A Biography of and Interview with

Charles W. Raker, VMD

Class of 1942, University of Pennsylvania School of Veterinary Medicine

Author and Interviewer: Sarah M. Khatibzadeh, Cornell DVM Candidate, Class of 2014

Dr. Charles Raker, 1942

Equine Surgeon, Teacher, and Mentor

Dr. Charles Raker graduated at the top of his class at the University of Pennsylvania's School of Veterinary Medicine in 1942. Following eight years in private mixed animal practice, he returned to his *alma mater* as assistant professor and was named Head of Large Animal Surgery four years later in 1954. He was promoted to Chairman of the Department of Surgery in 1956.[1]

One of the charter members of the American College of Veterinary Surgeons,[2] Dr. Raker was one of the most prominent equine surgeons of his era. He pioneered numerous innovative surgical techniques, many involving the upper respiratory tract.

Dr. Raker was a major force behind establish the University of Pennsylvania's New Bolton Center as one of the premier equine hospitals in the world. Though his reputation was international, he was especially well-known to equine veterinarians, horse owners and trainers throughout the northeast.

Following his retirement in 1985, Dr. Raker continued to see patients and perform surgeries for another seven years. Among his greatest legacies are the numerous residents whom he mentored and who became leading academic and clinical scholars and clinicians throughout the country. He actively promoted the education and careers of women including Dr. Olive Britt, the country's first female large animal surgeon.[3] Dr. Britt later became the veterinarian for a major TB breeding stable and was Secretariat's veterinarian.[4]

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[1] The Lawrence Baker Shepherd Professorship of Surgery was endowed in 1967, and Dr. Raker held that position through 1985.

[2] Pettit, Ghery D. "The American College of Veterinary Surgeons: The First 25 Years." *Veterinary Surgery.* 19(1):3-13. 1990. http://www.acvs.org/ID=4707/TYPE=1502/ACVS_The_First_25_Years.pdf

[3] Olive K. Britt, DVM (U Georgia) '59 – the first woman equine veterinarian in the state of Virginia and co-founder of Woodside Equine Clinic in Ashland, VA. She practiced into her 80s. In 1970, she attended the birth of Secretariat (see below). Also served as president of the North American Veterinary Conference 1989-90. Deceased 2006.

[4] Secretariat – triple crown winner in 1973 and one of America's most memorable horses.

Dr. Raker also mentored three women residents in the mid-1970s, each of whom developed distinguished careers in surgery (Dr. Midge Leitch),[5] internal medicine (Dr. Kathy Kohn)[6], and medicine/ophthalmology (Dr. Jill Beech).[7]

In 1993, the Charles W. Raker Professorship in Equine Surgery (Endowed) was named in his honor. The position is currently held by Dean W. Richardson, who is best known as the surgeon who led Barbaro's team.[8] Dr. Raker has received many other honors, including the Bellwether Medal for Distinguished Leadership from the University of Pennsylvania (1998), American Association of Equine Practitioners (AAEP) Distinguished Educator Award (2000), and the American College of Veterinary Surgeons Foundation Legends Award (2007).

In 2010, at the Baltimore Convention of the AAEP, Dr. Raker was awarded the association's "Beyond the Call" award for leadership, innovation, and service in equine medicine. It is the association's highest award and this was only the second time it has been awarded. He called this "the most significant and prestigious award I have ever received in my career."[9,10]

Dr. Raker's deep commitment to education is also evident in his leadership as chair of the Opportunity Scholarship Program, which has raised more than $1 million for needy students since 1998.

Dr. Raker resides in Honey Brook, Pennsylvania.

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[5] Midge I. Leitch VMD '73, adjunct assistant professor surgery (U Pennsylvania).

[6] Catherine W. Cohn, VMD '73, professor, The Ohio State University.

[7] Jill Beech, VMD '72, professor of medicine (U Pennsylvania).

[8] Barbaro, racing thoroughbred who won the Kentucky Derby in 2006 but shattered his leg two weeks later during the Preakness race. He was treated surgically by Dr. Dean Richardson at New Bolton Center, but died eight months later of complication of laminitis.

