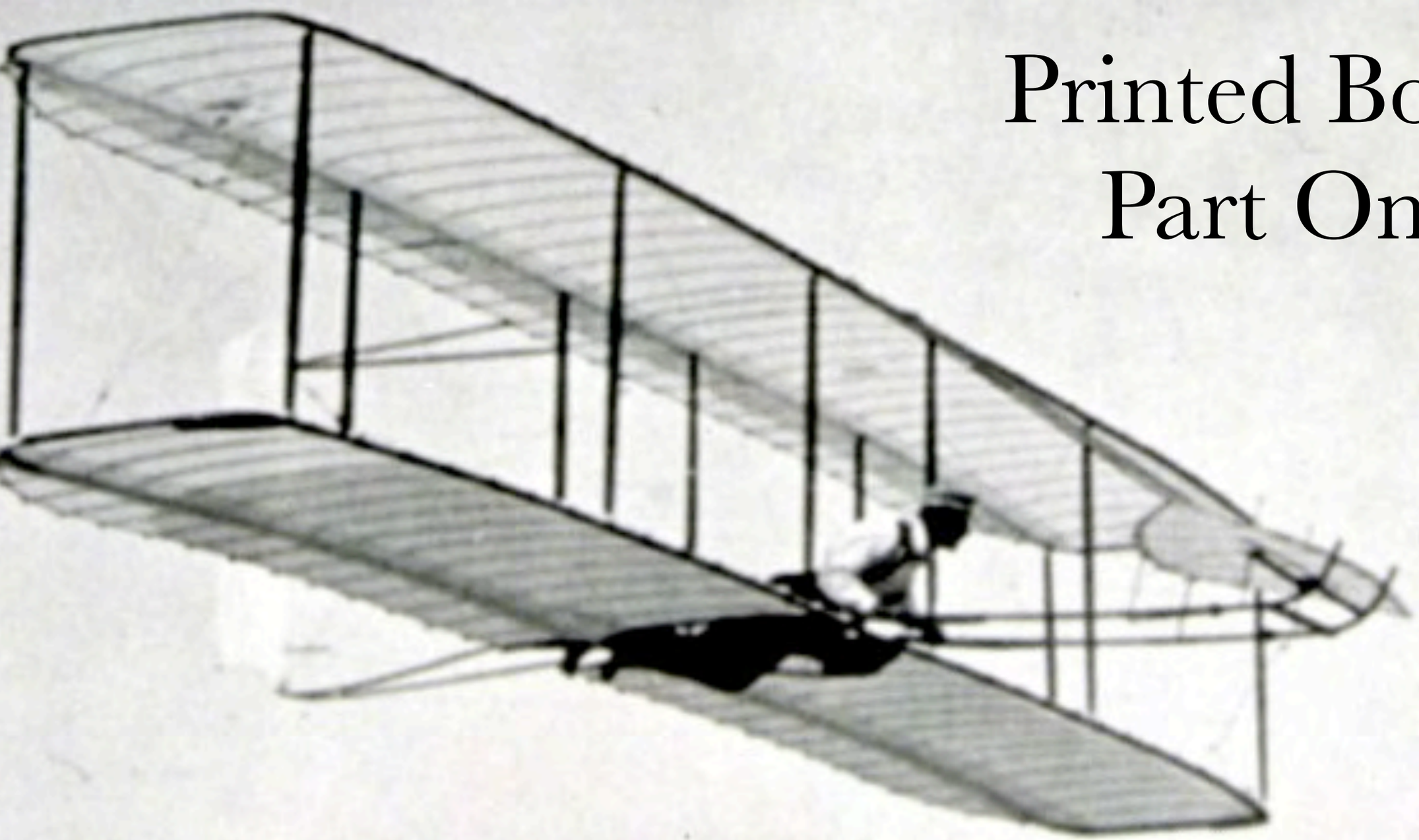


Printed Books
Part One

The Genesis of Flight

The Aeronautical History Collection of Colonel Richard Gimbel

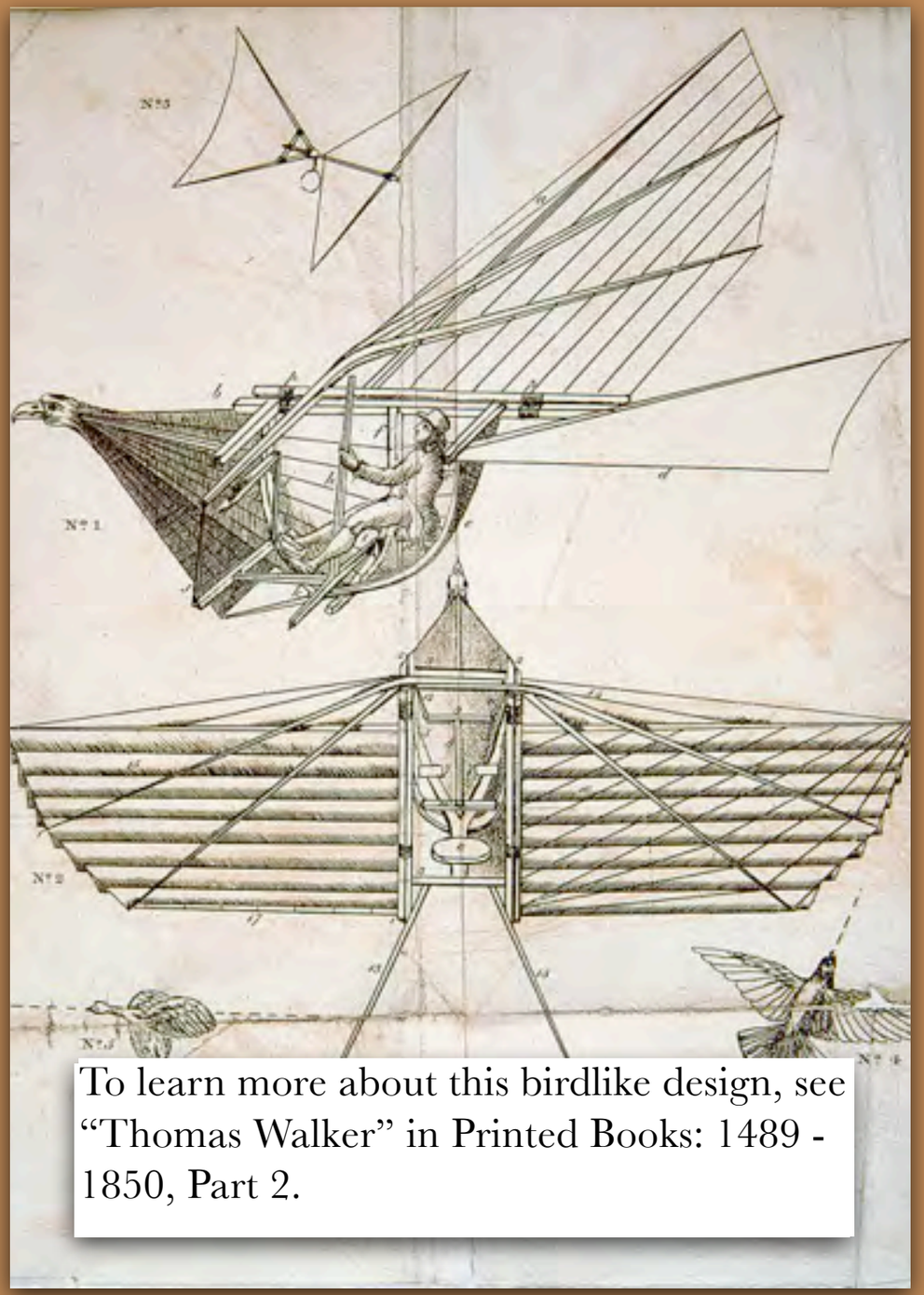
At the United States Air Force Academy

Printed Books
1489 - 1850
Part 1

Clive Hart

Chapter Introduction

The Colonel Richard Gimbel Aeronautical History Collection is especially valuable in containing items that bear on the very early history of aviation in a wide variety of ways. In addition to rare books and pamphlets from the time of the first balloon ascents and tracts offering designs for heavier-than-air machines, there are books of flying legends (many of them attractively illustrated), imaginative tales in both verse and prose of voyages to the moon and planets, books of scientific theory and quasi-scientific speculation, treatises on the flight of birds, and works of angelology that examine the human aspiration to flight from the point of view of religious belief.



To learn more about this birdlike design, see "Thomas Walker" in Printed Books: 1489 - 1850, Part 2.

The diversity of the collection greatly facilitates the wide-ranging interdisciplinary studies that are necessary if the technological achievements of the early modern period are to be properly understood. The development of winged aircraft was delayed not only by inadequate technology and the failure of all experimenters before the nineteenth century to understand the basis of bird flight but also by the deep-seated unease of many thinkers. The doubts of philosophers and theologians and the generally negative response of the early Christian church had a notable effect on the speculators. Although flying prophets and other men of virtue figure frequently in pagan myth and religion, early Christianity wished to reserve almost all virtuous flight for the seraphs. Ordinary angels were not represented as winged until some centuries after Christ. For Christians, flight through the atmosphere was most clearly associated with demons, sorcerers, and (later) witches. (Contrary to popular opinion, witches were an obsession of the Renaissance rather than of the Middle Ages.) Satan was "the prince of the power of the air" (Ephesians 2:2) and any man who aspired to fly might be thought potentially in league with him. At times more positive effects of Christian thought and iconography can nevertheless be perceived: the joyous story of the aerial journey of Mary's house in Terameno's little tract (see below, Terameno, *Translatio, ca.* 1495) caught the imagination of designers of large machines.

