

FIFTY YEARS OF THE GEOLOGY AND GEOGRAPHY SECTION: 1937-1986

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ABSTRACT

The Geology and Geography Section has a complex history, as documented by a fifty-year record of oral presentations. There are five statistically distinct phases. In Phase I (1937-1944) the section averaged 8.9 presentations per year. It was followed by Phase II (1945-1951), a post-war decline that averaged 3.7 papers. Apparently, the enthusiasm of the section's founders and an expansion of mineral industries during World War II combined to encourage strong Academy programs. When war-related demand ended, the section's oral program collapsed. Phase III (1952-1958), with 7.7 papers, recorded a late post-war resurgence. Phase IV (1959-1969), with 5.6 papers, was a time of decline apparently caused by the timing of Academy meetings. Phase V (1970-1986), with 7.7 papers, reflected a considerable expansion of the geological community within the state, especially on the campuses of regional universities. From 1937 through 1974, 67% of section chairs were from government or industry and all chairs from Academia were from the state's largest and most prestigious schools. Since 1974 all chairs have been professors from regional colleges. This is the most significant recent change within the section.

INTRODUCTION

The modern Geology and Geography Section of the Tennessee Academy of Science has its roots in a Geology Section formed in the winter of 1937. The first suggestion that an Academy section in the earth sciences might develop was in the announcement of the annual meeting for 1937. It included a call for papers for a new Geology Section. The Academy's *Journal* soon published the proceedings of an initial meeting. In 1938, this section changed its name and scope to geology and geography. Since 1937 the section serving earth scientists has had a continuous history as an administrative unit within the Academy and has met to hear papers in virtually all years (Figure 1). While the section has existed since 1937, even

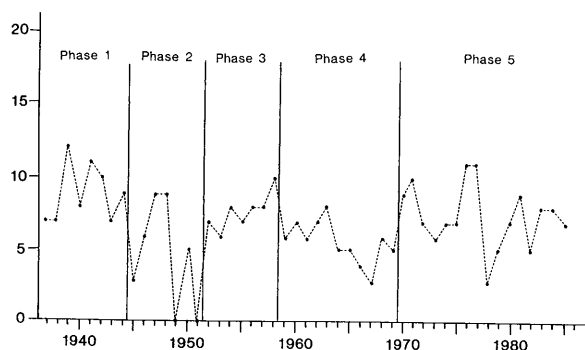


Figure 1. Oral Presentations of the Geology and Geography Sections, 1937-1986. Based on all published proceedings of the Academy and on all archival sources (Corgan, In Press A; In Press B; In Press C).

a superficial glance at Figure 1 suggests a complex history, crowded with successes and failures. To delineate major stages in sectional history is the primary objective of the present study.

This study complements a description of the Academy's general meetings (Corgan, In Press A; In Press B; In Press C). The report examines all sources of data on Academy history and explores quantitative techniques that aid in understanding the development of the Academy. While quantitative concepts are used in the present report, documentation is not duplicated here. Similarly, since all sources of data on each meeting are cited in companion texts, citations are not repeated.

EARLY PHASES

The section got off to a strong start, with seven papers presented during the first formal meeting (Figure 1). Also, Kendell E. Born, of the Tennessee Division of Geology, led a field trip to the Wells Creek Structure. The section continued to strengthen in the early years. Most meetings had both field trips and oral programs. During Phase I (1937-1944) the section had a mean of 8.88 papers with a standard deviation of 1.96. This high level of activity reflected two forces: the brisk demand for geological service caused by World War II and the enthusiasm of

section founders.

In post-war and late war years, the market for geological services diminished and the section almost collapsed. Beginning in 1945, and continuing through 1951, participation declined to an average of 3.71 papers per year (Figure 1). The standard deviation, of 3.25, reflected large fluctuations from year to year. Still, the section met faithfully from 1937 through 1948. Then it proved impossible to generate programs in 1949 and 1951. Several factors caused this collapse. The population of geologists within Tennessee shrank and less research was undertaken. Also, the years from 1949 through 1951 were a time when the first regional geological organizations began to develop in the southeastern United States. Their development had strong support from many people who had been mainstays of the Academy section.

