

Henry Molaison

Patient who became a cause célèbre in the study of memory

Henry Gustav Molaison, though known until his death only as HM to protect his privacy, is considered to be “one of the most famous people in the history of psychology.” He would undoubtedly be surprised to discover that his death has been commemorated by extensive obituaries in leading non-medical publications, including the *New York Times*, *Los Angeles Times*, and *Economist*. Suzanne Corkin, a psychologist at Massachusetts Institute of Technology who worked with HM for 45 years and who is writing a book about her experience, has arranged to preserve his brain for future study. Columbia Pictures and the film producer Scott Rudin have already acquired the rights to make a biopic of Henry Molaison, to be based on Corkin’s memoirs.

Henry Molaison was born near Hartford, Connecticut, the son of an electrician. Three first cousins on his father’s side had epilepsy. It remains unclear whether a minor head injury at the age of 7 years had any role in the development of Henry’s petit mal seizures from the age of 10 and his grand mal seizures from age 16. On graduating from high school in 1947 he worked on an assembly line and as a motor winder. His seizures were not controlled by anticonvulsants, and electroencephalography showed diffuse abnormalities. He was referred to William Beecher Scoville, a neurosurgeon at Hartford Hospital, who performed a bilateral temporal lobe resection on 23 August 1953. All brain tissue medial to the temporal horns of the lateral ventricles was removed, including the uncus, amygdala, and hippocampus. His seizures became less frequent (one or two grand mal fits a year), but severe memory loss (anterograde amnesia) was soon detected. Scoville wrote: “After operation this young man could no longer recognise the hospital staff nor find his way to the bathroom, and he seemed to recall nothing of the day to day events of his hospital life. There was also a partial retrograde amnesia.”

Alerted by Scoville, Wilder Penfield, a director of the Montreal Neurological Institute, sent the psychologist Brenda Milner to examine the patient. HM became famous after the paper “Loss of recent memory after bilateral hippocampal lesions” by Scoville and

Milner was published in the *Journal of Neurology, Neurosurgery and Psychiatry* in 1957 (20:11-21). It became one of the most highly cited articles in the field, with 1744 citations to 2001.

Psychosurgery was still popular in the United States in the early 1950s. The paper gives the results of formal memory and intelligence testing of nine patients who had undergone bilateral medial temporal lobe resection. Eight in every nine operations of this sort were carried out in patients with psychosis (schizophrenia or manic depressive psychosis), in order to, as Scoville and Milner put it, “secure as far as possible any beneficial effects a complete frontal lobotomy might have, while at the same time avoiding its undesirable side effects.” In three cases (including that of HM) severe memory defect was observed after surgery, but in psychotic patients it was often not recognised immediately “because of disturbed emotional state.” The authors concluded that “bilateral medial temporal lobe resection in man results in a persistent impairment of recent memory whenever the removal is carried far enough posteriorly to damage portions of the anterior hippocampus and hippocampal gyrus.”

About 100 investigators subsequently studied HM’s lost memory. Milner wrote in 1968 on why so much effort had been expended on one patient:

The answer lies in the “purity” of the memory disorder and its known dependence on a rare surgical procedure, bilateral temporal lobe resection, which is not likely to be repeated because of the evident risk to memory in such a lesion.

These studies revealed the role of medial temporal lobe structures in long term

declarative memory (conscious recollection of facts and events) and acquisition of new semantic knowledge. Since his short term memory was intact, researchers concluded that this did not depend on the removed structures. Interestingly, HM was able to learn motor skills, implying a different type of memory mechanism.

HM did not know his age and was unable to acquire new vocabulary. His retrograde amnesia extended back to the age of 16.



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He appeared content at all times and rarely complained of anything, including pain, hunger, and thirst (which might be caused by bilateral amygdalotomy). He also showed no interest in sexual relationships and never had a girlfriend. At the same time his intellectual abilities remained intact. When explaining to Corkin why he could not fulfil his dream of being a neurosurgeon, he said that “he wears glasses, and that blood might spurt up onto his glasses, creating an obstacle to his vision and causing him to miss his target in the patient’s

brain, thereby causing the patient harm.”

His topographical memory was also preserved, as he was able to draw an accurate floor plan of the bungalow near Hartford where he lived with his parents from 1958. In 1974 HM and his mother moved to live with a relative, a psychiatric nurse who could care for them in her home. In 1980 he was transferred to a nursing home in Windsor Locks, Connecticut. He passed the time watching television and doing crossword puzzles. He had to be reminded to shave, eat, brush his teeth, and comb his hair. His mobility became markedly reduced, because of diffuse brain atrophy and osteoporosis as a result of constant phenytoin treatment. He died of respiratory failure at the age of 82.

Boleslav Lichterman

Henry Gustav Molaison, amnesiac (b 1926), died 2 December 2008.

