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Reflections . . .

Variety, the spice of industrial veterinary medicine

Raised on a dairy and poultry (egg) farm in New York, I entered the College of Agriculture at Cornell University in 1940. I enlisted in the Army in 1943 and served in a field artillery battery in Europe until the end of World War II.

I returned to Cornell, received my BS in dairy science, and became a bacteriologist in industry, researching new drugs for animal diseases. A year and a half later, I enrolled in the University of Delaware and received an MS in animal nutrition. I was the first to show that ground feather meal, heretofore a waste product, could be used to replace a major portion of the expensive protein sources for broilers, with the addition of lysine and methionine as such or from other sources. The importance of nutrition was later stressed in veterinary college by Professor Francis Fox who admonished us to always look for "empty barn disease."

After graduating from Cornell's Veterinary College in 1953, I worked for a veterinarian in upstate New York in a practice comprising about 95% dairy cattle, with an occasional pig or horse to be seen. The remaining practice was small animal and was scheduled for specific hours, but we saw those patients whenever we returned from calls.

I next undertook to develop what had been a part-time office with an associate who also had a full-time office and hospital on Long Island. I saw mostly dogs and cats, and an occasional ocelot or bird. I also served dairies and the duck growers who needed health certificates before exporting portions of their flocks. One day I made a house call to the southern shore of

Long Island in the midst of a hurricane, with the ocean's waters lapping over the highway, to see an elderly lady's cat with a urethral obstruction (calculus). The cat was nearly comatose and I offered to take the cat to the hospital, where I could remove the calculus and provide supportive treatment. She refused, so I injected a smooth muscle relaxant in the slight hope that it would help, then left. When I sent a bill, I received a letter in return: "You killed my cat; I will not pay you anything."

The practice did not develop as rapidly as I had hoped. Having the opportunity to join the company for which I had worked as a bacteriologist, I took it, and was based in Kansas City, Mo and later Greeley, Colo. The continuous feeding of antibiotics to ruminants was in its infancy, and I established field trials with universities, private practitioners, ranches, and feedlots. A veterinarian was involved in all cases to make diagnoses and prescribe treatments to determine safety of the procedures, as required not only by FDA, but by our own people. I generated data to support claims for creep-feeding beef calves, improving gains of feeder cattle, preventing anaplasmosis in beef cattle—work done by Oklahoma State University—prevention of vibronic abortion in ewes—work done by University of Idaho—and prevention of diarrhea in newborn lambs. We pioneered in adding an antibiotic to salt for disease prevention in ewes on range and receiving no feed supplement.

Later, I designed studies to demonstrate that antibiotics could be fed continuously to dairy cattle without causing



Dr. Louis Shor

bloat and death, as many had predicted.

Hookworms in dogs now attracted our attention. The capsule treatment resulted either in underdosing—lack of efficacy, or overdosing—toxicosis. I sent disophenol to university clinicians and private practitioners throughout the country, and it became the first injectable suitable for exact dosing and had excellent efficacy. Newer drugs have a broader spectrum of activity and may be easier to administer, but that is why research must be continuous.

When establishing studies at universities to determine safety and effectiveness of drugs under local conditions, I encountered mixed reactions. Some deans and experiment station directors were eager to cooperate, realizing they would be able to recommend—or not recommend—a product to livestock producers in their states when it became available, based on first-hand experience. Other deans/directors did not want their department heads doing applied research; they believed their universities' functions were basic research and teaching and that accepting commercial grants would affect their integrity.

As a poultry specialist, I developed growth promoters, a coccidiostat, anthelmintics, and pigmenting agents for broilers and turkeys. We had to show not only safety and efficacy when used alone, but also when used in combination with other drugs. During this period, I went to Israel, where I gave a paper at an international poultry conference. At a reception for speakers at the conference, I was approached by a man from Czechoslovakia, then under Soviet control. He told me in guarded voice that he wanted to defect and might be able to do so if he could get an invitation to attend the National Turkey Federation Conference in the United States. The next morning, when my wife greeted him in the public hall, he pretended not to see us. I indicated that Soviet agents were watching him and he could not appear to be friendly to a Westerner. The agents had been unable to attend the speakers' reception the previous evening and that had been his only opportunity to speak to anyone. (I did arrange for his invitation, but never learned whether that scientist was allowed to attend the Conference.) In his Reflections . . . ,

Dr. S. B. Hitchner mentioned the Poultry Pathologists' conferences he had attended every other year. These were started by the late Dr. C. A. Bottorff and, when he retired, I became responsible for bringing together avian pathologists from the United States, Canada, and occasionally other countries, as well as planning and executing the two- and one-half-day program.