The first regional organization was the Southeastern Mineral Symposium. The first meeting was at Knoxville on March 3-5, 1949. Dr. Richard G. Stearns of Vanderbilt University has a program for this meeting and for others in this series. While the meeting was not in direct conflict with the Academy's fall meeting, at least ten geologists from Tennessee spoke. Sixteen of the talks were the sort of presentations the Geology and Geography Section tried to recruit.

In 1950 the Symposium was on March 23-25 in Lexington, Kentucky. It had less impact, but things grew worse in 1951. Geologists throughout the southeast were trying to replace the Southeastern Mineral Symposium with a Southeastern Section of the Geological Society of America. The Southeastern Section was created, on paper, in 1947 but there were not enough members to hold meetings. Then, the success of the Symposium demonstrated demand for a regional group.

In 1951 Geological Society of America members hoped to use the third Southeastern Mineral Symposium as a birthing room for a regional section. The Symposium, which was held in Atlanta during late March and early April, did lead to a regional section. Intense interest in this Symposium helps to account for the lack of an Academy program in 1951.

Thus, for many reasons, the seven years from 1945 through 1951 were a nadir in the history of academy involvements with geology and geography. Using Student's *t* tests to assess differences between data for Phase I and those for Phase II (Figure 1) yields $t=3.78$. At the .05 probability level this is a clear indication that differences between these phases are significant.

In 1952, the section's oral program strengthened remarkably, and it remained strong through 1958 (Figure 1). This seven year span is Phase III in sectional history. The mean number of papers rose to 7.71 and the standard deviation fell to 1.25. Student's *t*, which equals 3.02, indicates that this phase is also significant.

Initially, strengthening may have reflected several

unrelated factors. First, a Southeastern Section of the Geological Society of America was a less effective competitor than the Symposium had been. This was because the novelty of regional meetings soon wore thin. Second, the national economy began to place greater emphasis on the mineral industries during late stages of the Korean War. Third, and most important, there was a change in the national culture, with greater emphasis on the conservation and evaluation of resources. Much of the growth in Phase III simply reflected an expansion of the role of geologists in governmental agencies. Finally, there was also a late post-war World War II expansion of the geology faculty in major universities. They were beginning to offer more extensive graduate work. Strengthening in one agency, the Tennessee Division of Geology, is well documented (Wilson, 1981; Luther, 1985). The histories of other agencies and of major geology departments have not been described in the scholarly literature.

From Phase I through Phase II, the section had a strong program of field trips. This seemingly grew even stronger during Phase III. For the first time, an effort was made to preserve a formal record of trips, with at least one guidebook published as a hectographic reproduction (Barr, 1956).

LATER PHASES

From 1959 through 1969 the section entered another decline (Figure 1). For this interval, which is Phase IV in sectional history, the mean number of papers fell to 5.64, with a standard deviation of 1.43. During this eleven year span, 1963 was the only year when the oral program exceeded the mean of Phase III. Once again, Student's *t* ($t=3.18$) suggests that Phase IV is distinct.

During Phase IV, section leaders were concerned about diminished participation. They concluded that the problem was the date of the meeting. While there had been some experimentation, the Academy leadership preferred to hold meetings during Thanksgiving week, when schools were closed. This date facilitated participation by faculty from institutions that did not permit employees to miss work to attend conventions. The Geology and Geography Section drew much of its participation from government agencies and from large schools. These organizations had positive academic travel policies. The typical person who spoke to the section used vacation time to participate in an activity their employers viewed as a professional obligation. This prompted a revolution, led by Dr. Richard G. Stearns of Vanderbilt University and Dr. Robert C. Milici of the Tennessee Division of Geology.

Under Stearns' guidance, the annual gathering of the Geology and Geography section of the Academy in 1966 was unique. Dr. Stearns chaired a sectional meeting in

Knoxville on November 3. The remainder of the Academy met in Johnson City on November 25. The section threatened to leave the Academy, forming an independent state-level geological society. In the following year, the Academy abandoned Thanksgiving week meetings.

Another conflict emerged before the 1969 meeting. Dr. R. K. Wibking of Austin Peay State University circulated a proposal to establish separate sections for geography and geology. The proposal failed for lack of support. By the 1969 meeting, the section was unified, as geology and geography and the impact of a more suitable meeting date was beginning to have influence.

