

A Portrait of James Gregory, FRS

and notes on the extraordinarily talented Gregory family

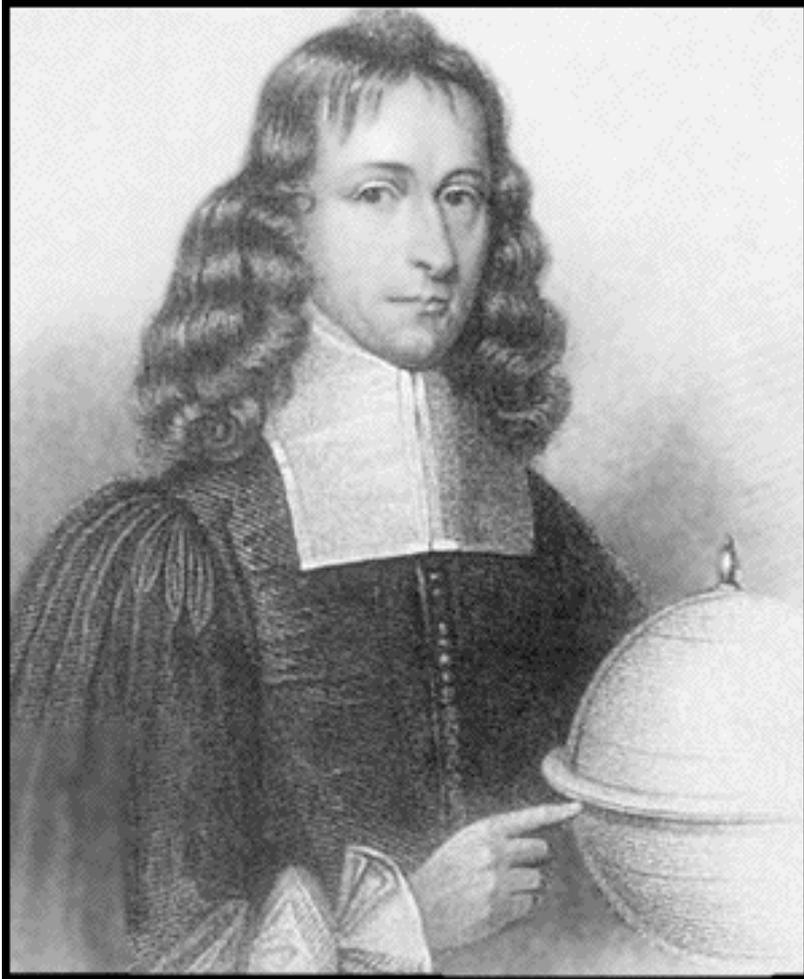
[the second in a series of articles prompted by ancestral portrait engravings](#)

by

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James Gregory, FRS



James Gregory FRS
by an unknown artist

The news that the Royal Society is to publish its archives on the Internet has been welcomed not only by the mathematicians and scientists who now will have easy access to the papers submitted since 1665 to Britain's oldest and most famous scientific powerhouse, but also by historians who study the influence of our greatest thinkers on the development of British life – and these historians include, of course, ancestor hunters, of which I am one. It was thus with special pleasure that my first dive into the newly available records brought me to James Gregory, for although he is almost unknown to the general public he was one of our greatest mathematicians, second only, in the minds of his contemporaries, to Newton, and he was also a member of one of our most academically brilliant Scottish families.

James Gregory was born in the Manse of Drumoak, a small parish on the river Dee, about 25 miles west of Aberdeen. His father was the Rev. John Gregory, a descendant of the Highland MacGregors of Roro, senior cadets of the Glenlyon family, who had been fined and imprisoned by the Covenanters, and his wife Janet Anderson, daughter of the remarkable David “dae a’thing” Anderson of Finzeauch, a mathematician and mechanic called on by the people of Aberdeen whenever an engineering miracle was needed (such as moving a huge rock in the harbour by harnessing the tides).

James seems to have inherited his genius from his mother's side of the family. (Janet's uncle, Alexander Anderson, was a pupil of the great Viète, for whom he acted as an editor, and he fully incorporated Viète's ideas into his own teaching in Paris.) He was the youngest of his parents' three children. Of his two

older brothers, Alexander, the elder, was murdered by his political enemies, and David, ten years older than James, acquired the estate of Kinnairdie and with his two wives sired 32 children.

James learnt mathematics first from his mother who taught him geometry. His father died in 1651 when James was thirteen and at this stage his education was taken over by his brother David. He was given Euclid's *Elements* to study and he found this quite an easy task. He attended Grammar School and then proceeded to university, Marischal College in Aberdeen.

There he began to study optics and the then current designs for telescopes, and with the encouragement of David he wrote a book on the topic, *Optica Promota*. In the preface he explained:

“Moved by a certain youthful ardour and emboldened by invention of the elliptic inequality, I have girded myself with these optical speculations, chief among which is the demonstration of the telescope.”

— which is not language typical of young students today. The “elliptic inequality” he mentioned refers to Kepler's discoveries and in *Optica Promota* he described the first practical reflecting telescope now known universally as the Gregorian telescope.

