EDMOND HALLEY (November 8, 1656 – January 25, 1742)

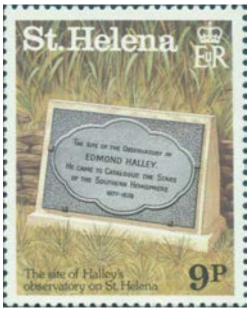
by HEINZ KLAUS STRICK, Germany

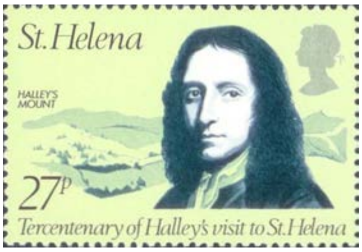
EDMOND HALLEY was born the son of a wealthy soap manufacturer near London. Although the father lost a large part of his fortune in the devastating fire of 1666, he was able to finance a good education for his son.

At the age of 15, he was already building sundials and studying the fluctuations of the earth's magnetic field. Contemporary sources claim that his knowledge of the starry sky was so extensive that he would have noticed immediately if the position of any star in the sky had changed.

At the age of 17 HALLEY entered *Queen's College*, Oxford.

When he was 20 years old, he published an article on an occultation of Mars by the moon. When the opportunity arose he interrupted his studies in Oxford and at the newly opened observatory in Greenwich, to travel to St Helena, the British territory in the Atlantic Ocean.





There he produced the first catalogue of the stars of the southern night sky with the exact positions of 341 stars. He was also the first astronomer to measure the transit of the planet Mercury in front of the Sun and, using KEPLER's 3rd law (*the squares of the orbital periods of the planets are proportional to the third power of the average distance from the Sun*) he determined the distance of the Earth to the Sun.

Returning to Oxford, HALLEY graduated without taking exams and at 22 became the youngest member of the *Royal Society*.

The following year the *Royal Society* sent him to Gdansk to settle a dispute between the 68-year-old astronomer JOHANNES HEVELIUS and ROBERT HOOKE.

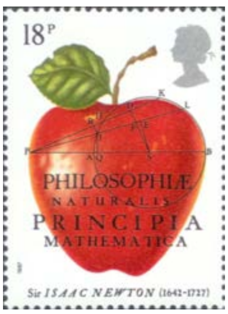
The latter had claimed that HEVELIUS's astronomical observations, which had been made without a telescope, could not be correct. After two months of examination, HALLEY confirmed the accuracy of the HEVELIUS data.

HOOKE was, incidentally, Professor of Geometry in London from 1665 and Secretary of the *Royal Society* from 1677. He improved the design of the microscope, introduced the term "cell", proposed the melting point of ice as the zero point for the thermometer scale and discovered HOOKE's law (*the linear relationship between deflection and load of elastic bodies, e.g. when measuring force by a spring balance*), which was named after him.

Due to his rapidly growing fame, HALLEY made an enemy of his previous patron, the *Astronomer Royal* JOHN FLAMSTEED who tried – successfully for a long time – to stop the further career of HALLEY.

In 1684 HALLEY showed that it follows from KEPLER's 3rd law that the forces acting between the celestial bodies were inversely proportional to the square of the distance. With HOOKE he discussed whether it could be deduced from this that the planetary orbits must be ellipses.

When he found that ISAAC NEWTON had long since found the missing proofs but has not published them, he urged him to write one of the most important scientific works in the history of mankind, the *Principia Mathematica*. His influence on NEWTON went so far that he himself paid the printing costs, read proofs and wrote a preface.



Although he did not succeed in obtaining an academic post, HALLEY continued to attract attention with his innovative publications. In 1686 he produced a map of the world showing the prevailing winds and their directions, and developed a formula for measuring height using a barometer.

In 1693 he published *An Estimate of the Degrees of Mortality of Mankind*, in which he was the first to draw up mortality tables. For this he used data from the Silesian city of Breslau (now called Wrocław). These records seemed to him to be particularly suitable because Breslau had a low population turnover. At this time in London, for example, considerably more people died than were born there.

These mortality tables are similar to those we know today. They indicate how many of every 1000 one-year-old (!) people reach the age of 2 years (885), ... , 10 years (661), 20 years (598), ... , 50 years (346), ... , 70 years (142), ...

HALLEY calculated the probability ("odds") that a person of a certain age will live for a certain number of years. From the information that 531 of the 1000 persons reach an age of 30 years, he concluded that they still have a life expectancy (*... may reasonably expect to live ...*) of about 27 more years, since according to the table an average of 265 persons would live to the age of 57. He also used his mortality table to establish a product rule for probabilities, e.g. for the event that two people have a certain number of years to live.

From 1695 onwards, he studied the orbits of comets intensively. In contrast to NEWTON, who assumed parabolic orbits, he firmly believed that comets move on elliptical orbits. This meant that the comet he observed in France in 1682 together with the Italian astronomer GIOVANNI DOMENICO CASSINI (1625-1712) must have been seen regularly in the past.

