



## Original Article

Meandering Musings by Linus Pauling: “American Scientists and the Spirit of the Frontier”<sup>☆</sup>George S. Bause, MD, MPH<sup>\*</sup>

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## ARTICLE INFO

## Article history:

Received 31 August 2015

Received in revised form 19 October 2015

Accepted 20 November 2015

## ABSTRACT

Hoping to raise funds in 1975 for his namesake institute, Linus Pauling submitted to *Esquire* magazine a 32-page handwritten manuscript, “American Scientists and the Spirit of the Frontier.” Angered when his submission for publication was declined, Pauling eventually gifted the original manuscript in 1986 to his friend, Linus Pauling Institute fundraiser Stephen Maddox, who would sell it in 2004 to the Wood Library-Museum of Anesthesiology. Published accurately here for the first time, the manuscript captures not only Pauling’s sweeping metaphor of scientists as frontiersmen but also the creative process by which Pauling formulated his hydrate microcrystal theory of general anesthesia.

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## The “Hysterical Soliciting” of Pauling’s Potboiler

From September through November of 1975, scheming and then skirmishing transpired between a master of fiction, Gordon J. Lish (1934–current; literary editor, author, and educator; New York, NY; pseudonym: “Captain Fiction”) and a master of nonfiction, Linus C. Pauling, PhD (1901–1994; theoretical physical chemist and social activist, Big Sur, CA). Popularly known for championing vitamin C, Pauling still remains the only person ever awarded two unshared Nobel Prizes—for Chemistry (1954) and Peace (1962). Eventually lauded as an emeritus professor at both the California Institute of Technology and Stanford University, Pauling forsook the groves of Academe for a park (ie, Menlo Park, CA) to found in 1973 his Institute of Orthomolecular Medicine. That organization was swiftly renamed the Linus Pauling Institute of Science and Medicine (LPI) to facilitate fundraising.

The autumn of 1975 challenged both Editor Gordon Lish and Professor Pauling with intense scheduling pressures. As *Esquire*’s Fiction Editor (1969–1976), Lish was preparing the final monthly issue of the year for that popular men’s magazine. Plans included inviting more than 30 “Great Americans” to write about “Great American Things.” Two celebrity scientists James Watson (codiscoverer of the DNA double helix) and Linus Pauling would be invited to contribute articles.<sup>1</sup>

However, Pauling was scheduled to garner an armload of awards and deliver a series of lectures over a 30-day period from mid-September to mid-October. His speaking tour would take him from the LPI to the capitals of the United States, Japan, and then the Soviet Union. In Washington, DC, Pauling was to receive the National Medal of Science from President Gerald Ford (see Fig. 1). Including Tokyo, Hiroshima, and Nagasaki, extensive touring in Japan was particularly wide ranging both geographically and topically, from pacifism to vitamin C. In Moscow, Pauling was scheduled to attend the Akademia Nauk (Academy of Science) before granting a television interview for a potential 80 million viewers. Given the preparations and packing required for the month’s worth of lecturing ahead of him, Pauling quite understandably declined Lish’s invitation to, on short notice, dash off a lay-friendly article to *Esquire*.

However, Pauling relented, following Lish’s self-described “hysterical soliciting.”<sup>1</sup> After Lish quoted *Esquire*’s compensation to authors as \$1 per word, Pauling realized that he could squeeze in time to author a quick article as a fundraiser for his cash-strapped namesake institute (LPI).<sup>2</sup> Pauling understood that payment by *Esquire* was unconditionally guaranteed by what he characterized as an “oral contract” with Lish.<sup>3</sup>

Ironically, as submitted to *Esquire*, Pauling’s manuscript offers glimpses into how he might have composed it. Including a probable day of “finding out what facts [were]...known” and organizing those facts while “waiting to go to sleep” that night, Pauling took “two days...to write the article.”<sup>3</sup> In preparing to write the article on day 1 (September 9, 1975), Pauling had apparently composed a list of 10 scientists to cite as “frontiersmen.” He had also located a 1944 quotation about “New frontiers of the mind” from a letter that

<sup>☆</sup> Conflicts of Interest: None.

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**Fig. 1.** Dr. Linus Pauling receives the 1974 National Medal of Science from President Gerald Ford on September 18, 1975. Image in the public domain.

