

1995

Nancy Bucher

Facing mandatory retirement in 1983 at age 70 from Harvard Medical School and Massachusetts General Hospital, most scientists would have been content to rest on their long years of service and moved on to retirement pastimes. But at age 70 Nancy Bucher accepted a new appointment at Boston University. Her research didn't miss a beat; she has just received news that her 41-year NIH grant will be renewed.

Bucher was born in 1913 in Baltimore, grew up in a suburb of the city, and was educated at Bryn Mawr School, Bryn Mawr College, and Johns Hopkins Medical School. These three institutions share histories that are remarkably and amusingly intertwined, due to several Quaker ladies who firmly saw to it that a woman's education could equal a man's.

Gifted teachers who made biology exciting at both the School and College awakened an abiding research interest in Bucher. After college, Bucher enjoyed the broadening experience of wandering through nine countries in Europe in as many months, years before air travel and Americanism blurred sharp national differences. She remembers with chilling hindsight the growing national terror that was spreading through Germany in the later 1930s; she recalls that the predominant reaction back home to her alarm was to brush it aside as a girlish misconception because "Hitler is a madman, nobody will listen."

Back in Baltimore in the middle of the Great Depression, Bucher volunteered as a lab technician at Johns Hopkins Medical School and became so engrossed that she was able to be first author of two papers in endocrine journals. She attributes this achievement, extraordinary in its day, to the encouragement of "a kindly boss." At the outbreak of World War II Bucher decided to study medicine and graduated in 1943, taking an internship at Boston University Medical School where Chester Kiefer, the chief of Medicine, was directing a nationwide study of the newly discovered and scarce new wonder drug, penicillin. Numerous diseases of interest to the armed forces, previously incurable and frequently fatal, were dramatically cured almost overnight, because there were no drug-resistant bugs. This was a heady experience that almost turned her into a clinician.

In 1945 the war ended and Bucher sought research training in the Huntington Labs of Harvard University, located at Massachusetts General Hospital, and headed by a distinguished clinical investigator, Joseph Aub. He was a brilliant, wonderfully warm and supportive man, with wide ranging curiosity and interests, and daughters whom he hoped would become doctors. He strongly promoted admission of women to Harvard, which finally happened the year after Bucher's arrival; she was appalled at Harvard's backwardness compared to Hopkins, which had always had women students, lightly termed 'hen medics'.

Bucher's first assignment was to find whether a newly discovered weed killer would cure mouse cancers. It didn't, but it did cause a peculiar myotonia, duly published and

forgotten until the Korean War, when a flurry of reprint requests presaged the public discovery of the use of agent orange.

Aub had the then radical idea, now taken for granted, that a way to understand cancer is to study normal growth, and so Bucher's next assignment was to find why after the excision of two-thirds of a rat's liver the remnant regenerates to the precise normal size and no more, all within little more than a week. That was in 1946; now, 50 years later, Bucher is still seeking the answer (as are numerous others). In those far away early days, Bucher notes, the pace of research was far slower and less frenetic. When she applied for a five-year grant in 1954, she was instead offered seven!

Radioactive isotopes, sophisticated technologies, and air conditioning were yet to be discovered. One day, a pigeon flew in an open window, alighting on a graduated cylinder that Bucher caught in mid-air as the bird took off. The rate of research was glacial; students and postdocs were not attracted to it, and much of her early work was carried out with one technician. Growth was quantified by interminable enumeration of many mitotic figures to ensure accuracy.

Nevertheless, through these and other painstaking approaches, a number of fundamentals of liver regeneration were established.

In a later fortuitous spin-off, Bucher found that cholesterol could be readily synthesized by cell-free liver homogenates, which caused a minor stir because several leading biochemists had tried to do this unsuccessfully. The rate limiting step in this long, complex biochemical pathway was later pinpointed in collaboration with subsequent Nobel Laureate Feodor Lynen, who invited Bucher to visit his lab in Munich in 1958, following an interesting six months in George Popjak's lab in London. Munich still had depressing war damage, which was far less evident in London. The ensuing eight months in Dan Mazia's lab in Berkeley, spent studying mitosis in sea urchin eggs, generated new thoughts about liver regeneration.

In 1973 Bucher was astonished by her election as ASCB Secretary, having had no previous formal role in the Society in her ten years of membership. At that time, all ASCB operations were run by the Secretary, as the Society had no full-time staff. Previous secretaries had managed largely by means of their office secretaries and moonlighting graduate students. The Huntington provided a 10x10 foot corner of its central office with a desk and a couple of file drawers, and, in response to a plea, the ASCB provided funds for a half-time secretary. By luck, the hospital's personnel office came up with Joyce Rosenthal, straight from Lord & Taylor's, and "a treasure" says Bucher. "She was marvelously efficient, had a fly-trap memory, a great talent for soothing ruffled feathers, and loved the job." It was on-the-job learning for both of them; nevertheless the Society continued to flourish and grow, despite the antiquated recipe card-type membership files. The number of members in 1973 is uncertain, because the commercial outfit that handled mailing had no interest in deleting names, and many listings were duplicated. This led Bucher to arrange mailings through FASEB, thereby initiating ASCB connections to the Federation. By 1978 the Society had totally outgrown

the ability of one tired investigator and one part-time secretary to handle it, and the files were spilling over in all directions. Bucher reported to Council that this one-horse operation was no longer adequate, and that a paid Executive Secretary, staff, and permanent office space were urgently needed. ASCB member Emma Shelton, recently retired from the NIH, took over the operation.

The years Bucher spent at the Huntington Labs were happy and productive; the atmosphere was stimulating and congenial, and those who were there remember it warmly. She remained until its doors were permanently closed upon retirement of Paul Zamecnik, Aub's successor.

Now at BU, Bucher is delightedly collaborating with Steve Farmer, who has introduced her to the wondrous new world of molecular biology, where answers to her previously unanswerable questions can be realistically addressed.

Bucher is an enthusiastic, conservatively adventurous traveler, most recently to the Amazon rain forest. In the Amazon, after several very long and fascinating but hot morning hikes she joined the others in refreshing dips in a lake. They later learned that they were sharing the local pond with electric eels, crocodiles, and anacondas—"only little ones, not much over 15 feet", they were told—and "all the creatures are nocturnal" (she hoped not subject to insomnia!).

At home, between wide ranging expeditions, Bucher enjoys hiking, canoeing, and cross country skiing, and has too many interests to keep up with.

Thinking back on where biology was when she started, Bucher marvels at its current explosive progress and thinks it's a great age to have lived through. She tries to think constructively, look forward, and keep moving.