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# **SIGMA GAMMA EPSILON'S W.A. TARR AWARD: HONORING THE MEMORY OF WILLIAM ARTHUR TARR (1881-1939), GRAND EDITOR OF *THE COMPASS***

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*For a billion years the patient earth amassed documents and inscribed them with signs and pictures, which lay unnoticed and unused. Today, at last, they are waking up, because man has come to rouse them. Stones have begun to speak, because an ear is there to hear them. Layers become history and, released from the enchanted sleep of eternity, life's motley, never-ending dance rises out of the black depths of the past into the light of the present.*  
**Hans Cloos, *Conversations with the Earth*, 1954, p. 4.**

## **ABSTRACT**

In 1947, delegates to the 14<sup>th</sup> National Convention of the Society of Sigma Gamma Epsilon established the W.A. Tarr Award in honor of William Arthur Tarr (1881-1939) and the awards were made by active Society chapters in the spring of 1948. William Arthur Tarr was the first editor of *The Compass*. W.A. Tarr was a professor of Mineralogy and Geology at the University of Missouri from 1911 to 1939, during which he was the faculty advisor to the Epsilon chapter of Sigma Gamma Epsilon.

**KEY WORDS:** University of Missouri geology; Epsilon chapter of Sigma Gamma Epsilon; stylolites; cone-in-cone structures

## INTRODUCTION

In this issue of *The Compass*, Even (2014) announces the thirty-one Sigma Gamma Epsilon **W.A. Tarr Awardees** for 2013-2014 academic year. The W.A. Tarr Award is awarded annually in recognition of outstanding scholarship and service to a graduating senior from each active chapter of Sigma Gamma Epsilon. To each of the recipients of the W.A. Tarr Award, we offer our heartfelt congratulations! The question each of the recipients should be asking is, "Who was W.A. Tarr and why was this award established?"

In 1947, delegates to the 14<sup>th</sup> National Convention, held in St. Louis, Missouri, established the **W.A. Tarr Award** in honor of Dr. William Arthur Tarr (1881-1939), National Editor of *The Compass* from 1920-1939 (Ford, 2012). During Dr. Tarr's tenure as editor of *The Compass*, the journal had morphed from a four-page newsletter (see "The Compass, Volume 1, Number 1, 1920") to a peer-reviewed scientific journal (Daniel, 1996). The first W.A. Tarr awards qualified members of active chapters in the spring of 1948 (Daniel, 1996).

## BRIEF BIOGRAPHY OF WILLIAM ARTHUR TARR

William Arthur Tarr (fig. 1) was born on 29 March 1881, in the small town of New Cambria (population <400) in the rolling hills of northeast Missouri (Mark Twain country) to John W. and Ida Elizabeth (nee Hill) Tarr. William spent his boyhood on a farm near Lyons, Kansas, where he developed interest in minerals while playing with the screenings from a

sand containing agates and from picking through the salt mine dumps near Lyon (Branson, 1939). He worked in the Lyons salt mines for a period of time. It was visits to his grandparents in Missouri that led to an acquaintance with coal mines and the decision to become a mining engineer or a geologist.

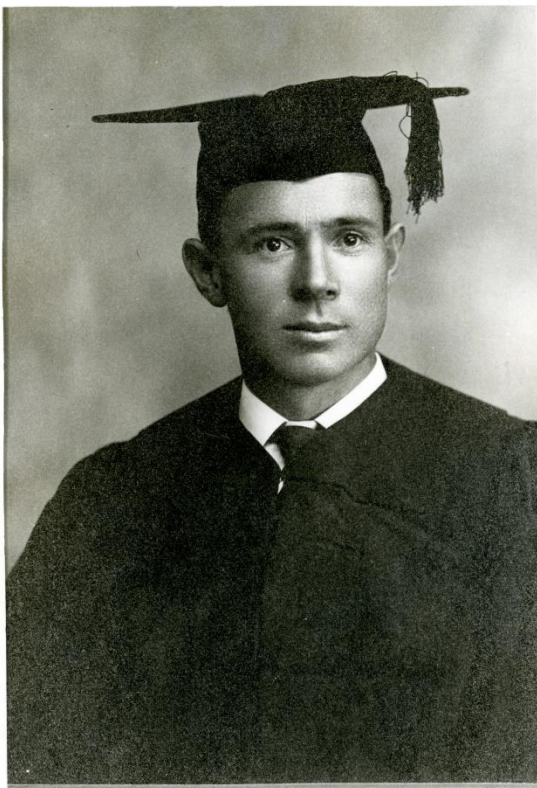


1936

**Figure 1.** Photo of William Arthur Tarr. Photo courtesy of the University Archives, University of Missouri.

In 1893, his family moved to Oklahoma near Enid. After two years of high school (age 19), William took the college entrance exams and entered the Oklahoma Agricultural and Mechanical College in Stillwater, Oklahoma (now

