

SOUTHERN CONTRIBUTIONS TO NATURAL HISTORY

S. M. BAIN

FORMERLY PROFESSOR OF BOTANY, UNIVERSITY OF TENNESSEE

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A name long to be honored in the annals of American botany is that of Dr. A. W. Chapman, the author of the "Flora of the Southern United States." Chapman was born of English parents in Southamp- ton, Massachusetts, in 1809; died April 6, 1899, at Apalachicola, Florida, in his 90th year. After his graduation from Amherst Col- lege in 1830 he began life as a teacher near Savannah, Georgia. He soon equipped himself as a medical practitioner and finally made his home at Apalachicola, Florida, in 1847, where he spent the greater part of his long and useful life. Dr. Chapman became en- thusiastically interested in the rich Southern flora, and an active collector in this adopted state. He was a constant correspondent of Drs. Torrey and Gray and contributed much material to their Flora of North America. Dr. M. A. Curtis of North Carolina and Dr. Chapman undertook to prepare a manual of the flowering plants of the Southern states east of the Mississippi River and south of Vir- ginia and Kentucky, but on account of the former's active interest in the fungi, Dr. Chapman undertook his task alone. He finally brought out his first edition in 1860, just at the opening of the Civil War. He heard nothing of the result of his labors for four years, "when Dr. Gray," as he writes, "smuggled through the lines a bud- get of friendly notices of the work which appeared during those years in the periodicals of this country and Europe, and all at once I awoke to bigness." Dr. Chapman's work was for many years the leading authority on the plants of the South, and in the 88th year of his life he brought out a final edition of the work. Dr. Chapman was a man of rare physique, and in the quiet retirement of his Flor- ida home enjoyed the high esteem of his neighbors and fellow town- men. He was a hospitable gentleman of the old school and a de- lightful correspondent. His final collections went to the Biltmore Herbarium.

Dr. Chapman's loyalty to the scientific interests of the South is shown by statements in letters to the writer in 1895. He was offer- ing his valuable collection for sale and stated, "I want it to remain in Southern hands." After disposing of the collection to the Bilt- more estates, he writes, "I have succeeded in keeping my herbarium at home. I have sold it to the Vanderbilt establishment at Biltmore, North Carolina." Dr. Chapman's biographer, Dr. Mohr, says of his critical work in systematic botany that it "evinces the scientific turn of mind and the method required for enduring work in photography, which secured to the author a place in the ranks of the writers of au- thority."

As above stated, the bulk of the natural history work done in the South has been due to individual initiation. This is true even when we take account of the institutions and organizations, such as the state geological surveys, for they were founded at the earnest solicitation of a few active individuals. In this short sketch no full discussion can be given of institutions; they are treated elsewhere in this work. Yet, a general reference to their bearing on work in natural history must be made.

Geological research in the South, though hardly to be considered as "natural history," should perhaps be considered on account of its relation to the main subject; and with it a short sketch of the establishment and personnel of representative state geological surveys. The earlier state surveys were established—North Carolina in 1823; Tennessee in 1831; Virginia, in 1835; South Carolina, in 1844; Alabama, in 1848; Missouri, in 1853; Mississippi, in 1854.

Denison Olmstead (1791-1859), "a Connecticut school teacher," while professor of chemistry in the University of North Carolina, began a geological survey of that state in 1823. While this can scarcely be dignified with the title of survey, it nevertheless marks the first appropriation out of public funds made in this country for such a purpose, (\$250 for four years!). On Olmstead's call to Yale in 1825, he was succeeded by Elisha Mitchell (1793-1857). This survey suffered varying fortunes, but a notable point in passing is that Mitchell's geological map of North Carolina, published in 1842 was the first of its kind to be issued in this country. Mitchell made important contributions, especially to the theories of the origin and distribution of gold deposits in North Carolina. He lost his life by accident while exploring the noble mountain peak which now bears his name. His name is also commemorated in the Elisha Mitchell Scientific Society of the University of North Carolina, which is one of the most efficient organizations of its kind in the South.

L. Vauuxem (1792-1848), while professor at South Carolina College, was the first American to point out the probable absorption of atmospheric gases by the earth's crust, and consequent secular changes in the terrestrial atmosphere.

Michael Tromeய (1805-1857), a native of Ireland, was the first geologist of South Carolina, and went to Alabama in 1848. He deserves especial mention as one of the most active and earliest workers on Southern geology.

James M. Safford (1822-?) was appointed state geologist of Tennessee in 1854. His "Geological Reconnaissance" was published in 1856. Merrill says: "From a strictly geological standpoint the matter given in . . . the closing chapters of the report was of greatest importance. . . This report shows on the part of Safford a thorough insight into the intricacies of the structure of the State and an ability to grasp the salient features and master the broader problems in a manner perhaps not realized by many of his contemporaries and successors."

Joseph Le Conte (Univ. of S. C.), published his first geological paper on the coral growth as exemplified on the peninsula and keys of Florida (1857). According to conclusions here reached—a fundamental contribution to the theory of the subject—"The peninsula and keys of Florida have been the result of the combined action of at least three agencies. First, the Gulf Stream laid the foundation; upon that corals built up to the water level; and, finally, the work was completed by the waves."

