



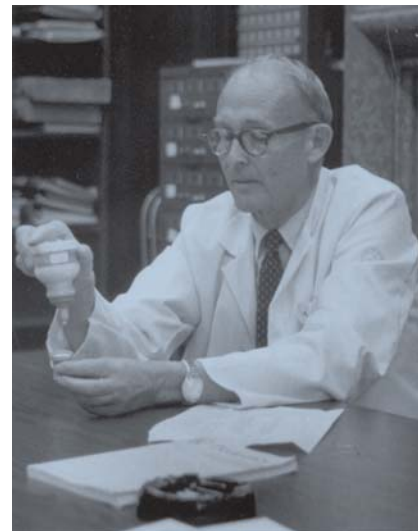
The eminent Richard Lawrence Day made his mark on pediatrics at Pitt. (Photo 1962)

RICHARD LAWRENCE DAY'S APPROACH TO PEDIATRICS
PUT PITT ON SOLID FOOTING | BY EDWIN KIESTER JR.

LIFE JACKETS ON ICE

When Richard Lawrence Day was 80 years old, he noticed an interesting phenomenon in his own kitchen. He had accidentally left a spoon in the freezer, and when he removed it, he dropped it into a cup of hot water he had heated in the microwave. The water immediately began to boil. Day, who had been exploring matters of heat and body temperature since the mid-1930s, was intrigued and wanted to know more. He enlisted the help of a Yale University engineer, Robert Apfel, to reproduce and investigate the phenomenon in the laboratory. They wrote a detailed and erudite explanation of how minute ice crystals on the spoon would interact with water raised to superheated temperatures and published it in a letter to *Nature*.

“My father had all the curiosity of an 8-year-old child,” Sally Day Perreten, Day’s eldest, says. “He was always asking questions, tinkering, seeking information about things he had observed.”



Day changed neonatology.
(Photo circa 1970)

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Once, she recalls, he was introduced to a scientist who was quantifying the forces of gravity. Day immediately bombarded him with questions: How does gravity work? What are the physical principles involved? How could its force be measured?

“The quintessential skeptical inquirer,” his longtime collaborator, close friend, and expert on blindness in premature infants, the neonatologist William Silverman said when presenting Day with the John Howland Award, the highest honor of the American Pediatric Society, in 1986.

Dick Day was chair of pediatrics at Pitt from 1960 to 1965, and one of the intellectual architects who built the school into the medical-research powerhouse it is today. Colleagues from those days still speak of him with awe and admiration 40 years later.

“He helped make it a first-rate center,” says Bernard Michaels (MD ’42), retired clinical professor of pediatrics, citing Day’s insistence on what is now called “evidence-based medicine.” “He declared that the rules of evidence [for the clinic] were no different from those in the laboratory.”

Richard Michaels (who is not related to Bernard Michaels) was recruited by Day from the University of Cincinnati, where he worked with Albert Sabin on what would become the live-virus polio vaccine. Richard Michaels had studied under Day at Columbia University and jumped at the chance to join him again; he stayed at Pitt for more than 30 years. “Dick Day was rigorous,” Richard Michaels says. “Instead of asking, ‘What do you think?’ He considered things that were measurable. ‘Where is the evidence? Follow the evidence.’ He could be harsh with those who [offered] anything less.” Richard Michaels recalls that when Day conducted grand rounds, one physician always had an opinion to share. He held forth at length and volubly on every case. When “Dr. Blank” had finished, Day would declare, “You’ve heard Dr. Blank’s *opinion*. Now does anyone have any *facts* to contribute?”

Day arrived at Pitt with an already well-burnished reputation and a pediatric syndrome named for him. In the 1940s, at Babies Hospital at Columbia University, Day and Conrad Riley had been confronted with five children—ages 18 months to 8 years—afflicted by a mysterious and puzzling set of symptoms. The children were undersize, lacked muscle tone (“floppy,” according to one description), and seemed impervious to pain. Strangest of all, they cried like other children,

yet produced no tears. When Riley and Day reported on their cases in medical journals, 33 more came to light. The complex of symptoms was eventually named the Riley-Day syndrome, also known as familial dysautonomia. Transmitted when a child inherits a defective gene from each parent, the disorder attacks the autonomic nervous system and has been found primarily in those of Eastern European Jewish descent. One in 27 Ashkenazi Jews is said to be a carrier of the defective gene. Many of those afflicted die early. Today, half survive into their 30s.

