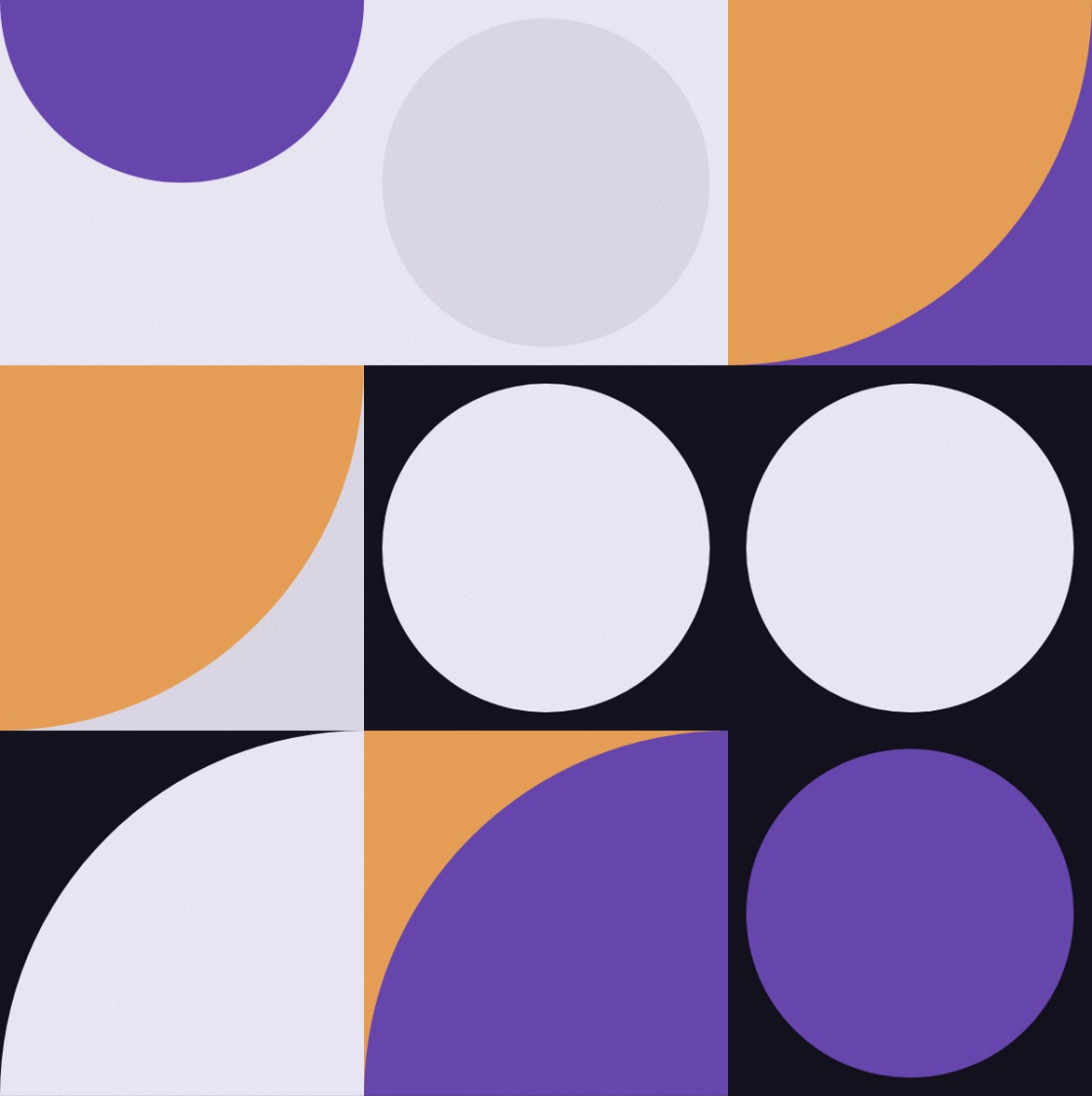




THE SIDEREAL MESSENGER

GALILEO GALILEI

Translated by Edward Stafford Carlos

JVA EDITORA



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JVA Editora

THE SIDEREAL MESSENGER

RIVINGTONS

London Waterloo Place

Oxford Magdalen Street

Cambridge Trinity Street



GALILEO'S BROKEN LENS.