The collection includes many books of importance not described here. There are early editions of John Donne, John Milton, Ovid, Johannes Sambucus, and Alfred Tennyson, all of scholarly and bibliographical interest. Early and rare books on fireworks bear on the history of rocketry. There are works by the British astronomer Sir John Frederick Herschel and other important astronomers and scientists. The shelves also hold a large number of items from among the thousands of publications that appeared in the two or three years following the first ascent in a Montgolfier balloon in 1783. These include not only the best-known books and pamphlets in French and English but also an especially rich collection of publications in Italian. Together with these is a large and valuable collection of the many satirical plays, vaudevilles, squibs, and broadsides published, mainly in French, in the years immediately following the Montgolfiers' success. (Perhaps the only collection to rival the Gimbel in that respect is the Bibliothèque de l'Arsenal, Paris.) The books described in this section

and those in the Appendix inevitably represent no more than a sample. Although I have tried to identify items that reveal the special qualities of the Gimbel collection, other choices could readily have been made.

* * *

Following the standard bibliographic data for each item in this and the next section (Printed Books, 1851-1914), the Gimbel collection call number is identified. Additionally, where appropriate, references are given to corresponding entries in such standard bibliographies as Hain, Brockett, Gamble, and Randers-Pehrson (the last coded R-P) listed in the "Printed Books, 1489-1850" section of the Bibliography of this program. For books published before 1701, numbers are given for the Pollard or Wing short-title catalogues coded STC and also listed in the Bibliography. If an entry in the Bibliography refers not to the holding in the Gimbel collection but to a closely related book or edition, the number is placed in brackets. Finally, and again where appropriate, other copies and editions in the Gimbel collection of the item described are noted. Thus for *Historia Alexandri,* the first item described in this section, the Gimbel call number is AC10.A41489, and "Hain 780" refers to the number of the relevant entry in Ludwig Hain, *Reportorium bibliographicum. 4 vols.* Stuttgart and Paris, 1826-1838 (listed in the Bibliography at the end of the catalogue).

Alexander the Great (romances, etc.)

Historia Alexāndri | magni regis | mace | donie de prelijs.
Colophon: Historia Alexandri magni finit feliciter impressa Argentine anno domini M.CCCC.LXXXIX
. . .

