Wilhelm Friedrich von Gleichen-Russworm (1717 – 1783)

Born in Bayreuth, Germany, on 14 January 1717, Wilhelm Friedrich von Gleichen-Russworm (Russwurm or Rusworm), sometimes recorded as Wilhelm Frederich von Gleichen, was the elder son of Heinrich von Gleichen, a private counsellor and chief huntsman. His mother, Caroline von Russworm, was from the House of Greifenstein. Wilhelm had little formal education and in 1728, after living with relatives for three years due to parental discord at home, he became a court page in Frankfurt. In 1730 he began a military career as a cadet at Dresden, where he received a smattering of science tuition, but his implication in a fatal duel forced him to return home. He joined the service of the Margrave of Bayreuth as an ensign in 1734, rose to the rank of lieutenant colonel in 1748, and in 1750, as equerry in charge of the royal stables and stud, received the Order of the Brandenburg Red Eagle. He married Antoinette Heidloff in 1753; they had seven children, but only two daughters survived to adulthood. In 1756 he resigned his commission to manage the Greifenstein estates inherited from his mother in 1748, and to pursue his scientific interests.

Through self-education and travel through Germany, Switzerland, Italy and France, he sought to gain the knowledge denied in his youth. His first published writings, which appeared soon after he left Bayreuth, dealt with natural history, physics and chemistry, but were quite fanciful and controversial. In 1760 he met Martin Frobenius Ledermüller (1719–1769), physician and keeper of the Margrave of Brandenburg's natural history collection. Ledermüller was transforming his basic findings from the microscope into graphic works of art, and his publications led to Gleichen-Russworm's decision to focus on microscopy. He was particularly interested in the fertilisation processes of plants and animals, and his 1763 publication contained 51 colour plates illustrating details of floral structure and pollens. Also included were six plates of modifications and accessories he designed for the microscope. His most important contribution to science was made in 1778: the technique of staining micro-organisms with indigo and carmine that he developed from earlier use of dyes and colouring agents, to improve the visibility of plant and animal tissues.

An untiring natural history researcher with an extensive library, he corresponded with other scholars, and was a member of scientific and cultural organisations in Erfurt, Erlangen and Berlin. He died at Schloss Greifenstein after eight weeks of illness, on 16 June 1783. His memorial is the name of the fern genus *Gleichenia,* published in 1793 by British botanist and co-founder of the Linnean Society, James Edward Smith. *Gleichenia* comprises about eleven species in tropical to southern temperate regions, with three species currently recognised in New Zealand, one of them described as recently as 2012. *Gleichenia* often form dense, almost impenetrable masses, hence the common name tangle fern, or in Māori waewae-kākā ('footprint of the kaka').

Gleichenia dicarpa

Gleichenia are terrestrial ferns with a thicket-forming habit, long creeping, scaly rhizomes, wide branch angles of the main frond stems and segmented leafy pinnae. *Gleichenia dicarpa* (Greek *di* and *karpos* 'two-seeded') forms springy masses of wiry, forked fronds up to 100 cm high, the dark green pinnae in one to several tiers, with the ultimate segments more or less round or slightly convex above, pouched and often whitish below, the fertile ones containing usually two pale yellow sporangia. It occurs on lowland to subalpine swamp or poorly drained clay soils throughout the main islands of New Zealand (rarer in the east) and also in Australia, New Caledonia, Philippines, Borneo and Malaysia.