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REFERENCES

1 **Williamson-Noble FA**. Venous pulsations. *Trans Ophthalmol Soc UK* 1952;**72**:317–26.
2 **Coccius EA**. *Ueber die Anwendung des Augen-Spiegels, nebst Angabe eines neues Instrumentes*. Leipzig: Muller, 1853:3–23.
3 **Elliot RH**. The retinal pulse. *Br J Ophthalmol* 1921;**5**:481–500.
4 **Duke-Elder WS**. The venous pressure of the eye and its relation to the intra-ocular pressure. *J Physiol* 1926;**61**:409–18.
5 **Baurmann M**. Ueber die Entstehung und klinicke Bedeutung des Netzhautvenenpulses. *Ber Zusammenkunft Dtsch Ophthalmol Ges* 1925;**45**:53–9.
6 **Attariwala R**, Giels CP, Glucksberg MR. The influence of elevated intra-ocular pressure on vascular pressures in the cat retina. *Invest Ophthalmol Vis Sci* 1994;**35**:1019–25.
7 **Levine DN**. Spontaneous pulsations of the retinal veins. *Microvasc Res* 1998;**56**:154–65.
8 **Fry WE**. Variations in the intraneural course of the central retinal vein. *Arch Ophthalmol* 1930;**4**:180–7.
9 **Fry WE**. The pathology of papilloedema: an examination of forty eyes with special reference to compression of the central vein of the retina. *Am J Ophthalmol* 1931;**14**:874–83.
10 **Dardenne G**, Dereymaeker A, Lacheron JM. Cerebrospinal fluid pressure and pulsatility: an experimental study of circulatory and respiratory influences in normal and hydrocephalic dogs. *Invest Neurol* 1969;**2**:193–216.
11 **Lorentzen SE**. Incidence of spontaneous venous pulsation in the retina. *Acta Ophthalmol* 1970;**48**:765–76.
12 **Levin BE**. The clinical significance of spontaneous pulsations of the retinal vein. *Arch Neurol* 1978;**35**:37–40.
13 **Gucer G**, Viernstein L. Long-term intracranial pressure recording in the management of pseudotumour cerebri. *J Neurosurg* 1978;**49**:256–63.
14 **Hedges TR**, Baron EM, Hedges TR, *et al*. The retinal venous pulse: its relation to optic disc characteristics and choroidal pulse. *Ophthalmology* 1994;**101**:542–7.
15 **Rabbetts RB**. Visual examination of the eye and ophthalmoscopy. In: Bennett AG, Rabbetts RB, eds. *Bennett and Rabbett's clinical visual optics*, 3rd edn. Oxford: Butterworth Heinemann, 1998:301–29.
16 **Dreher AW**, Tso PC, Weinrab RN. Reproducability of topographic measurements of the normal and glaucomatous optic nerve head with the laser tomographic scanner. *Am J Ophthalmol* 1991;**111**:221–9.

NEUROLOGICAL STAMP

Hans Berger (1873–1941), Richard Caton (1842–1926), and electroencephalography

Hans Berger recorded the first human electroencephalograms (EEGs) in 1924. He obtained his medical degree from the University of Jena, Germany, in 1897 and then joined the university psychiatric clinic directed by Otto Binswanger. There he remained until retirement in 1938. Berger succeeded Binswanger as director of the clinic and became Professor of Neurology and Psychiatry at the University of Jena in 1919. In his early work Berger had hoped to discover the physiological basis of psychic phenomena. The results were disappointing and Berger turned to investigating electrical activity of the brain. He characterised the wave patterns including α and β waves and coined the term "electroencephalogram". Berger's paper *Über das Elektrenkephalogramm des Menschen* (On the EEG in humans), published in 1929 in the *Archive für Psychiatre und Nervenkrankheiten*, was the first of 23 publications on the subject. He described or touched upon a large number of normal and abnormal EEG phenomena, for example EEG changes associated with attention and mental effort, and alterations in the EEG associated with cerebral injury. His reports, at first disbelieved, were even derided by some until Adrian and Matthews confirmed his basic observations in 1934. In the mid 1930s, Alfred Loomis (1887–1975) showed that in humans EEG patterns changed dramatically during a night's sleep. Unrelated to EEG, in 1920 Berger also described intellectual changes after prefrontal cortex injuries, and in 1923 his was one of the first good descriptions of perseveration after damage to the frontal lobes.

In 1929 Berger cited Caton's valuable earlier contribution to the field. Caton reported his initial findings to the British Medical Association in 1875. In 1877 these were reported more fully in a supplement to the *BMJ*, and again in 1887 to the Ninth International Medical Congress in Washington DC. Caton placed unipolar electrodes on the surface of both hemispheres or one electrode on the cerebral cortex or on the grey matter and the other on the surface of the skull. Currents were measured by optical magnification of the meniscus in his Thompson's galvanometer. Currents were found to increase with sleep and variations in the baseline unrelated to cardiac or respiratory rhythms were observed. These currents were vulnerable to anoxia and anaesthesia, and were abolished by the animal's death. Caton also found that strong current variations occurred when light was shone into the eyes. He also discovered cerebral potential change evoked by sensory stimulation. Caton is better remembered as becoming Lord Mayor of Liverpool in 1907. His work received no attention among English speaking electrophysiologists. The *Lancet*, in its obituary column, did not mention Caton's contribution to electrophysiology. The *BMJ* noted only that he did some work on the localisation of movements in the 1870s. Of interest, Berger was also not honoured in his own country. This was in part owing to his opposition to the Nazis. Berger became increasingly depressed after retirement in 1938, and died by suicide in 1941.

EEG has been illustrated on a number of stamps. An Italian stamp of 1988 shows a pictorial representation of an EEG and St Valentine (Stanley Gibbons no. 1989, Scott no. 1743). St Valentine was the first bishop of Temi in Umbria. Some of the mythology is not entirely clear, but St Valentine was probably a physician who was martyred by the Romans on February 14, 273. He is patron saint of both lovers and epilepsy. There are also other patron saints of epilepsy. Legend has it that St Valentine miraculously cured a young fiancee, Serapia, afflicted with a mysterious illness, thought now to be epilepsy. Sites where St Valentine was thought to have lived or visited became pilgrimage destinations for cure of the disorder. These destinations included Rome and Temi in Italy, Ruffach in France (where a hospital for epilepsy was later built), Poppel in Belgium, and Passau in Germany. Soon after Valentine's death young lovers started making pilgrimages to Temi to be blessed by the Bishop on the 14th hour of every month for eternal love.

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