EXHIBITED IN THE LOAN COLLECTION OF SCIENTIFIC APPARATUS AT THE SOUTH
KENSINGTON MUSEUM, 1876.

From a photograph of the Science and Art Department, South Kensington.

THE SIDEREAL MESSENGER

OF

GALILEO GALILEI

AND A PART OF THE PREFACE TO KEPLER'S DIOPTRICS
CONTAINING THE ORIGINAL ACCOUNT OF GALILEO'S
ASTRONOMICAL DISCOVERIES.

A Translation with Introduction and Notes

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PREFATORY NOTE.

About five years ago I was engaged in preparing a catalogue of the ancient books which belong to Christ's Hospital. One portion of these books consisted of a collection of ancient mathematical works presented at various times for the use of that part of the school which is known as the Royal Mathematical Foundation of King Charles II. Amongst them were some well known by name to every mathematical student, but which few have ever seen. Perhaps the most interesting of them all was a little volume, printed in London in 1653, containing Gassendi's *Explanation of the Ptolemaic and Copernican Systems of Astronomy*, as well as that of Tycho Brahe, Galileo's *Sidereus Nuncius*, and Kepler's *Dioptrics*. I found Galileo's account [v] his astronomical discoveries so interesting, both in matter and in style, that I translated it as a recreation from school-work. I venture to think that others also will be interested in following Galileo through the apprehension of his famous discoveries, and in reading the language in which he announced them.

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INTRODUCTION.

In 1609, Galileo, then Professor of Mathematics at Padua, in the service of the Venetian Republic, heard from a correspondent at Paris of the invention of a telescope, and set to work to consider how such an instrument could be made. The result was his invention of the telescope known by his name, and identical in principle with the modern opera-glass. In a maritime and warlike State, the advantages to be expected from such an invention were immediately recognised, and Galileo was rewarded with a confirmation of his Professorship for life, and a handsome stipend, in recognition of his invention and construction of the first telescope seen at Venice. In his pamphlet, *The Sidereal Messenger*, here translated, Galileo relates how he came to learn the value of the telescope for astronomical research; and how his observations were rewarded by numerous discoveries in rapid succession, and at length by that of Jupiter's satellites. Galileo at once saw the value of this discovery as bearing upon the establishment of the Copernican system of astronomy, which had met with slight acceptance, and indeed as yet had hardly any recommendation except that of greater simplicity. Kepler had just published at Prague his work on the planet Mars (*Commentaria de motibus Stellæ Martis*), on which he had been engaged apparently for eight years; there he heard of Galileo's discoveries, and at length was invited by Galileo himself, through a common friend, Giuliano de' Medici, ambassador of the Grand-Duke of Tuscany, Cosmo de' Medici II., to the Emperor Rudolph II., to correspond with Galileo on the subject of these discoveries. The Emperor also requested his opinion, and Kepler accordingly examined Galileo's *Sidereal Messenger* in a pamphlet, entitled *A Discussion with the Sidereal Messenger* (Florence, 1610).

In this *Discussion* Kepler gives reasons for accepting Galileo's observations—although he was not able to verify them from want of a telescope—and entirely supports Galileo's views and conclusions, adducing his own previous speculations, or pointing out, as in the case of Galileo's idea of earth-light on the moon, the previous conception of the same explanation [the

phenomenon. He rejects, however, Galileo's explanation of the copper colour of the moon in eclipses. Kepler ends by expressing unbounded enthusiasm at the discovery of Jupiter's satellites, and the argument it furnishes in support of the Copernican theory.

Soon after, in 1611, Kepler published another pamphlet, his *Narrative*, giving an account of actual observations made in verification of Galileo's discoveries by himself and several friends, whose names he gives, with a telescope made by Galileo, and belonging to Ernest, Elector and Archbishop of Cologne. Kepler and his friends saw the lunar mountains and three of the satellites of Jupiter, but failed to make out any signs of the ring of Saturn corresponding to the imperfect description of Galileo.