[9] "'Beyond the Call' Award Presented to Charles W. Raker." *Tri-County Record Berksmont News.* 10 Jan 2011.
http://www.berksmontnews.com/articles/2011/01/10/tri_county_record/news/doc4d2b43bfea28c369625766.txt

[10] "Raker receives AAEP award." *Thoroughbred Times.* 10 Jan 2011.
http://www.thoroughbredtimes.com/horse-health/2011/01/10/penn-vet-alumnus-wins-aaep-award.aspx

Interview

Listen to the Interview

Subject: Charles W. Raker, VMD
Interviewer: Sarah M. Khatibzadeh, Cornell DVM Candidate, Class of 2014
Interview Date: May 25, 2011
Location: Honey Brook, Pennsylvania

Interviewer's Note:
I interviewed Dr. Raker as part of an independent study on the history of the equine surgery specialty, one of my main interests in equine medicine. After taking Dr. Donald Smith's Veterinary History Course in 2011, I wished to learn more about this specialty - not just the cutting-edge techniques, but how the field as a whole has evolved in the last century, who contributed to the key developments, and how those clinicians influenced modern equine surgical practices. I initially contacted Dr. Raker by letter, and he generously invited me to meet him at his home in Honey Brook, Pennsylvania. He was incredibly wise and kind, and his stories and his advice were inspiring, to say the least. It was an honor to interview this distinguished man, and I hope that you enjoy this interview. (Sarah M. Khatibzadeh '14)

Sarah M. Khatibzadeh:
How did you become interested in veterinary medicine?

Dr. Charles Raker:
It was a family thing primarily. My father bred and raised wire-haired fox terriers and Airedales (in Daylesford, Pennyslvania).[1] Our local veterinarian, Dr. Thomas Gasser would come down and treat these animals when they were ill and dock the tails on the terriers, and I became very fascinated with that.

We had neighbors with a farm, and I spent a good deal of time on that farm in summers when I was a very young boy, so that got me used to the large animal aspect. When I was a freshman in high school, we had to write a project or a thesis about what we wanted to do, and I wrote that I wanted to be a veterinarian. When I graduated from high school, I enrolled at the University of Pennsylvania to do my pre-veterinary work, which at that time was two years. The earliest you could get admitted was with one year, but they recommended two years.

After one year, my grades were reasonably good, so I thought, "*Well, maybe I could get into veterinary school after one year. I don't know, but I won't know if I don't try.*" So I went up to the veterinary school and, lo and behold, the person who interviewed me was the Dean of the Veterinary School, the dean at that time.[2] And I seem to remember (and I think this is correct), that he asked me two questions: "*Do you know how to milk a cow?*" and I said, "*Yes, I know how to milk a cow*;" and we chatted and then he said, "*Do you know how to hook up a team of horses?*" and I said, "*Yeah, I've helped make hay and thrash grain and so*

[1] A small town in Chester County, Pennsylvania near Philadelphia.
[2] George A. Dick, VMD '04, Dean 1931-1945.

on." And he said, "*Great, you're the kind of veterinary student we want!*" And I was in veterinary school after one year of pre-vet work.

[After graduation from veterinary school in 1942], I went into a mixed animal practice in Norristown, not too far from here. The reason I went to that practice was because the man who owned the practice, Dr. William Steinbach,[3] was elected tax collector of Norristown, so he needed some help. So I went there and ran the practice, and after three years (1945), I purchased the practice from him. I had a very busy mixed practice: cows, horses and pigs. There were few horses, except for farm horses. I serviced a large stable at Valley Forge Military Academy[4] with some sixty horses, but most of my work was with cattle. I did a lot of cattle work and some pigs and sheep.

I also did small animal work and had office hours in the evenings. I would do some spays. Back in those days but I didn't do any other surgery. In fact I didn't consider myself a surgeon, [just a mixed practice veterinarian]. So if I had some serious fracture or something, I would send it to one of my colleagues and have them do it.

Then in 1950, Dr. John Beck,[5] Professor of Medicine at the University of Pennsylvania Veterinary School, asked me if I'd consider joining the faculty. The American Veterinary Medical Association (AVMA) evaluates schools every five years[6] to see if they have an adequate curriculum and staff to teach veterinary students veterinary medicine. The University of Pennsylvania at the end of the 40s was put on probation because the school was in the city of Philadelphia and they weren't getting many cattle or horses into Philadelphia. The AVMA said that there wasn't enough large animal experience for their students.

The School had a farm out in Bristol, Pennsylvania, some 30 miles northeast of the city, which had been given to the Veterinary School by the Morris family. When Mr. Morris died, he left that farm (known as the Bolton Farm), to the veterinary school.

When I was in my fourth year of veterinary school, they took us on a field trip out there to see artificial insemination in cattle. I believe that was the only time I was there. There were horses (mainly the farm's draft horses), swine, sheep, poultry, and close to 200 head of Guernsey cattle. The School decided they would make use of that facility to increase the students' exposure to large animals, and they needed somebody to operate that facility. And that's where I went when I joined the faculty, to "Old" Bolton Farm.