From 1970 through 1986 the program strengthened, averaging 7.65 papers with a standard deviation of 2.07. In this 17-year period only three years yielded programs below the 5.64 paper average of Phase IV. At the .05 probability level, a Student's *t* of 2.81 suggests that Phase IV and Phase V are statistically distinct. Further programs of the last five years have a submean close to the general mean, indicating stability. Phase V should continue for some years.

During Phase IV, section leaders hoped that a change in the meeting date would lead to greater participation by agency geologists and by the faculty and students of large schools. These two groups had always dominated programs. The change in dates probably did cause the shift from Phase IV to Phase V, but the population of speakers is quite different from those of early years. In the late 1960s, the faculty of regional universities became prominent in the section. This group now dominates programs. They are also leaders in sectional affairs.

The change in leadership was especially dramatic, as demonstrated in Table 1. Following standard procedures, the data of Table 1 yield a Chi square of 16.37. At the usual level of probability, this suggests a profound difference between sectional leadership in early years and leadership

since 1974. Before 1974, every chairperson was from government, from industry, or on the faculty of Vanderbilt University or the University of Tennessee, Knoxville. Since 1974, every chairperson has been with a regional university.

Phase V reflects a restructuring of geological education in Tennessee. Once, preprofessional instruction in geology was the exclusive province of large, long-established schools. In the 1960s and 1970s, geology departments with undergraduate major and minor programs evolved in many public four-year institutions. At the same time, earth science programs entered the secondary schools (Corgan and Rice, 1973; Rice and Corgan, 1974). This led to a state certification for secondary school earth science teachers. Eventually, certification produced a need for precollegiate teacher preparation programs that were somewhat different from traditional geology majors (e.g., Corgan, 1972; 1973).

Clearly there was a change in collegiate geology offerings, and in the population served by the Geology and Geography Section of the Academy. The spread of higher education in geology within Tennessee is essentially undescribed since only one department has a recorded history (Corgan, 1985). Whatever else is true, a statewide expansion of geological education created a larger pool of faculty and students who were attracted to the service of the Geology and Geography Section. This apparently accounts for most of the difference between Phase IV and Phase V.

One minor factor that strengthened the section during Phase V was the emergence of the Safford Centennial Society. Founded in 1969, this geological group is largely social. It cosponsors an annual spring field trip with the Geology and Geography Section. A number of field trip guidebooks have been published (e.g., Wilson, et al., 1972).

THE SECTION'S ROLE

While the Geology and Geography Section has had ups and downs (Figure 1), it has been surprisingly constant in one regard: it offers the geologists of 1987 the same kind of programs it offered the geologists of 1937. From its inception the section has been, primarily, a forum for geological, rather than geographical, communication. Corgan and Lyle (1977) explored the function of that forum through 1976 and found the section's role was unchanging. They could detect no time-dependent difference in *Journal of the Tennessee Academy of Science* publications in geology. Over a 40-year time span, there was no statistically significant change in the ratios of theoretical to not theoretical, regional to nonregional, mathematical to nonmathematical papers. A qualitative evaluation of publications from 1977 through 1986 suggests that another decade has passed without any

Table 1*. Leadership of the Geology and Geography Section, 1937–1986.

		1937–1974	1986	TOTAL
From Academia	Observed	13	12	25
	Expected	18.9	6.1	
Other Employment	Observed	24	0	24
	Expected	18.1	6.9	
TOTALS		37	12	49

*The item studied is the professional affiliation of each chairperson named in the Academy's archives and in published proceedings (Corgan, In Press A; In Press B; In Press C).

change in the functions of the section. Seemingly, there is no need for change. And, the section has never alienated members through unnecessary innovation.

SUMMARY AND CONCLUSIONS

Statistics permit recognition of five historical phases in the evolution of the Geology and Geography Section: 1937–1944, 1945–1951, 1952–1958, 1959–1969, and 1970–1986. The first stage had the richest programs and the second had the most impoverished. They are apparently rooted in the development and collapse of a war-related, mineral-oriented economy. Phase II was also influenced by conflicts with other geological organizations.

The third stage reflected a late postwar expansion of academic and governmental programs. Eventually, an Academy meeting date that did not suit the priorities of geologists inhibited participation, leading to the downswing of Phase IV. The current stage is the longest and has a relatively high level of scholarly participation. This phase seems stable and should continue into the 1990s.

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