An amazing human being

By Laura Stephenson Carter

If you chanced upon Elmer Pfefferkorn as he was out for one of his daily walks, you would never guess from his humble demeanor that he's an internationally recognized scientist and a much-loved teacher of parasitology and virology.

When Dr. Elmer Pfefferkorn talks, Dartmouth medical students listen:

Hepatitis A was sweeping through a U.S. military base, so an infectious disease team from the Centers for Disease Control (CDC) swooped in to investigate.

Not a single rustle or cough can be heard as the students settle in to hear Pfefferkorn illustrate a point with yet another of his famous stories.

Early on, the CDC investigators made a useful observation—all of the cases were in officers; none were in enlisted men. This pointed very strongly to a food-borne epidemic, but everyone on the base ate exactly the same meals and the food was prepared in the same kitchen. So there went the food hypothesis, the investigators figured.

But the team had made some progress. So at the day's end, when the base commander invited the visitors to join the officers for dinner, they accepted the offer. As the first course was served, the commander urged the investigators to try the special salad dressing that was served only to officers. Now these were experienced epidemiologists. They'd heard the key words "only to officers," so they all very politely refused.

The students laugh.

The next day, of course, the top thing on the team's list was to look into that salad dressing. They learned that it was made by an old master sergeant and that he was scrupulously careful about following procedures. He washed his hands compulsively, and he wore gloves whenever it was appropriate. It didn't seem likely that he could be involved in the epidemic.

But just to be sure, the investigators asked for the ingredients of the salad dressing. It was the usual salad dressing stuff—oil, vinegar, herbs, plus, remarkably, one cup of the master sergeant's urine.

Pfefferkorn pauses while the students groan and titter nervously.

So the CDC investigators questioned the master sergeant about his health, and he reported that about six weeks earlier he had started feeling ill and his urine had turned dark brown. But he'd tasted it, and it had tasted as good as ever . . .

The students laugh again, as Pfefferkorn delivers this line in a sly deadpan.

. . . and so into the salad dressing it continued to go. The master sergeant, as might be expected, later tested positive for Hepatitis A.

Continuing on in a more serious note, Pfefferkorn points out that the usual route for the transmission of Hepatitis A is the fecal-oral pathway. Since there is typically much less virus in urine than in feces, the urine-laced salad dressing was not necessarily the cause of the outbreak on the base.

Laura Carter is Dartmouth Medicine*'s associate editor. The story about Hepatitis A that begins this feature, as well as the comments by alumni and colleagues in the sidebar, have been lightly edited to aid comprehension in this context. However, as is* Dartmouth Medicine*'s standard practice, all comments in quotation marks represent exactly what the quoted individual said.*

JON GILBERT FOX

For more than 40 years, Pfefferkorn has held DMS students in his thrall with the power of his stories.

JON GILBERT FOX

Despite his years of experience, Pfefferkorn still practices each lecture at least three times (at home in front of his fireplace) before delivering it. He's also renowned for starting class exactly on time.

Pfefferkorn's stories about parasitology and virology are legendary. "The storytelling is not just to keep the students awake," he insists, but also "to emphasize an important point that I hope they will remember."

JON GILBERT FOX

The walls of Pfefferkorn's office are filled with framed awards.

He may be semi-retired, but Pfefferkorn still has a knack for keeping students enthralled with his lectures on virology and parasitology. That knack has won him 15 teaching awards over the course of his career, including DMS's top teaching award, presented by the graduating class, no less than five times. The Medical School eventually had to establish a rule that students couldn't elect a previous winner until three years had passed, to give other faculty a chance to win.

Still, more than 40 years after he came to Dartmouth, students continue to flock to his classes in anticipation of great lectures and stories.

"Elmer is the most amazing teacher and human being," says Dr. Joseph O'Donnell, a DMS '71 and longtime member of the faculty. "He leaves an indelible mark on everyone he touches. I can still tell you amazing parasite stories."

Among O'Donnell's favorites are tales about a parasitic worm crawling out someone's nose during a card game; about a perfect storm of circumstances that resulted in a college football team getting hepatitis and having to cancel their season; and about diagnosing pinworms by collecting the eggs using Scotch tape affixed to a Popsicle stick. "He tells about sneaking up on your [sleeping] kid at night . . . with this contraption, lowering the [kid's] pajamas, and touching the tape to the perianal area," O'Donnell says. "But of course you have to have a great story if the kid wakes up."

What's Pfefferkorn's secret? Beyond his gruesomely fascinating subject matter, of course. "I take substantial pleasure in teaching," he says. To perfect his technique, he not only practices each lecture at least three times in front of his fireplace at home, but he admits to picking up ideas—and improving on them—from teachers he's observed over the years. "From every single one of them I've learned something about teaching. In some cases, it was a lesson in what *not* to do."