I had about twelve students with me all the time, and the School had made contractual arrangements with three large animal practitioners in the area. We'd have a student stay with the practitioner for one week at a time, as a sort of externship to see a large animal practice.

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[3] William Alexander Steinbach, VMD '16.
[4] http://www.vfmac.edu/
[5] John D. Beck, VMD '28, Professor of Medicine 1931-57.
[6] The interval between accreditation reviews by the Council on Education of the American Veterinary Medical Association is now seven years.

I stayed on the farm and utilized the herd of cattle for treatment of mastitis and dystocias, milk fevers and pregnancy exams. And they had some swine. They had a boar that produced a lot of offspring with scrotal hernias. This was apparently hereditary, and I told them, "*Don't get rid of that boar, because he produces a lot of good surgical material for our students!*" So we kept him on. We also had poultry and learned to caponize chickens.[7]

Then about 1951, U.S. Steel decided to build a large steel plant in Bristol, Pennsylvania, and they were going to employ some 20,000 workers. And of course the farm land started to disappear, and so they decided to move [Bolton Farm] to another location.

So in the summer of 1952 the university purchased a facility in southern Chester County, and it's known as "New" Bolton Center. We wanted to keep the name Bolton because just about all of the Guernsey cattle were named "Bolton this" or "Bolton that". So they thought that there was a lot of nostalgia and history behind that name so they'd keep it. So, in the summer of 1952, I transferred from "Old" Bolton Farm to New Bolton Center.

During that summer of 1952, the professor of medicine and the professor of small animal surgery said that they didn't have a large animal surgeon in Philadelphia. The two surgeons who had been there had left. And they asked me if I would spend the summer in Philadelphia taking care of the large animal clinic and the surgery. I didn't think I was qualified, but they thought I was, and I thought, "*Well, I'll give it a try*."

So I moved into Philadelphia that summer and lo, and behold, I was doing large animal surgery! I was repairing fractured splint bones, and also diagnosed a few fractured sesamoids but didn't think I could repair those. Dr. Edwin Churchill,[8] a graduate of Penn and a great equine practitioner, had been a large animal surgeon there in the past. And he was doing some sesamoid fracture surgery. And I'd call up and say, *"Ed, would you come up - I've got one here – and show me how to do this?"* And so he did. I learned to do cryptorchids and castrations (though I had previously done some in practice). So anyway, I had some surgical experience that summer, but it was mostly a learning experience and I always had help when I needed it.

That September (1952), we went out to New Bolton Center. There I started to do a lot of cattle work. I would go out on farm consultations and take students along. And we'd do what I called "hardware disease" and removed many foreign bodies from the reticulum.[9] I had my first experience with a displaced abomasum, which I had seen before (but didn't know what I was seeing).

All of my equine castrations at that time were done [with the horse] standing under local anesthesia. We did have Sparine® (promazine), which is an old relative of Acepromazine, and we'd occasionally give the horses some to quiet them. But mostly we would restrain with a twitch until I could administer the local anesthetic. I would anesthetize all of the skin on the

[7] Demasculate
[8] Edwin A. Churchill '41
[9] Traumatic reticuloperitonitis

base of the scrotum. Then I would inject Xylocaine®/procaine high up into the (spermatic) cord.

One time when I was in practice, I was castrating this colt and I went to inject the cord and I was underneath him on the left side and he kicked me right in the back of the knee. I had had a bad knee, and my doctor thought I had a slipped meniscus and needed surgery. Well, I never had surgery done on the knee. The horse corrected whatever it was! From then on I had no trouble!

I started doing some laryngeal hemiplegia surgeries that year, too. I might back up here. When I was a student in veterinary school, there was only one disease we were taught in reference to the respiratory track of the horse, and that was laryngeal hemiplegia, or so-called "roaring." Our professor of surgery, Dr. Bill Lee,[10] told us about how he would do standing surgery doing a sacculectomy. They didn't teach us anything about any kind of fractures.

So when I got to New Bolton Center (in the fall of 1952), I started doing some of these things because I had done a few of them that summer in Philadelphia.

