

In memory of A. R. “Pete” Palmer (1927–2022)

On October 24th, 2022 the geological community suffered a great loss with the passing of Allison Ralph “Pete” Palmer at the age of 95. Pete died peacefully after a brief illness at the Frasier Meadows Retirement Community in Boulder, Colorado, where he lived—forever enthusiastic and engaging—for the last 15 years of his life.

Pete loved trilobites. From the moment he split his first whole one out of a rock to the last time he bent over one at a tiny desk lab in his Frasier suite, his interest never flagged. He was also fascinated by Cambrian stratigraphy, which was only dimly understood when he started. These two research interests intertwined throughout his six decades of active research, and he made monumental contributions to both.

Following a B.Sc. from Pennsylvania State University (1946) and a Ph.D. from the University of Minnesota (1950), Pete’s career had four distinct phases. Initially (1950-66), he worked for the United States Geological Survey (USGS; Washington, DC) as the Cambrian Paleontologist-Stratigrapher. Next (1966-80), he joined academia as Professor of Geology in the Dept. of Earth and Space Sciences at SUNY Stony Brook (New York), where he taught, mentored graduate students, and was occasional chair. Changing paths again (1980-94), he became Editor-in-Chief of the colossal 30-volume (nearly 2000 contributors!) *Decade of North American Geology* project for the Geological Society of America (GSA; Boulder, Colorado). Finally, he transitioned to a gentleman scientist, who occasionally mentored students and consulted with international trilobite experts in his home laboratory in Boulder, gave numerous geological talks and field trips, spoke frequently about sustainability issues and deep time, and always kept his microscope close by. Ever the diligent scribe, Pete wrote over 250 vignettes from

his life, filed under “Memoirs and Memories” on his home computer, which helped us tell his story.

Contributions to Cambrian paleontology and stratigraphy

Pete discovered his purpose in life early while an undergraduate at Penn State, when he first encountered trilobites. He said it was love at first sight. A freshman geology course introduced him to fossil bearing rocks by requiring that he map one square mile near campus. One day when fossil hunting for fun in a limestone outcrop near the town of Bellefonte “I made a lucky swing of my geology hammer at the underside of a limestone ledge in a railroad cut and out fell the largest *and first complete Bellefontia* [trilobite] then known” (Palmer, n.d.; emphasis added). More discoveries in a pile of limestone rocks unearthed by a local farmer and dumped near campus revealed traces of species not known from that area, which engaged him further. Trilobites then became the focus of his senior, and later doctoral, research. They remained a passionate interest his whole life.

Despite a growing and boisterous family of five kids, Pete managed to squeeze collecting trips into many summers. He would pile the entire family, complete with camping gear, field gear, and a crib, into a car (initially small Nash Rambler station wagons and later a Volkswagon van) and drive from Virginia to Montana, camping each night. Leaving his wife and kids at his in-laws, he would head to field sites in the Utah-Nevada-California area, and then circle back to Montana for the return drive to Virginia. The word indefatigable comes to mind.

Pete made monumental contributions to geology and paleontology throughout his life. He published more than 150 papers, monographs, and other contributions (listed below), naming

more than 230 species and almost 50 genera of trilobites. He appreciated the importance of considering fossils within their geologic context, which allowed him to refine the stratigraphy of the Cambrian System on Laurentia. He also developed and popularized the “biomere” concept of trilobite evolution and extinction (Palmer, 1965, 1979, 1984), which spurred more than four decades of work to more fully understand the patterns and processes involved (e.g., Taylor, 2006). Indeed, Pete was always eager to encourage research and new methods to drive the science forward.

Pete also served on the International Subcommittee on Cambrian Stratigraphy (ISCS) for more than 20 years, including a stint as Chair. While on the ISCS, Pete joined with other distinguished international researchers to search the world—Siberia, China, Australia, and Canada, among other places—to identify a type locality for the base of the Cambrian. The boundary was eventually defined to lie in southeastern Newfoundland.

