- disease activity in five patients with refractory relapsing-remitting multiple sclerosis. *J Neuroimmunol* 1999;99:142–9.
- 16 Weiner HL, Mackin GA, Orav EJ, *et al*. Intermittent cyclophosphamide pulse therapy in progressive multiple sclerosis: final report of the Northeast Cooperative Multiple Sclerosis Treatment Group. *Neurology* 1993;43:910–18.
 - 17 Hohol MJ, Olek MJ, Orav EJ, *et al*. Treatment of progressive multiple sclerosis with pulse cyclophosphamide/methylprednisolone: response to therapy is linked to the duration of progressive disease. *Mult Scler* 1999;5:403–9.
 - 18 Goodkin DE, Plencner S, Palmer-Saxerud J, *et al*. Cyclophosphamide in chronic progressive multiple sclerosis. Maintenance *v* non-maintenance therapy. *Arch Neurol* 1987;44:823–7.
 - 19 Trapp BD, Peterson J, Ransohoff RM, *et al*. Axonal transection in the lesions of multiple sclerosis. *N Engl J Med* 1998;338:278–85.
 - 20 Storch M, Lassmann H. Pathology and pathogenesis of demyelinating diseases. *Curr Opin Neurology* 1997;10:186–92.
 - 21 Weber F, Polak T, Gunther A, *et al*. Synergistic immunomodulatory effects of interferon- β 1b and phosphodiesterase inhibitor pentoxifylline in patients with relapsing-remitting multiple sclerosis. *Ann Neurol* 1998;44:27–34.

NEUROLOGICAL STAMP

Willem Einthoven (1860–1927)

Einthoven's lifetime work was dedicated to electrocardiography and its extended applications. He qualified in 1885, and in the same year was appointed professor of physiology at Leiden where he worked until his death. For his development of the electrocardiogram he was awarded the 1924 Nobel Prize for physiology or medicine.

He entered the University of Utrecht in 1878, planning to specialise in ophthalmology and to follow his father into the army and colonial medical services. At Utrecht at the Gasthuis voor Doglijders, a famous eye hospital, he worked with FC Donders, a pioneer of ophthalmology, and also with the ophthalmologist H Snellen.

He wrote two papers as a student. The first was *Some remarks on the elbow joint*. This was a consequence of his fracturing his own wrist during a gymnastic exercise and was a study of pronation and supination of the arm. In the paper he analysed the anatomy of the arm according to the principles of mathematics and physics. His second paper *Stereoscopy by means of colour variation* arose from the work for his thesis.

In the late 1880s he performed studies in asthma demonstrating its basis in bronchial spasm which he produced by stimulation of the vagal nerve with carbon dioxide. In 1883 he continued his studies in optics and recorded electrical potentials of the eye and later of the heart. In 1903 he constructed a string galvanometer with which he also recorded the reaction of the eye to light and electrical activity of vagal nerves. In his last experiment in 1927 he recorded the action potential of the sympathetic nerve.

The question was raised whether an instrument (his string galvanometer) should be honoured by a Nobel Prize in physiology or medicine, or physics. The decision to physiology or medicine was agreed after Einthoven's clarification that the galvanometer was fundamental to the recording of the electrocardiogram, and the clinical application produced very practical results.

Einthoven was honoured philatelically by Mexico in 1972 alongside an American cardiologist Dr Frank Wilson. The stamp also shows a mural by Diego Rivera. As well as Drs Wilson and Einthoven, the heads of Dr James Herrick (left bottom) and Dr Paul Dudley White (right bottom) are shown (Stanley Gibbons 1242, Scott C395).

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