Joseph Le Conte (1825-1901) was born on his father's plantation in Liberty County, Georgia. His life reads almost like a romance, and cannot be even adequately glimpsed at in this brief sketch. His youth was spent on his father's plantation and he attended college at Athens, Georgia. He spent much time in travel through the north, and took his medical degree at the College of Physicians and Surgeons, New York. He later became dissatisfied with the field of medicine and spent some time at Harvard with Agassiz, there his surroundings served as an agreeable mental tonic.

Le Conte's first professional charge was at Oglethorpe University, Midway, Georgia, where he taught all the sciences. He next filled for four years the chair of botany and geology at the University of Georgia to which he was called in 1852. Owing to administrative difficulties here, he accepted the professorship of chemistry and geology in the College of South Carolina in 1857. In spite of his onerous duties here, he continued to write occasional important papers on various scientific and philosophical questions. During the period of the Civil War the College disbanded, and Le Conte served the Confederate Government in several different ways, being in 1864 appointed Chemist of the Niter and Mining Bureau with rank of Major. In 1868, after rather trying vicissitudes of the reconstruction period, Joseph Le Conte with his brother, received calls to the University of California, and the South thus lost the services of the maturer years of another of its men of genius.

Le Conte's estimate of his own life accomplishment, he states among other things, "In geology, I believe some real advance was made in my series of papers (1) on the structure and origin of mountain ranges; (2) on the genesis of metalliferous veins; (3) especially in that on critical periods in the history of the earth; (4) on the demonstration of the Ozarkian or better, the Sierran epoch as one of great importance in the history of the earth."

The devotion of Le Conte's students and friends in the University of California was sublime. He passed away in the embrace of his family and loving friends during a visit to the Yosemite Valley in 1901.

Among the especially effective geological surveys made or being made in the South may be mentioned, the Arkansas Survey, under the directorship of Dr. J. C. Branner, himself a native of Tennessee, now of Stanford University; the Alabama Survey, by Dr. Eugene A. Sanith; the Texas Survey, by Dr. F. W. Simonds; the Mississippi Survey under Dr. E. W. Hilgard, now of the University of Cali-

ifornia, whose career in the South would make a fitting accompaniment to that of Le Conte, his friend and colleague of many years. It is to be regretted that in many states there has been a growing disposition to shift responsibility to the National Geological Survey. From the standpoint of purely scientific investigation there is no doubt that the cause may suffer in the hands of one immense bureau, dominated by one man or a few men, who are at least in danger of being tempted to suppress freedom of discussion.

Among the factors making for advancement in these fields in the South should be considered a number of institutions besides the State Geological Surveys. The educational institutions in the South are treated elsewhere in this volume.

Special attention should be called to two establishments that are active factors in the field of botany, viz.: The Missouri Botanical Garden, at St. Louis, and the Biltmore Estate of Mr. Geo. W. Vanderbilt at Biltmore, North Carolina. The former, established by Shaw, is one of the important scientific establishments of the U. S. and the latter has an important collection and library, and a corps of workers in the field of forestry and systematic botany.

Much is doubtless in the future to be expected of the Agricultural Experiment Stations, which were founded by Act of Congress in 1887. The bill establishing these institutions is known as the Hatch Act, Representative Hatch of Missouri, being one of its chief exponents in Congress. These institutions were founded for the scientific investigation of problems related to agriculture and some of the most important fundamental problems of biology are legitimate fields for exploitation under the terms of the Hatch Act. Unfortunately, in many Southern states the activities of the Experiment Stations have been diverted in the hands of the demagogues, so that they have been more accurately bureaus of information to serve populistic propaganda than really scientific institutions. Fortunately, these conditions are improving.

The field of natural history has now given way to the science of biology. Its problems have ramified into so many channels that no one man can now hope to compass it all. The great need of the South now in order to encourage real accomplishment in this and other scientific fields so important to the industrial as well as cultural progress of the region, is adequate libraries and a healthy enthusiastic public sentiment attracting amateurs to the still completely explored regions of the South.

In an attempt to trace out the factors that have produced the South's contributions to Natural History we find that the earliest devotees came with the first colonists from Great Britain, and brought some exponents of this field of culture among others to the shores of Virginia and North Carolina.

After the establishment of the United States, as a nation, the encouragement given by Jefferson and others of Virginia was an ex-

ceedingly important factor to the whole country. During the 19th century the South owes much of its accomplishment in this field to the influences of the older New England Colleges, and especially to their Alumni who emigrated Southward. In Louisiana and other sections of the South much is due to scientific influences, emanating from France, as illustrated by Audubon and Langlois. Due consideration must also be given to the influx of Germans, as illustrated by Mohr, Hilgard, Gattinger, and Schweinitz. It is quite probable that up to the period of the Civil War there was more local interest that might be considered really indigenous in South Carolina than any other Southern state, judging from the leading lights among Southern naturalists, we are compelled to yield the palm to the French element of our composition, for considering their proportion they considerably outweigh all others, though much is due to the Germans.