In 1981 Pete co-founded the Institute for Cambrian Studies (ICS), a non-profit organization which serves to promote the scientific study of the Cambrian System. He served as President for 25 years, during which time he created and curated the internationally important ICS Research Library and Collections (which now resides with MW at the University of Chicago). The ICS visitor’s logbook is testament to just how many of us—students, professionals, and amateurs alike—benefitted from Pete’s expertise, enthusiasm, generosity, and hospitality when visiting his Boulder home.

For his many contributions, Pete garnered numerous honors and awards, most notably: The Walcott Medal (1967, National Academy of Sciences), the Golden Plate Award (1968, American Academy of Achievement), Fellow of the American Association for the Advancement of Science (1981), Distinguished Service Award (1992, Geological Society of America), the

Paleontological Society Medal (1998, Paleontological Society) and the Moore Medal (2006, Society of Economic Paleontologists and Mineralogists).

Contributions to the broader geological community, and DNAG

Although his name will always be associated with the Cambrian System, Pete also made far-reaching contributions to the broader geological community. A GSA member right up until his death, Pete served on many committees, including those on stratigraphic nomenclature, education and outreach, strategic planning, and meeting planning. Probably his biggest contribution to GSA—and to the broader geological community—was as Editor-in-Chief of the monumental *Decade of North American Geology* (DNAG) series, which included being chief fund-raiser, and wrangler of geological maps and laggardly sub-editors. This massive effort involved participants from over 100 universities, 20 provincial and state geological surveys, 23 oil or mining companies or consulting firms, 18 countries, and 23 agencies in the United States, Canada, Mexico, Central and South America, Greenland, and Israel.

The early DNAG days were harried, mostly due to money concerns. First, Pete had to create a separate legal entity, the GSA Foundation, to ensure that DNAG funds were not siphoned off to other GSA projects. Second, the DNAG project was far too expensive for GSA to bankroll on its own. So, Pete, with Dwight Roberts (a Boulder banker with an undergraduate degree in geology, and first Executive Director of the GSA Foundation) and Bob Wilson (head of Exxon Research at the time and a past President of GSA), set out to beat the bushes for funds by visiting the headquarters of major American oil companies. The response during their first stop at Marathon Oil's Denver headquarters set the tone for all subsequent fundraising: "If you

can get EXXON to contribute \$250,000, [Marathon] will contribute \$100,000” (Palmer, n.d.). These persistent efforts netted \$2.5 million in pledges for the estimated \$4 million project. The rest was raised by offering a pre-publication price of \$1,500 for the complete series to geology department libraries and many individuals.

Pete then spent the next 12 years recruiting volume editors, organizing workshops for regional volumes, generating field guides, figuring out how to print huge oversized color maps, and trying to keep the whole project moving forward. The resulting series remains the most comprehensive survey of North American Geology ever compiled. In recognition, Pete was awarded the GSA Distinguished Service Award in 1992.

Writing and Serendipity

Writing was in Pete’s DNA. He wrote early and prodigiously. He contributed poems, crosswords, and short stories to newspapers in elementary, middle, and high school. For four summers, starting at age 12, he reported for a local newspaper where his family camped. From 1951 to 2009, he wrote over 150 papers, book chapters, and monographs on trilobite systematics, global stratigraphy, and paleontological techniques. He wrote a series of essays for *GSA Today* on sustainability, and even wrote songs, one of which (*Indian Summer Day*) was professionally recorded and copyrighted in Los Angeles at the end of a cross-country hitchhiking trip from New Jersey in 1945 (Palmer, n.d.). To the end, Pete contributed to the Memoirs group at Frasier Meadows and wrote biographies of new residents.

Pete’s inordinate fondness for serendipity—in both science and life—bordered on the religious: “Serendipity is one of my favorite words” (Palmer, n.d.). He wrote about it often—

sometimes even professionally (Palmer, 1975)—starting with how his first position with the USGS in 1950 emerged from concatenated serendipities. Pete’s PhD supervisor Charlie Bell knew a colleague who had close connections to Preston Cloud (new chief of Paleontology and Stratigraphy branch at USGS) at a time when Cloud was looking for a Cambrian paleontologist who could take advantage of Walcott’s massive collection of trilobites that were housed with USGS in the upper floors of the Smithsonian: the Walcott collection curator had died a few years earlier and not yet been replaced. Bell also wisely insisted that, if Pete wished to become a paleontologist, he needed a good biology background. A course on ‘faunistics’ introduced him to Pat, who became his wife of over 65 years.

