



Dr. Edward H. Hon

Photo courtesy of Loma Linda University School of Medicine *Alumni Journal*, July-August, 2007.

Hon, Edward Harry Gee (1917–2006)

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Dr. Edward H. Hon was a pioneer in electronic fetal heart-rate monitoring. His research resulted in a commercially-available monitor in the late 1960s that continues to be used throughout the world in the twenty-first century.

Early Life in Australia

Edward "Ted" Hon was born in Shekki, China, a village outside the city of Guangzhou, on January 12, 1917. His father, Harry Gee Hon, had emigrated from China to Australia as a young man, and operated a general store in Tenterfield, New South Wales. He married Cecilia Wong See of Sydney, Australia. Ted, the fifth of their eleven children, was born while Cecilia was visiting her in-laws in Shekki.¹

It was through the influence of a housekeeper she employed to help care for her growing family that Cecilia Hon became a Seventh-day Adventist during the early 1920s. Ted's eldest brother, Eric, was the first from the Australian-Chinese community to become an Adventist minister.²

Because the family operated store sold radios, Ted became interested in that technology. In 1939, he received a radio mechanics diploma from the Marconi School of Wireless in Sydney and in 1942 a diploma in radio technology from the same school. The Commonwealth of Australia also issued him a license to operate broadcast station transmitters. He received additional experience in electronic instrumentation while working for the Phillips Apparatus Factory in Sydney during World War II.³

Medical Education

With the war coming to an end, Hon reevaluated his life goals. If he became a shopkeeper, the number of people he could influence would be negligible compared to what he could do if he became a physician. In a comprehensive challenge exam, he placed second in the state of New South Wales, thereby gaining acceptance to the medical school at the University of Sydney. However, Hon felt impressed that he should study in the United States. Erwin E. Cossentine, former principal of Avondale College in Australia and by then president of Union College in Lincoln, Nebraska, worked out transfer of Hon's Australian technical college credits to Union's pre-med requirements. Thus, after arriving in Lincoln in March 1945, he was able to complete his pre-med studies by September.⁴

Hon then proceeded to southern California where he enrolled at the Loma Linda College of Medical Evangelists (CME). He spent the 1946 summer break canvassing denominational publications in Kenansville, North Carolina. The kindness of the mostly black tenant farmers who ordered books from him because they were helping a foreign student attend a Christian school of medicine made a lasting impression on him.

In 1948, Hon married Audrey Quay, a family friend from Sydney. She graduated from the School of Nursing at Loma Linda in 1951. They would have three children: Robert would earn a Ph.D. in computer science; Ted became a physician (anesthesiology), as did Shirley (internal medicine).⁵

Hon completed his medical studies in 1949, earning first place in the class with highest honors during all four years. He graduated from CME in the Loma Linda Bowl on June 12, 1949. In those days student physicians received their MD degrees after an additional year of internship, so he was officially a member of the CME Class of 1950. Dr. Hon interned at the Loma Linda Sanitarium and Hospital from 1949 to 1950, and became a pathology resident there from 1950 to 1951.⁶

OB/Gyn Pioneer

In 1951 Dr. Hon moved to New Haven, Connecticut, accepting an invitation from Dr. Herbert Toms to participate in the Obstetrics and Gynecology (OB/Gyn) program at Yale University School of Medicine.⁷ Hon became an assistant (1951), then associate (1953), and then senior resident (1954) in OB/Gyn at Yale University's New Haven Community Hospital.

Hon thrived in the eastern academic environment. His strong electronics background became of utmost value for his biophysical research studies. When C. Lee Buxton, MD, who succeeded Toms as chair of the OB/Gyn program at Yale, read preliminary reports about fetal monitoring at Johns Hopkins University in Maryland, he asked Hon to go there and evaluate it. Dr. Hon was not impressed with what he saw at Johns Hopkins, but was intrigued with the concept. After Dr. Buxton asked what it would take to design better studies, Dr. Hon replied that a new electronics laboratory costing some \$50,000 would be necessary. In short order, Dr. Hon began his ground-breaking research, with funding from Yale as a Markle Scholar in Medical Science.⁸

