

In Vino Veritas: **Anesthesia & Mystical Truth**

By George A. Mashour, M.D., Ph.D.

All the Adventures of a Curious Character

I have known Dr. George Mashour since our overlapping days at the Massachusetts General Hospital, and as I pen this introduction, I appreciate anew just why George truly is in a class of his own. Now comfortably ensconced at the University of Michigan, George is by many measures as curious a character as the famous Dr. Richard Feynman from whom I have pilfered the title of this introduction. Beginning with this issue of the Bulletin, we shall be reprinting a variety of his "writings." I can assure you that you will not want for entertainment.

I first met George when he came to the MGH for his anesthesia residency. Although that institution sports its fair share of talented souls, George stood out even within that group. He had, by the time of our first meeting, already completed a Ph.D. in Neuroscience, a residency in psychiatry, and was one of a small group of esteemed Fulbright Scholars. When he showed up in our OR and introduced himself, it was, to quote Bogie's famous old line, "the beginning of a beautiful friendship." Although George may tell audiences that I had a substantial impact on parts of his career, I would counter that George is the one who had an impact on mine. He was one of those residents that all academic faculty dream of finding: bright, energetic, creative and ever so full of the capacity "to do." The opportunity to call him one of my "students" validated my fundamental rationale for being in academia. I have made it my habit to sample each and every one of his writings, some dating from the earliest days of his residency, each reflecting his truly masterful fluency with classical and modern learning. It is, however, his first major anesthesia publication dating from 2004 and a recent talk he gave to my group in Santa Barbara based on a 2005 publication that best reflect the breadth of his intellectual and literary talents.

His 2004 opus, "Consciousness Unbound Toward A Paradigm of General Anesthesia" argues that the state we call "anesthesia" may in fact occur through the unbinding of neural processes that maintain consciousness, and his novel and important insight has enabled a true paradigm shift for researchers in this area. As a first year resident, George drew a fine distinction between the questions of how anesthetics work at a molecular level (mechanism) from how they function at a behavioral level (action). At the opposite extreme, in 2005, George published a small article on the little known link between one of the fathers of our specialty, Dr. Henry Beecher, and the work done by the CIA in the 1950s and 1960s on LSD. In that article, George forces the reader to seriously consider the implications of what perhaps was Beecher's most enduring contribution to medicine, his doctrine of informed consent, and that it was formed in the wake of his relationship to the use and experimentation with LSD.

George's writings will instill both an awe of the mantle that we carry in the name of the ancient craft of relieving pain, and also a genuine sense of pride in the profession that we call our own.

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It is this broad talent—his ability to convey the mystery of our trade, to stir in us the emotion associated with that mystery, yet simultaneously making all of us just a bit wiser about our humble and small place in the eons-long struggle against human suffering—that makes his works worthy of our attention. Enjoy!

—Jason A. Campagna, M.D., Ph.D., Associate Editor

Gentle reader, how fortunate you are to be living in the great state of California. No, it is not because of the sunny climes, nor the vast expanses of the fair Pacific, nor even the sculpted pectoralis majors of your governor. It is, in fact, because of the editor of the *CSA Bulletin*: you are unequivocally blessed to have a wise soul like Dr. Stephen Jackson as the literary *élan vital* of your Society. Although I have never met the man personally, I became thoroughly convinced of his exquisite taste and discerning mind when he lauded a series of essays I penned during my chief residency as “most brilliantly written” and “vastly entertaining.” Here, I said to myself, is a man with vision. Here, I exulted, is a man with his finger on the pulse of the emerging field of literary anesthesiology.

Don't get me wrong, people: I previously have had the experience of submitting articles to other savvy editors in California. Yet, with no offense to them intended, it seems to me that they have an almost irrational obsession with *trivialities* such as “data” and “proof,” expecting me to beat upon my delicate insights with such blunt instruments as “statistics.” Indeed, I often comfortably begin my rebuttal letters with “you're just not getting it!” Dr. Jackson, on the other hand, is a man who seems to understand that the deepest truths cannot be *taught*, but rather are *caught*.

On that note, the present treatise reflects on the topic of anesthesia and mystical truth, a story that has its origins in antiquity and touches on the deepest quandaries of our field. One of the fundamental scientific questions in anesthesiology is the mechanism by which general anesthetics extinguish consciousness, a question that becomes yet more complex when we consider that—somewhere along the road to sweet oblivion—anesthetics can also produce heightened, even *mystical* states of consciousness.

