and Shelby Gerking, continues as one of the world's great freshwater biological stations.

Other persons mentioned by Torrey will be considered later.

Other Zoologists

Several of Indiana's outstanding zoologists were still living when the above papers were prepared, but have died since.

Amos Butler (1860-1937), frequently referred to as the actual founder of the Indiana Academy, stands out as one of Indiana's most versatile naturalists. He was a lover of birds and mammals—and men. His "Birds of Indiana" (1) is now regarded as a classic and a collectors' item. In addition to being a natural scientist, Dr. Butler was a social

scientist of the front rank. For many years he was secretary of the State Board of Charities. He was an expert on penology and prison conditions, on mental health and on anthropology.

A. B. Ulrey (1860-1929) was born near North Manchester. He graduated from Indiana University in 1892, then studied at Woods Hole. He was a student and a contemporary of David Starr Jordan. He taught at Manchester College from 1894 to 1899, establishing the Biology department in the highest standards of research and scholarship. From 1901 to 1929 he taught at UCLA. He was a specialist in marine fish and echinoderms.

Howard E. Enders (1877-1958) was another great teacher of the generation just past. He was Head of the Department of Biological Sciences at Purdue following Stanley Coulter, and he was also Dean of the School of Science. Trained as a parasitologist, he did considerable research in tropical America, where he also led groups of students for study. We also recall him as a pioneer in the development of the present day concept of General Biology as an elementary college course.

Marcus Ward Lyon, Jr. (1875-1942) was an example of a first class scientist not primarily connected with a university. A mammalogist and a pathologist, he was associated for many years with the U. S. National Museum in various capacities, concluding as assistant curator. In 1919 he joined the South Bend Clinic as pathologist. However he continued his interest in mammals. His presidential address to this Academy in 1933 on the origins of Indiana's mammals became the basis of a larger publication on Indiana mammals (6) which is now a collectors' item.

Alden H. Hadley (1876-1951) was another in the line of Indiana ornithologists. Born in Morgan County, he studied for a time at Earlham College under David Worth Dennis, but moved to Florida because of ill health, and graduated from Stetson University. He became associated with the National Audubon Society almost from its beginning. He served as its Director of Education for many years. He returned to Mooresville in 1941 and worked with the State Department of Conservation until his death from an auto accident in 1951, giving literally thousands of lectures on natural history and conservation, to schools and other interested groups. The Indianapolis Star reported "In the death of Alden Hadley the robins and cardinals have lost a great friend, as have many friends who knew this keen and gentle naturalist."

Samuel Elliott Perkins, III (1878-1941) was a distinguished lawyer who made ornithology an avocation. He was a product of the Indianapolis schools and Wabash College. He was an honorary member of the Nature Study Club of Indiana and for six years was its president. He was a member of several ornithological organizations. He was an ardent bird bander and a promoter of bird banding in the early days of that program. He is to be remembered as one of the great throng of naturalists and lovers of the out of doors for which Indiana has been noted.

Benjamin H. Grave (1878-1949) was born at Monrovia, Indiana. He had his education at Friends Academy at Plainfield, Earlham College and Johns Hopkins University (Ph.D. in 1910). His teaching career was spent mainly at Knox College, Wabash College and DePauw University.

He did extensive research in embryology and physiology. His students remember him as a teacher possessed of intense enthusiasm. An unusually large number went on for graduate work.

Frank R. Elliott (1888-1965) was one of the few spider specialists of Indiana. He was born at Spartanburg in Randolph County. He attended college at Earlham and did his graduate work at Ohio State. He taught at Earlham and at Valparaiso where, for many years, he headed the Department of Biology. He worked extensively on the ecology of spiders. In 1952 he contributed an important paper before the Academy on the history of Araneology of Indiana (3).

Alfred C. Kinsey (1894-1956) is best remembered as a student of human sexual behavior. Actually he was a student of evolution. He first studied it as manifested in insects, especially gall wasps.

Ira T. Wilson (1895-1951) was born at Jonesboro. He was trained at Indiana University, one of Will Scott's students in limnology. He was a pioneer student of lake sedimentation and made important contributions to the interpretation of post glacial climatic successions. He was closely associated with Dr. Potzger of Butler University. His entire teaching career was at Heidelberg University in Ohio.

Zoology Today in Indiana

It is the responsibility of any treatise that purports to be a "history," to deal primarily wtih events and people of the past. For present purposes the people normally would be those who are not now living.

Certain observations grow out of a summary of a history of zoology in Indiana. 1) The earlier zoologists were concerned chiefly with the "survey" approach, listing species, with notes on ecology and distribution. 2) The animal groups most fully covered have been fishes, birds and mammals.

