The 33rd Rovenstine Lecture
What I Have Learned from 9 Years and 9,000 Papers
Lawrence J. Saidman, M.D.

I begin with a confession. Ever since I attended my first Rovenstine lecture at the American Society of Anesthesiologists (ASA) meeting in 1964, I have wanted to stand before this audience and present this lecture. For giving me this opportunity, I give special thanks to Wilson Willhite, our President and my former Air Force officemate.

It is customary at the start of this lecture to acknowledge Emory Rovenstine, the man for whom this lecture is named. For the majority of anesthesiologists who have served as Rovenstine lecturers, such comments were based on personal experience as either one of Rovenstine's colleagues or one of his residents. However, my career in this splendid specialty began in 1962, 18 months after Rovenstine's death, and thus I rely for my comments on the commentaries written or observed. Although describing the importance of contributions of an individual from a past era often results in undeserved hyperbole, in the case of Rovenstine, it would appear that the credit he receives is properly due him. He entered the specialty in the early 1930s, and following residency and several years on the faculty of the University of Wisconsin under the tutelage of Ralph Waters, he established a new department at New York University in 1935. Over the next 25 yr, the department at Bellevue became known as the preeminent center for training in the United States. Perhaps the best indication of Rovenstine’s influence and Rovenstine’s influence on the specialty is that 34 graduates of the program became heads of medical school departments of anesthesiology.

Genealogically and in an anesthesiologic sense, I, too, count myself as a direct descendant of Rovenstine, having trained under Stuart Cullen, who was a trainee under Rovenstine. Clearly, the base from which many in this specialty originate is very narrow, and much of the current generation derives from the program at New York University, either directly or one and now two generations removed.

I am related to Rovenstine professionally as an anesthesiologist, but an additional connection to him is via the Journal, Anesthesiology. Rovenstine was one of two Associate Editors when the first issue of the Journal was published in 1940. According to Stuart Cullen, who, in 1964, wrote an essay for Anesthesiology detailing the history of the Journal, an unsigned editorial published in the first issue of the Journal, July 1940, was written by Rovenstine. Interestingly, the editorial was described as “lousy” in the letter accompanying submission of the editorial. The author’s own opinion notwithstanding, several statements in the editorial should be required reading for all editors of scientific journals. First, the author comments that, “If articles are judged solely upon their merits and only those published which contain original work, comprehensive reviews, or report valuable experiences, the bulk of medical literature would be decreased as rapidly as it has grown.” The editorial concludes, “There should be an insistence upon brevity,” and “If all the essential facts in articles were omitted many of them would be much shorter.” The editorial concludes, “The American Society of Anesthesiologists, Inc. are convinced that in their special branch of medicine there is a definite need and place for Anesthesiology. However, they realize the responsibility that is theirs; namely, to avoid further burdening the medical literature with articles that do not merit publication.” Thus, in these brief comments, Rovenstine (if, in fact, Cullen was correct in attributing authorship to Rovenstine) has defined impor-
tant responsibilities of an editor of a scientific journal.

When I began to consider the title and the subject for today’s presentation, I realized that there was no shortage of topical material (much of it negative or pessimistic) on which I could dwell. For example, I could, I suspect, gain your attention by telling you that reimbursement for our services is decreasing, that managed care is altering our practice (at least in San Diego), or that the State of California and the federal government plan to decrease the number of residency positions in anesthesiology—but I won’t. I could describe in some detail how the prolonged recession has affected the California economy and, in turn, our practice of medicine; that there is a great surplus of all physicians in San Diego; and that, for the first time, physicians are leaving San Diego to find practice opportunities elsewhere—but I won’t. I could tell you that, not only are our graduating residents having difficulty finding practice opportunities, but when an opportunity becomes available, the “buy in” is nearly confiscatory; that the number and quality of medical students choosing anesthesiology, after increasing for many years, has been decreasing for the past several years; that the attitude of many is, “We better make it in a hurry, for soon there won’t be any left”—but I won’t. Rather than dwell on what are, for the most part, negative issues impacting our professional lives and our specialty, I have decided instead to speak from a perspective that only eight before—Henry Ruth (1940–1955), Ralph Tovell (1955–1958), James Eckenhoff (1959–1962), Leroy Vandam (1963–1970), Arthur Keats (1971–1973), Nicholas Green (1974–1976), Phil Larson (1976–1978), and Jack Michenfelder (1979–1985)—have been privileged to share: the position of Editor in Chief of our Journal, Anesthesiology. The issues about which I will speak arise from my experiences the past 9 yr with authors, reviewers, editors, our specialty society, and the world of publishing in anesthesia. Some of what I will discuss might be considered controversial or perhaps contentious. But what better audience before which to generate controversy is there than this one?