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David John Evans



Former professor of histopathology Imperial College of Science and Technology and Medicine and honorary consultant St Mary's Hospital, London (b 1937; q Cambridge/The London 1961; FRCPath), d 23 November 2008.

David John Evans gained an open major scholarship and exhibition to Cambridge, and prizes in medicine and paediatrics. He became reader at the Royal Postgraduate Medical School, Hammersmith, in 1974 and professor of tissue pathology in 1980, and in 1988 was appointed to the chair of histopathology at Imperial College. He investigated the mechanisms of injury of anti-glomerular basement membrane (anti-GBM) antibody disease and its treatment by plasma exchange. Later he showed the presence of amyloid P in the glomerular basement membrane and studied the genetic determinants of glomerulonephritis. He leaves a wife, Margaret; two daughters; and four granddaughters.

David Ansell

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Alistair John Gordon



Former general practitioner, London (b 1936; q Cambridge/St Bartholomew's Hospital, London, 1961), died from pneumonia complicating a fractured femur on 29 November 2008.

After qualifying and posts in Portsmouth, Alistair John

Gordon joined his father in private general practice in Sloane Street, Kensington, later moving to Wilton Crescent. After his father's death he moved to Walton Place in 1974, remaining in singlehanded practice (apart from a few years when joined by his stepdaughter) until retiring in 2004. He loved being a family doctor, making himself readily available, and his practice spanned several generations of families. He was also for many years company doctor for the Charterhouse Group, News International, and P&O. He leaves a wife, Olivia, and by his first wife, Sissel, a son and two grandsons; one son predeceased him.

John Kirkham

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David Millward



Former general practitioner Cardiff (b 1932; q Welsh National School of Medicine 1955), d 10 June 2008. After qualification and house jobs, David Millward signed up for an extra year during his national service in the Royal Army Medical Corps, attached to the King's Own Yorkshire Light Infantry in Cyprus and Germany. After leaving the forces, he entered general practice, becoming a partner in the Docks Practice in Cardiff and one of the two police surgeons in the city. In 1970 he opened a surgery at his home in Cyncoed, Cardiff, and was appointed lecturer in general practice attached to the Welsh National School of Medicine. A "doctors doctor," David retired at 63 and bore the ill health that dogged his retirement with fortitude. He leaves a wife, Elaine; four daughters; and eight grandchildren.

Howell Lloyd

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Ivor Gwyndaf Pryce



Former consultant psychiatrist Whitchurch Hospital, Cardiff (b 1926; q Cardiff/University College Hospital, London, 1951; MD, FRCPsych), died from Alzheimer's disease and pneumonia on 7 December 2008.

Ivor Gwyndaf Pryce won an NUM scholarship to study medicine. After a year in general practice in Merthyr Tydfil he trained in psychiatry, being appointed consultant in 1962. He specialised in rehabilitation, and led the progressive psychiatric rehabilitation work in Cardiff. After his retirement in 1990, he served as Mental Health Act commissioner for Wales and the West Midlands (1991-9), and as chairman of the Welsh Psychiatric Society (1994). Predeceased by his first wife, Ray, in 1979, he leaves his second wife, Beatrice, a son and grandson from his first marriage, and two stepchildren and a step-granddaughter from his second.

Rachel Unsworth

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Patrick Rawlence

Former general practitioner Pulham Market, Diss, Norfolk (b 1916; q St Thomas's Hospital, London, 1940), died from a metastatic sarcoma on 7 January 2009.

Patrick Rawlence ("Doc," "Pat") volunteered for the Friends' Ambulance Unit in South-West China during the second world war, then settled in general practice for the next 30 years. A shepherd of his flock, he was ahead of his time in practising patient centred care and working with a nurse practitioner in the 1970s, yet promoting tried and tested past practices. He recounted treating a Chinese patient with tetanus by amputating his infected

thumb (*BMJ* 1953;ii:1271). After his retirement he continued his local involvement, founding a village orchestra and a British motorbike club. He leaves a wife, Jocelyn; four children; and four grandchildren.

Andrew Pyper

Cite this as: *BMJ* 2009;338:b923

Desmond John Woods



Former consultant paediatrician Palmerston North and Auckland, New Zealand (b 1917; q Otago 1952; CBE, FRCPEd, FRACP), d 27 December 2008.

Desmond John Woods ("Des") completed exams in accountancy as a serviceman, also serving with distinction in the North African and Italian campaigns. On returning to New Zealand, he jumped at the opportunity for ex-servicemen to study medicine. Service with the Royal New Zealand Navy as surgeon lieutenant enabled him to train in paediatrics in Edinburgh. He returned as consultant at Palmerston North Hospital in 1960. In 1976 he moved to Auckland as medical superintendent of the Mangere Hospital and Training School for intellectually disabled children, retiring in 1984. Predeceased by his wife, Frances, in 1992, he leaves five children and 11 grandchildren.

Rosemary Marks

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