At Babies Hospital, Day had also studied thermoregulation in premature infants in ways that upended prevalent thinking about newborn nurseries. Conventional wisdom at that time held that premature babies could not maintain body temperature as they had in the uterus because of incomplete neural development. Essentially, doctors thought they were temporarily cold-blooded and could thrive at a lower stable temperature. To explore the question, Day and the physicist James Hardy of Cornell University developed the first gradient calorimeter for precisely and directly measuring heat loss in newborns. The two men showed that premature infants actually made all the necessary physiological adjustments one would expect to maintain body temperature. Their systems were just easily overwhelmed in the face of massive heat loss because of their small size.

Day’s study included only premature infants a week after delivery, so his work was at first disparaged, and he was forced to add a caveat that the findings might not apply to less mature infants. His results and recommendations were not accepted until 15 years later. Subsequent studies showed that very small reductions in heat loss led to increased survival of premature infants.

His findings on heat loss and, later, on the use of oxygen in preterm birth, led him to establish Babies’ first care center for premature infants in 1949, the model for neonatology centers elsewhere.

Day also performed landmark research in kernicterus. This disorder, found in the early days of life, is marked by an accumulation in the brain and spinal cord of bilirubin, the yellowish substance cast off in the breakdown of red blood cells. The condition can cause brain damage in infants, especially the premature. Again, conventional wisdom and Day parted ways. Before Day studied the disorder, physicians believed that bilirubin,

which gave a telltale yellow cast to babies, was merely a marker of the condition; they believed the real culprit lay elsewhere in the body. Day went to the laboratory to investigate. In a series of animal studies, he showed that bilirubin itself did the damage by depressing respiration in brain tissue.

During World War II, Day’s work on heat regulation brought him to the attention of the U.S. Army’s Climatic Research Laboratory. Officers wanted him to develop protective clothing for troops in subzero climates for protracted periods. Yet Day’s experience with neonates had demonstrated for him that the surface-area-to-volume ratio of a limb was crucial in heat exchange. So to fully insulate and protect fingers in temperatures as low as -10 degrees Fahrenheit, he concluded, gloves would have to be preposterously large. In presentations to medical students afterward, he famously showed photographs of Antarctic penguins—they don’t bother to insulate nests. They simply hold eggs above the frozen conductive surface until they hatch.

When Day came to Pitt in 1960, it was with two distinct missions. His first was to help the medical school undergo its transition (a tense one) to a full-time faculty instead of one made up of community practitioners working part-time for the school. Malcolm Holliday, a retired pediatric nephrologist at the University of California, San Francisco and pioneer in pediatric kidney transplantation, recalls that he was one of only six early hires. (Richard Michaels was another.) Day was also to put research and clinical practice on equal footing in pediatrician training. He constantly gave sermons on the need for scientific methodology and grew angry when doctors spoke of “preclinical” to mean scientific and “clinical” to imply nonscientific studies. He insisted that the same rules should govern both.

Fifty-five years old when he came to Pitt and swept up in the reorganization, Chairman Day himself performed little research but continued bedside and classroom instruction.

“He was a *wonderful* teacher,” says Richard Michaels, who notes that Day won student awards as best teacher at Columbia and later at SUNY Downstate Medical Center in Brooklyn and Mount Sinai School of Medicine. (Downstate Medical Center students dedicated their yearbook to Day in 1959; the dedication read, “Dr. Day, through his own professional life, offers personal inspiration for each of us. Would that all physicians were as courteous, as astute in clinical medicine, as interested in teach-

ing, and as productive in research.”)

When Day left Pitt in 1965, there was much head shaking and tongue clicking, Silverman recalls in a short biography. But his decision “made perfect sense to anyone who knew of his lifelong interest in the welfare of children.” He and his wife, Ida (pronounced EE-dah), had strong social consciences, and Day accepted the position of medical director of Planned Parenthood Federation of America “because of his strong conviction that overpopulation was arguably the most important problem faced by this planet,” according to Silverman. He similarly accepted an appointment at Downstate Medical Center, Silverman writes, out of a desire to train those bringing pediatric services to the less well-off.