The Editor in Chief is, because of a combination of factors, afforded a rather unique view of our specialty and of our professional society—the ASA. This is due in part to the fact that the Editor is a member of the Board of Directors of the ASA and, as such, attends all meetings of the Board as well as of the House of Delegates. Whereas many of my colleagues might view this responsibility as an onerous chore, and I confess that I did also when informed of this obligation, my experiences at these meetings of the Board and the House have given me a very different view. Our professional society has a dedicated and incredibly able staff, a gorgeous headquarters (one everyone should visit), but most importantly, there is the possibility for virtually anyone so inclined to move through the ranks in the ASA to a position of leadership that includes the presidency. All voices are heard in the ASA, all opinions are given due consideration, but mainly, hard work, preparation, and sometimes, even vision are rewarded with results. These comments regarding the ASA are directed in particular to those of my academic colleagues who believe that their interests have been given short shrift, for example, that the change in Medicare reimbursement regarding concurrent supervision for teaching physicians could have been averted had the leadership of the Society been more committed to academic enterprise and less committed to their own economic interests. From my perspective, however, nothing could be further from the truth. The effort to protect and preserve that which academic anesthesia believes is important was extensive and expensive and may not yet be over. To those of my associates who sit on the sidelines and complain that their interests are neglected, I say, “Get involved.” At every level, beginning at the local level, I know that the ASA through our academic enterprise and our dues, but today, this is not enough. We must be our own advocates via our own efforts, and in doing so, our likelihood of success is enhanced.

Breadth of the Specialty

A second perspective, gained from reviewing the thousands of papers submitted for publication, is that the breadth of research interests of our membership is enormous, from clinically related outcome studies to laboratory investigations studying subcellular phenomena. Although there may be some among our membership who wonder what much of that is published has to do with our clinical specialty, I and, I believe, all of our Editorial Board contend that Anesthesiology should be the repository of the best clinical and laboratory research performed that is related either directly and immediately or even remotely and less obviously to our practice. Thus, just as a paper describing the results of a randomized controlled trial of a new drug or management protocol belongs in the Journal, so does a paper characterizing the

Anesthesiology. V 83, No 1, Jul 1995
population and location of adrenergic receptors in humans. Justification for the former is obvious; for the latter, it is so that development of more human specific adrenergic agonists might proceed.

Mentoring

A third perspective or perhaps privilege afforded the Editor of the Journal is the opportunity to encourage the young, bright, energetic researchers on whom generation of new knowledge depends. The constituency of the Editor is, after all, not only the readers of the Journal, but the authors, without whom a Journal would be little more than commercial and classified advertising. My thanks to our authors here and abroad.

In this regard, the Editor has an important mentoring role, a role I believe to be among the most important responsibilities of all who teach, supervise, or in any way influence young people. Mentoring can, if properly performed, be the stimulus that turns the merely able student into the independent investigator or inspired teacher, and who, in turn, can serve as a mentor of the next generation of young people. That lack of mentoring may be a problem in our specialty may be reflected by data demonstrating the much greater publication rate in Anesthesiology for Laboratory Investigations than for Clinical Investigations (table 1). Although there likely are many other factors that I have not considered for these differences, those that come to mind are as follows. First, it may be easier to control conditions important for laboratory investigations, i.e., given the pressures of the clinical schedule and other production-related factors that exist in operating rooms and other patient-care areas, it is difficult to insinuate good clinical studies into the clinical situation. Second, although I do not believe it to be the case, the Journal may be biased in favor of laboratory studies. Third, it may be that there are just better or more important questions to answer in the laboratory than there are in clinical areas (I also do not believe this to be true). Finally, it may be that those conducting laboratory research receive better training or mentoring than those performing clinical research. My hypothesis, admittedly unproved, is that the latter issue is the most important. In support of my hypothesis is the fact that, to obtain funds in support of laboratory research, a detailed re-

| Table 1. Clinical and Laboratory Investigations Submitted to and Published in Anesthesiology, 1989–1994 |
|--------------------------------------------------|------------------|------------------|
| Clinical investigations                        | 2512              | 776              |
| Laboratory investigations                      | 1528              | 700              |

search proposal that, in turn, was reviewed by a group of experts or a study section is required. Thus, such a proposal has early been subjected to a form of peer review. On the other hand, clinical research proposals may require little more than approval from an institutional human studies committee less concerned with the scientific merit of the proposal than with issues of informed consent and subject safety.

