

- 21 Fung YC. Stress-strain-history relations of soft tissues in simple elongation. In: Fung YC, Perrone N, Anliker M, eds. *Biomechanics: Its foundations and objectives*. Englewood Cliffs, NJ: Prentice-Hall, 1972.
- 22 Fung YC. *Biomechanics. Mechanical properties of living tissue*. 2nd ed. New York: Springer-Verlag, 1993.
- 23 Cowan PM, North ACT, Randall JT. X-ray diffraction studies of collagen fibers. *Symp Soc Exp Biol* 1955;9: 115–26.
- 24 Williams PE, Goldspink G. Connective tissue changes in immobilized muscle. *J Anat* 1984;138:343–50.
- 25 Jozsa L, Thoring J, Jarvinen M, Kannus P, Lehto M, Kvist M. Quantitative alterations in intramuscular connective tissue following immobilization: an experimental study in the rat calf muscles. *Exp Mol Pathol* 1988;49:267–78.
- 26 Jozsa L, Kannus P, Thoring J, Reffy A, Jarvinen M, Kvist M. The effect of tenotomy and immobilization on intramuscular connective tissue. *J Bone Joint Surg* 1990;72: 293–7.
- 27 Williams PE, Goldspink G. Changes in sarcomere length and physiological properties in immobilized muscle. *J Anat* 1978;127:459–68.
- 28 Tardieu C, Lespargot A, Tabary C, Bret MD. Toewalking in children with cerebral palsy: contributions of contracture and excessive contraction of triceps surae muscle. *Physical Therapy* 1989;69:656–62.
- 29 Watts RL, Wiegner AW, Young RR. Elastic properties of muscles measured at the elbow in man: II. Patients with Parkinsonian rigidity. *J Neurol Neurosurg Psychiatry* 1986;49:1177–81.
- 30 Given JD, Dewald JPA, Rymer WZ. Dependence of stretch reflex response on stretch velocity in spastic hemiparesis. *Soc Neurosci* 1994;20:339.

Samuel Jones Gee (1839–1911) and stereotypic movements caused by apomorphia

Hughlings Jackson provides an interesting and possibly the first account of what we would now regard as a dopamine driven stereotypy. He refers,¹ without the full reference, to Lauder Brunton's work on:

“the representation of the systemic sensori-motor processes concerned in vomiting in centres so high as the corpus striatum and optic thalamus.”

“... when any irritation exists in the right cerebral hemisphere it will occasion vomiting more readily than irritation in the left cerebral hemisphere, and according to Budge, this is actually the case” (Lauder Brunton, *Practitioner*, December 1874). Dr Brunton refers to an experiment by Gee on a dog (*Clinical Society Transactions* 1860). Gee injected a large dose of apomorphia (2 grains*) into a dog. The dog vomited, and in two or three minutes began to course round the room in which the experiment was performed in a curiously persistent methodical manner. Brunton (op cit) says: “This effect of apomorphia points to an action of the drug on the nervous centres, and is all the more interesting when we remember that Budge placed the cerebral centre for the stomach in the *right thalamus opticus*.”

This paper² of Samuel Gee is dated by Legg as 1869. Jackson uses this experiment to illuminate the peripheral differences, chiefly of the autonomic nervous system in determining representation in the highest centres; he does not comment on the stereotypy so plainly portrayed. Gee was almost certainly the first to take the drug himself, initially doubting its emetic properties.³

Samuel Jones Gee was one of the great scholar-physicians of the 19th century. His father, a businessman had marked literary tastes, frequented the British Museum, and was prone to pilgrimages to “Cromwellian holy places”. Gee attended University College School. He obtained gold medals in every subject in his medical studies at University College Hospital. Legg³ deemed his medical knowledge “encyclopaedic”, his learning “prodigious”. He became assistant physician to St Bartholomew's Hospital in 1866 working in the skin, anatomy, and pathological anatomy departments. His lectures were “impressive, clear, well thought out”, but he was inclined to archaic expression. His aphorisms became well known to students, who mimicked his mannerisms, but probably

stimulated his writing *Medical Lectures and Aphorisms*. He was determined in his opposition to specialisation. Legg reports that often he knew more of the rare skin diseases than the expert members of the Dermatological Society. He had a reputation for his skill in children's illnesses, but resisted attempts to make him a children's specialist.

A highly principled man of few words he none the less held strong views. Classicist, philosopher, and student of literature, he had a curious distaste for “practical men”; and politicians, he abhorred. He opposed the College of Physicians giving a license to practice to women.

His writings included many chapters in standard texts: on scarlet fever, diphtheria, and pleurisy. His Gulstonian (sic) lectures were *On the Heat of the body*, March 1871. Gee's *Auscultation and Percussion: together with other methods of physical examination of the chest*, London, James Walton 1870, ran to a sixth edition, 1908. *Medical Lectures and Aphorisms*, 1902 ran to a fourth edition, 1915.

Neurological papers included: the shape of the head; spastic paraplegia; motor ataxia due to injury to the back; a case of conjugate deviation of the eyes; brass-founder's palsy; head shaking; and hereditary infantile spastic paraplegia.

He is often remembered for his description of infantile coeliac disease (Gee-Herter or Gee-Thaysen disease), though this was clearly depicted by Aretaeus the Cappadocian in the second century AD.

Gee was appointed physician to the Prince of Wales in 1901, and retired in 1904. In 1911 he died suddenly of a coronary occlusion, confirmed at his request by post-mortem examination.

J M S PEARCE
304 Beverley Road,
Anaby, Hull HU10 7BG, UK

- 1 Jackson JH. On the scientific and empirical investigation of the epilepsies. *Medical Press and Circular*, October 14, 1874 to December 13, 1876. Text in: *Selected writings of John Hughlings Jackson*. Vol 1. James Taylor, ed. London: Staples Press 1931:p249.
- 2 Gee S. On the action of a new organic base, apomorphia. *Clinical Society Transactions* 1869:ii; 166.
- 3 Gee SJ. *Medical lectures and aphorisms*. With recollections by J Wickham Legg. 4th ed. London: Henry Frowde and Hodder and Stoughton. 1915:357–404.

*2 grains = 120 mg.