2

JAMES (JACOB) BERNOULLI
Basel, Switzerland
27 Dec. 1654 - 16 Aug. 1705

1

In the year 1692 James Bernoulli, discussing the logarithmic spiral (...) shows that it reproduces itself in its evolute, its involute, and its caustics of both reflection and refraction, and then adds:
"But since this marvellous spiral, by such a singular and wonderful peculiarity, pleases me so much that I can scarce be satisfied with thinking about it, I have thought that it might not be inelegantly used for a symbolic representation of various matters. For since it always produces a spiral similar to itself, indeed precisely the same spiral, however it may be involved or evolved, or reflected or refracted, it may be taken as an emblem of a progeny always in all things like the parent, simllima filia matri. Or, if it is not forbidden to compare a theorem of eternal truth to the mysteries of our faith, it may be taken as an emblem of the eternal generation of the Son, who as an image of the Father, emanating from him, as light from light, remains ομοουσιος with him, howsoever overshadowed. Or, if you prefer, since our spira mirabilis remains, amid all changes, most persistently itself, and exactly the same as ever, it may be used as a symbol, either of fortitude and constancy in adversity, or, of the human body, which after all its changes, even after death, will be restored to its exact and perfect self, so that, indeed, if the fashion of Archimedes were allowed in these days, I should gladly have my tombstone bear this spiral, with the motto, "Though changed, I arise again exactly the same, Eadem numero mutata resurgo."

Thomas Hill. In: Moritz, pp. 144 - 145, #922

2

Following the example of Archimedes who wished his tomb decorated with his beautiful discovery in geometry and ordered it inscribed with a cylinder circumscribed by a sphere, James Bernoulli requested that his tomb be inscribed with his logarithme spiral together with the words, "Eadem mutata resurgo," a happy allusion to the hope of the Christians, which is in a way symbolized by the properties of that curve.

Fontenelle (1758)
In: Moritz, pp. 143 - 144, #920

3

In 1698 he published an essay on the differential calculus and its applications to geometry. He here investigated the chief properties of the equiangular spiral, and especially noticed the manner in which various curves deduced from it reproduced the original curve: struck by this fact he begged that, in imitation of
Archimedes, and equiangular spiral should be engraved on his tombstone with the inscription Eadem numero mutata resurgo.

Ball 2, p. 367
http://www.maths.tcd.ie/pub/HistMath/People/Bernoullis/RouseBall/RB_Bernoullis.html

4

James Bernoulli, a distinguished mathematician, born at Basel, Switzerland, December 27, 1654, when investigating the properties of the equiangular spiral, noticed the manner in which various curves deduced from it reproduced the original curve. This fact (an unusual one) strongly impressed the mind of the great mathematician, and he requested that an equiangular spiral should be engraved on his tombstone with the inscription "Eadem numero mutata resurgo".
Professor Ball, speaking of James Bernulli says: "He was one of the earliest to realize how powerful as an instrument of analysis was the infinitesimal calculus. His lectures, which contain the earliest use of the term integral calculus; for Leibnitz had treated each problem by itself, and had not laid down any general rules on the subject."

Before passing to the consideration of the next device, we may remark that the equiangular spiral is so called because the angle included between any radius vector and the tangent at the extremity is constant. This spiral is also frequently called the logarithmic spiral because the radii vectors making equal angles with each other are in geometrical progression. It is evident, then, that the measuring arcs, being in mathematical proggression, are as the logarithms of the radii vectors which are in geometrical progression. It will thus be seen thet either name indicates a characteristic of the spiral that adorns the stone marking the resting-place of James Bernoulli.

Rupert, pp. 99-100

5

Because of his study of the logarithmic spiral, r = a ^ θ, he directed that this curve should be engraved upon his tombstone, with the words Eadem mutata resurgo#, and the visitor to the cloisters at Basel may still see the rude attempt of stonecutter to carry out his wish##.

"I shall arise the same, though changed"
There is an engraving of the design in J. J. Battierius, Vita ... Jacobi Bernoulli, p. 40 (Basel, 1705)

Smith I, p. 428

6

Jacob I had a mystical strain which is of some significance in the study of the heredity of the Bernoullis. It showed itself once in an interesting way toward the end of his life. There is a certain spiral (the logarithmic or equiangular) which is reproduced in a similar spiral after each of many geometrical transformations. Jacob was fascinated by this recurrence of the spiral, several of whose properties he discovered, and directed that a spiral be engraved on his tombstone with the inscription Eadem mutata resurgo (Though changed I shall arise the same).

Bell, p. 159
(Bell I, p. 215 [of greek ed.])

7

Wonderful are the phoenix-like properties of the curve = equiangular spiral: let all the mathematical equivalents of burning it and tearing it in pieces be

performed-it will but reappear unscathed! To Bernoulli in his old age the curve seened to be no unworthy symbol of his life and faith; and in accordance with his wishes the spiral was engraved upon his tombstone, and with it the words Eadem mutata resurgo.

Herbert Western Turnbull, The Great Mathematicians. In: Newman, p. 147

Other References

Huntley, p. 168
Pedoe, p. 249
Wells-G, p. 68

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