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Progress and Problems: A Personal Perspective

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Each generation of pharmacists has been greeted by its own special set of challenges and, hence, opportunities. My generation was no different. I am reminded of Hercules who had a problem. Standing between him and salvation was Hydra, the nine-headed monster. Which should he lop off first? As he lopped one off at random, two heads popped up in its place. As one problem is solved, others remain and others emerge. During the early 1900s infectious diseases were the leading causes of death. Sulfa drugs were introduced during my early lifetime and later the antibiotics. Today we are surprised when infectious diseases result in death. That's progress. People are living longer than ever, and the health care sector has another problem, and pharmacy has a challenge and an opportunity. Persons over 85 are the fastest growing segment of our population. The demographic predictions and rising health care costs offer some sobering thoughts.

I had my personal problems preparing to enter a lifetime career in pharmaceutical education. That was almost 50 years ago. From behind barbed wires where I was placed along with other U.S. citizens of Japanese ancestry, gaining acceptance at a university was fraught with difficulty. Fortunately, the University of Nebraska opened its doors and its heart. Among the very positive things of this part of my life is that I (from California) met my wife, Midori (from the state of Washington), also displaced, who had found her way to Nebraska. We both have fond memories of that period. Dean Rufus A. Lyman and Dr. Harald G. O. Holck, the pharmacology professor, are a part of this memory. Dr. Holck taught me most of what I know about the basics, and I learned what mentoring really meant. From him I learned the art of science as well as the scientific method, commitment, hard work and scientific integrity, but above all, the excitement of science. During this time I was drafted and served in the U.S. Provost Marshal General's Office, part of that time in the Enemy Prisoner of War Information Bureau and Counter Intelligence Corp. Trips to the Pentagon were frequent. I suppose this was progress of some sort--from behind barbed wires as a security risk to serving the country in this capacity. I returned to Nebraska to complete my education through the M.S. degree.

As I look back at this period at Nebraska, it wasn't necessarily the "good ole days," although many of the problems and concerns we have today did not exist. At any rate, if they did exist, I was unaware of them. Antivivisectionists, yes, but not like the animal rights activists of today. Lack of integrity in science was rarely, if ever, a concern.

I completed a bachelor's dissertation under the close tutelage of Harald Holck. I remember becoming an associate member of Sigma Xi as an undergraduate and also being inducted into the Rho Chi Society. My recollection of that period is that it shaped my future. Today while pharmacy educators are bemoaning the lack of pharmacy graduates entering advanced degree programs, I wonder how many of our bright and well motivated students are seriously taken under the wing of a senior investigator and how many are discouraged with their exposure to higher education. The pressures of an overloaded curriculum, grant proposal writing, personal research and a myriad of other excuses make bachelor's dissertations a rarity today. Is this progress or a problem? The problem is even more deeply rooted. Our high school seniors score significantly lower on biology and chemistry achievement tests than do their counterparts from many other countries (Australia, Canada, England, Finland, Hungary, Italy, Japan, Norway, Poland, Sweden, Hong Kong and

Singapore), and their scores in science achievement tests have been declining since 1970. The ramifications of the problems of the applicant pool for graduate studies should have particular concerns for pharmaceutical education.

My research at Nebraska involved searching for an improved method for the bioassay of digitals. Later, this experience placed me in a position to serve on the USP Revision Committee and be assigned to monographs which dealt with bioassays. Improvements in isolation, identification, subsequent synthesis and analytical procedures have made bioassays mostly obsolete insofar as therapeutic potency determinations are concerned. Indeed this is progress!

During my graduate school and teaching assistant tenure at Nebraska, one of the rare treats I had was to meet and discuss pharmaceutical education with Dr. Edward C. Elliott, well known in pharmacy circles as the engineer of the Pharmaceutical Survey of 1948, more well known as the Elliott Survey. The discussions which followed the release of this report which recommended an experimental 6-year pharmacy degree ultimately led to a mandatory 5-year bachelor's degree program. Some years later through a sequence of events including capitation support from the federal government, the "clinical" movement and later the experiential education movement came about. Most of us would look at those events as progress. Certainly there are strong elements of progress which make it now possible for pharmacy to grasp the opportunities being afforded by the rapidly changing health care field. The problem, as I see it, is that many, if not most, 5-year programs consist of 2 years of college work prior to entering pharmacy for a 3-year period. Out of the 3-year period, one semester is spent in experiential education. What is left is 2 1/2 years of didactic work and the professionalization process--less time than spent in the classroom in the old 4-year baccalaureate program. In the meantime, science and technology have advance with blinding speed with knowledge exploding at a doubling rate every 4 to 5 years. Is this progress or a problem? The current discussion about the entry-level Pharm.D. degree takes me back to 1948. Progress?

Despite these negative connotations, one measure of progress is the burgeoning career opportunities for pharmacists. This, too, however, is posing problems of career choice for many. Which choice can utilize skills which have been developed and also satisfy personal desires and innate abilities? A partial solution to this problem is the Pathway program enthusiastically accepted by students and participating schools developed and supported by Glaxo Inc.