Dr. Charles Raker (Foreground) in Teaching Laboratory

In the meantime, they had employed an equine veterinarian from Guelph, Ontario[11] (Dr. Eric Pallister) who came to Philadelphia. And they moved me out to New Bolton Center. After a year he decided he didn't like the States and decided to go back to Canada. So again they didn't have a large animal surgeon in Philadelphia. And Drs. Beck and Dr. Allam came to me again and said they'd like me to return to Philadelphia in large animal surgery. And I said, "*Whoa, wait, wait now, I'm not a surgeon, I'm not trained to do all those things that are going to have to be done in there. A lot of these animals are valuable, and I just can't bring myself to do this. I'm just not qualified*." *"Well, what can we do?"* They said they'd send me away somewhere to get surgical training. And I said, *"Well, I don't know. I'll have to think about that*." And I said, *"If I can't do that, I like teaching, so don't get rid of me".*

They sent me to Cornell, where Dr. Gordon Danks was the surgeon.[12] I spent two weeks with Dr. Danks and watched him do equine surgery of various sorts. I never picked up a scalpel, I didn't make an incision, I didn't put a suture in. I observed for two weeks, and that was my surgical training. So I'm a self-taught surgeon, and fortunately I had good luck because most of my procedures turned out pretty well, and I felt like I became a fairly good surgeon over

[10] William J. Lee, VMD '09, professor of veterinary surgery 1914-48.
[11] The Ontario Veterinary College in Guelph, Ontario (Canada).
[12] A. Gordon Danks, Cornell '33, professor of surgery and head, Large Animal Hospital (Cornell University).

the years. My students and people came from various other veterinary schools around the country and spent time with me and I had a great career.

Once I decided to go into surgery and change from Assistant Professor of Medicine to Assistant Professor of Surgery, I had to return to Philadelphia, because that's where most of the equine work was done. And we didn't really have a facility at New Bolton Center to do that kind of surgery. So I went to Philadelphia.

At that time, our anesthesia was "Equithesin®," a combination of chloral hydrate, magnesium sulfate, and pentobarbital sodium. But that really didn't produce good anesthesia. It could produce good sedation, but that was about all. (Where possible, we supplemented with local anesthesia.)

When putting these horses onto an operating table, when the table is upright with the girth bands out underneath, and we had everything ready. There was a head halter on, there was a tail rope on, and these two girths were around and over the back but didn't touch the belly of the horse. Then we'd administer the Equithesin® combination until the horse began to sag. Then, we'd quickly tighten up the straps, securing the horse to the table, and he'd begin to struggle and kick until the sedation took full effect. It wasn't very satisfactory, but that's what we did and that's what we had.

We also had a lot of horses under this anesthesia that came up with facial paralysis. We didn't know what the reason was. We thought there was some pressure from the rope or halter or something on the facial nerve. So we thought that we'll fix that. We'll take that halter and wrap a lot of cotton in there, and that will do it! And lo and behold, it made it worse! So then we did away with the leather halters entirely and went to these woven halters and the trouble ceased.

When I was a student, the anesthesia that was used mostly for general anesthesia was chloroform. But the horse would be on the table struggling and fighting. Finally, they would put a towel over the horse's nose and drip the chloroform and he eventually would be anesthetized. We tried to do that with ether and it never really worked very well. As far as gas anesthesia was concerned, it wasn't until the gases that are used today and then we had real surgical anesthesia.

I went into Philadelphia in surgery in January 1954. I stayed there for ten years until the surgery facilities at New Bolton Center were completed which was in 1964. And then we moved the entire facility and large animal surgery to New Bolton Center.

During that time I used to do some colic surgery in Philadelphia because I had heard they were being done. We really didn't know what to do. We didn't know anything to speak of about fluid therapy, we weren't measuring blood gases. We weren't doing any of those things. I did some decent surgery I thought. In fact I had one mare that I removed about 28 feet of small intestine and she survived, but most of them didn't. About 80% of the cases at that time were failure - only about 20% of the cases survived.

But after we began to learn more about fluid therapy and blood gas analysis, and these sorts of things, the rate improved. Of course over the years it's all changed and now I guess probably 80% of them survive today.

During my time in Philadelphia, I radiographed a horse's carpus and found a chip fracture off the distal margin of the radiocarpal bone. "*Oh, nobody's ever done knee surgery, but why not try it?*" So I did my first knee surgery. We removed that little chip and that horse went on and did very well. So that was my first experience with carpal surgery.

I had worked with Dr. Churchill on some apical sesamoid fractures, but we'd never attempted to repair basal sesamoid fractures. But I started to operate on basal sesamoid fractures, and those went well also. We had a lot of splint bone fractures.

