



## Editorial

## Dr. Alice Ettinger: Pioneer of fluoroscopy and exceptional teacher



### 1. International day of radiology

The International Day of Radiology was established collaboratively by the Radiological Society of North America (RSNA), the European Society of Radiology (ESR) and the American College of Radiology (ACR). This day has been celebrated annually on November 8 since 2012 to promote awareness of the role of medical imaging in healthcare. Since 2017, Clinical Imaging and the American Association for Women Radiologists (AAWR) have celebrated the International Day of Radiology by recognizing the life and achievements of outstanding women in the history of radiology, thus far featuring Marie Curie and Lucy Frank Squire [1,2].

For the 2019 International Day of Radiology, Dr. Alice Ettinger is celebrated for her introduction of spot fluoroscopy to the United States, a fundamental technique used throughout radiology and multiple additional specialties, as well as her dedication as a teacher.

### 2. Early life and training

Alice Ettinger was born on October 8, 1899 in Berlin, 4 years after Wilhelm Roentgen discovered the X-ray. Alice Ettinger graduated from the Chamisso Gymnasium in Berlin in 1919 and then went on to complete her medical degree at the Albert Ludwig University in Freiburg, Germany in 1924 [3]. She continued her residency training at the Charite Hospital of Friedrich Wilhelm University in Berlin in internal medicine and radiology [4]. Her interest in radiology may have initially been sparked by Dr. Hans Heinrich Berg, an expert in gastrointestinal radiology known for “mucosal relief technique,” who was also at Charite Hospital. Alice Ettinger went on to work with Hans Berg for two and a half years [3].

### 3. Revolutionizing fluoroscopy

While Alice Ettinger was completing her training, radiologists relied on the fluoroscope, a device that uses X-rays to visualize the bowel, but does not allow exposure of film for a permanent record of any visualized pathology. Alice Ettinger's mentor, Hans Berg, developed a “spot-film device” to solve this very problem. As news of this groundbreaking invention spread throughout the world, Dr. Joseph Pratt of Tufts Medical School and the chief of medicine at the Boston Dispensary contacted Hans Berg, requesting a spot-film device as well as one of his associates to teach them how to use the device. Hans Berg chose Alice Ettinger to travel to Boston with the spot film device for what was initially planned to be a six-week trip, but ultimately resulted in Alice Ettinger remaining in Boston for the remainder of her illustrious career [3,5].

Alice Ettinger spread knowledge of spot radiography throughout

Boston and the entire United States [6]. She helped to modernize fluoroscopy, an essential radiographic technique before the advent of cross-sectional imaging and which continues with a foothold in gastrointestinal imaging for specific indications including dysphagia, pre-operative evaluation for bariatric surgery and postoperative evaluation after bowel surgery [7]. Furthermore, fluoroscopy ushered in a revolution in medicine beyond diagnostic radiology spanning angiography, interventional cardiology, fracture reduction and hardware placement by orthopedic surgeons, retrograde pyelograms/urethrograms, lumbar puncture and epidural injections, speech and swallow pathology evaluations and endoscopic retrograde cholangio-pancreatography (ERCP) by gastroenterologists [8,9].

### 4. Mid to late career

Alice Ettinger chose to become a faculty member at Tufts Medical School the same year she arrived in 1932. In part this was because she was Jewish and sought to escape the changing political climate in Germany [5]. However, Alice Ettinger clearly earned this position on the basis of her own merits and remained at Tufts for the rest of her career—in total more than 50 years. She became a clinical professor of radiology in 1950 and the chair of the radiology department from 1959 to 1965, one of the first in the country.

Alice Ettinger was an innovator and constantly striving for excellence. In 1945, she developed the first diagnostic radiology residency program at Tufts Medical School [6]. She also introduced the x-ray technician training program at Northeastern University, one of the earliest of its kind [4]. In addition, Alice Ettinger led a medical student radiology elective. An invitation to teach a session at this course received by a Boston area radiologist was considered a great honor [10]. Furthermore, Alice Ettinger frequently published papers in the radiology literature, including one of the first research studies to recognize the possible harm of intravenous contrast agents to the kidneys [11].

The honors and awards earned by Alice Ettinger are numerous. However, her most notable accomplishments include being elected as the president of the New England Roentgen Ray Society in 1965 [6]. Alice Ettinger went on to win both the Radiological Society of North America (RSNA) gold medal in 1982 and the American College of Radiology (ACR) gold medal in 1984, a rare occurrence shared by none other than Marie Curie [6,12,13]. The little known fact about Alice Ettinger that inspired the writing of this article was that she was awarded the faculty teaching award from the graduating medical students at Tufts for an astonishing 13 consecutive years [4,6].

### 5. Testimonials

While Alice Ettinger never married or had children, she touched

many individuals throughout her career from medical students to senior physicians. Her students remarked that “with her, it was never sort of good enough, or probably OK,” “excellence is the only mode in which she could operate,” and “she was like a vat of information with an overflow valve that needed hourly discharge, whoever was there to hear it” [5]. The physician-in-chief of New England Medical Center Dr. Samuel Proger said, “No single individual has contributed to a greater extent to the quality standards of this hospital.” Dr. Robert Paul, Jr., who succeeded Alice Ettinger as the radiologist-in-chief said that “She set an example in teaching people how to care for patients. Dr. Ettinger bridged the gap between frontier medical knowledge and patient care” [14].

Dr. Barbara Weissman, a professor of radiology at Brigham and Women's Hospital and beloved former diagnostic radiology residency program director, feels that she was incredibly fortunate to learn about radiology from Alice Ettinger as a medical student at Tufts. Barbara Weissman recalls, “Alice Ettinger brought humanity to radiology. She personally knew the patients whose films she was reading” [15]. Not only did Alice Ettinger insist that Barbara Weissman go to Brigham and Women's Hospital for training with program director Dr. Harry Mellins, she called Harry Mellins personally on Barbara Weissman's behalf to ensure the outcome. Barbara Weissman went on to win the AAWR Alice Ettinger Distinguished Achievement Award in 2009.

Alice Ettinger also took Dr. Robert Pugatch under her wing when he switched from surgical training into the Tufts diagnostic radiology residency in 1972. Although retired at the time, Alice Ettinger reviewed cases daily with Robert Pugatch to help build his pattern recognition, for which he is known to this day. Alice Ettinger even arranged Robert Pugatch's first attending position after residency. He recalls that she helped multiple Jewish physicians escape Germany, including Richard Schatzki, after whom Schatzki's ring is named. Now a professor of radiology at the University of Maryland and the Vice Chair of Academic Affairs, Robert Pugatch considers Alice Ettinger his “savior and original mentor” [10].

## 6. Closing

Alice Ettinger is celebrated for her commitment to excellence in radiology, both as an innovator and educator. The ripples of her efforts continue on today both in the way that radiology is clinically practiced and the many colleagues and trainees she touched.

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## Declaration of competing interest

None.

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