The Temple of Apollo in Delphi was among the most sacred sites of Ancient Greece, because within those hallowed halls was perched *the Oracle*. The Oracle was typically a woman from Delphi who underwent a mystical initiation that transformed her into a prophetic priestess, or *Pythia*. These seers would induce themselves into a trance-like state, from which sprung the cosmic

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truths that guided the lives of the ancients. The Pythia, however, was not simply high on life. As Strabo (64 B.C.-A.D. 25) writes:

They say that the seat of the oracle is a cavern hollowed deep down in the earth, with a rather narrow mouth, from which rises a *pneuma* [the ancient Greek word for gas, vapor, or breath] that produces divine possession. A tripod is set above this cleft, mounting which, the Pythia inhales the vapor and prophecies.



The vapors emanating from the chasm under the Temple thus imbued the Pythia with a mystical force—or did they? Around 1900 an English classicist named Adolphe Oppe visited French archeological excavations at Delphi and found no evidence of a chasm or any source of gas. The tales of old appeared to be debunked, and the mysterious vapors of Delphi were regarded as nothing more than legend throughout the greater part of the 20th century.

Figure 1: Isabella Herb: Early pioneer of anesthesiology.

A more recent investigation by John Hale and colleagues revealed that, in fact, there *were* hidden faults under the Delphic Temple.¹ Analysis of the spring water around the site of the Oracle identified the gases methane, ethane, and ethylene. It was the sweet aroma of ethylene that fit Plutarch's ancient description of the Temple's vapors as expensive perfumes. What finally helped reveal the secret of the gases were not the records of the historian Plutarch, but rather the investigation of one of the great women in the history of anesthesiology. In 1899, Isabella Herb was an anesthetist for Charles Mayo at the Mayo Clinic and, in the 1920s, introduced the anesthetic ethylene into clinical practice.² (Figure 1) Her publications on ethylene from the 1920s and 1930s indicate that its administration in lower doses evokes a trance-like state leading to euphoria and mystical experiences. Occasionally, however, patients under the influence of ethylene would thrash about uttering incoherent screams—descriptions like these fit ancient reports of the Oracles periodically having violent reactions instead of prophecies. The mystery of Delphi appeared to be solved.



Figure 2: William James: Harvard psychologist and philosopher.

The relationship of anesthesia to mystical truth has a more academic manifestation in modernity, indeed, in the Harvard of the late 19th century. Renowned psychologist William James's experiments with nitrous oxide influenced one of his greatest works, *The Varieties of Religious Experience*.³ (Figure 2) In the midst of a nitrous reverie, James once scribbled, "That sounds like nonsense, but it is pure on sense!" James published more formal reflections of his nitrous experiences in an 1898 article entitled "Consciousness Under Nitrous Oxide." This treatise was inspired by the work of one who has been called "anesthesia's philosopher and mystic," Benjamin Paul Blood.⁴ In 1874, Blood published a book entitled *The Anaesthetic Revelation and the Gist of Philosophy*, which heavily influenced the thinking of James. Blood attempted to formulate a foundation for philosophy based on his 14-year investigation into the mysteries of the mind using ether and nitrous oxide. Blood regarded the anesthetic experience as a key to resolving the typical dualistic thinking of Western philosophy. Oscar Wilde, after receiving anesthesia for a tooth removal, elegantly expressed this synthetic experience in a letter to William James:

The next experience I became aware of, who shall relate! My God! I *knew everything*. A vast inrush of obvious and absolutely satisfying solutions to all possible problems ... an all-embracing unification of hitherto contending and apparently diverse aspects of truth took possession of my soul by force ... Then, in a flash, this state of intellectual ecstasy was succeeded by one that I shall never forget ... a state of moral ecstasy. I was seized with an immense yearning to take back this truth to the feeble, sorrowing, struggling world in which I had lived.

So it is that anesthesia conditioned the sense of truth in both the ancient and modern worlds. Perhaps one day the cognitive neuroscience of anesthesiology will grasp these mystical phenomena that may seem like nonsense, but in fact are a most intriguing *on sense*.

See the CSA Web Site for references.

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