Oklahoma State University–Stillwater). William graduated with a BS degree in engineering in 1904, and in 1905, he married Coralynn Gertrude (nee Neumann) of Hillsdale, OK in 1905. He then attended the University of Arizona and graduated with a BS degree in mining engineering in 1908 (fig. 2). William received his doctorate from the University of Chicago in 1911. In 1927, he was granted an Honorary Doctor of Science from Oklahoma A and M.



1908

**Figure 2.** William A. Tarr's University of Arizona graduation. Photo courtesy of University Archives, University of Missouri.

From 1908-1909, Mr. Tarr was an Instructor of Geology at the University of Arizona.

Shortly after graduating with his PhD, in 1911, Dr. Tarr accepted a position as an Instructor of Mineralogy and Geology at the University of Missouri (fig. 3). He was promoted rapidly through assistant professor and associate professor, attaining the rank of full professor in 1919. He remained in this position until his death in 1939. During the summer seasons, Dr. Tarr taught summer sessions at the University of Chicago and worked as a geologist for Missouri Bureau of Geology and Mines. He also was a consulting geologist for various petroleum companies.



1922

**Figure 3.** William A. Tarr as a Professor of Mineralogy and Geology. Photo courtesy of the University of Missouri Archives, University of Missouri.



Dr. Tarr was an active member in various professional associations. He was a Fellow of the Mineralogical Society of America, serving as councilor from 1925-1929 and as vice-president in 1934. He was a Fellow of the Geological Society of America and the American Association for the Advancement of Science, and a member of the Mineralogical Society of Great Britain and Ireland, the American Association of Petroleum Geologists, and the Society of

Sedimentary and Economic Mineralogist. In addition, Dr. Tarr was a member of the Kappa Sigma social fraternity and an activity participant in three scholarship/professional fraternities: Phi Kappa Phi, Sigma Xi, Gamma Alpha, and Sigma Gamma Epsilon. Dr. Tarr was the chapter advisor for the Epsilon Chapter of Sigma Gamma Epsilon, which had been established in 1919, at the University of Missouri (fig. 4).



**Figure 4.** A page from the 1920 *The Savitar*, the University of Missouri yearbook featuring the Epsilon Chapter of Sigma Gamma Epsilon. Dr. W.A. Tarr (center row, 3<sup>rd</sup> to the right) was the Epsilon Chapter advisor. Figure courtesy of the University Archives, University of Missouri.

Dr. Tarr's geological interests were in mineralogy, general geology, and economic geology, but one of his strongest interests was in the origin and nature of stylolites and other concretionary structures in sedimentary rocks, as well as the lead-zinc and barite deposits of Missouri. His work on stylolites has

been referenced in over 40 scientific publications (e.g. Burma and Riley, 1955; Park and Schot, 1968; Ramos, 2000). Tarr also maintained a keen interest in cone-in-cone structures and stated that stresses giving rise to fibrous calcite in cone-in-cone structures were attributable to loading and overburden (Tarr, 1932). Tarr's early work on the origin of cone-in-cone structures has been referenced in over 33 scientific publications (e.g. Wang and Lee, 2012; McBride, *et al.*, 2003; Bustin, 1982; Tarney and Schreiber, 1977). In her work on the origin of cone-in-cone calcite veins in the Gogolin Formation (Middle Triassic) in southwestern Poland, Kowal-Linka (2000, p. 54) stated that the vertical shifts of adjacent cones, remnants of primary fibrous calcite crystals, as well as the burial history, justify the application of Tarr's theory in interpreting the origin of the secondary cone-in-cone structure within the fibrous structure veins.

### **WILLIAM A. TARR, THE TEACHER**

According to the University of Missouri Bulletin of courses in 1912, Tarr taught the following courses. The course descriptions were written by Dr. Tarr for the University's course catalog.