Serendipity played a role in his discovery of a world-class locality for Miocene fossil insects, arachnids and freshwater crustaceans. It was one of only three sites in the world where non-marine arthropods could be extracted from the matrix and where preservation was as good or better than specimens preserved in amber (Palmer, 1958). This early major monograph (Palmer, 1958) resulted from a string of serendipities: a) a curious field geologist intrigued by one odd nodule, that by chance arrived at USGS at a time when Pete was b) temporarily an administrative assistant processing incoming samples for Cloud, c) exploring the utility of acid extraction of fossils from limestones, d) in the same building as terrestrial arthropod specialists, and e) permitted by an indulgent supervisor (Cloud) to embark on a project far from his expertise.

Serendipity also led to one of Pete’s enduring legacies, a marvelous short educational film about deep time that he conceived, produced and narrated: The Earth *Has* a History (1989; now available on the GSA YouTube channel, <https://www.youtube.com/watch?v=H2gJ4w7pMqM>). The seed for this film was planted after he

opted conspiratorially to attend what he suspected to be a creationist presentation debunking the great age of the earth. Afterwards, he thought “There’s got to be a way to show folks the Earth is really old without using numbers!” (Palmer, n.d.). A week later, while hiking the Rattlesnake Gulch trail in Eldorado Canyon State Park, he saw, for the first time, the striking angular unconformity between uplifted and tilted 1.7-billion-year-old sedimentary white quartzites and the much younger (~100 million years old) and more conspicuous overlying tilted red sandstones that dominate the canyon entrance and form the Flatirons west of Boulder. This angular unconformity was nearly as dramatic as the one at Siccar Point that led James Hutton to recognize that Earth history had “no vestige of a beginning and no prospect of an end”. The Eldorado Canyon site inspired Pete to start thinking about a geological field trip where he could help people see—inescapably—the fallacy of a 6,000-year-old Earth. But to complete the story for the field trip, he still needed a clear example of how sediments are horizontal when first laid down.

Fortunately (again), the day after first seeing that dramatic unconformity, a casual conversation at his own church led him to visit a newly excavated trench for a gravel pit, where over 100 meters of conspicuously horizontal sediments were exposed. Pete then had all the pieces for a compelling, easy-to-grasp field trip to see inescapable evidence for deep time in close proximity: a) modern horizontal sediments (Principle of Original Horizontality), b) younger sediments that lay on top of older ones (Principle of Superposition), and c) the stunning Eldorado Canyon angular unconformity that revealed two rounds of sedimentation, lithification, uplift, tilting, and erosion of the Earth’s surface. South Boulder Creek had cut the perfect cross-section through deep time.

Thereafter, Pete led over 100 field trips there for school groups, church groups, elder-hostel groups, natural history groups, etc., to tell the Earth's story. One of the first was with creationists from the church that inspired his search initially. Most were persuaded that the Earth was indeed likely much older than 6,000 years, based on what Pete showed them, but they still insisted that humans had been specially created. Serendipity helped win half the battle. At his request, Pete's ashes were spread at a viewpoint overlooking this remarkable site.

Pete Palmer will be remembered as a gentleman, scholar, and mentor who profoundly shaped our understanding of trilobite systematics and the Cambrian System. He tirelessly devoted his life to facilitating and promoting science among professional paleontologists and in the broader community. His enduring legacy continues to inspire many others to follow in his footsteps.

Declaration of competing interests

A. Richard Palmer is the son of Pete Palmer. The careers of both authors were influenced by Pete Palmer.

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Mark Webster¹ and A. Richard Palmer²

¹Department of the Geophysical Sciences, University of Chicago, 5734 South Ellis Avenue,
Chicago, Illinois 60637, U.S.A. <mwebster@geosci.uchicago.edu>

²Department of Biological Sciences, University of Alberta, Edmonton, Alberta T6G 2E9, Canada
<rich.palmer@ualberta.ca>