President Franklin D. Roosevelt (1882–1945; 32nd US President, 1933–1945, Washington, DC) had written to Vannevar Bush, DENG (1890–1974; American engineer and Director, US Office of Scientific Research and Development). That quote was cited in *Science the Endless Frontier*, the report that Bush filed with the Office of the President in July of 1945.<sup>4</sup> As part of the submission to *Esquire*, Pauling had also determined that he would include his own creative process behind formulating his hydrate microcrystal theory of general anesthesia.<sup>5–8</sup>

Although this theory is viewed with skepticism today, as early as 1961, Pauling had concluded:

The hydrate-microcrystal theory of anesthesia by non-hydrogen-bonding agents differs from most earlier theories in that it involves primarily the interaction of the molecules of the anesthetic agent with water molecules in the brain, rather than with molecules of lipids. The postulated formation of hydrate microcrystals similar in structure to known hydrate crystals of chloroform, xenon, and other anesthetic agents as well as of the substances related to protein side chains, entrapping ions and electrically charged side chains of protein molecules in such a way as to decrease the energy of electric oscillations in the brain, provides a rational explanation of the effect of the anesthetic agents in causing loss of consciousness.<sup>7</sup>

The manuscript is a remarkable record of Pauling's musings as the Nobel laureate meanders among 10 scientists and through his own creative

process in developing his hydrate microcrystal theory of general anesthesia. Incredibly, when it came to sitting down and writing his submission for *Esquire*, Pauling implies that, after researching it on September 9 and presumably ruminating on it that evening, he penned the 32-page manuscript on day 2—all in one day! Pauling shared with Lish: "Here is my paper, which I wrote yesterday [September 10, 1975]. I hope that you find it satisfactory. It contains about 2250 words, but I do not want to shorten it, because the development of the theme is logical."<sup>9</sup> Likely lengthier than what Lish had solicited, the manuscript, at Lish's "\$1.00 a word,"<sup>2</sup> promised "to pay \$2,000"<sup>3</sup> to Pauling's cash-strapped LPI. The likelihood of Pauling's penning this manuscript in one nearly continuous sitting is supported by his friend and former LPI Development Director, who also noted, "Dr. Pauling has a gift for writing and his own corrections occur as he writes making the thought continue on without a hitch" (Stephen D. Maddox, e-mail communication, March 23, 2004).

### Septembers All: The Manuscript's Penning, Initial Transcription, and 40 Years Later...Accurate Transcription (1975–2015)

Housed in the K. Garth Huston, Sr, Rare Book Room of the Wood Library-Museum of Anesthesiology (WLM), Linus Pauling's original manuscript—handwritten on September 10, 1975, and, fortunately, returned by Lish—was transcribed by this journal article's author (hereafter, "transcriber").<sup>10,11</sup> It was cross-checked against the LPI's typewritten transcript from September 11, 1975.<sup>12</sup> Three discrepancies were noted between the two transcriptions. These were deemed transcription errors in the typewritten LPI transcript by two independent arbiters, WLM Archivist Felicia Reilly, MALS, and WLM Museum Registrar Judith Robins, MA.

Photocopies of the original *Esquire*-rejected manuscript are included with the Lish Papers at Indiana University and with the Pauling Papers at Oregon State University.<sup>13,14</sup> In light of the latter, scholars should note two issues with the manuscript's listing in *The Pauling Catalogue*<sup>15</sup>:

1. The *Catalogue* date for the listing, September 11, 1975, belongs to the item pictured, the typescript—in contrast, the original handwritten manuscript is clearly dated "10 September 1975" by Pauling (see Fig. 2).
2. The manuscript listing is for a photocopy of the manuscript (there at Oregon State University), not the original manuscript (which is in Schaumburg, IL).

After reviewing all of the pertinent files in person in Corvallis, Oregon (Ava Helen and Linus Pauling Papers, 1873–2013, Special Collections and Archives Research Center, Oregon State University Libraries) and after surveying the English language scientific and popular literature, the transcriber is satisfied that no accurate transcription of this manuscript has ever been published previously. Below, the transcriber has represented Pauling's crossed out words or phrases by boldfaced strikethrough (eg, Pauling's crossed out "settle" = ~~settle~~). Words or phrases in the original manuscript that Pauling inserted, by caret and/or superscript, have been transcriber represented by caret and boldfacing (eg, the insertion of the phrase "in 1900" is represented as <sup>in 1900</sup>).

### [For *Esquire*. <sup>^</sup>10 Sept 1975] About 2250 words American Scientists and the Spirit of the Frontier Linus Pauling

During most of the two centuries of its existence the United States has contained frontiers. After the Eastern coast had been settled these frontiers moved toward the West. The American pioneers who overcame the problems of the frontiers and ~~settle~~ opened these regions for settlement had traits ~~of character~~ that we consider characteristically American. They were vigorous and industrious, clear of thought, imaginative and innovative, and bold in conceiving and effective in executing their plans for solving the problems presented by the unexplored and unconquered regions.

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