With the help of various records, he identified this comet with the one from 1531 and 1607, and then with the dates of 1305, 1380 and 1456. Later, when his prediction that the comet would be seen again at the end of 1758 came true, it was given the name HALLEY's Comet.

The following stamps commemorate of observations by the Arab scientist NASIR AL-DIN AL-TUSI (1201-1274).

After long journeys across the Atlantic, HALLEY published a map in 1700, on which places with the same deflection of the compass were connected by lines.

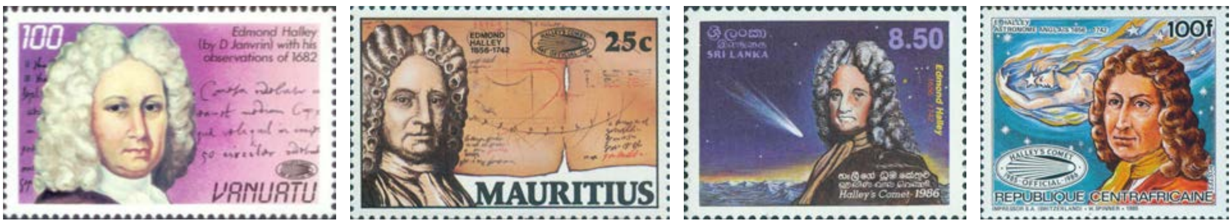
Finally in 1704 he succeeded JOHN WALLIS, the first important English mathematician, as professor of geometry at Oxford University and his inaugural lecture aroused great enthusiasm.

In addition to his own mathematical treatises, he published translations of the works of APOLLONIUS OF PERGA (260-190 BC) on conic sections, and of MENELAUS OF ALEXANDRIA (around 100 AD) on spherical trigonometry.

Although he was already 64 years old, he succeeded FLAMSTEED as *Astronomer Royal* in Greenwich in 1720 and he continued to hold this office for 21 years. FLAMSTEED's widow was so furious about the appointment that she had all the instruments acquired by her husband sold, just so that HALLEY could not use them.

In the dispute of priorities with LEIBNIZ, HALLEY took the position of NEWTON, whom he greatly admired, and the report on this to the *Royal Society* bore his name.

He never ceased to explore until the end of his life. He wrote scientific papers on archaeology and on the history of astronomy, and also on methods for solving higher-order equations.
He developed a method of determining the longitude of a place at sea by observing the moon.
By comparison with ancient star charts he also discovered that stars have a proper motion.




NICARAGUA
COMETA HALLEY
CORREOS 1985
1.00
VOLCAN MASAYA
EDMUNDO HALLEY


NICARAGUA
COMETA HALLEY
CORREOS 1985
3.00
VEGA
OBSERVATORIO SUBTERRANEO DE TYCHO BRAHE


NICARAGUA
COMETA HALLEY
CORREOS 1985
3.00
ESPERA ARMILLAR S. XV


NICARAGUA
COMETA HALLEY
AEREO 1985
9.00
ASTROLABIO DE HABERMEL, 1575


TAPISSERIE DE BAYEUX (1066)
HALLEY'S COMET 1985 OFFICIAL 1986
CONQUÊTE DE L'ANGLETERRE PAR LES NORMANDS EN 1066
HAROLD
LA COMÈTE FUT NÉFASTE AU ROI HAROLD
REPUBLIQUE DE GUINÉE
5F


HALLEY'S COMET 1985 OFFICIAL 1986
LA COMÈTE VUE PAR LES ARABES
ASTROLABE
REPUBLIQUE DE GUINÉE
30F


HALLEY'S COMET 1985 OFFICIAL 1986
MOCTEZUMA II
REPUBLIQUE DE GUINÉE
40F


COMMONWEALTH OF DOMINICA
45¢
HALLEY'S COMET 1985-6


GRENADA GRENADINES
40¢
HALLEY'S COMET 1985-6


GRENADA GRENADINES
$4.00
HALLEY'S COMET 1985-6


UGANDA
50/-
HALLEY'S COMET 1985-6


UGANDA
140/-
HALLEY'S COMET 1985-6


UGANDA
2500/-
HALLEY'S COMET 1985-6


ANTIGUA & BARBUDA
5¢
HALLEY'S COMET 1985-6


ANTIGUA & BARBUDA
60¢
HALLEY'S COMET 1985-6


ANTIGUA & BARBUDA
$4.00
HALLEY'S COMET 1985-6


LESOTHO
70s
HALLEY'S COMET 1985-6


LESOTHO
M3
HALLEY'S COMET 1985-6


EDMOND HALLEY. HALLEY'S COMET IN 1531
EIIR
MONTSERRAT
70c


HALLEY'S COMET IN 1301
EIIR
MONTSERRAT
50c


HALLEY'S COMET IN 1066 and 1910
EIIR
MONTSERRAT
$1


BAYEUX TAPESTRY. HALLEY'S COMET IN 1066
MONTSERRAT
35c

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https://www.spektrum.de/wissen/edmond-halley-1656-1742/854858

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