***Rocks and Rock Minerals.*** A course designed to meet the needs of students who deal with rocks, as geologists, engineers, architects, and agriculturists. The rocks and rock minerals were to be studied by simple megascopic methods, such as can be used in the field and about four hours per week are spent in the laboratory. Rocks and Rock Minerals had a pre-requisite of Principles of

Geology or Geology of Soils or Geology for Engineers.

***Mineralogy.*** The study of crystallography, and the general physical and chemical properties of minerals, followed by descriptions of the minerals.

***Economic Geology.*** An examination of the origin, mode of occurrence, distribution, uses, methods of obtaining, and conservation of deposits of coal, oil and gas, clays, building stones, cement materials, gypsum, fertilizers and minor minerals. Field trips to mines and quarries near Columbia will be made. The second course in Economic Geology (106b) examined the deposits of ores of iron, copper, lead, zinc, silver, nickel, and aluminium. Students were to study the main ores of each metal in the laboratory. Economic Geology had the typical requisites of Physical Geology and Mineralogy, but also included Elementary Chemistry.

In addition to the above, Dr. Tarr also taught **Petrology** and **Principles of Ore Deposits**. Joseph Connolly, a former graduate student, described Dr. Tarr as 'a severe taskmaster during class or laboratory periods, always demanding the best effort' (Connolly, 1940). Connolly (1940, p. 191) describes a particular event during an advance mineralogy class when apparently the students were unprepared and Dr. Tarr quietly picked up his books and left the classroom, but as he left stated, with a smile, "*Gentlemen, I'm too busy to undertake a fruitless discussion with a class so totally uninformed. Let me know when you wish to*

meet with me again.” Apparently, that was the last time the students attended class unprepared!

Dr. Tarr was a skilled and inspiring field geologist. He permitted no “grouching” about the weather, terrain, or problems with transport, and led by example. Even as a task master, according to Connolly (1940), Tarr enjoyed a good laugh and horseplay during ‘off-duty’ hours.

### **Published Works of W.A. Tarr**

Dr. Tarr was a prolific scholar and had already published one paper on the copper in the ‘red beds’ of Oklahoma prior to his appointment as an instructor of geology and mineralogy to the faculty at the University Missouri in 1911. During his 28-year career at the University of Missouri, Dr. Tarr published seventy-one (71) papers eighteen (18) abstracts of presentation, and three (3) text books. Most of his published papers were in premier journals such as *Bulletin of the Geological Society of America*, *American Mineralogist*, and *Economic Geology*.

Several of Dr. Tarr’s published works were with Dr. William H. Twenhofel at the University of Kansas. Dr. Twenhofel was one of the founding members of the Society of Sigma Gamma Epsilon in 1915, and the Society’s first National President (Ford, 2012). In 1920, student delegates to the 3<sup>rd</sup> National Convention of Sigma Gamma Epsilon, which was hosted by the Epsilon Chapter at the University of Missouri established *The Compass: Earth Science Journal of Sigma Gamma Epsilon* and elected Dr. Tarr as the first National Editor. It is interesting to note that although

Dr. Tarr served as the National Editor of *The Compass* for nineteen years, until his death in 1939 (Ford, 2012; Schram, 1939), he never published a paper in the Society’s journal. A list of Dr. Tarr’s scholarly works is provided below.

### ***Published Papers***

- 1910 Copper in the ‘red beds’ of Oklahoma, *Economic Geology*, v. 5, p. 221-226.
- 1912 The lack of association of the irregularities of the lines of magnetic declination and the petroleum fields, *Economic Geology*, v. 7, p. 647-661.
- 1913 Common rocks and their determination, *Nature-Study Review*, Dec 1912-Jan 1913.
- 1914 *Tables for the Determination of the Common Minerals and Rocks*, Columbia, MO.
- 1914 A study of the effects of heat on Missouri granites, *University of Missouri, Bulletin*, v. 15, no. 27 (co-authored w/ L.M. Neumann)
- 1915 A study of some heating tests, and the light they throw on the cause of the disaggregation of granite, *Economic Geology*, v. 10, p. 348-367.
- 1915 Native silver in glacial material at Columbia, MO, *American Journal of Science*, v. 40, p. 219.
- 1916 Stylolites in quartzite, *Science*, v. 43, p. 819-820.