I didn't do any major fracture surgery. We had a man who came with us, a Dr. Jacques Jenny, a Swiss veterinarian. It was probably in the late 1950's. He was an orthopedic surgeon in small animal - and I call him the father of large animal orthopedic surgery.[13]

He and I used to go out and do a lot of these cases. He'd come down to the clinic and he'd say, "*Charlie, I got a horse with a fracture up in New Jersey and I want to go up there and try to repair it tonight. Would you go with me?*" So we'd gather all of our equipment together around five or a little later and drive and anesthetize this horse, and he'd do his surgery and do a nice repair job. And so the surgery was done, maybe about midnight. We'd stay around until the anesthesia effect wore off and the gets up and fractures the leg again. You know how horses are if you've ever seen them get up from anesthesia? They try to get up, and they flop around and so on. They would break down the fracture in the repair.

In the Philadelphia clinic, we tried to recover the horses standing alongside of the operating table, standing there until we thought that they were adequately recovered and we could take their girths off. We tried various sorts of things, but nothing seemed to work. And then Dr. Jenny got the concept: Maybe if we could recover them in water, the water would dampen the movement of the limbs and we could keep them there until they were fully recovered and then take them out of that, put them in a stall and they would stand up.

He tried this on a case one time. He had a backhoe come in and dig a big hole. And he filled it with water. We put an anesthetized horse in there and let it recover. And, by gosh, he said, "*Yeah. I think this will work!*" So that was the beginning of the pool recovery system which is at New Bolton Center.

It's a large rubber raft. The horse is taken off the table in a sling, and he's moved by an overhead monorail to the pool area and he's lowered into the raft. There are four rubber boots for his legs. And there's an apron out front where you can rest his head. The anesthetist has a walkway alongside and can continue to monitor the horse. And that works very well.

[13] Jacques A.B. Jenny, Dr. Med. Vet. (Zurich), professor of orthopedic surgery, 1959-71. A distinguished and world-renowned orthopedic surgeon, Dr. Jenny was the chairman of the organizing committee that gave rise to the American College of Veterinary Surgeons in 1965 and the first Chairman of the Board of Regents of that organization.

You don't use them for chip fractures of a joint. You don't use them for sesamoid fractures. But for a major catastrophic fracture, it's really a good way to recover them. Unfortunately, Dr. Jenny was never around to see the effects of that. He died at an early age.[14]

Sarah:
When did Dr. Jenny come up with the idea for water recovery?

Dr. Raker:
In the late 1960's or very early '70s.

Sarah:
You have been credited as helping establish New Bolton as a premier facility for equine surgery. What would you say are your biggest contributions to that?

Dr. Raker:
I have to say people. You've got to have the right people. When I was still in Philadelphia, I was the only large animal surgeon from 1954 to 1957.

In 1957, after being on call for 365 days/year for three years, I got my first intern. And the next year, I employed another intern, and the next year I employed another one. And I thought we ought to start a residency program. Probably about 1960 or '61, I started the residency program.

Then I expanded that so that usually I would have three interns and a like number of residents.[15] And as you do that, you pick out certain people that have special ability or have some smarts, knows what they're doing.

One of them was Dr. Don Smith.[16] He was superb. You would scrub in with him on a piece of surgery and show him how to do it and he could do it the next time as well as anyone. He was truly one of the amazing residents that I had.

As the caseload begins to increase, as the reputation begins to increase, more cases are coming in. They'd say, "*Hey, take it up there to Raker, he did this and somebody did that and look at that horse.*" So it's sort of by what you do and the reputation you build up. And the caseload increases accordingly. And then you have to maintain a staff of really qualified people.

I'd get very irritated when I would say that this is what we were going to do. I'd like you to do this. And some of them would say, "*What's in it for me?*" And I'd say, "*If New Bolton Center doesn't survive, you don't have a job. That's what's in it for you!*"

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[14] Jacques Jenny (1917-71) died at the height of his career.
[15] Internships were one-year post DVM clinical training positions; at that time, residencies were typically two-year positions following an internship.
[16] Donald F. Smith, DVM '74 (Ontario Vet College); professor of surgery, dean emeritus (Cornell).

The other thing was, you have to treat all these animals and all of these patients and their owners alike whether they are a $3,500 pony or a million dollar horse. You are first and always a veterinarian, and I tried to instill that in my staff.

The other thing I initiated was a written report to the people involved. When I went there, they never made any sort of report to the owner or trainer. And I thought, "*Well, this really isn't right. They ought to know what they are spending their money for.*" So I started writing a report. And it doesn't have to be lengthy – three, four, five pages. But it has to hit the highpoints, what you found, what you did, or what you recommend. And the veterinarian would say, *"Well, don't do that. You write to me and I'll tell them."* And I said, "*No. I'm sorry. I won't do that. You and whoever else is involved will also get a copy of this letter.*" I was criticized for that, but I stood my ground, and I'm glad that I did. The end of the line is that I am the fall guy if something goes wrong. And that definitely helped be a practice builder. Those are several things that I think I did.