37 leaves. 28.5 cm.
Title-page with verso blank. Illus. Of king on t.-p.
Signatures: a4-f4, [g1].
Printer: Johannes Gruninger.
AC10.A4 1489
Hain 780

The romance of Alexander, a fabulous account of the life of Alexander the Great (356-323 B.C.E.), was immensely popular in the Middle Ages and the early Renaissance. Alexander not only conquered all known countries on land but also used a primitive submarine to explore the bottom of the sea and a flying machine to carry him through the regions of the air. His machine, illustrated in this and many other medieval manuscripts, consisted of a basket to which two or sometimes four griffins were tethered. Alexander held a dead carcass on a pole. When he raised the carcass above the griffins' heads, they attempted to fly up to it and so carried the basket through the air. When Alexander wanted to descend, he lowered the pole to make the griffins fly down. The land and sea below Alexander are described as if on a large map. Offended by Alexander's presumption, divine power finally caused the griffins to think they were rising when in fact they were descending. The machine, which was damaged when it landed, came down fifteen

days' walk from Alexander's army, thus complicating Alexander's return. Along with the story of Icarus (see below, Riedrer, *Spiegel*, 1493), this is among the most frequently quoted cautionary tales about the consequences of excessive ambition. (The story is told on fol.f2v of this printing of the book.)

Riedrer, Friedrich

Spiegel der waren Rhetoric | vsz M. Tulio C. vnd andern | getütscht: Mit Irn glidern cluger reden | Sandbriefen, vnd formen. Menicher con | tract, seltzam. Regulierts Tütschs vnd | nutzbar exempliert, mit fügen vff | göttlich vnd keiserlich schrifft vnd rech | te gegründt: nuwlich (vnd vormaln | In gemein nÿe gesehen) ÿetz loblich vsz | gangen. [fol. 188r:] friburg in Briszgaw, Durch fridrichen Riedrer versamelt, gedruckt, vnd volendet . . . An mittwoch vor sant Lucien tag [11 December] 1493.

[188] leaves, 2-180 so numbered. 31 cm.
With several woodcuts, incl. t-p; fall of Icarus on fol. 61v.
AC10.R4 1493
Hain 13914

Although illustrations of flying men had long been common in manuscripts and other media, Albrecht Dürer's woodcut in Riedrer's *Spiegel* is the first such representation in a printed book. The story of the flight of Daedalus and his son Icarus was best known from a passage in Ovid:

> he lays feathers in order, beginning at the smallest, short next to long, so that you would think they had grown upon a slope. Just so the old fashioned rustic pan-pipes with their unequal reeds rise one above another. Then he fastened the feathers together with twine and wax at the middle and bottom; and, thus arranged, he bent

them with a gentle curve, so that they looked like real bird's wings.

Using these wings, Daedalus and Icarus flew away from captivity but "led by a desire for the open sky," Icarus flew too high. "The wax melted; his arms were bare as he beat them up and down, but, lacking wings, they took no hold on the air" (*Metamorphoses*, VIII. 189-195, 224, 227-228).

Dürer makes an ironic parallel between Icarus' fall into an element to which he is physically unsuited and the entirely natural dive of the seabird to his left. Variants of the old adage "if God had meant us to fly, He'd have given us wings" were often invoked in response to early attempts to build flying machines.

[Terameno, Pietro]

Translatio miraculosa ecclesie beate | Marie virginis de Loreto. [Romae, Eucharius Silber, *ca.* 1495]

4 leaves. 14 cm.
Title vignette: church being transported by angels, with Madonna above.
Ms. notes.
1. Mary, Blessed Virgin, Saint—Early works to 1800.
AC10.T7 1495
Hain-Reichling, Appendices 1884

This little tract, hugely popular during the Renaissance, was reprinted many times and translated into several languages. After the Reformation, its Marian theme made it wholly unacceptable to Protestants. Two different translations of modified versions of the original, both by R. Corbington and both printed in 1635, were nevertheless widely circulated among English recusants during the seventeenth century. Facsimiles of the translations were published as folded broadsheets at the back of D.M. Rogers, ed., *English Recusant Literature, 1558 - 1640* vols. 75 (1971) and 108 (1972). According to the legend, in 1291 angels transported the Virgin's house from Nazareth through the air and deposited it in Loreto to protect it from invading infidels. The story serves in part to counter pagan stories of mystical flight, such as an oracle that flies after being lifted by priests in Lucian's *De Syria dea* (sect. 37). Images of the flying house–including frescos,

sketches, and paintings by Tiepolo (1692-1769)–are common. In Catholic countries the story strongly influenced later speculations about the relationship between the flight of angels and their power to move material objects. In this vignette they are carrying the house without effort through the upper air, above the clouds. This region was thought to be one of total serenity; if human beings could reach so high, they too, would be able to move objects without muscular effort. Together with Saint Joseph of Copertino (1603-1663), Mary is one of the patron saints of aviators.

De his quę mundo mi-
RABILITER EVENIVNT: VBI
de ſenſuum erroribus,& potentijs animę,
ac de influentijs cælorum, F. Clau-
dij Cæleſtini opuſculum.

De mirabili poteſtate ar
TIS ET NATVRAE, VBI DE
philoſophorum lapide, F. Rogerij Ba-
chonis Anglici, libellus.

Hæc duo gratiſſima,& non aſpernanda opu-
ſcula,Orontius F. Delph. Regius Mathe-
maticus,diligenter recognoſcebat,
& in ſuam redigebat har-
moniam,Lutetiæ
Pariſiorum.

Apud Simonem Colinæum
1 5 4 2.

Cælestinus, Claudius

De his quę mundo mirabiliter enenivnt: vbi de sensuum erroribus, & potentijs animę, ac de influentijs cælorum, F. Claudij Cælestini opusculum. De mirabili potestate artis et natvrae, vbi de philosophorum lapide, F. Rogerij Bachonis Anglici,

libellus. Hæc duo gratissima, & non aspernanda opuscula, Orontius F. Delph. Regius Mathematicus, diligenter recognoscebat, & in suam redigebat harmoniam. Lutetiæ Parisiorum.Apud Simonem Colinæum, 1542.