But from others, he gleaned insights into what *to* do. For example, he perfected a technique used by Dr. Larry Kilham, a now-deceased DMS virologist whose "teaching was very much dependent on short historical sketches of great virologists of the past and how they contributed to the emergence of a new field." And Pfefferkorn attributes the way he greets students—saying "Good morning, my young virologists" or "Good morning, my young parasitologists," depending on the class he's teaching—to the late Dr. Harold Brown, an eminent parasitologist at Columbia who would address students as "my young colleagues."

Pfefferkorn's stories are legendary at DMS. "The storytelling is not just to keep the students awake," he insists, but also "to emphasize an important point that I hope they will remember." He says his philosophy of teaching medical students is simple: "I try to be absolutely clear and absolutely fascinating." He pauses and his eyes twinkle mischievously. "Occasionally, of course," he continues, "there's a conflict between being absolutely clear and absolutely fascinating, and I don't always aim for absolutely clear." He laughs. "If I'm forced to choose, I go for fascination."

"Elmer was clearly one of the most fascinating lecturers," says Dr. Joseph Schwartzman, a DMS '72 and a longtime member of the pathology department. "I think my class and all the other classes I've ever heard of would show up for whatever lecture Elmer was giving."

"Elmer entertains them with the subject [and] anecdotes that relate to the subject," says Dr. Michael Fanger, who succeeded Pfefferkorn as chair of the Department of Microbiology in 1992. But "it doesn't come across as somebody doing entertaining. It's somebody telling stories about a particular part of science that you tend to remember and you remember well."

Armed only with old-fashioned slide and over-

Enthusiastic about Elmer

People who know Pfefferkorn need little prompting to enthuse about him. Here are some comments drawn from the interviews that were conducted for the adjacent story, as well as from previously published accounts.

As many of our instructors use PowerPoint and fall into reading off the slide, Dr. Pfeff comes armed with a packet of notes and an old-fashioned slide projector and overhead—which he rarely uses. You learn to sit back and listen. Dr. Pfeff doesn't teach in bullet points and outlines but in stories. You learn about each disease on the basis of outbreaks and discoveries, and somehow you end up with molecular mechanisms and disease characteristics from engaging and interesting histories. His classes prove that technology cannot substitute for excellent teaching.

— Christina Megli, DMS '09

The students adore him. He really enjoys teaching, and there is a mutual sense of respect. He feels that he owes the students his very best effort. Did you know that after all these years, he practices his lectures? He asks when the auditorium is free and goes in to run through his lecture. And he always asks for pictures and bios of the first-year class so he can familiarize himself with the students before he begins teaching them.

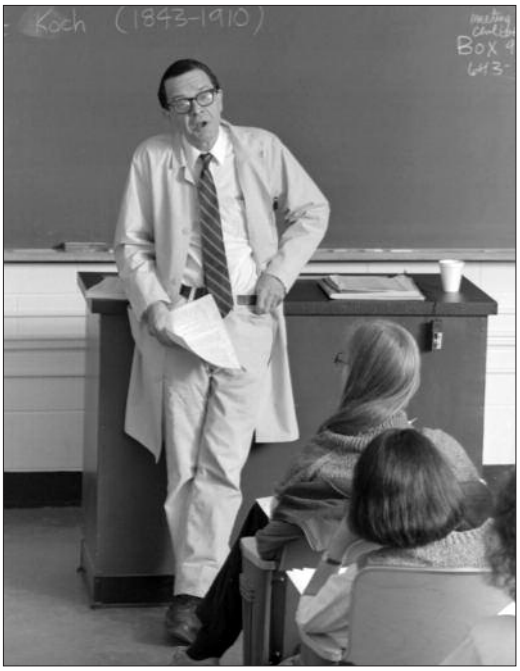
— Linda Martin, DMS Office of Student Affairs

My first memory of Elmer was his greeting us as scared first-years sitting around a table at Kellogg Cafeteria. He not only knew all our names, but he knew all about us. He set the tone for the DMS experience—and it's something I've tried to live by, a small and caring community of support.

— Joseph O'Donnell, DMS '71, now a professor of medicine at DMS

Elmer Pfefferkorn is perhaps one of the most beloved of all DMS teachers. Over 40-plus years, he has taught thousands. Everyone remembers his reference to "fecal veneer" and the gross worms and stuff he so eloquently taught us about. Three cheers for Elmer, and long live little creatures.