We had a man who came to me in the 1950's from a stable in Fairmount Park where he had been mucking stalls.[17,18] He asked me if I had a job. And I said that I needed a man to do some cleaning up of stalls. So I hired him. When I started to change bandages after surgery, he said, "*I've put on a lot of bandages, can I help you?*" So I found out he could put on a roll of bandages better than I could! So he began to help me. Then he goes in and watches anesthesia. And first thing you know, he's doing anesthesia – and gas anesthesia! He was with me for many years and died a few years ago.

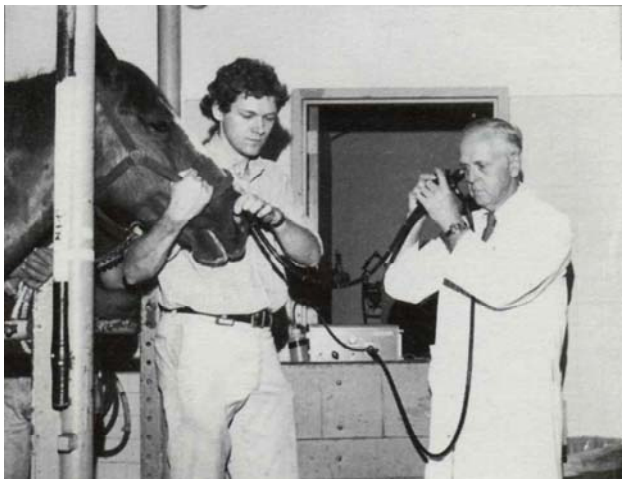
He certainly wasn't trained. He didn't know pharmacology, physiology. But he *did* know when the horse was doing fine, and when he was having some problems. He'd say, "*Doctor, you'd better get on with the surgery.*" George was very useful, and there weren't many Georges around.

I would scrub in on all of the surgeries with all of my residents until I thought they were qualified to go on their own. One day I had a resident and told him to do a surgery, that I'd be available if he needed me. And I left. You have to do that at some point. You can't be their "nursemaid" all the time. Anyway, I'm in my office and George comes over to say that I better get in there, he's in trouble. And I went over and he *was* in trouble. But anyway, you have to let them go on and do the surgery. I told you about Dr. Smith. I didn't have to do that much with him. He was sharp! Some can do it quite well. Unfortunately I had a couple who I don't think ever learned to be what I call a good surgeon. It just wasn't part of them. Not everybody can do everything. I was fortunate and good luck to have been a decent surgeon.

As I said earlier, when I was a student, the only respiratory problem they taught us about was left laryngeal hemiplegia, left-side paralysis.

[17] Fairmount Park, a large racetrack in Philadelphia, Pennsylvania
[18] George Pournarous, a legendary anesthesia technician at New Bolton

When I began to endoscope horses, I'd use a rigid endoscope with a little battery pack. If the horse threw up his head at the wrong time, the scope might puncture the turbinates and blood would pour all over the floor. But that's what we had and that's what we used. It was better than nothing. But then we began to see displaced palates, abnormalities of arytenoids, pharyngeal collapse, a lot of different things.



Dr. Charles Raker (Right)
Examining a Horse by Endoscope

When I got my first flexible endoscope in the early 1970's, then you didn't have to be too concerned about bleeding and so on. We could get a much better look and you could get photographs. That's how I got that award (ACVS Foundations 2007), by doing a lot of new upper respiratory tract surgeries. In my last year (1992), on the tie-back surgeries for laryngeal hemiplegia, I did over 75 in that last year.

But in the beginning, I did them standing like I had been taught in veterinary school. And you just anesthetized the sublingual area and you can cut through the cricothyroid ligament, and go in and feel the saccules. I would take a swap with Xylocaine® and go in to anesthetize all of the areas that I could, and then I'd use the "fingernail technique". I could make an incision with my fingernail at the junction of the medial wall of the thyroid saccule. And then you could just go in and peel the whole saccule out right over your finger. And when you pull it down and take a pair of scissors and trim it off, you'll have the whole laryngeal saccule over your finger.

They also, of course, use burrs to do that. I was fortunate in learning the finger technique so that's the one that I always used. And we did that until MacKay-Smith and Marks[19] and that group at Delaware Equine[20] came up with the tieback surgery. Then I learned to do that. And I made a few changes in that procedure as well.