[4], 52 p. 21 cm.
1. Science—Early works to 1800. I. Bacon, Roger, 1214?-1294. II. Fine, Oronce, 1494-1555. III. Title. IV. Title: De mirabili potestate artis et natvrae.
Q155.C13
[Gamble 4678, 4679]

An important contributor to medieval science, Franciscan monk Roger Bacon was somewhat irascible and prone to hyperbole. In *De mirabili potestate artis et natvrae*, written about 1260, he alleged that "it is possible to make flying machines such that a man may sit in the middle of the machine turning some kind of device by means of which artificially constructed wings strike the air in the manner of a flying bird." Speaking of this and a number of other mechanical devices, he goes on to say that it is certain that they were made both in ancient times and in modern, with the possible exception of the flying machine, which he has not seen, nor does he know anyone who has seen such a thing. He does, however, claim to know a man who has thought through the art

of building one. In medieval times it was common to believe that the achievements of the classical world—mechanical as well as moral—surpassed those of the civilizations of the day. The conviction that in those times men had solved the problem of flight inspired many experimenters.


ORLANDO FVRIOSO
DI M. LVDOVICO ARIOSTO
ET ALCVNE ALTRE DEL
S. Aluigi Gonzaga in lode dell'istesso.
AGGIVNTOVI PER CIASCVN
CANTO ALCVNE ALLEGORIE, ET NEL FINE
TAVOLA DI TVTTO
CON GRATIA ET PRIVILEGIO.
IN VINEGIA APPRESSO GABRIEL
GIOLITO DE FERRARI.

Ariosto, Lodovico, 1474-1533

Orlando Furioso di M. Lvdovico Ariosto ornato di uarie figure, con alcune stanze del medesimo nuouamente aggiunte, et alcvne altre del S. Aluigi Orlando Furioso di M. Lvdovico Ariosto ornato di uarie figure, con alcune stanze del medesimo nuouamente aggiunte, et alcvne Gonzaga in lode dell'istesso. . . In Vinegia appresso Gabriel Giolito de Ferrari, 1547.

264, [30] numb. leaves, illus. 21 cm.
"Espositione di tvtti i vocaboli e lvoghi difficili . . . raccolte da M. Lodovico Dolce . . ." (leaves [1—25] has special t.-p.).
With bookplates of Thomas Isted and C.W.H. Sotheby.
Printer's device (phoenix on pyre staring at the sun with motto *semper eadem*) on t.-p.s and last p.
PQ4567.A2 1547
Other copies and editions in the Gimbel collection: PQ4567.A2 1572: *Orlando Fvrioso . . . tvtto ricorretto. . . ,* illus. with woodcuts attrib. to Dosso Dossi (*d.* 1542), Venetia, 1572; PQ4582.E5 A35: *Orlando Furioso*, trans. from the Italian. . . with notes by John Hoole, 5 v., illus., London, 1799.

One of the greatest Italian writers of the Renaissance, Ariosto wrote plays that imitated those of Plautus and Terence and lyric poems in both Latin and Italian. His fame, however, rests almost entirely on *Orlando Furioso*, a long and complex romance in forty-six cantos, the first version of which was published between 1516 and 1532. Among its many

episodes is the story of how Astolfo flies to the moon in aid of Orlando, whose "wit" (rational faculty) had been taken from him and deposited there three months earlier. To reach the moon, Astolfo first rides on his winged horse, the offspring of a griffin and a mare, and then in the chariot of Elijah (2 Kings 2:11) with Saint John the Evangelist as charioteer:

> ...to the *Moone* he guides the running wheel,
> The *Moone* was like a glasse all void of spot, Or
> like a peece of purely burnisht steel, And
> look't, although to us it seem'd so small, Wel-
> nigh as big as earth and sea and all.

(Canto 34.70.4-8, in Sir John Harrington's translation of 1591).

Astolfo returns safely with the "wit" and restores Orlando to mental health. In 1784 Vincent Lunardi was to propose that Astolfo's flight was a hint that the principle of the balloon had long since been discovered. (See below, Lunardi, *An account*, 1784, p. 28n.) Ariosto's is one of the many stories of journeys to the moon that proliferated in the literature of the late Middle Ages and the Renaissance. As later holdings in the Gimbel collection reveal, these became still more numerous after the observations of the moon made with the telescopes of Galileo and others.

LIBRO PRIMO 91
INCOMINCIA IL PRIMO LI-
bro di Luciano delle vere narrationi.

ESsendo una fiata uscito fuore delle colone di Hercole, & condotto nel mare occidentale, nauigaua con prospero uento & bonaccia la causa della sperinatione & del proposito mio era desiderio de cose nuoue, perochè desideraua sapere qual fosse il fine del mare Ociano, & che huomini oltra esso habitassino, per questa ragione adonche fornite le naue de uettouaglie & cose necessarie, contacento con meco cinquanta compagni de mia etade, liquali erano de quello medemo uolere che io, & armando la naue di buona copia d'arme, per il suo prospero uso ottimo gubernatore conduisse. Era la naue mediocre, robusta pero & forte contra l'impeto delle onde marine, di e notte adonche co bonaccia nauigando, non molto longi da terra non con gran forza di uento procedeua il uiaggio nostro nel seguente giorno nel nascere del sole crebbe il uento & gli fu sopra, & una caligine tenebrosa per tutto

M 14

Lucianus Samosatensis, *ca*. C.E. 135-190

I dialoghi piacevoli, le vere narrationi, le facete epistole di Luciano philosopho. Di greco in volgare tradotte per M. Nicolo da Lonigo: & historiate, & di nuouo accuratamente reuiste, et emendate. In Venetia, per G. Padoano, 1551.