The book begins with 5 postulates and 37 definitions which are followed by 59 theorems on the reflection and refraction of light. Then propositions on mathematical astronomy discussing parallax, transits and elliptical orbits are considered. Next he gives details of his invention of a reflecting telescope in which a primary concave parabolic mirror converges the light to one focus of a concave ellipsoidal mirror. Reflection of light rays from its surface converge to the ellipsoid's second focus which

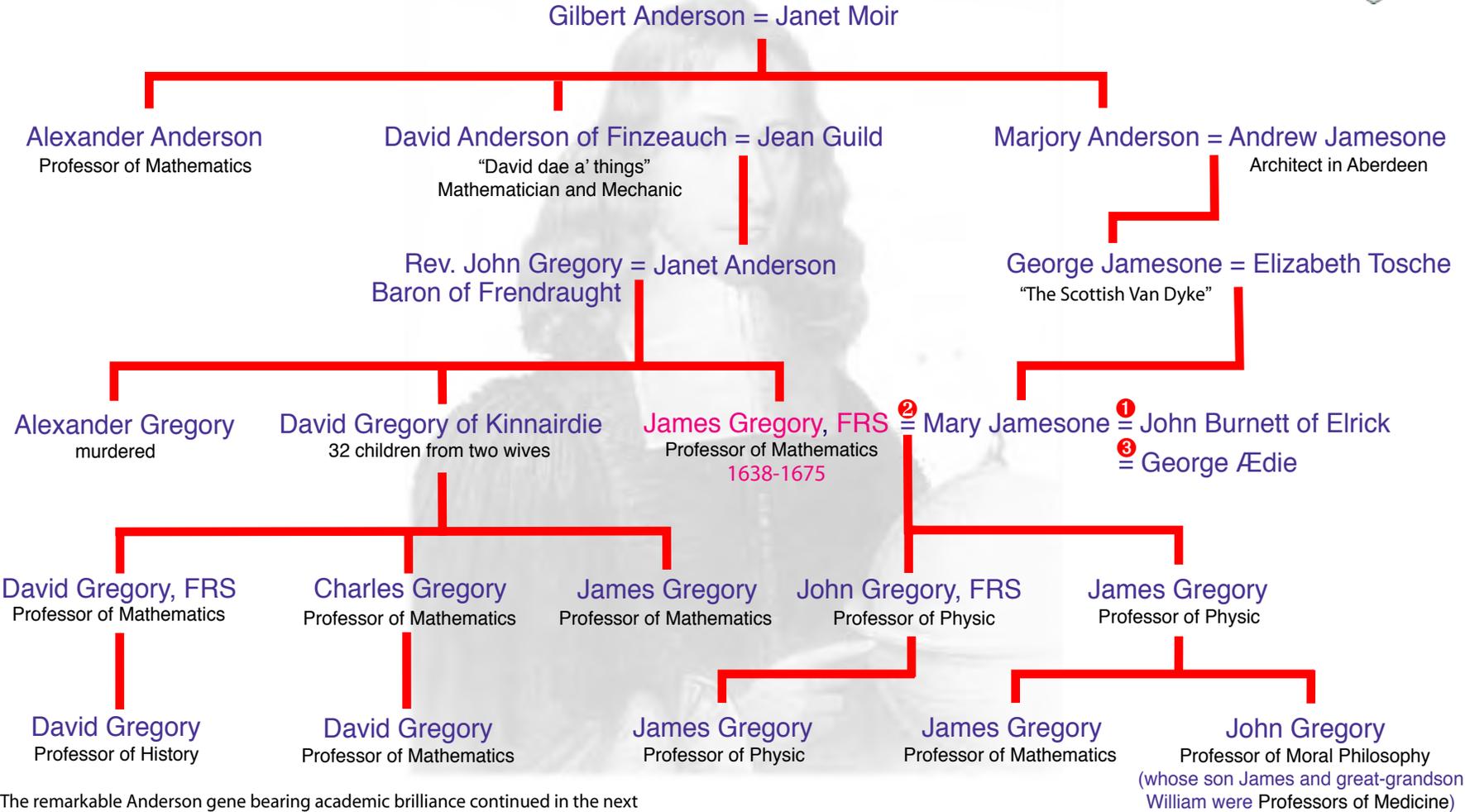
is behind the main mirror. There is a central hole in the main mirror through which the light passes and is brought to a focus by an eyepiece lens. The tube of the Gregorian telescope is thus shorter than the sum of the focal lengths of the two mirrors. His innovation was to use both mirrors and lenses in his telescope., a combination which would work more effectively than a telescope which used only mirrors or used only lenses.

In 1663 Gregory went to London where, still only 25, he was able to discuss his ideas with established mathematicians before continuing on to universities in Flanders, Paris and Rome before settling at Padua, then an international centre of mathematical excellence. At Padua he published in 1667 *Vera circuli et hyperbolae quadratura* and in 1668 *Geometriae pars universalis*, the first attempt to write a textbook on what is now called calculus.

On his return to London in 1668 he was elected a Fellow of the Royal Society and then proceeded to St Andrews to take the chair of the Regius Professor of Mathematics created for him by Charles II specifically in order that he could continue his outstanding mathematical research. The following year he married Mary Jamesone, a daughter of George Jamesone the artist, and in 1674, as a consequence of the jealousies of his colleagues, he left to become Professor of Mathematics at Edinburgh where, a year later, at the age of 36, he suffered a stroke and died.

The academic brilliance of James Gregory's family may be measured by the descendants of his parents holding more than twenty chairs in the following generations, principally in mathematics on his brother David's side, and in medicine on his own side. The many hundreds who today can claim descent from the parents can be justifiably proud of the tree on the next page.

The Gregory Descendants
of the Anderson Family



The remarkable Anderson gene bearing academic brilliance continued in the next generation and was carried also to the descendants of daughters not shown here.