Concurrent with my arrival at Purdue to earn my doctorate in 1948, I became a member of the American Pharmaceutical Association and have been a continuous member ever since. It has given to me more than I have given to it. During this period and a few years thereafter, the Scientific Section of the APhA was a haven for many of us interested in pharmacology/toxicology. The meetings were well attended, and the excitement could be felt. Pharmacy-trained pharmacologists and generally pharmacological research in schools of pharmacy, however, were frowned upon by the American Society of Pharmacology and Experimental Therapeutics (ASPE-T), a constituent society of the Federation of American Societies for Experimental Biology (FASEB). Many of us wanted to be accepted and to participate in this organization. Nominated by my good friend and Purdue colleague, C. Jelleff Carr, and my Nebraska mentor, Harold Holck, I was accepted into ASPET in 1956. It was a personal triumph for me and generally for pharmacy. At that time, very few pharmacy school-trained pharmacologists were members. This was progress, but this led to a problem for the Biological Section of the APhA Scientific Section. The trade-off is that pharmaceutical scientists are now successfully competing in a wider arena and being accepted. I believe this is progress for pharmacy. More recently, pharmaceutical scientists are making great strides in the area of toxicology. In several universities, pharmacy faculty have taken university-wide leadership roles in the development of this still emerging discipline. So, progress has been evolutionary.

Less than a decade ago, the National Science Board Commission issued a report, "Educating

Americans for the 21st Century." One passage I remember well states, "The nation that dramatically and boldly led the world into the age of technology is failing to provide its own children with the intellectual tools needed for the 21st Century." Although the statement was targeted to pre-college education, I have often wondered if it also has relevancy to pharmacy education. Although we've made progress, too many classes still depend on rote memory and regurgitation of facts, and many examination questions are poorly formulated and ambiguous. I am afraid that there are some faculty who teach the subject matter and not the student. There is a difference. No longer can I remember who made this statement, but it bears repeating--"As an enterprise [or as a faculty] we are, in this country, far too much producer-oriented and far too little consumer-oriented." Page Smith's book, Killing the Spirit, (Viking Press), contains a key anecdote. Smith ran into a colleague who, when asked how she was doing, replied, "Wonderful, I'm not teaching this quarter." It is fortunate, however, that pharmacy has its share of dedicated, committed teachers. We need to have all of our instructors committed to teaching and to maintaining a caring attitude towards our future generation of pharmacists and scientists. Doris Green's review of Robert Cole's, The Call of Stories, which appeared in the December 1990 issue of Academic Leader contains a quotation from the book, "The ultimate test of a person's worth as a doctor (pharmacist) or teacher or lawyer has to do not only with what he or she knows, but with how he or she behaves with another person, the patient or student or client."

A major problem we face in all segments of our society is the continuing decline of ethical conduct and lack of integrity and honesty. Polls at prestigious universities indicate nearly 60% of the students have violated the Honor Code at least once, research and project papers are "for sale," university administrators and faculty are increasing involved in "lanky-panky" of one type or another. Scientific misconduct has become a major issue. What is the difference between scientific misconduct and sloppy science? A major university retracted ten medical research studies because of errors and suspicion or deliberate fabrication of data. As often is the case with victims of rape, "whistleblowers" in scientific misconduct cases are often unfairly treated although great measures are taken to accord "due process" to the accused. What has happened to the mores of our scientific enterprise? According to one attorney, institutions often overlook or conceal scientific misconduct. Is this really true? Evidence, anecdotal or otherwise, appears to confirm this statement. Are these events leading students away from careers in teaching and research? What is research anyway? Titles can be found in Current Contents which would indicate the papers to contain significant findings only to discover that it absolutely lacks substance. So, despite the progress we've made, there are difficult problems to resolve in both teaching and research and administration.

In pharmaceutical education, often quality is measured by NABPLEX passing rates, by American Council on Pharmaceutical Education (ACPE) accreditation and by the amount of research grant dollars generated. The NABPLEX measures minimal competencies for practice and does not necessarily measure level of education. I would be the first to say, however, that the public's perception is important and they hold true the linkage between pass rate and educational level. We must also acknowledge the pragmatic importance of passing the examination. The true measure of an education, however, is how the graduates meet their obligations as pharmacists and citizens. ACPE accreditation also requires only minimal standards to be met. Quality of education then is the responsibility of each school.

Some years ago, I remember an acquaintance of mine who was recruited by an institution to teach pharmacology. This, despite the fact that his Ph.D. degree was in a discipline other than pharmacology. At least he had an earned doctorate for purposes of accreditation. He later visited my laboratory, pointed at a standard laboratory instrument found in all pharmacology laboratories and asked, "Tom, what is this used for?" Need I say more? This is not an indictment of accreditation agencies, but an indictment of university and school administration which allows it. The overt violations of good teaching practices or misconducts in research are relatively easily

detected and corrected; however, the more subtle abrogations of good conduct are difficult to detect or to control. As W. M. Thackeray wrote, "The wicked are wicked, no doubt, and they go astray and they fall and they come by their just desserts, but who can tell the mischief which the very virtuous do?"

I would, therefore, propose some type of internal quality assurance program for each school of pharmacy, not to harass, but to assist all of us in doing a better job.

Many of the problems we face are money problems. How does that go? For lack of a nail, the shoe was lost--money has a way of having a dramatic domino effect. Budget shortfalls are impacting significantly on many of us. At the same time, the "cost of doing business" escalates. Striving for highly competitive federal, state, and private funds has had a dramatic effect on the resources we spend to acquire it. Often good instruction is compromised. Cutting corners may result in instant gratification, but the consequences are widespread and long-term. Declining funds lead to various types of faculty entrepreneurship with its own set of problems. Earlier we discussed quality assurance. It is much needed now, given the money-driven activities in which many schools and faculty are engaged.

On balance, we have made great progress, but the problems today are many. It is a time to assess our mission and priorities in higher education as we cope with diminishing money and morals. Coping with diminishing resources is one thing, but coping with diminishing resources in a way which will not have long-lasting negative effects on our academic enterprise as well as our personal lives is another. This is the challenge for the 90s.