— Benjamin Gardner, DMS '96, now medical director of Choate Rosemary Hall School



As is evident from this 1988 photograph of Pfefferkorn, his classroom mien hasn't changed much over the decades.

For a WEB EXTRA about Pfefferkorn, see dartmed.dartmouth.edu/spring08/html/amazing_human_being_we.php.

Armed only with old-fashioned slide and overhead projectors, Pfefferkorn is still enthralling today's technologically savvy students. "He manages to animate the class without PowerPoint," says a second-year student.

head projectors, Pfefferkorn is still enthralling today's technologically savvy students. "He manages to animate the class without PowerPoint," says second-year Amanda Thornton. "Of course, his stories were the most exciting part of his lecture—they almost always had a point. He had a story about a football team with hepatitis, and also one about how one could coax bedbugs to emerge in the classiest hotels—by turning off the lights and then abruptly turning them back on. He was just really interesting to listen to."

"He had, as far as I can tell, absolutely a unique way of distilling very complicated concepts, making them understandable and making them interesting," agrees Schwartzman. "You could go to a lecture and really get caught up in a topic, no matter whether it was basic virology or parasitology."

One topic that has long caught students' attention—that alumni several decades out of medical school still associate with Pfefferkorn—is the concept of fecal veneer. "The fecal veneer is the theoretical construct that the world is covered with a thin layer of feces," Pfefferkorn explained in a recent lecture on viral hepatitis. "You can't see fecal veneer. You can't smell it. But it's there."

JON GILBERT FOX

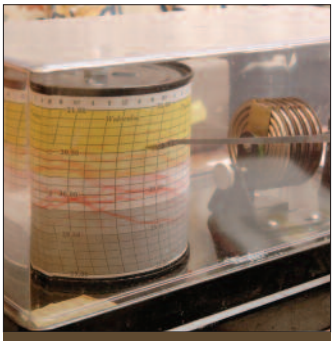
Pfefferkorn is a fan of the prolific Victorian novelist Anthony Trollope.

JON GILBERT FOX

Although he no longer runs his own lab, Pfefferkorn still attends research conferences (always arriving on time) and loves to discuss lab conundrums—here, in 2001, with pathologist Joe Schwartzman.

Pfefferkorn knew as far back as he can remember that he wanted to go into medicine. Neither of his parents were scientists, but his father did subscribe to a magazine that young Elmer read eagerly—*Popular Science*.

JON GILBERT FOX



Ever the scientist, Pfefferkorn keeps a recording barometer in his library.

He went on to give the class a quick history lesson: Viral hepatitis, like polio, is transmitted by the oral-fecal or fecal-oral pathway and is very dependent for the frequency of infection on the thickness of the fecal veneer. Before the sanitary revolution, fecal veneer was thick everywhere in the world. Overt disease was rare because everyone was infected early in life and thus developed immunity. Pregnant women probably immunized their fetuses by a transplacental transfer of antibodies.

Consequently, he continued, newborns came into the world with passive immunity and, in the presence of a thick fecal veneer, got infected while they still had passive immunity. They got no disease and ended up with passive immunity that lasted the rest of their lives. But when fecal veneer is thinned out by sewage disposal plants, toilets, and hand-washing facilities, then infection is delayed until late childhood, adolescence, or even adulthood. And these populations are susceptible to severe viral hepatitis.

So ended the lesson on historical epidemiology.

"I think most really good basic science teachers . . . try to show students what the relevancy is of basic science to clinical medicine," says Dr. James Strickler, who was dean of DMS when Pfefferkorn was tapped to chair microbiology in 1980. "It's motivational," continues Strickler, "and a good teacher like Elmer . . . knows how to motivate students."

As good as he is at teaching, Pfefferkorn insists that his first love is medical research. Growing up as an only child in Manitowoc, Wisc., he knew as far back as he can remember that he wanted to go into medicine. Neither of his parents were either scientists or doctors, but his father did subscribe to a magazine that young Elmer, already a strong student in math and science, read eagerly—*Popular Science*.

After graduating from Lawrence College in Wisconsin, he got a Rhodes Scholarship to study medicine at Oxford. There he fell in love with research while working in the lab of Dr. Donald Woods, an eminent bacteriologist known for discovering the mechanism of how sulfonamides work against bacteria. At Harvard Medical School, Pfefferkorn resolved to go into research, did a thesis on the genetics of bacteriophages (viruses that infect bacteria), and by 1959 had earned his Ph.D.

He decided he'd like to work on polioviruses next. "I went to one of the greatest virologists at Harvard—John Enders," says Pfefferkorn, "and I told Dr. Enders that I intended to be a virologist and I was going to work on poliovirus." Enders was one of three people who'd been awarded the 1954 Nobel Prize in Physiology or Medicine for the cultivation of the poliomyelitis virus. "Wise John Enders said to me that there [were] already too many people working on poliovirus. He suggested that it would be much wiser to work on a virus that no one knew anything about."