Then we saw chondrosis of the arytenoid cartilages and a lot of deformities, little granulomas on the medial side of the laryngeal airway. And so it opened up a whole new field of surgery.

I did a lot of soft palate surgery, and some people say it was worthless. I had a study that we did some years before I left that about 73% of all the cases that I did went on and raced. While it wasn't perfect, it was better than some. Then when Dr. Tullerners came after I did,

[19] Daniel Marks, DVM, senior author of laryngeal prosthesis technique: Marks, D., MacKay-Smith, M.P, Cushing, L.S., *et al*.: Use of a prosthetic device for surgical correction of laryngeal hemiplegia in horses. *J. Am. Vet. Med. Assoc*. 1970 Jul 15; 157(2):157-63.
[20] Delaware Equine Center, Cochranville, Pennsylvania.

he began laser surgery. We probably ended up recognizing a good 12-15 different entities that can affect the airway and that affect performance in racing.

I never did much with extensive comminuted fracture surgery, but I did continue to do sesamoid problems, and splint bone problems and carpus and tarsus, and so on. And I did those because I felt confident in doing them.

I always had a staff meeting every Wednesday morning for an hour. When we got our first arthroscope in the late '70s I said, *"I want one of you to learn how to use this equipment. And I would like all you staff, any case that is suitable for arthroscopic surgery, to refer it to this clinician."* Well, they didn't like that. But I said that the reason I am doing that is that I hope within the first six months or at least the first year that we will have accumulated enough cases that we can take a look at them and say this is good, this is bad, this is what you have to do, don't be fooled by this, or whatever. And Dr. Richardson[21] was the one who said he would like to do this – and he did. And then after a period of time when we felt that we had the experience, then the other staff members began to do them likewise.

Sarah:
As one of the original thirty-five charter members of the American College of Veterinary Surgeons (ACVS), could you describe your role in the development of the ACVS?

Dr. Raker:
Dr. Mark Allam, who was Dean of the Penn Vet (University of Pennsylvania School of Veterinary Medicine) at that time and a small animal surgeon, thought it would be a good idea to form a college of surgeons. So he got together Jenny and myself and a few others from other schools, Dick Ruby, and some from Colorado and Cornell. And we had a meeting in Chicago and that was the beginning of the College of [Veterinary] Surgeons.

Soon after that, I spent several years on the examination committee, and then chaired the examination committee. Following that, I was elected to the Board of Regents and I served on the Board of Regents for a three-year term. Then I became vice-chair. And then eventually from there on I became president of the organization for a year.

The examination committee solicited questions from large and small animal surgeons from all of the veterinary schools. Then we would sit down as a committee and decide which questions we should use. And I always said I was glad that I didn't have to take that exam – because I think I would have flunked it! Residents took all three sections, small animal, large animal, and the oral section.[22] Then it was by examination from then on.

They had to have (an internship or equivalent, plus) a two-year residency at a veterinary school or a qualified, approved practice. And from this beginning, the college kept growing and growing. Today, there are probably between 1,500-2,000 members of the ACVS, and some of the original members I served with have died.

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[21] Dean W. Richardson DVM '79 (Ohio State University), Charles W. Raker Professor of Equine Surgery, Chief, Large Animal Surgery.
[22] Today, residents elect to take a small or a large animal exam with practical, case-based, and written portions.

Sarah:
Today, about 60% of ACVS diplomates work in a private practice. Could you comment on the relationship between academic surgeons and private practice surgeons, and how that relationship has evolved over time?

Dr. Raker:
The academic surgeons have all gone through the process of residency training, and taking the board examinations. There are some (private practice) large animal surgeons who are not members of the college (ACVS). You don't have to be a member of the college to be a very excellent equine surgeon. However, a lot of practices, whether large or small, have decided that from the standpoint of building up their practice and the reputation of the practice that they should have in their practice a board-certified surgeon. So it adds to the prestige of the practice.

Sarah:
When you did your final surgery in 1992, what were the newest advancements at that time?

Dr. Raker:
Well, one thing that I mentioned was the improvement in colic surgery due primarily to better understanding of general anesthesia, blood gases and fluid therapy, and the introduction of stapling and suturing bowel, where it was indicated; [also] the advance of laparoscopic surgery, using a laparoscope to do a lot of these procedures.