In a year when the conference was to be held, a "hot" new aminoglycoside with *Pasteurella* spp activity became available. The conference was cancelled and I was sent to establish bovine shipping fever studies in feedlots in Kansas, Colorado, and California. This was a blind study in that the drug was dissolved in a colorless vehicle at one of four concentrations, including zero. Bottles were labeled only with treatment numbers and the dosage was a standard X ml/kg. A fifth treatment was the standard treatment for that area. I treated 375 sick animals, 75/treatment at each location, and was quickly able to identify the treated animals by the dosage used. Unfortunately, the drug remained in the kidneys for an extended period, and laboratory studies designed to secure a food tolerance for the drug showed it to be a carcinogen. End of project! I mention it as an example of how hundreds of thousands of dollars and many months can be spent on a drug, only to have it fail because of toxicity or lack of efficacy at a reasonable dosage.

I was asked to join the firm's regulatory affairs department. This involved meeting with FDA and Canada's Health Protection Branch to determine requirements for drug approval, interacting with colleagues, and submitting data to the agencies when the work was done.

After 27 years with the first company, I joined a second organization. As before, I designed and established studies on a growth promoter for broilers and turkeys and helped wrap up the work on albendazole to control liver flukes in cattle. I initiated studies for the drug's use against liver flukes in sheep and goats.

Regulatory affairs beckoned again and, in addition to working with state/provincial and federal agencies in the United States and Canada, I was responsible for manufacturing quality assurance. My laboratory staff and I

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had to see that all raw materials and finished products met specifications and that manufacturing procedures followed FDA's and state regulations.

I was secretary and, later, president of what is now known as the American Association of Industrial Veterinarians and was honored as the Industrial Veterinarian of the Year in 1988. This association has done much to improve the perception and actual competence of industrial veterinarians by its workshops and meetings. I also served on several task forces of the Animal Health Institute, a trade organization of animal health companies that works with government agencies to assure that laws and regulations are fair and reasonable.

Industrial veterinarians were once considered outcasts by the rest of the profession. At one time, there was even a movement to deny them membership in the AVMA. Formation of the Industrial Veterinarians Association, in the 1930's, I believe, with its educational programs and its message that industrial veterinarians are in the forefront of new drug development, basic research

in various disciplines, and technical service that informs practitioners of useful new products and procedures have changed the perception of us, however. In fact, two industrial veterinarians have served as AVMA presidents in recent years, bringing credit to the entire profession.

Representing the avian pathologists on AVMA's Drug Availability Advisory Committee for several terms, I met with representatives of other species groups, the AVMA Councils, and the AVMA staff members. This committee serves the interest of keeping useful old drugs available, making new drugs more readily available, and stopping the improper use of drugs. My trips to Schaumburg have made me aware of how much the AVMA actually does to help the profession at local and national levels, and I would strongly urge veterinarians to be active in their local, state, and national organizations.

My life in veterinary medicine—both practice and industry—has enabled me to meet a cross section of humanity, from the illiterate feedlot cowhand to college and corporate pres-

idents. I have learned that our profession affects all people by making wholesome food plentiful and inexpensive and strengthening the human/animal bond, which is so essential to our well-being. There may be equal professions, but none finer.

Dr. Shor's current activities include consulting for animal health companies and providing information to Volunteers in Technical Assistance. When not umpiring softball or baseball, Dr. Shor can also be found reviewing books on animal care and husbandry for *Library Journal* or helping his wife, a published author, write books.

Retired veterinarians are encouraged to contribute to this feature. Dissertations should be concise. Contributors should focus primarily on noteworthy professional experiences and observations. Persons interested in contributing should contact the editor-in-chief for details.