- 1916 *Tables for the Determination of the Common Minerals and Rocks* (Revised Edition), Columbia, MO.
- 1917 Origin of the chert in the Burlington limestone, *American Journal of Science* (4), v. 44, p. 409-452.
- 1918 The barite deposits of Missouri and the geology of the barite district, *University of Missouri Studies*, 3, No. 1.
- 1918 Rhythmic banding of manganese dioxide in rhyolite tuff, *Journal of Geology*, v. 26, p. 610-617.
- 1918 Oolites in shale and their origin, *Geological Society of America, Bulletin*, v. 26, p. 587-600.
- 1918 Discussion of paper by R.M. Bagg on fluorite in Ordovician limestones of Wisconsin, *Geological Society of America Bulletin*, v. 29, p. 104.
- 1919 The barite deposits of Missouri, *Economic Geology*, v. 14, p. 46-67.
- 1921 An effort to determine how successful are selections for membership in Sigma Xi, *Sigma Xi Quarterly*, v. 9, p. 23-26.
- 1921 *Tables for the Determination of Common Minerals and Rocks* (Revised Edition) Columbia, MO.
- 1921 The minerals of Madison County, Missouri, *American Mineralogist*, v. 6, p. 7-10.
- 1921 Syngenetic origin of concretions in shale, , *Geological Society of America*, v. 32, 373-384.
- 1922 Cone-in-cone, *American Journal of Science* (5), v. 4, p. 199-213
- 1924 Intrenched and incised meanders of some streams on the northern slope of the Ozark Plateau in Missouri, *Journal of Geology*, v. 32, p. 583-600.
- 1924 Report on the committee on sedimentation, *National Research Council*, Washington D.C. (co-authored w/ W.H. Twenhofel and others).
- 1925 Researches in sedimentation in 1924; report of the committee on sedimentation, *National Research Council*, Washington D.C. (co-authored w/ W.H. Twenhofel and others).
- 1925 Is the chalk a chemical deposit?, *Geology Magazine*, v. 62, p. 252-264.
- 1926 Researches in sedimentation in 1925-26: Report of the committee on sedimentation, *National Research Council*, Washington D.C. (co-authored w/ W.H. Twenhofel and others).
- 1926 The origin of chert and flint, *University of Missouri Studies*, 1, no. 2.



- 1926 Silicification of erosion surfaces, *Economic Geology*, v. 21, p. 511-513.
- 1926 Chert and flint, in, Twenhofel, W.H. (ed), *Treatise on Sedimentation*, Baltimore, Williams and Wilkins p. 378-394.
- 1926 Concretions, in, Twenhofel, W.H. (ed), *Treatise on Sedimentation*, Baltimore, Williams and Wilkins, p. 498-515.
- 1926 Cone-in-cone, in, Twenhofel, W.H. (ed), *Treatise on Sedimentation*, Baltimore, Williams and Wilkins, p. 515-518.
- 1926 Stylolites, in, Twenhofel, W.H. (ed), *Treatise on Sedimentation*, Baltimore, Williams and Wilkins, p. 518-521.
- 1927 Origin of chert and flint, *Pan American Geologist*, v. 47, p. 73.
- 1927 Alternating deposition of pyrite, marcasites, and possibly melnikovite, *American Mineralogist*, v. 12, p. 417-421.
- 1927 Researches in sedimentation in 1926-27; Report of the committee on sedimentation, *National Research Council*, Washington D.C. (co-authored w/ W.H. Twenhofel and others).
- 1928 Syngenetic pyritization in local reducing areas of Pennsylvanian shales in Missouri, *Pan-American Geologist*, v. 49, p. 73.
- 1928 Cone-in-cone concretions from the Devonian of New York, *Science*, n.s., v. 68, p. 403.
- 1928 New types of columnar and buttress structures, *Bulletin of the Geological Society of America*, v. 39, p. 1149-1156 (co-authored/ E.B. Branson).
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- 1929 Doubly terminated quartz crystals occurring in gypsum, *American Mineralogist*, v. 14, p. 19-25.
- 1929 Pseudo-cubic quartz crystals from Artesia, New Mexico, *American Mineralogist*, v. 14, p. 50-53 (co-authored/ J.T. Lonsdale).
- 1929 The origin of the zinc deposits at Franklin and Sterling Hill, New Jersey, *American Mineralogist*, v. 14, p. 207-221.
- 1930 Recent publications on chert, flint, concretions, cone-in-cone, and stylolites, Report of the committee on sedimentation, *National Research Council*, Washington D.C., Reprint and Circular Series, No. 92, Report of the committee on sedimentation.
- 1932 Meteorites in sedimentary rocks?, *Science*, n.s., v. 75, p. 17-18.
- 1932 A barite vein cutting granite of southeastern Missouri, *American Mineralogist*, v. 17, p. 443-448.