One of our young staff doctors followed Dr. Eric Tulleners, who followed in my footsteps in the area of upper respiratory surgery. Unfortunately, Dr. Tulleners died at an early age. Dr. Eric Parente[23] followed Dr. Tulleners and is currently doing most of the upper respiratory tract surgeries at New Bolton Center. And he's doing some new innovations in laryngeal surgery (and nasal hematomas) that I think are quite interesting and have been successful.

Fracture surgery was definitely improving with all of the hardware that was becoming available. Originally, the hardware wasn't adequate for horses and couldn't stand the stress of their weight. Those things continued to evolve and I would say are probably going to continue to evolve in the future. Most horses with comminuted long bone fractures or fractures of P1 or P2, or rupture of the digital flexor tendons, were put down.

Unfortunately, in the field of equine surgery, there is a dollar involved in most everything, which is why many racetrack horses are still "put down" when these injuries occur. If a gelding is worth $4,000, he may be put down because he isn't worth the cost of the surgery. If it's a mare that could be a potential broodmare, or a horse like Barbaro[24] who could be a potential stallion, then it's a different situation.

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[23] Eric J. Parent Cornell '89, associate professor of surgery

[24] Barbaro, racing thoroughbred who won the Kentucky Derby but shattered his leg two weeks later during the Preakness race. He was treated surgically by Dr. Dean Richardson at New Bolton Center, but died eight months of complication of laminitis.

A woman asked me the recently if it was right to try and repair the severe fracture in the case of Barbaro. I said that I thought it was right because he was a valuable horse with a lot of public appeal. It was a fracture that, with the expertise that we have today, could be repaired. It was just unfortunate that he developed laminitis, and when he did, the decision was made to destroy him. But up to that point, he was doing wonderfully.

Sarah:
You have stayed in touch with a lot of your students over the years, even after retiring. What challenges do students who specialize in equine surgery face when they come out of school?

Dr. Raker:
First of all, just coming out of school, you don't have the reputation of a more senior person. That means that some owners of the higher-priced animals won't want the veterinarian who just completed their residency. They want the boss, the head man. But otherwise, I think that a veterinarian who gets through their residency is basically trained to be a pretty decent surgeon.

I was proud of all of my residents and would put them up there with some of the more seasoned surgeons and they probably can do just as well. I'm not saying that about severe fractures but I'm talking about the routine surgeries you might have to do.

It takes a lot of dedication. It takes a lot of stopping and thinking, pausing and rumination, if you will. Continuing education is vital, as is attending the ACVS meetings, so you can broaden your experience and your background and your training. Some veterinarians wouldn't go to those meetings if they didn't need continuing education credits to maintain their license. I always went to all of the ACVS and AAEP (American Association of Equine Practitioners) meetings.

Sarah:
You said this was in the mid-1960s when you started hiring more women (interns and residents). How long did it take before the stigma wore off or people got used to it?

Dr. Raker:
Not more than half-dozen years or fewer. I think our clients felt that if they were good enough that I would employ them as a staff member, they trusted me.

Sarah:
What advice would you give a veterinary student who is interesting in going into equine surgery?

Dr. Raker:
One thing—and I'm sure you know this without me telling you—is to be as good a student as you feel you can be. If that's what you want to do, you've got to say, "*I've really got to spend my time, I've got to learn this, I've got to get on with this*." And there may be times when you say, "*This is a drag*." But you can't look at it that way. You've got to say, "*This is*

part of it, this is what I want to do, and this is what I am going to do." You have to have a positive outlook.

Grades are not all that important, and yet grades are important. You don't have to be the top student in your class to be a good equine practitioner or surgeon.

For instance, I had two students in the same class. One was the top student in the class, and the other took three or four re-examinations (to pass boards). Later, the two joined together in practice. And the veterinarian who had three or four re-exams, every bit of knowledge that he got, he stored in his head and could use it in his hands. And he was as good a veterinarian, if not better, than the one who was top in his class.

I also remember another student who ended up being a great person in research and won a lot of awards. And this particular student was a brilliant young man. And I said to him, "*I hope you never go into practice."* He said, "*Why?*" And I said, "*Because you'll probably kill the first animal you look at. I've observed you, you're great with research. I can see it in you every day in the things you do but you're just not adapted to use the information with your hands and go to work and use it. You haven't been able to make the transition from the knowledge to the application*."

So every opportunity you have from a clinical standpoint to get hands-on experience, to get in there, to feel the leg…don't be one of those who stands back and looks! If you want to learn, you've got to get the experience, you've got to do it. And the more you do it, the more you learn, and the better you become.

Apply yourself. The knowledge is great. You need it. But "*If you can't apply it, you ain't no good!*"