The lesser publication rate for Clinical Investigations also may be related to the need for pharmaceutical manufacturers to obtain drug efficacy and safety data. The promise of “easy money” to perform the studies necessary to obtain these data, especially when research funds are increasingly difficult to obtain, may seduce a young physician to embark on a study that, from the beginning, is not likely to be sufficiently meritorious to be publishable in a high-quality peer-reviewed journal. Thus, studies investigating the effects of single rather than different doses of drugs, using retrospective or otherwise inadequate controls, involving too few subjects (underpowered), using no or inadequate randomization, and other problems too numerous to mention all reflect inexperience that might have been compensated for by proper mentoring.

These comments regarding relationships between anesthesiologists, investigators, and industry, plus the fact that I have spoken publicly and written on this subject, may lead some to believe that I am opposed to industry-supported research. On the contrary, I recognize that our specialty has a long and proud tradition of a productive and legitimate relationship with the pharmaceutical industry that has both resulted in important research and benefited the careers of many young faculty. At the same time, I strongly believe that to obtain the greatest benefit from these interactions, several guidelines should be followed. First, the objectives of the project should be desired by both investigator and sponsor and in more than just a financial manner. When a proposal is made by a product sponsor to support certain research, rather than merely carry out an industry-suggested protocol, the investigator solicited to perform the research should participate in

---


the design of the protocol so that, not only are the company’s objectives achieved, but so are those of the investigator. Thus, the study, if well performed, must be of sufficient worth to result in a publishable paper. Second, the investigator should obtain assurance from the sponsor that the study is not being replicated at several institutions or, if it is, that a coordinated approach to publication will be made. As Editor, I have been in the position of rejecting a paper describing what otherwise was perfectly well done research because the protocol was virtually identical to that described in a paper already through the review process. These issues are only a few that can be dealt with by proper mentoring. Research expertise does not come naturally. It requires training and time and should be a major priority for our specialty.

A final issue related to mentoring has to do with the difficulty for clinical scientists to acquire the training and expertise required to become proficient in any, let alone every, area. For example, papers presented at this year’s scientific program deal with a broad variety of subjects, including molecular biology, sophisticated pharmacokinetics, neurochemistry, spinal physiology and pharmacology, epidemiology, and more—far too much for any individual to master, especially in these days of decreasing clinical revenues and increasing clinical commitments. However, what has become increasingly common over the past 10 yr or so is the extremely productive practice of incorporating Ph.D.s into our clinical departments to direct, assist with, and teach, in the broadest sense of the term, research techniques. In other words, these individuals serve as far more than independent productive investigators. They serve as research mentors. In my opinion, departments are wise to engage the services of basic scientists whose research interests intersect with those of the specialty. Notable examples of individuals who collaborate within clinical departments performing research and serving as great mentors are Zeljko Bosnjak, Richard Traystman, Gary Strichartz, Jeffrey Cooper, Jerry Collins, Joan Kendig, Keith Miller, Michael Halsey, Ralph Lydic, Jay Gondolfi, Robert Myers, and others. I apologize for not including, and of course, our own Tony Yaksh. This specialty is enriched by these associations, and if anything, I expect them to be even more prominent in the future.

Depth of the Specialty

Although breadth of the specialty, at least in terms of subject matter, is great, analysis of data relating to papers published in *Anesthesiology* reveals that depth of our research enterprise as defined by the number of American institutions at which most of the science is performed is extremely shallow (table 2). Of research papers published in *Anesthesiology* between July 1992 and June 1994 that originate from American institutions, 59% originate from only 11 institutions, and 75% are from just 20 institutions. The remaining 25% are from 48 departments. A possible reason for the small number of institutions from which published papers derive is that certain journals develop a certain culture, *i.e.*, investigators from a given cohort of institutions prefer to publish in a given journal (*e.g.*, *Anesthesiology*). A second possibility is that what is known as publication bias operates as part of the editorial process of this journal.* In other words, papers submitted from larger or better known departments or from departments in which a member of the Editorial Board is a member of the faculty have, all other things being equal, a greater chance of being published than do papers from smaller departments or perhaps from departments not represented on the Editorial Board of *Anesthesiology*. Interestingly, of the 11 departments with the greatest number of published papers in *Anesthesiology*, 10 have at least one Editor or Associate Editor as a member of their faculty. On the other hand, in support of the integrity of our peer-review process is that distribution of research grants to anesthesiology departments is similar to that of published papers (table 2).