- 1932 Chert and flint, in Twenhofel, W.H. (ed), *Treatise on Sedimentation* (2<sup>nd</sup> Edition), Baltimore, Williams and Wilkins, p. 519-546.
- 1932 Concretions, in Twenhofel, W.H. (ed), *Treatise on Sedimentation* (2<sup>nd</sup> Edition), Baltimore, Williams and Wilkins, p. 696-716.
- 1932 Cone-in-cone, in Twenhofel, W.H. (ed), *Treatise on Sedimentation* (2<sup>nd</sup> Edition), Baltimore, Williams and Wilkins, p. 716-733.
- 1932 Chert and flint, concretions, and cone-in-cone, Report of the committee on sedimentation, 1930-32, *National Research Council*, Washington D.C., p. 90-99.
- 1932 Intrusive relationship of the granite to the rhyolite (porphyry) of southeastern Missouri, *Bulletin of the Geological Society of America*, v. 43, p. 965-992.
- 1933 The origin of the sand barites of the lower Permian of Oklahoma, *American Mineralogist*, v. 18, p. 260-272.
- 1933 The Miami-Picher zinc-lead district, *Economic Geology*, v. 28, p. 463-479.
- 1933 A post-Devonian igneous intrusion in southeastern Missouri, *Journal of Geology*, v. 41, p. 815-823 (co-authored w/ W.D. Keller),
- 1933 Origin of the “Beef” in the Lias shales of the Dorset coast, *Geology Magazine*, v. 70, p. 289-294.
- 1933 Origin of the concretionary structures of the magnesian limestone at Sunderland, England, *Journal of Geology*, v. 41, p. 268-287.
- 1934 Cone-in-cone from northwest Louisiana, *Louisiana Conservation Review*, April, p. 34-35.
- 1934 A hydrothermal deposit in Wayne County, Missouri, *Economic Geology*, v. 29, p. 84-92 (co-authored w/ J.J. Bryan).
- 1934 The Miami-Picher zinc-lead district, *Economic Geology*, v. 29, p. 779-780.
- 1935 The origin of the Decaturville dome, Camden County, Missouri, *Proceedings of the Missouri Academy of Science*, v. 1, p. 99-101.
- 1935 The linnacite group of cobalt-nickel-iron-copper sulfides, *American Mineralogist*, v. 20, p. 69-80.
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- 1936 Dickite in Missouri, *American Mineralogist*, v. 21, p. 109-114 (co-authored w/ W.D. Keller)
- 1937 Carbonation vs. carbonatization, *Science*, v. 85, p. 198.
- 1937 Trend of mineralogical research, *American Mineralogist*, v. 22, p. 869-871.
- 1937 Occurrence and origin of chert, *Tulsa Geological Society Digest*, p. 22-24.
- 1937 Some occurrences of kaolinite deposited from solution, *American Mineralogist*, v. 22, p. 933-935 (co-authored w/ W.D. Keller).
- 1937 Origin of the marcasites sink-hole deposits of central Missouri, *American Mineralogist*, v. 22, p. 830-841.
- 1938 The origin of the iron deposits of Pilot Knob, Missouri, *Proceedings of the Missouri Academy of Science*.
- 1938 Terminology of siliceous sediments, *Committee of Sedimentation of the National Research Council*, Washington, D.C.
- 1939 Contributions to a knowledge of the lead and zinc deposits of the Mississippi Valley region, *Geological Society of America Special Papers*, v. 24, (co-authored w/ E.S. Bastin and others).
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- 1935 *Introduction to Geology*, New York, McGraw-Hill Book Co., 470 p. (co-authored w/ E.B. Branson).
- 1938 *Introductory Economic Geology (2<sup>nd</sup> Edition)*, New York, McGraw-Hill Book Co, 645 p.
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- 1918 Genesis of Missouri lead and zinc deposits, *Geological Society of America Bulletin*, v. 29, p. 86-87.
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