Pfefferkorn wound up working on an infectious organism that one of Enders's postdoctoral fellows had isolated from a mosquito in Egypt: the Sindbis virus, named for a region near Cairo. "All it had was a name," recalls Pfefferkorn. "Nothing was known about it. [John Enders] dug a sample out of his freezer and said that this would be an appropriate way to begin a career in virology. And he was dead right."

Pfefferkorn spent the next 10 years working on Sindbis—at Harvard and later at Dartmouth after his move north in 1967. "It rapidly became a model system for studying animal viruses," he says. "Laboratories all over the world began working on this virus and building on the experiments we did."

But in the 1970s, when he was close to identifying the role of each gene in Sindbis, Pfefferkorn "decided to stop being a virologist because the field was getting much too crowded," he recalls. "If I had been talking to a young virologist-to-be, as the old

Elmer Pfefferkorn is one of the faculty members at DMS who most influenced my future as a researcher and physician in infectious diseases. His passion for teaching and genuine excitement for medicine inspired me. To this day, I am grateful to Elmer for his time, wisdom, and his inspiration.

— Donna Ambrosino, DMS '77, now executive director of Massachusetts Biologic Laboratories

When other people were starting to buy premade reagents from commercial suppliers, we were making up our own—usually a year's supply at a time. Elmer was very frugal. And he wanted to know that the media he was going to use would be the same and not vary from batch to batch.

— Joseph Schwartzman, DMS '72, now a professor of pathology at DMS

In Dr. Pfefferkorn, one sees a glimpse of Socrates, wandering the streets of Athens, consumed by his calling—nearly to the point of distraction.

— Christopher Reveley, DMS '89, now an anesthesiologist in Utah

Elmer Pfefferkorn was recognized by Dartmouth medical students year in and year out for his excellent teaching, while at the same time he was doing superb research on bugs and parasites that afflict cats and humans. Elmer, while walking, looked as if he might topple forward. Indeed in this activity he did not give away the reality that he was a superb squash player. Many were the days that I tried desperately to at least get 10 points in a game against him. Elmer was a true academic. His loves were his work, his books (all about him in the office), and his family.

— Edward Harris, DMS '60, emeritus chair of medicine at Stanford

He has a sparkle in his eye every time he talks about bacteria.

— Diego Lerner, DMS '90, now a psychiatrist in California

Although I can't say that microbiology was my favorite topic in medical school, Dr. Pfefferkorn's lectures were standouts for their eloquence and clarity.

— Suzanne Bird, DMS '85, now director of the psychiatric emergency service at Cambridge (Mass.) Hospital

As much as he enjoys teaching, research was Pfefferkorn's first love. This undated photo shows him at the bench.

Whenever he gets a chance, Pfefferkorn waxes eloquent about toxoplasma. He's intrigued by how well the parasite avoids being destroyed by the body's immune system. "Oh, it's a perfectly marvelous organism," he says.

master fulfilling John Enders's role, I would have said, 'Don't work on this virus. There are too many people working on it already.' So I essentially gave the same advice to myself, and I decided to switch completely and become a parasitologist."

Pfefferkorn focused on *Toxoplasma gondii*, a parasite that behaves like a virus. *T. gondii* grows inside cats and other mammals and is spread through feces. The disease it causes—toxoplasmosis—can cause neurological damage in AIDS-compromised individuals as well as in unborn children, since the infection can cross the placental barrier.

"Elmer was a pioneer in introducing the rigorous biological approach to study this interaction between the parasites and its host cell," says Joe Schwartzman, who returned to DMS a few years after graduating to do a fellowship in Pfefferkorn's lab. Pfefferkorn even convinced Dr. David Bzik, a DMS malaria researcher who had trained as a virologist, to switch to studying *T. gondii* because it was a better surrogate model for genetic studies.

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JON GILBERT FOX

For many years, Pfefferkorn has also made daily notes about the weather.

JON GILBERT FOX

Reading is one of Pfefferkorn's great joys, though far from his only avocation. He also binds books, collects wildflowers, faithfully records the weather—and is a loyal fan at Dartmouth athletic contests.

Pfefferkorn is an avid reader and long collected first-edition translations of Elizabethan literature and books on 19th-century British explorations of the Arctic. Among his treasures is a first edition of Whittier's *Snow-Bound*.

