William Macewen [1848–1924]

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William Macewen was rather more than a pioneer intracranial surgeon. He has pioneer status in many other fields including asepsis, osteotomy, bone grafting, otorhinolaryngology, inguinal hernia repair, tracheal intubation, pneumonectomy, surgical suturing and drainage, osteogenesis, and nurse education (Fig. 1).

Born on the Isle of Bute in the Firth of Clyde some 40 km due west of Glasgow on 22 June 1848, William Macewen died on the Isle at Garrochty on 22 March 1924, aged 75 years, of pneumonia following influenza. He was one of 12 children whose family were sea-traders carrying goods between Scotland and the Baltic countries. With this background, and living on Bute, he acquired a love of nature, learned to swim and sail, and became familiar with the woodworking involved in boat-building [10].

Macewen completed primary-school education on Bute where he was noted more for his skill at the Scottish sport of single-stick fighting than academic attainment. From about 10 years of age he attended the Garnethill Collegiate School in Glasgow where he remained disinterested in his studies, continuing to prefer physical activities. Nonetheless, in 1865 he gained entry to the University of Glasgow and studied medicine. His university examination results were very ordinary, possibly because he spent most of his time in self-instruction in the Hunterian Museum of the Glasgow Royal Infirmary. Nevertheless, he was graduated M.B. and C.M. in 1869 and M.D. 1873. By 1871 he was Physician Superintendent to the Parliamentary Road Parish Hospital, Casualty Surgeon to the Glasgow Central Police District, and in private practice. By 1874 he was a surgeon

at the Glasgow Royal Infirmary and promoted 2 years later to a full surgeon in charge of wards. He remained there until 1892 when his appointment as Regius Professor of Surgery at the University of Glasgow required him to transfer to the Western Infirmary [10].

The chronology of Macewen's other major contributions reveal him as a strikingly latecomer to neurological surgery: a double ovariectomy of 1874 in which, against Lister's recommendation for clamping, he sutured the pedicle with his special chromic catgut [4]; an 1875 survey of his treatment of penetrating wounds of the thorax and abdomen [10]; an 1877 experimentally based treatment of femoral aneurisms [10]; an 1878 report [2] on his use of his specially designed carpenter-like chisel or osteotome [eponym: a *Macewen*] in the antiseptic treatment of genu valgum and genu varum [eponym: *Macewen's operation*]; his insertion in 1879 [3] of a tracheal tube to allow a patient with oedema glottidis to breathe—an application soon extended for anaesthetic and other purposes; and a radical

Fig. 1 William Macewen at about 30 years of age. Courtesy of the Royal College of Physicians and Surgeons of Glasgow

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cure for inguinal hernia in 1880 [5] [eponym: also *Macewen's operation*].

Macewen's first neurological surgery, in August 1876, was actually a post mortem study [9]. The site for the operation on the live John McKinley had originally been selected on the basis of a convulsion beginning on his right side with a subsequent aphasia and right sided hemiplegia lasting 2 h. John's parents did not then consent to an operation and the lesion Macewen diagnosed in Broca's area—an abscess about the size of a pigeon's egg—was not found there until after John's death. Macewen's five other pioneer operations were conducted between 1879 and mid-1883, well before the better-known Bennett and Godlee operation of 1884. All were based explicitly on what had been established about the localisation of motor function [6, 9].

Macewen also pioneered spinal cord operations. In a sense they were developments of his osteotomies, here designed to treat curvature of the spine that had caused connective tissue neoplasms or displacements of the bodies of the vertebrae to bring about paraplegia and loss of sensation. By 1884 Macewen had demonstrated and published the results of several such procedures, whereas Gowers' and Horsley's first was in 1888 [6, 10].

Macewen's contributions to neurology began in 1878 when he experimentally confirmed that the pupillary dilation that followed attempts to rouse patients in alcoholic comas distinguished those unconscious from other causes (eponym *Macewen's pupil*) [1]. Further contributions came from his pioneering use of bone fragments in the repair and replacement of diseased limb bones (1878) [2], an application he soon extended to the repair of a severe comminuted skull fracture (1884) [9], a method (1880) for the location of abscesses caused by otitis media [eponym: *Macewen's triangle*], and a brain atlas (1893) based on his own technically adroit photographs of frozen head sections [7].

What made his work so successful was his careful analysis, often experimentally based, of the physical and anatomical peculiarities of the structures involved; particular examples of which are his repairs to patella fractures (1883), the spectacular removal of a whole tubercular lung (1895) [10], and his definitive study of osteogenesis (1912) [8].

Adding to these surgical innovations, Macewen pioneered aseptic practice by boiling his surgical instruments, washing before operations, and insisting on general cleanliness in his theatres and wards, so effectively replacing Lister's antiseptic procedures [10]. In collaboration with Matron Rebecca Strong he developed one of the first curricula for appropriate nurse training (1891). Nurses were, in his view, the surgeon's intelligence department

and a reason often given for his repeatedly declining the offer of the Foundation Chair in Surgery at Johns Hopkins (later accepted by William Halsted) was that he would not have been allowed to train them to be so [10].

The quick acidic wit for which Macewen was well-known is nicely illustrated when he answered a US visiting surgeon who asked anxiously when he was to bathe, as was then the pre-operative custom in America: "In Scotland we bathe whether we operate or not." Although he could be very abrupt—as late as 2002 I heard some older Glasgow physicians describe him as "a rude bugger"—his treatment of his nurses and his rehabilitation work during WWI showed considerable patience, understanding, and tact [9].

Macewen received many honours and honorary degrees. In the UK he was a Fellow of the Faculty of Physicians and Surgeons Glasgow (1874), Fellow of the Royal Society, London (1895), Fellow of the Royal College of Surgeons, London (1900), Knight Bachelor (1902), Companion of the Bath (1923), Honorary Surgeon to the King of England in Scotland (1908), Surgeon-General to the British Royal Navy in Scotland (1915), President of the British Medical Association (1922), and President of the International Society of Surgery (1923) [10]. He had become very different from the somewhat idle boy on Bute.

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