By 1959, when he returned to his homeland for a three-month appointment as a visiting professor in the OB/Gyn department at the University of Sydney, Dr. Hon had developed the infant heart-rate monitor for which he became renowned, though it was not yet widely available. The Sydney newspapers lauded his achievements, and a feature in the *Sunday Telegraph* described him as a "devout Seventh-day Adventist" who "sees the hand of God guiding his career."⁹

After returning to New Haven, Dr. Hon became a United States citizen on December 23, 1959. He continued his research at the White Memorial Medical Center in Los Angeles (1960-1964) while under appointment at his alma mater as professor of OB/Gyn and Director of Research, College of Medical Evangelists.¹⁰

Dr. Hon's fetal monitor is an electronic instrument that assesses the condition of the fetus before birth. Its use significantly reduced the dangers associated with childbirth. The device made monitoring the heart rate of the unborn infant a simple procedure. It enabled the obstetrician to determine fetal heart rate continuously, even during labor contractions. In addition, the monitor enabled obstetricians to measure the strength and frequency of uterine contractions, which together provide information about the condition of the unborn infant and how well it tolerates labor. This information helps prevent complications during labor and delivery which otherwise could lead to fetal damage and death.¹¹

Dr. Hon explained the need met by the monitor, noting that a baby's heartbeat is usually between 120 and 160 beats per minute: "For a physician to obtain any meaningful check, he must count those beats frequently and accurately. Few can do this during labor without significant error. Of course, the greater the error, the more inaccurate the count." The fetal heart rate monitor provided accurate, continuous records of fetal heart rate throughout labor and delivery.¹²

A *Life* magazine feature in 1969 reported that since 1956 Dr. Hon had monitored over 3,000 births, including that of his own son, and vividly depicted the value of the instrument he developed:

The fetus must struggle to survive the strains and pressures being put upon it. For years attending doctors have had no reliable way – nothing better than a stethoscope – to tell precisely when the fetus was in trouble. Consequently, some five to seven infants per thousand die unexpectedly each year.

The instant a baby gets into trouble – a squeezed umbilical cord, a compressed head or a shortage of oxygen – its heart reflects a precipitous fall on the machine's graph. Fortunately, 90% of all fetal distress is caused by umbilical cord compression. Once spotted, it can usually be relieved by simply changing the mother's position.

When the unit . . . was tried on four hundred mothers with histories of difficult labor, the results were impressive. None of the babies died, the number of Caesarean sections for fetal distress was reduced by 75%, and the number of injured babies was cut by 50%. Hopefully, Dr. Hon's new system could save as many as 20,000 babies a year.¹³

Dr. Hon's fetal monitoring system was first installed at Loma Linda University Hospital in late 1968.¹⁴ Through the subsequent decades, fetal monitoring has dramatically enhanced obstetrical care in hospitals and clinics around the world, reducing fetal brain damage and death during labor.

After thirteen years at the University of Southern California (1969-1982), Dr. Hon retired at age 65. However, Ezra Davidson, MD, chief of OB/Gyn at Martin Luther King/Drew Medical Center in Los Angeles, immediately asked him to fill a post that would be specially created for him: research scientist at the Drew Postgraduate School in Los Angeles. Dr. Hon concluded that he could contribute significantly in many areas, and saw it as an opportunity to give back for the support he received from the black North Carolina tenant farmers years before

when he colporteured among them. While at Drew, he educated nurses to deliver prenatal care, especially to hypertensive mothers in the surrounding black community. He also worked on a new version of his fetal monitor, feeling that the best way to spot fetal distress is to monitor distress in the mother, which would provide for corrective measures before the baby experienced distress.¹⁵

Contribution

Along with his 28-year academic career and service in retirement at Drew, Dr. Hon authored 149 scientific articles. In addition to the Markle Scholar in Medical Science at Yale, the prizes and awards conferred on him included: Distinguished Service Award (American College of OB/Gyn), Fellow ad eundem (Royal College of OB/Gyn, London England), Virginia Apgar Award in Perinatal Pediatrics, President's Distinguished Achievement Award (The Society for Gynecologic Investigation), and Lifetime Achievement Award (Los Angeles OB/Gyn Society). In 1999 the Governor-General of Australia, Sir William Deane, summoned Dr. Hon to receive the Order of Australia Gold Medal, an award approved by Queen Elizabeth II.¹⁶