JON GILBERT FOX

Pfefferkorn points to the inscription in his first edition of *Snow-Bound*.

velous organism," he says. He recalls his delight at seeing it under the microscope for the first time. "It does all sorts of astonishing things to the whole cell that it's growing inside of. Just as with the Sindbis virus, it became a marvelous organism for parasitological research."

"Elmer finessed the technique for isolating the parasite from cat feces," says Dr. Lloyd Kasper, a DMS neurologist who after completing his residency at DHMC in 1979 worked as a fellow in Pfefferkorn's lab until 1983. "Elmer's big scientific approach was to do these crosses—he would mutagenize the parasite, isolate some pathway that he was interested in. And then he would take those parasites and he would cross them in the cat gut because this was the only way that you could do genetic recombination." This was before scientists had developed molecular techniques for inserting genes into organisms.

Pfefferkorn is also "still famous in virology for creating the first temperature-sensitive mutants in a eukaryotic virus," says Bzik. These mutants stop growing at body temperature.

In addition, Pfefferkorn worked on developing a vaccine as well as testing drugs against *T. gondii*.

Many people are studying the parasite today because it's so amenable to genetic manipulation. In fact, work in the field "really started with the ideas that Elmer developed," says Dr. Louis Weiss, a *T. gondii* expert at Albert Einstein College of Medicine. "He did some of the very early work on molecular biology in this organism and [on] drug resistance and mutagenesis."

The more one learns about Elmer Pfefferkorn, the more intriguing the story gets. This consummate scientist has several avocations that fall firmly in the humanities. He's an avid reader and long collected first-edition translations of Elizabethan literature and books on 19th-century British explorations of the Arctic. He recently sent those collections to auction, but he still has an extensive home library that includes many first editions. Among his treasures is a first-edition copy of *Snow-Bound* signed by John Greenleaf Whittier in 1869. The inscription reads: "Life is ever lord of Death and Love can never lose its own."

Pfefferkorn is a skilled bookbinder, too. Working in his basement repair shop, he has restored the bindings of many of his old books.

He also collects weather data. For the past 25 years, he's kept track of the daily high and low temperatures as well as the atmospheric pressure using an old-fashioned recording barometer that sits in his library.

And every day the weather is nice, he takes a walk around Hanover's Occom Pond, collecting wildflowers as he goes. Once he's back home, he checks his finds in a guidebook and records any new varieties. So far he's up to 153.

He collects fine-art prints as well. His most prized work is a Rembrandt etching—"The Rat Catcher"—that he obtained from a dealer in London for a reasonable price because it was trimmed improperly. "That's how I could afford it," he says. "It always reminds me of the role of the rat in bubonic plague."

Pfefferkorn's dedication to Dartmouth Medical School is as legendary as his teaching and research. He has served on key administrative committees, chaired the Admissions Committee, and chaired the Department of Microbiology.

"Elmer is a team player," says former dean Strickler. He "was someone that I would always turn to for advice and counsel on institutional matters, whether it be academic programs [or] some of the more complex interpersonal matters that we always run into in administration."

In the 1970s, Pfefferkorn was a member of a committee—chaired by Strickler, who was then associate dean—that was charged with looking at

Dr. Pfefferkorn is the only lecturer I have ever had who always began and ended class precisely on time. He still attends our weekly infectious disease clinical conference (always on time), as well as many other lectures on campus, and continues to serve as an inspiration to his many former students who are now faculty members, here and around the country.

— Kathryn Kirkland, DMS '86, now an associate professor of infectious diseases at DMS

My best memory of Dr. Pfefferkorn is when I was studying in the serials room in the Dartmouth College library. He'd come in every day, around the same time, to read the newspaper. He was always up on current events in the medical world, but it was unexpected to see him sitting peacefully in the undergrad library, reading the *New York Times*.

— Amanda Thornton, DMS '10

Despite my having been an English major in college, Dr. P. identified significant gaps in my exposure to some of the "great books" and took it upon himself—quietly and unobtrusively—to continue my education in the humanities even as he was helping me to become a physician and scientist. I would often arrive at my lab bench in micro to find an undiscovered literary classic waiting for me to read—most notably Charles Dickens's *Bleak House*, which quickly became, and remains, one of my all-time favorite reads. He remains unforgettable amongst the legions of teachers I have had in my life.