223 numb. 1. illus. 15 cm.
With 30 woodcuts. Bound in vellum.
Bookplate of George Charles Bright, M.D.
I. Lonigo, Nicolò da, tr.
PA4231.A2 1551
[Gamble 80]
Other copies and editions in the Gimbel collection: PA4232.F8 1613: in *Les oeuvres*, with 10 vignettes on t.-p., Paris, 1613; PA4236.G39: *Lucian's Werke, übersetzt von August Pauly*, Stuttgart, 1829 (v.10 of set only); PA4230.A2F13: in *Lucian: with an English Translation*, 8 v., Loeb Classical Library, 1913-1967.

In classical literature voyages away from the surface of the earth, both to Hades and to Heaven, were relatively common, among the most celebrated and amusing being the dramatic visit to an aerial civilization in Aristophanes' play *The Birds* (414 B.C.E.). Better known among readers of the Renaissance, however, were two journeys described by the Greek poet Lucian. The more familiar of these is his satire *Icaromenippus*, the hero of which travels to the heavens in search of truth. The other is a story in this "true history," which is in fact a parody of travelers' tales. Lucian tells us, tongue in cheek, that he made an involuntary journey to the moon when he was traveling beyond the Pillars of Hercules (the

Straits of Gibraltar). In the translation by Francis Hicks (1634) Lucian describes how "upon a suddaine a whirlewinde caught us, which turned our shippe round about, and lifted us up some three thousand furlongs into the air." After a week without sight of land, they "came in view of a great countrie in the aire, like to shining Island." He proceeds to describe the inhabitants and their surroundings in terms intended as a satirical commentary on life in Rome.

PHILOSTRATI
LEMNII SENIORIS HISTO-
riæ de vita Apollonij Tyanei
Libri octo.

Alemano Rhinuccino Florentino
interprete.

Eusebius contra Hieroclem, qui Tyaneum
Christo conferre conatus est.

Zenobio Acciolo Florentino interprete.

Omnia hæc ad Græcam veritatem diligen-
ter castigata, & recognita, adiectis
ubi opus esse videbatur,
annotatiunculis.

LVTETIAE.

Apud Gulielmum Cauellat, in pingui Gal-
lina, ex aduerso Collegij Cameracensis.

1555.

CVM PRIVILEGIO REGIS.

Philostratus, Flavius,
***ca.* C.E. 170-245**

Philostrati Lemnii senioris historiÏ de vita Apollonij Tyanei libri octo...Lvtetiae, Apud Gulielmum Cauellat, 1555.

16 p.1., 571 p. 11.5 cm.
1. Apollonius, of Tyana. I. Title: De vita Apollonii Tyanei.
TLB154.P5 1555

Appolonius of Tyana (in Cappodocia, an ancient name for a district of what is now Turkey) was a peripatetic philosopher and mystic, born about the time of Christ. The accounts of his magical powers gained him such fame that he was treated by pagans, both in his own day and for some time thereafter, as a god to be revered in direct competition with the claims that were being made for Christ by the early church. The story of his life was written in Greek by Flavius Philostratus (second to third centuries C.E.). Like many mystics, of whom Simon Magus is perhaps the best known, Apollonius was credited with being able to fly (see Book VII, chap. x). Although the ability to fly was a standard attribute of virtuous pagan mystics, any flying human being was, in the apprehension of Christians, almost certainly in league with demonic powers. (See Introduction to this section.)


IO· BAPTISTAE PORTÆ NEAPOLITANI, MAGIÆ NATVRALIS LIBRI VIGINTI.

Ab ipso quidem authore ante biennium adaucti, nunc verò ab infinitis, quibus editio illa scatebat mendis, optimè repurgati: in quibus scientiarum Naturalium diuitiæ & deliciæ demonstrantur.

Accessit INDEX, [illegible]

Librorum ordinem, qui in hoc opere continentur, versa pagina indicabit.

FRANCOFVRTI
Apud Andreæ Wecheli heredes, Claudium Marnium, & Ioann. Aubrium.
M D XCI.

Porta, Giovanni Battista della, 1535?-1615

Io. Baptistæ Portæ neapolitani, Magiæ natvralis libri viginti...Francofvrti, Apud A. Wecheli heredes, C. Marnium, & I. Aubrium, 1591.

[36], 669 p. 17 cm.
Index on first [36] p. Publisher's device on t.-p.
1. Science—Early works to 1800. I. Title: Magiæ naturalis libri viginti.
Q155.P83 1591
[Gamble 4985]

First published in 1558 when Porta was in his early twenties, Porta's book was reissued in greatly expanded form in 1589 and reprinted several times thereafter. It became one of the best known and most frequently quoted collections of "natural wonders." On pp. 69-70 of the first edition (pp. 668-669 of this edition) he describes how to make a *draco volans* (flying dragon: the ordinary Latin term for a paper kite, which he believes to be the probable reality behind the wooden dove of Archytas; see below, Kircher, *Magnes*, 1641). The passage was influential in spreading knowledge of how to build and fly a diamond-shaped kite of the kind that returning sailors had recently introduced into Europe from the East Indies. Among other writers to quote the description was Johann Jacob Wecker (1528-1586), a copy of whose *Les secrets et merveilles de natvre* is in the Gimbel collection (the quote is found on pp. 1219-1221 of Wecker). This design quickly ousted the more complicated native European kite (which