To these observations, there might be added certain others on impressions concerning the present.

3) Gradually, other areas of zoology are receiving considerable attention. Examples include the emphasis on a) Genetics at Indiana University under the leadership of Fernandus Payne, Herman Muller and Tracy Sonneborn; b) Molecular Biology, research and course work, at Purdue, Earlham, Wabash, Goshen and, no doubt, other schools; c) Parasitology, at Purdue and Notre Dame.

4) In addition to the universities and colleges as centers for research and teaching of zoology, several local areas are being preserved for future study. The system of state parks of which Indiana is justly proud can be expected to serve as permanent sites for primitive biological habitats. The proposed Dunes National Park which has just had Congressional clearance gives promise of becoming a priceless addition to research facilities.

Small areas include: the Biological Station of Indiana University previously cited; the David Worth Dennis Biological Station of Earlham College on Dewart Lake in Kosciusko County, a center for undergraduate instruction and research in Limnology; the lakes inside the state-owned

areas, as Shock Lake, Chain-o-Lakes, Hovey Lake, and many reservoirs; small primitive areas scattered over the state, such as the Mary Gray Bird Sanctuary near Connersville, the Allee Memorial Woods near Bloomingdale, of Wabash College, the Cring Woods near Portland, of Earlham College, Sedgwick Rock near Richmond, of Earlham College, the Hayes Regional Arboretum, of Richmond, and many other small areas set aside through the efforts of local conservation groups such as "Acres" of Fort Wayne. (No doubt many others of these exist. A more complete list of such areas would be useful.)

5) Indiana has contributed a significant number of zoologists who were born and trained within the state, to other parts of the country. However, Indiana's yield of eminent people compared with that of nearby state has been analyzed by Visher (9) and found to be distinctly below that of neighboring states, especially Ohio and Illinois. He believes that the shortcoming is due in considerable part to the smaller percentage of Indiana's people who are interested in scholarly achievement; that there is presently an excessive amount of interest in high school athletics, local politics and local prestige; that financial support of Indiana's universities and colleges has been less generous than that in nearby states. He further believes that an active program of encouraging young people in increased respect for scholarly endeavors should be undertaken.

Visher's interpretation is a most sobering one. There may be other more subtle factors, but present members of the Academy should feel the responsibility to make Indiana's place in the discipline of zoology a more distinctive one.

As I approach the conclusion of this paper, I am made aware of the limitation imposed by its title, namely, the account of the accumulation of the body of knowledge which is Indiana Zoology. I know that surely the records of many workers worthy of inclusion have been omitted. Such omissions may have been due to my ignorance of their contributions or mistaken judgment on my part.

I am also concerned for three categories of zoologists which should be held in cherished memory. They are:

1) Great teachers in Indiana universities and colleges, who stimulated students to significant research, without having the opportunity for such research themselves.

2) Zoologists native to, and trained in Indiana, but whose productive careers have been outside the state, "Indiana's gift to the country."

3) Contributors to the current efforts of the Committee on Biological Survey in the field of zoology. These people are working actively to round out the knowledge of Indiana's animal life. They include, often, younger workers, even graduate and undergraduate students.

4) Contributors to areas of experimental zoology which have been slighted somewhat in this paper.

It is my hope that we may continue to make a matter of permanent record the work of these and others. Thus, again, we may hope to improve our status in relation to that of our sister states.

Literature Cited

1. Butler, Amos. 1898. Birds of Indiana. Ind. Dept. Geol. and Nat. Resources **22:** 515-1187.
2. Edington, Will E. 1935. There were giants in those days, Proc. Ind. Acad. Sci. **44:** 22-38.
3. Elliott, Frank R. 1953. The araneology of Indiana. Proc. Ind. Acad. Sci. **62:** 299-317.
4. Evermann, Barton Warren. 1916. A century of zoology in Indiana, 1816-1916. Proc. Ind. Acad. Sci. **26:** 189-224.
5. King, Lawrence J. and M. S. Markle. 1954. Dr. John T. Plummer (1807-1865) pioneer scientist of Richmond, Indiana. Proc. Ind. Acad. Sci. **63:** 255-260.
6. Lyon, Marcus Ward, Jr. 1936. Mammals of Indiana. Amer. Midl. Nat. **17:** 1-384.
7. Torrey, Theodore W. 1949. Zoology and its makers at Indiana University. Bios **20** (2) : 67-99.
8. Visher, Stephen S. 1951. **Indiana scientists, a biographical directory.** Ind. Acad. Sci. 218 pp.
9. Visher, Stephen S. 1962. Indiana's yield of eminent people compared with that of nearby states. Proc. Ind. Acad. Sci. **72:** 240-242.