Table 2. Institutional Distribution of Research Papers Published in *Anesthesiology*, 1992–1994, and of NIH Research Funds to Anesthesiologists, 1994

<table>
<thead>
<tr>
<th>Institutions (n)</th>
<th>Research Papers Published in <em>Anesthesiology</em>, July 1992–June 1994 (%)</th>
<th>NIH Research Funds to Anesthesiology Departments (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>59</td>
<td>43</td>
</tr>
<tr>
<td>16</td>
<td>70</td>
<td>52</td>
</tr>
<tr>
<td>20</td>
<td>75</td>
<td>61</td>
</tr>
</tbody>
</table>

NIH = National Institutes of Health.
9 YEARS AND 9,000 PAPERS

Surgery. Derivations include anesthesiology, anesthesiologist, and anesthetist and are used to indicate the specialty as well as those who practice the specialty of medicine related to anesthesiology. In 1992, Nick Greene, at this lecture and in a subsequent paper,7 proposed renaming this specialty metesthesiology to account for the substantial change in job description that has taken the anesthesiologist out of the operating room and away from the administration of anesthetics to the critical care unit, pain treatment center, preoperative evaluation center, postanesthetic recovery area, and other non-operating room anesthetizing areas. In my opinion, Greene’s idea is a good one, but his solution is imperfect. Metesthesiology or any other neologism does not describe who we are or what we do. For those of us who now see when on answering the phone are greeted with, “Is this Metesthesiology?” The attempt by some departments to rename themselves Anesthesiology and Critical Care Medicine is an incomplete solution. Therefore, I propose perioperative medicine and pain management (PMPM) as a term that is both unambiguous and describes that totality of what we do (or what we should do).

First, PMPM includes what is becoming increasingly important in the age of managed care, the preoperative assessment of patients. Many departments have established preoperative assessment centers wherein patients scheduled for surgery are seen, their medical problems are evaluated, additional testing is ordered, the anesthetic plan is developed, and the postoperative prescription, including pain management, is decided. Contrast the scope of these activities with the so-called “clearing for surgery” still too frequently provided by those who do not have a clue as to what the contents of anesthesiology and surgery implies. How, for example, can an individual who has never himself been in an operating room even begin to suggest what form of anesthetic management is appropriate for a patient with systemic disease requiring surgery? I never again want to hear from a consulting internist that a patient is “cleared for surgery but only if spinal anesthesia is given” or that “tracheal intubation should be avoided.” Obviously, postoperative care in both the postanesthetic recovery room and the intensive care unit is included by my suggested new term. Finally, pain management, both acute and chronic, including pain related to cancer, is described.

My suggestion to rename this specialty is also consistent with recent comments in the ASA newsletter from our President, Dr. Wilhite, who stated that “anesthesiologists no longer administer anesthesia; we deliver sophisticated and complex intensive medical care in the operating room and perioperative periods.” Furthermore, emphasizing perioperative medical care would increase the importance of what is done and lessen the emphasis on who does it. In other words, we should be defined by the extent and quality of our comprehensive medical approach to the surgical patient and not, as unfortunately is too often the case, by how skillfully a psychomotor task is accomplished. Yes, airway management, tracheal intubation, vascular cannulation, and nerve block therapy require great skill, but it is the training and expertise enabling the decision as what should be done rather than who performs it that properly differentiates the perioperative medical specialist from the technician. This proposal, however, carries with it a heavy responsibility to ensure that the products of our training programs are, as Eckenhoff stated in his 1977 Rovenstine lecture, “adequately prepared for assuming their role in patient care services to the ultimate best advantage of the patient.”