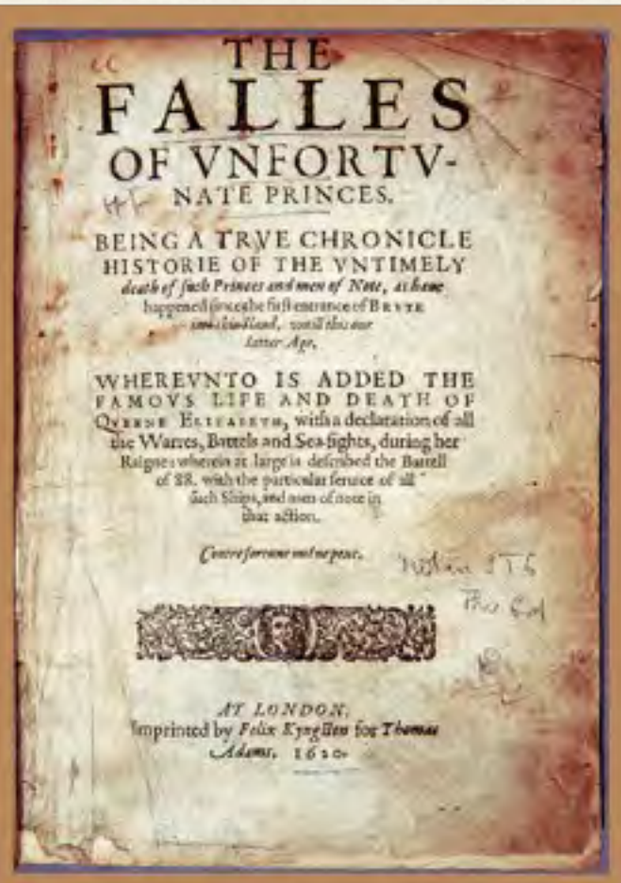
was indeed shaped like a dragon) and eventually played its part in the development of the airplane, especially with the aerodynamic experiments of Sir George Cayley in the early nineteenth century.

Veranzio, Fausto, bp., 1551-1617

Machinæ novæ Favsti Verantii siceni. Cvm declaratione latina, italica, hispanica, gallica, et germanica. Venetiis [*ca*. 1595].

1 p. l., 49 pl. (double pages) 19,18 p. 38 cm.
1.Mechanical Engineering—Early works to 1800.
2. Machinery—Early works to 1800.
3. Parachutes. 4. Inventions. I. Title.
TJ144.V47
Gamble 2527

The earliest Western drawing of a parachute is probably that found in British Library Add. MS 34113, fol. 200v, dated about 1480 and very likely antedating Leonardo's famous design of about the same date. Whether Veranzio could have known of either of these manuscript sketches is uncertain. In any event, the parachute reproduced here is the first to have appeared in a printed book. Like Leonardo's, it uses a rigid rectangular frame, though unlike Leonardo's pyramidal design the canopy is very flat– so flat as to be unstable. The illustration is in any case rather schematic: the uncomfortably harnessed parachutist, whose tunic is quite unruffled, is dropping very slowly. This design appears to have had little if any effect on later inventors. The first recorded free fall by a human being using a parachute was not made until André Jacques Garnerin descended from a balloon on October 22, 1797.



THE
FALLES
OF VNFORTV-
NATE PRINCES.

BEING A TRVE CHRONICLE
HISTORIE OF THE VNTIMELY
death of such Princes and men of Note, as haue
happened since the first entrance of BRVTE
into this Iland, vntil this our
latter Age.

WHEREVNTO IS ADDED THE
FAMOVS LIFE AND DEATH OF
QVEENE ELIZABETH, with a declaration of all
the Warres, Battels and Sea-fights, during her
Raigne: wherein at large is described the Battell
of 88. with the particular seruice of all
such Ships, and men of note in
that action.

Contre fortune nul ne peut.

AT LONDON,
Imprinted by *Felix Kyngston* for *Thomas*
Adams. 1620.

Mirrour for magistrates

The | falles | of vnfortv- | nate Princes. | Being a trve chronicle | historie of the untimely |death of such Princes and men of Note, as haue | happened since the first entrance of Brvte | into this Iland, vntil this our latter Age. | Wherevnto is added the | famovs life and death of |

Qveene Elizabeth, with a declaration of all | the Warres, Battels and Sea-fights, during her | Raigne: wherein at large is described the Battell | of 88. with the particular seruice of all | such Ships, and men of note in | that action. . . At London, | Imprinted by Felix Kyngston for Thomas | Adams, 1620.

Originally published *ca.* 1555, but suppressed; a first part covering the earliest period was added later; this edition adds *A winter nights vision* and *Englands Eliza*. The three parts have separate title pages: *The Variable Fortvne and Vnhappie Falles Of Such Princes As hath happened since the Conquest*, 1609; *A winter nights vision*, 1610; *Englands Eliza*, 1610.

1. Gt. Brit.—Hist.—Poetry. I. Niccols, Richard, 1584-1616. II. Baldwin, William, fl. 1547. III. Higgins, John, fl. 1570-1602. IV. Title.
PR2199.M67 1620

[Not in STC. This edition appears to be a reissue, with new t.-p., of the edition of 1610: STC 13446.]

A legendary king of England, Bladud was supposed to have lived in the middle of the ninth century B.C.E. The story of his death was repeatedly cited in Renaissance England as an example of punished hubris. Accounts of his life vary. The founder of the

city of Bath, Bladud is said either to have given healing power to the waters by means of spells and mechanical arts or to have been banished as a leper and to have discovered their curative qualities when wandering as a swineherd in 863 B.C.E. The former version is more commonly found. *The Mirrour for Magistrates* (an anthology of historical narratives) represents him as a kind of British Daedalus, master-inventor. He is said to have died when hoping once too often to outwit nature. Having attached feathers to his body and wings to his arms, he tried to fly from the top of the temple of Apollo but fell onto the building and broke his neck. The limp verse in the *Mirrour* implicity Christianizes the story by saying that he flew from the top of the "temple" but fell onto the "church." This is one of many medieval and Renaissance moral tales of men who died or were maimed as a result of their arrogant attempts to fly with wings. Because of Bladud's association with Apollo, he was sometimes identified with the flying prophet Abaris.

The Mirrour for Magistrates was reprinted in many variant forms after its first (suppressed) printing in the mid-1550s. The first extant edition is dated 1559. Despite its very uneven literary quality it was enormously popular.


IOH. KEPPLERI
MATHEMATICI
OLIM IMPERATORII
SOMNIVM,
Seu
OPVS POSTHVMVM
DE ASTRONOMIA
LVNARI.
Divulgatum
á
M. LUDOVICO KEPPLERO FILIO,
Medicinæ Candidato.
Impressum partim Sagani Silesiorum, absolutum Francofurti, sumptibus hæredum authoris.
ANNO M DC XXXIV.