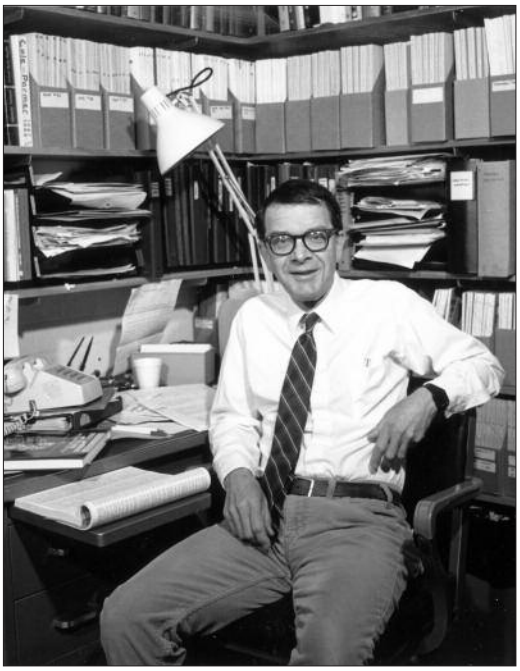
— Suzanne Bird, DMS '85, now director of the psychiatric emergency service at Cambridge (Mass.) Hospital

One hilarious encounter occurred when Dr. Pfefferkorn had explained that chlamydial conjunctivitis is usually transmitted genital to hand, then hand to eye. Someone asked: "Can it be transmitted directly from genital to eye?" Dr. Pfefferkorn stopped, reached up, and took off his spectacles and replied, "Not if you wear your glasses!"

— Justin StormoGipson, DMS '82, now an ophthalmologist in Idaho

I fondly remember his good spirits and entertaining ways of delivering a lecture.

— Elaine Choy Lee, DMS '79, now a pediatrician in New York City



FLYING SQUIRREL GRAPHICS

Reading matter proliferated at his office at DMS, as well as at home, as this 1987 photograph clearly demonstrates.

"The Dean's Office cherishes . . . faculty who can look at an institution as an institution and not just at their own niche in the department," says former DMS dean James Strickler. "Elmer was very, very good at this."

DMS's finances. The School was running at a deficit and struggling to dig its way out of a deep fiscal hole. When the committee proposed what Strickler describes as a Draconian plan—which involved cutting the budget, limiting faculty hires, and freezing tenure—Pfefferkorn "rose above departmental and institutional and personal concerns [and] contributed in a very, very intelligent, sensible, team-building way," says Strickler.

JON GILBERT FOX

St. Augustine's *Cittie of God* is one of the books Pfefferkorn's rebound.

Pfefferkorn was also involved in the academic planning for DMS's reinstitution of an M.D. program in the early 1970s and then for the transition from a three-year to a four-year M.D. program in the early 1980s.

"The Dean's Office cherishes . . . faculty who can look at an institution as an institution and not just at their own niche in the department," says Strickler. "Elmer was very, very good at this. He was such an intelligent, respected member of the faculty that what he said counted. When Elmer opined, people listened."

Pfefferkorn's opinion was especially influential on the Admissions Committee. Strickler appointed him chair of the committee when DMS hired its first professional, nonfaculty admissions officer. The

FLYING SQUIRREL GRAPHICS

Pfefferkorn, in his Harvard crimson robes, is one of the faculty members whom students have always sought out for a farewell photo at graduation. Here, in 2005, he poses obligingly with Jeffrey Barrett.

Serving on the Admissions Committee, Pfefferkorn admits, "was the only administrative position . . . which I really enjoyed. In contrast to all the other committees, you have a final product to show at the end of each year."

JON GILBERT FOX

This book is about explorer Ernest Shackleton—a topic he is fond of.

dean anticipated getting opposition to the move from some faculty, and Strickler knew that a widely respected faculty member like Pfefferkorn could be relied on to counter it.

Serving on the Admissions Committee, Pfefferkorn admits, "was the only administrative position that I've had in my life which I really enjoyed. In contrast to all the other committees, you have a final product to show at the end of each year. The entering class is indeed a final product upon which the quality of the Medical School is intimately dependent."

The effort to recruit more women and minority students to DMS also owes a lot to Pfefferkorn. In fact, the year after the decision was made to increase the number of women, "Dartmouth Medical School had the second highest percentage of women in the entering class of any medical school" in the U.S., says Strickler. Only the still-all-female Women's Medical College of Pennsylvania had more. "Elmer was key to this. And he was also very, very positive about getting more minorities into medical school."

"Our goal . . . was to get the best and most diverse class we could," says Pfefferkorn. "We had our successes—and some failures, but I think the successes outnumbered the failures. It was a very cooperative and interactive committee."

He found the applicants inspiring. "Your impression of the younger generation is constantly bolstered by finding excellence, which a great many applicants showed," he says. "They're exactly the sort of people that we should like to see at the Medical School."