This Is a Time for Opportunity

Earlier I mentioned a number of issues causing concern among many in our specialty, especially those in academic medicine. Although I share the concern of others with regard to the importance of these issues and am especially grateful to no longer be a department chairman struggling with solutions to these problems, it is possible that this may be a time of opportunity for us rather than a time of travail. How, you might ask, am I able to be in any way optimistic about a situation that appears to strike at the fundamental survival of academic anesthesiology? In my opinion, this specialty has not, in some respects, taken advantage of the riches provided to it in the form of the best and the brightest of medical school graduates who have chosen anesthesiology as a career. Furthermore, to some extent, our academic mission has been perturbed by increasing salaries generated, in turn, by spending more and more time in the clinic at the expense of research training and research activity. Many young faculty have been provided 1 day or, at most, 2 days per week of so called “academic time” — clearly insufficient to acquire the training required to successfully compete for federal research grant funding. The department chair often had


Anesthesiology, V 85, No 1, Jul 1995
to defend a lack of research productivity with the excuse of the crushing clinical load at a time when departments of medicine were becoming virtual research institutes. Bright young faculty did not believe they could afford to take the time required to acquire the skills necessary to compete in today's world of science. Research fellowship positions were difficult to fill. I contend that now may be the time for us to do just that which others have been doing for years. If others can spend several years or more in training to acquire the skills necessary to successfully compete for research funds, why can't we do so as well? Our questions are important, but the tools to address these issues require a commitment to study similar to that expended by academics in other disciplines, such as neuroscience, genetics, and immunology. Now that the financial rewards or perhaps the pressures are less, perhaps more of our best graduates will be less easily seduced by the promise of great financial reward and will be willing to take the time necessary to acquire sufficient expertise to compete in today's world of science.

Peters' Principles

Finally, I will exercise the prerogative of one who has spent nearly 30 yr considering issues related to teaching, recruitment, and retention of faculty to provide some advice to those contemplating an academic career, a choice I enthusiastically endorse. My comments are modified from a commencement address presented several years ago at my oldest daughter's graduation from graduate school.† The speaker was Tom Peters, the noted business consultant and author of many bestsellers, including In Search of Excellence, a book describing those characteristics that make for a successful business and successful business leaders. Of the list of 12 recommendations for the graduates, I have adapted those I believe to be appropriate for young physicians.

1. Keep studying. The world of science is rapidly changing. That which is in vogue today will shortly be obsolete, and you must be able to adapt to stay competitive tomorrow. For example, the successful respiratory physiologist today may not be competitive tomorrow in terms of what may be priorities for research funding.

2. Stay international. Analysis of Editorial Office activity has disclosed several aspects of the science related to the specialty that may be of surprise to many of you. First, as is the case for science related to other specialties, we have become one great international society, as reflected by the fact that nearly 50% of all research papers submitted for publication in 1993 and nearly one-third of research papers published in Anesthesiology in 1993 originated from outside the United States. If this Journal is representative of all of clinical science, and I suspect it is, many of your competitors are from outside the United States.

3. Don't forget that the scientific method is about conducting experiments, not just planning or writing protocols. My colleague Jon Benumof was always skeptical about, and he is likely correct, the individual who spent all of his or her time writing protocols and never did get into the laboratory or the clinic to test a hypothesis. A corollary to this is that you must not stop with the abstract. The result of a well done experiment is a published paper.

4. Don’t just learn to tolerate failure—seek it out. As Tom Peters stated, “Anything worth doing is worth doing poorly.” Anyone can do that which is easy or predictable. Identifying another adjunct to reduce the risk of aspiration is not addressing the important problems in our specialty. Take some chances. As B. F. Skinner stated, “A failure is not always a mistake... It may simply be the best one can do under the circumstances. The real mistake is to stop trying.”

5. This one is for prospective department chairs: If you do not really groove on people, don't be a manager (chair). Do not choose this path because others think you should. If you don't have a vision of the future, you will be wasting your time and that of many others by assuming a leadership role when you aren't qualified or interested in doing so. Make certain you answer the question, “Do I want to be it, or do I want to do it?” If you only want to be it, forget it.

6. Be uncompromising in choosing the ethical path. Be a role model; stand for something that is clear and unambiguous to all.

7. Finally, have a lot of fun. Live your fantasy. Do not put off your passion. Learn to trust the “wow” factor. As Gandhi said, “Almost anything you do will seem insignificant, but it is very important that you do it.”

† Peters T. Commencement address. University of California, Berkeley, School of Business Administration, May 1990.
Ladies and Gentlemen, thank you for your attention this afternoon, and most of all, thank you for allowing me to serve as Editor of our Journal.

References
2. Editorial. Anesthesiology 1:95–96, 1940
4. Saidman LJ: Unresolved issues relating to peer review, industry support of research, and conflict of interest. Anesthesiology 80:491–492, 1994