Kepler, Johannes, 1571-1630

Ioh. Keppleri mathematici olim imperatorii Somnivm, seu opvs posthvmvm de astronomia lvnari. Divulgatum á M. Ludovico Kepplero filio, medicinæ candidato. Impressum partim Sagani Silesiorum, absolutum Francofurti, sumptibus hæredum authoris, 1634.

2 p. l., 182, [2] p. diagrs. 19 x 15.5 cm.
1. Astronomy—Early works to 1800. I. Kepler, Ludwig, 1607-1663. II. Title: Somnivm. III. Title: De astronomia lvnari.
QB41.K38 1634

Kepler's *Somnium* is a dream-story (sometimes a nightmare-story) of a trip to the moon. Although containing supernatural elements, it is in many respects a fictionalized autobiography in which Kepler's mother figures as a white witch who knows how to transport the dreamer to the moon. Not printed until four years after the death of the author, the *Somnium* had already been circulating widely in manuscript and had caused the family much trouble: Kepler's mother was almost burned at the stake. The story is important in the history of science fiction. Although a journey to the moon had long been a standard narrative episode, Kepler's differed from most in combining an imaginative tale involving magical potions and strange events with a description of the moon and its inhabitants based on scientific observation and measurement. The *Somnium* comments on the lessening of the force of gravity as

one moves away from the surface of earth and on the difficulty of breathing in rarefied air. Kepler speculates that there is life on the moon, but he does not assume that the inhabitants have humanoid characteristics. Instead, they are akin to dinosaurs and lack any aspects of civilization.

[Wilkins, John, bp. of Chester] 1614-1672

...A discourse concerning a new world & another planet. In 2 bookes. London, Printed for Iohn Maynard, 1640.

2 v. in 1. illus., diagrs. 17.5 cm.
Engraved t.-p. Each volume has also special t.-p.
Pages 221-222 wanting in v. 2.

CONTENTS. — [v.1] The first book. The discovery of a new world. Or, A discourse tending to prove, that 'tis probable there may be another habitable world in the moone. With a discourse concerning the possibility of a passage thither. The third impression. Corrected and enlarged. — [v.2] A discovrse concerning a new planet. Tending to prove, that 'tis probable our earth is one of the planets. The second booke, now first published. . .
1. Astronomy—Early works to 1800. I. Title.
QB41.W68 1640
STC 25640.5; [Gamble 5075].
Other copies and editions in the Gimbel collection: QB41.W68 1638: *The discovery of a world in the moone*, [1st ed.] London, 1638; QB41.W68 1684: 4th ed. "corrected and amended," London, 1684; QB41.W68 1684a: 5th ed., London, 1684; QB41.W68: *Le monde dans la lvne*, trans. le Sr de la Montagne, Rouen, 1655, with engraved t.-p.; QB41.W68 1656: another ed. of the previous item, Rouen, 1656.

A man of wide general learning, Wilkins was made Master of Wadham College, Oxford, in 1648,

presiding over the university's Philosophical Society. Later he was to be an important member of the Royal Society. A writer of elegant prose, he was keen to remain in touch with the latest discoveries in science and was well equipped to write works of "high popularization" such as his *Discovery*. Appearing at a time when fictional accounts of the moon were growing common, this book turns to (probable) realities. Soon after its first publication in 1638, Wilkins revised the book, adding a substantial final chapter on the proposition that "tis possible for some of our posteritie, to find a conveyance to this other world." Having read Kepler's *Somnium* and other contemporary moon-journeys, Wilkins attempts to answer the scientific questions raised by them. Confident that human flight was possible, even though "it may seeme a terrible and impossible thing ever to passe through the vaste spaces of the aire," he commented that future ages would take flight for granted. He discussed problems related to gravity, to the density of the air, to the cold of the upper atmosphere, and to the probable distance of the moon from the earth. He calculated that distance as 179,712 miles, which is of the right order of magnitude. The figure was repeated as established fact by many later writers. A practical scientist, Wilkins also gave serious thought to the physical

circumstances of life during the journey: as there are no airborne inns, how will the travelers eat, how will they overcome the intolerable boredom of the trip, when will they sleep?

ATHANASII
KIRCHERI
FVLDENSIS BVCHONII, E SOCIESV.
MAGNES
siue De
ARTE MAGNETICA
OPVS TRIPARTITVM
Quo
PRÆTERQVAM QVOD VNIVERSA MAGNETIS
Naturæ, eiusque in omnibus Actibus & Scientijs vsus noua,
methodo explicetur, è viribus quoque & prodigiosis effectibus Magneticorum, aliarumque abditarum Naturæ
motorum in Elementis, Lapidibus, Plantis
& Animalibus eluceſcentium, multa hactenus incognita Naturæ arcana per
Phyſica, Medica, Chymica, &
Mathematica omnis generis experimenta
recluduntur.
Sumptibus Hermanni Scheus sub signo Reginæ.
ROMAE, Ex Typographia Ludouici Grignani. MDCXLI.
SVPERIORVM PERMISSV.

Kircher, Athanasius, 1602-1680

...*Magnes, siue De arte magnetica opvs tripartitvm*. . .sumptibus Hermanni Scheus. . ., Romae, Ex typographia Ludouici Grignani, 1641.

15 p. l.,916, [16] p. illus. 25 cm.
1. Magnetism—Early works to 1800. I. Title.
Q155.K58
Other copies and editions in the Gimbel collection:
Q155.K58 1654: 3rd ed. "ab ipso authore recognita," Romæ, 1654.