Pfefferkorn also made important contributions to the Department of Microbiology—now Microbiology and Immunology—as well. When he took over as chair in 1980, the department was small and underfunded. But he built it into one of the strongest departments at DMS, according to Fanger. Pfefferkorn expanded the microbiology component, created a joint graduate program with the biochemistry department, fostered a collaborative environment, and added an immunology section. But he never lost sight of what was best for the whole institution. "He believed in the School," says Fanger. "Sometimes microbiology—his department—would take a backseat in making a decision that wasn't as favorable for his department as it would be for the School."

If you looked up "unassuming" in the dictionary, one of the definitions could well be "Elmer Pfefferkorn." He enthralled students without grandstanding. He was quietly supportive of DMS. He toiled in his small but productive lab. (He loved having a small lab—he never had an army of postdocs working for him—because it was in keeping with his preference for science as a cottage industry.) But somehow—maybe in spite of his low-key nature, but maybe because of it—he achieved international recognition for his pioneering research on *T. gondii*. He became known not only for his work but also for his generosity in sharing ideas, advice, and even reagents with other labs both within and outside of Dartmouth.

Many people talk about how Pfefferkorn helped them, about his willingness to share. All too often, scientists compete for ideas and recognition. The malaria field, for instance "is a very selective, politically charged dynamic," says Bzik. "People are competing viciously, literally viciously, for getting the idea, getting the vaccine, or getting the new drug to treat malaria. . . . But in toxo, Elmer was instrumental in getting the field more collegially flavored." Toxoplasma labs nationwide, Bzik explains, meet every other year. "We share our ideas, share our resources." In fact, the first International Congress on Toxoplasmosis was organized by Kasper and Schwartzman and held in 1990 at Dartmouth's Minary Conference Center in Holderness, N.H.

Elmer Pfefferkorn is the reason that I fear taking public transit to this day. I will always remember his references to the "fecal veneer" of society whenever I sit in a taxicab or hold the handrail on the Boston T. Other than that, I have nothing but fond memories of his lectures on intestinal parasites and body lice."

— D. Eric Brush, DMS '99, now an emergency physician in Massachusetts

He would say, "It's good to have a lifetime supply." For instance, about the time I came to Elmer's lab, people began switching from glass jars to plastic to grow cell cultures. So Elmer bought cases and cases of the 32-ounce glass medicine jars that he used for his cell cultures because he was afraid they weren't going to be available soon—so he made sure he had a lifetime supply.

— Joseph Schwartzman, DMS '72, now a professor of pathology at DMS

Dr. Pfefferkorn's contagious enthusiasm for exotic parasites has played a role in my career decision-making, including, I'm sure, my choice to practice medicine with the Peace Corps in East and Central Africa. I remember well when I was a first-year student, I brought him back a huge ascaris [worm] in formalin, retrieved from a vomiting child on the ward where I had just completed an elective in South Africa. He couldn't have been more thrilled with this off-beat little gift.

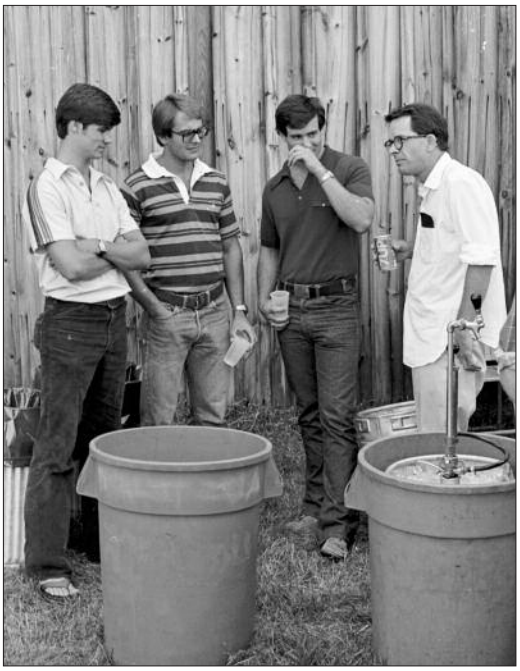
— Patricia Ruze, DMS '90, now area medical officer for the Peace Corps in Kenya

Who can forget Elmer Pfefferkorn, whose cheery and spritely manner energized our studies.

— Kenneth Settel, DMS '69, now a psychiatrist in Massachusetts

Elmer's work paved the way for the explosion in molecular biology, cell biology, and genomic research associated with this organism. Elmer's intellectual rigor and deep thinking has had a significant influence on current researchers on *Toxoplasma gondii*, and we are all indebted to his generosity of spirit and profound insights into this pathogen.

— From the dedication in *Toxoplasma gondii, The Model Apicomplexan: Perspectives and Methods*



Pfefferkorn could always be counted on to hobnob with students at parties—here with three first-years in 1978.