After 55 years together, Ted Hon's wife, Audrey, died on September 25, 2003. Three years later, Dr. Edward H. Hon died in Bradbury, California on November 6, 2006, at age 89. Charles J. Lockwood, MD, editor-in chief of *Contemporary OB/Gyn*, aptly summarized his legacy:

To his students, residents, and fellows, Dr. Hon blended critical thinking with gentle encouragement. To his peers, he was a role model of creativity and innovation. But it is America's parents who owe Dr. Hon the greatest debt of gratitude for improving their chances of delivering a healthy child.¹⁷

SOURCES

"Edward 'Ted' Harry Gee Hon '50." Loma Linda University School of Medicine (LLUSM) *Alumni Journal*, July-September 2007.

"Fetal-monitoring equipment installed in University Hospital." *University Scope*, December 11, 1968.

"Grocer Boy Who Became a Scientist" (from the *Sydney Sunday Telegraph*, August 30, 1959). *Australasian Record and Advent World Survey*, October 5, 1959.

Hon, Kelvin. "Hon, Eric William (1908–1980) and Hazel (Young) (1914–2014)." *Encyclopedia of Seventh-day Adventists*. January 9, 2021. Accessed March 2, 2021, <https://encyclopedia.adventist.org/article?id=H7XH>.

"Monitoring the Unborn." *Newsweek*, October 21, 1968.

"Obstetrics Goes Electronic: Automatic Monitoring Aimed at Assisting in Cases of Birth Complications." *Loma Linda University Magazine*, October 1962.

"'Watching' the Unborn Inside the Womb." *Life*, July 25, 1969.

Yeo, Henry. "Edward H. Hon '50: Luminary, Scientist, Inventor." *LLUSM Alumni Journal*, April-June 2000.

NOTES

1. "Edward 'Ted' Harry Gee Hon '50," Loma Linda University School of Medicine (LLUSM) *Alumni Journal*, July-September 2007, 44.
2. Kelvin Hon, "Hon, Eric William (1908–1980) and Hazel (Young) (1914–2014)," *Encyclopedia of Seventh-day Adventists*, January 9, 2021, accessed March 2, 2021, <https://encyclopedia.adventist.org/article?id=H7XH>.
3. Henry K. Yeo, "Edward H. Hon '50: Luminary, Scientist, Inventor," *LLUSM Alumni Journal*, April-June 2000, 18-28.
4. Yeo, "Luminary, Scientist, Inventor;" "Edward 'Ted' Harry Gee Hon '50."
5. "Edward 'Ted' Harry Gee Hon '50."
6. Yeo, "Luminary, Scientist, Inventor."
7. "Edward 'Ted' Harry Gee Hon '50."
8. Yeo, "Luminary, Scientist, Inventor."
9. "Grocer Boy Who Became a Scientist" (from the Sydney *Sunday Telegraph*, August 30, 1959), *Australasian Record and Advent World Survey*, October 5, 1959, 1-2.
10. "Obstetrics Goes Electronic: Automatic Monitoring Aimed at Assisting in Cases of Birth Complications," *Loma Linda University Magazine*, October 1962, 20-25.
11. "Monitoring the Unborn," *Newsweek*, October 21, 1968, 72.
12. "Obstetrics Goes Electronic."
13. "'Watching' the Unborn Inside the Womb," *Life*, July 25, 1969, 63-65.
14. "Fetal-monitoring Equipment Installed in University Hospital," *University Scope*, December 11, 1968, 1.
15. Yeo, "Luminary, Scientist, Inventor."
16. "Edward 'Ted' Harry Gee Hon '50."
17. Tribute in the December 2006 issue of *Contemporary OB/Gyn*, quoted in "Edward 'Ted' Harry Gee Hon '50."

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