Kepler had previously published a treatise on Optics (Frankfort, 1604). He now extended it to the consideration of the theory of the telescope, and explained the principle of Galileo's telescope; he also showed another combination of lenses which would produce a similar effect. This was the principle of the common astronomical telescope, often called, from this circumstance, Kepler's telescope, though he did not construct it. The account of Galileo's later astronomical discoveries of Saturn's ring and the phases of Venus is taken from the preface of this work.—(Kepler's *Dioptrics*; Augsburg, 1611.)

In 1612 Galileo published a series of observations of solar spots, and in 1618 some observations of three comets. There exist also long series of minute observations of Jupiter and his satellites, continued to November 1619.—(Galileo's *Works*; Florence, 1845.)

Further astronomical researches may have been hindered by failing sight. One more astronomical discovery, however, that of the moon's librations, was made as late as 1637, and the announcement of it is dated "dalla mia carcere di Arcetri." Galileo died January 8, 1642.

The following editions have been used for the translation:—

Galileo's *Works*.

1. Florence, 1718.
2. Padua, 1744.
3. Florence, 1842-56.

Sidereus Nuncius.

1. Venice, 1610.
2. London, 1653.

Kepler's *Works*, ed. C. Frisch. Frankfurt a. M., 1858-71.

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Prodromus dissertationum mathematicarum continens Mysterium Cosmographicum de admirabili proportionē orbium cœlestium. Tübingen, 1596.

Astronomia nova αιτιολογητὸς (Commentaria de motibus stellæ Martis). [Prague,] 1609.

THE
SIDEREAL MESSENGER
OF
GALILEO GALILEI

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THE

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SIDEREAL MESSENGER

UNFOLDING GREAT AND MARVELLOUS SIGHTS,
AND PROPOSING THEM TO THE ATTENTION OF EVERY ONE,
BUT ESPECIALLY PHILOSOPHERS AND ASTRONOMERS,

BEING SUCH AS HAVE BEEN OBSERVED BY

GALILEO GALILEI

A GENTLEMAN OF FLORENCE,
PROFESSOR OF MATHEMATICS IN THE UNIVERSITY OF PADUA,

WITH THE AID OF A

TELESCOPE

lately invented by him,

*Respecting the Moon's Surface, an innumerable number of Fixed Stars,
the Milky Way, and Nebulous Stars, but especially respecting
Four Planets which revolve round the Planet Jupiter at
different distances and in different periodic times, with
amazing velocity, and which, after remaining
unknown to every one up to this day, the
Author recently discovered, and
determined to name the
MEDICEAN STARS.*

VENICE 1610.

TO THE MOST SERENE

[1]

COSMO DE' MEDICI, THE SECOND,

FOURTH GRAND-DUKE OF TUSCANY.

THERE is certainly something very noble and large-minded in the intention of those who have endeavoured to protect from envy the noble achievements of distinguished men, and to rescue their names, worthy of immortality, from oblivion and decay. This desire has given us the lineaments of famous men, sculptured in marble, or fashioned in bronze, as a memorial of them to future ages; to the same feeling we owe the erection of statues, both ordinary and equestrian; hence, as the poet¹ says, has originated expenditure, mounting to the stars, upon columns and pyramids; with this desire, lastly, cities have been built, and distinguished by the names of those men, whom the gratitude of posterity thought worthy of being handed down to all ages. For the state of the human mind is such, that unless[2] be continually stirred by the counterparts² of matters, obtruding themselves upon it from without, all recollection of the matters easily passes away from it.

But others, having regard for more stable and more lasting monuments, secured the eternity of the fame of great men by placing it under the protection, not of marble or bronze, but of the Muses' guardianship and the imperishable monuments of literature. But why do I mention these things, as if human wit, content with these regions, did not dare to advance further; whereas, since she well understood that all human monuments do perish at last by violence, by weather, or by age, she took a wider view, and invented more imperishable signs, over which destroying Time and envious Age could claim no rights; so, betaking herself to the sky, she inscribed on the well-known orbs of the brightest stars—those everlasting orbs—the names of those who, for eminent and god-like deeds, were accounted worthy to enjoy an eternity in company with the stars. Wherefore the fame of Jupiter, Mars, Mercury, Hercules, and the rest of the heroes by whose names the stars are called, will not fade until the extinction of the splendour of the constellations themselves.