“My parents were Quakers,” says daughter Betsy Day Darlington. “They were very involved in the peace movement and many other good causes.” In New York, Ida Day worked with the American Friends Service Committee to help women from Hiroshima who had been facially disfigured in the atomic bombing get reconstructive surgery. One woman lived in the Day household for four years while the Days put her through Parsons School of Design and tutored her in English. She returned to Japan and set up a successful dress shop, staffed by other Hiroshima women. For one year, the family also housed Hilde Speer Schramm, the daughter of “Hitler’s architect,” Albert Speer. Because her father had been convicted of war crimes at Nuremberg, Hilde had been denied hospitality elsewhere. She is now a leader in the German Green Party and still visits the Day daughters.

“It was quite a childhood,” Darlington says.

In Pittsburgh, the Days owned a large house just off the campus and, says Perreten, filled it with “foreign students, graduate students, displaced persons, concentration-camp victims, anyone needing help. Some stayed for weeks or months.”

“A common topic of conversation was speculation over the number of keys to the Day house that were handed out,” one friend said, suggesting that the Days didn’t know how many guests were sleeping there at any given time. (An exaggeration, notes Perreten.)

Silverman, a frequent visitor, called it a “Youth hostel atmosphere.”

Ida’s idea of bedside reading, Silverman writes, was “ban-the-bomb literature.” Then he adds, seemingly with a wink, “sweet gentle Ida had the reputation for mixing the most potent martinis east of the Mississippi.”

The Days’ unbridled hospitality and activist positions didn’t always sit well with the community. For three years in those racially conscious days, a Nigerian graduate student lived in the house, recalls Richard Michaels (who was a next-door neighbor for six months). That brought on some muttering in the neighborhood. Dick Day also contested the racial barriers that blocked African Americans from the University Club, a fight that was eventually successful.

“He put principle above all else,” Holliday says. “He was passionate, and he was right.”

Day left Planned Parenthood in 1968 to help establish the Mount Sinai School of Medicine. In his retirement years, he moved to Westbrook, Conn., to follow another lifelong passion, sailing. The Days kept a sailboat on Long Island Sound even in their Pittsburgh days and spent every August cruising Long Island Sound and the Maine coast. They owned a succession of sailboats, starting with what Darlington calls a “real clunker” that they brought down the Erie Canal. Once, 6-year-old Betsy, who was sitting on the stepped mast, slipped off, fell into the cabin, and suffered a concussion, but that didn’t stop her family. After all, she notes, they had a doctor on board. The “crew” also included two Labrador retrievers. During every voyage, they would find a place to anchor where Ida would convince a property owner to let the dogs go ashore to relieve themselves.

The family also shared a passion for music. While at Columbia, Day received an offer of a position at an out-of-state medical school. He declined because his daughters’ music teachers were all in New York. “I don’t think that’s an adequate reason,” the dean reportedly said. “To me, it is,” Day replied. He outfitted an old Jeep station wagon to carry Sally’s harp, which he covered with a homemade platform on which sat Betsy with her violin and Kate, the youngest daughter, with her cello. (Ida played viola.) Sally Day Perreten today is a professional harpist, Kate Day Beare teaches cello in England, and Betsy Day Darlington performs with a chamber orchestra. (The family tradition continues: One grandchild is a bassoonist with the Boston Symphony; another plays flute in the Toronto Symphony.)

But pastimes like music and sailing weren’t enough to quench the retired Day’s insatiable curiosity, as the chilled spoon incident shows.

Before his death in 1989, he was redesign-



Day with his youngest daughter, Kate Day Beare.

ing the traditional rowing oar and studying the placebo effects of acupuncture. He questioned the accepted advice for sharp back blows to dislodge food particles jammed in the airway. So he designed a series of models to simulate the throat and used them to test the effectiveness of back blows against Henry Heimlich’s recommended method of squeezing the midsection. With a colleague at Yale, Arthur DuBois, he documented the inertial and aerodynamic forces at work in each method. They showed the Heimlich maneuver was more effective, and that back blows had the potential to move obstructions deeper into the throat. Their findings persuaded the American Heart Association to stop recommending back blows for dealing with choking. (The research was partially funded by Heimlich’s own foundation.)

Day’s undying curiosity led him to seek out full evidence; he also tempered his investigations with caution, recalls Perreten:

“There was a pond behind our house. Dad loved hockey, and we all skated, but Dad insisted he had to test new ice first. ... He’d put on his skates and go out on the pond, but he prepared himself for every eventuality. He wore a bright orange life jacket just in case the ice was thin and he fell through.” ■