In some scientific fields, says a colleague, "people are competing viciously . . . for getting the idea, getting the vaccine. . . . But in [toxoplasmosis], Elmer was instrumental in getting the field more collegially flavored."

"Whenever you call him up, he's always been willing to share his advice or share reagents, dig something up out of the freezer that he did 30 years ago [and] send it down to you," says Albert Einstein's Louis Weiss. "He never viewed anybody coming into the field as competition."

It was striking to Weiss and others who attended that first toxoplasmosis meeting that "people literally brought their lab notebooks, or raw data, and were putting it up on overhead projectors." That sort of open sharing of data, Weiss says, "is what you do in a lab meeting, but not something you ever see in an international meeting." He, too, credits Pfefferkorn with "setting the tone that we cooperate."

Perhaps Pfefferkorn's generosity is merely an extension of his love for teaching, sharing knowledge, facilitating learning.

Scientists make their mark not just through their own contributions, says Fanger, "but by the contributions of the individuals who have worked with them." Many people—including Fanger, Bzik, Kasper, and Schwartzman—credit Pfefferkorn with having had a major influence on their careers.

continued on page 58

JON GILBERT FOX

Pfefferkorn picks wildflowers on his daily walk and then looks them up.

An Amazing Human Being

continued from page 43

And so does Dr. J. Michael Bishop, who won the Nobel Prize in Physiology or Medicine in 1989 for clarifying the origin of cancer. Since 1998, he has been chancellor of the University of California at San Francisco. When Bishop was a medical student at Harvard, he talked his way into working in Pfefferkorn's lab—something that was unusual at the time. Bishop has commented many times that it was a seminal experience in his career. "My work with Elmer was sheer joy," he says in his autobiography on the Nobel Prize website.

As for Bishop's mentor, Pfefforkorn merely says, modestly, "We tackled a research project. All he learned from me was the frustration of doing research. Well, the pleasure of doing research and also the frustration, I guess. At any rate, he very generously credits me."

That's Elmer Pfefferkorn: Modest. Humble. Unassuming.

And generous. Wise. Loyal. Dedicated. Inspiring. Beloved. Truly beloved. ■

> I found animal virology in the form of an elective course taken when I returned to my third year of medical school, and in the person of Elmer Pfefferkorn. From the course, I learned that the viruses of animal cells were ripe for study with the tools of molecular biology. . . . From Elmer, I learned the inebriation of research, the practice of rigor, and the art of disappointment. I began my work with Elmer in odd hours snatched from the days and nights of my formal curriculum. But an enlightened dean gave me a larger opportunity when he approved my outrageous proposal to ignore the curriculum of my final year in medical school, to spend most of my time in the research laboratory. . . . Flexibility of this sort in the affairs of a medical school is rare, even now, in this allegedly more liberal age. My work with Elmer was sheer joy.
>
> — J. Michael Bishop, 1989 Nobel Laureate

Into India

continued from page 49

other son marrying the Christian girl Nalini. Saheb-ji, they are already having their first baby. They are giving him a Christian name. They are naming him after you."

"What? No! Really! Why haven't you told me this before?"

"They asked me not to, Saheb. They are not sure you would be giving permission. Also, in India, it is the custom when they name a baby after you that you are the boy's second father and mother. That is a great responsibility, Saheb. They knew you would return soon to America, so they did not want to put the burden on you."

"Well, isn't that something! I'd really like to see them—and the baby, of course."

Word was sent to Ichalkaranji, and the young couple appeared at my office, smiling and embarrassed and bearing a very small baby. It was the day before we were to depart. The mother held the black-haired infant proudly as he flailed his arms and legs about in the bright sun.

I hugged all three of them in one embrace and pressed an envelope into Shivaji's hand. "This is part of my responsibility," I said. "Make sure he goes to a good school. Maybe the one in Sangli." This was a school for mechanics that the Presbyterian Mission had established in a neighboring town. "I'll be thinking of all of you," I added.

"Thank you, Doctor Saheb. We will be remembering you, too. The little one will be here always to remind us."

The image that remains most vivid for me, more than 50 years later, is of the slender vice president, Shri Sarvapalli Radhakrishnan, in his immaculate Nehru jacket. When he swooped down on our little village from the empyrean heights of New Delhi, like a shining white knight, his visit seemed to initiate the dramatic train of events that first plunged us into deepest despair, then offered miraculous release.

How inscrutably, in the words of Omar Khayyám:

The Moving Finger writes; and,
having writ,
Moves on: nor all your Piety nor Wit
Shall lure it back to cancel half a
Line,
Nor all your Tears wash out a Word
of it. ■