A voluminous writer who combined true scientific curiosity with credulity and a vivid imagination, the Jesuit priest Kircher caught the imagination of many readers with his book on magnetism (reprinted in 1643 and 1654). Writing first of the natural, observable qualities of the magnet, he then proceeds to more recondite matters, including magnetic hydromancy and oneiromancy. In an engraving opposite p.358 he illustrates his explanation of the wooden dove of Archytas. According to Aulus Gellius (second century C.E.), Archytas of Tarentum, a friend of Plato (fourth century B.C.E.), built and flew a wooden dove, "so nicely balanced was it, you see, with weights and moved by a current of air enclosed and hidden within it" (*Noctium atticarum libri xx*, X.12.8-10; see Appendix). Writers of the Renaissance frequently discussed the true means by which this bird might have flown. Kircher says that it must have been propelled by hidden magnets and a wire so fine as to escape detection. The Latin caption beneath the

engraving says, "Neither a wheel, nor a wind but a magnet enables the device to move." Scientists were often fascinated by the practical uses to which they thought the somewhat mysterious power of the magnet might be put.

The wooden dove of Archytas continued for centuries to encourage inventors to build flying models. Among the most interesting is a design by Erasmus Darwin, grandfather of Charles, for a model goose (1777).

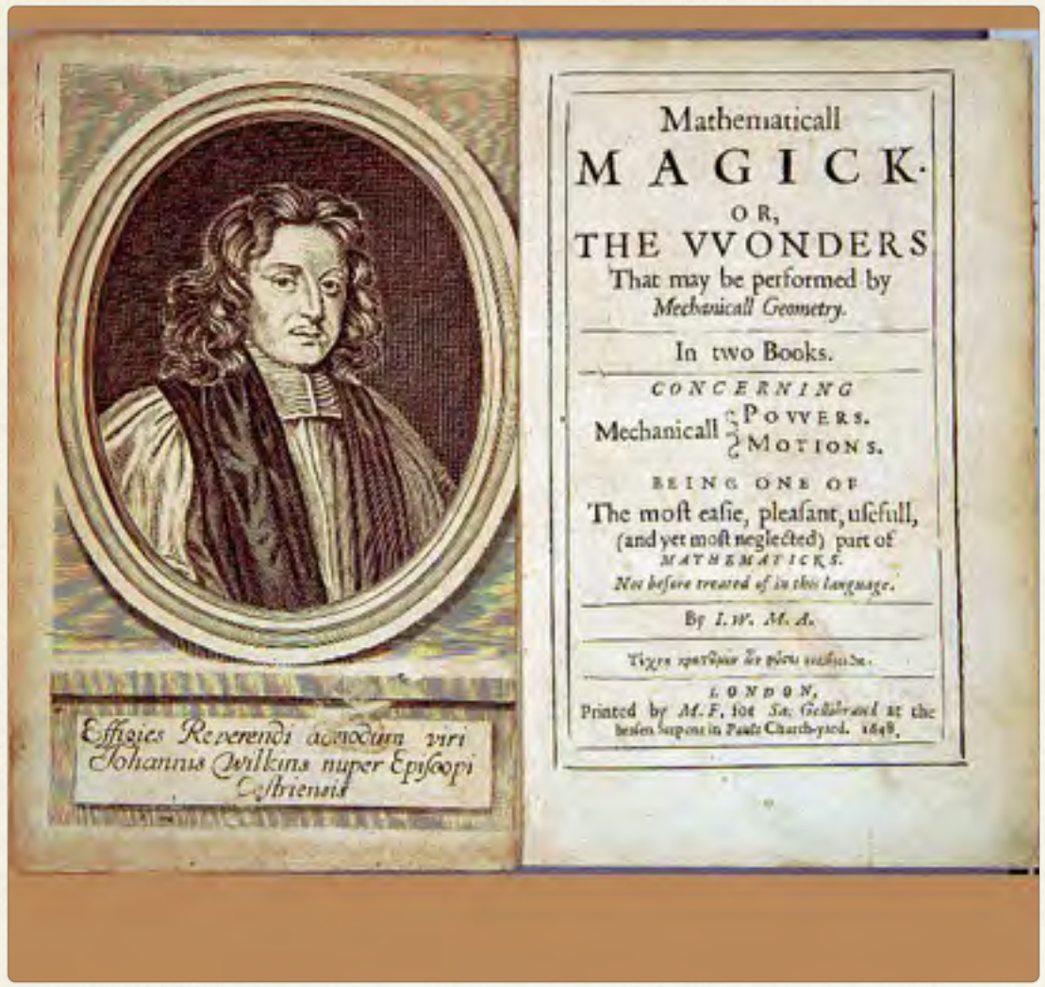

IANI NICII
ERITHRÆI
PINACOTHECA
IMAGINVM, ILLVSTRIVM,
doctrinæ vel ingenii laude,
VIRORVM,
qui, auctore superstite,
diem suum obierunt.
COLON. AGRIPPINÆ,
Apud Iodocum Kalcovium et Socios.
CIↃ IↃC XLV.

Rossi, Gian Vittorio, 1577-1647

Iani Nicii Erithræi Pinacotheca imaginvm, illvstrivm, doctrinæ vel ingenii laude, virorvm, qui, auctore superstite, diem suum obierunt. Colon. Agrippinæ Apud Iodocum Kalcovium et Socios, 1645.

2 v. in. 1. port. 15.5 cm.
1. Biography—17th century. I. Title: Pinacotheca imaginum, illustrium.
CT93.R82

One of Rossi's "illustrious men" is the painter, sculptor, and architect Paolo Guidotti, who was born in Lucca in 1569. Guidotti was a man of many talents: in addition to being a skilled visual artist he was a musician, poet, and doctor of laws. Toward the end of the sixteenth century he decided to try to add human flight to his other achievements. He accordingly made wings from whalebone held in shape with springs and covered with feathers. These he fixed under rather than on top of his arms, thus ensuring further rigidity. With this equipment he threw himself from a height and seems to have managed a short glide, which one sober-minded witness described as more like a controlled fall than a flight. The attempt ended when he crashed through a roof and landed on the floor of the room below, breaking his thigh. The date of this attempt is unknown. One account says that it was as late as 1628, but Guidotti was then 59 years old and unlikely to have engaged in such vigorous activity at that age.



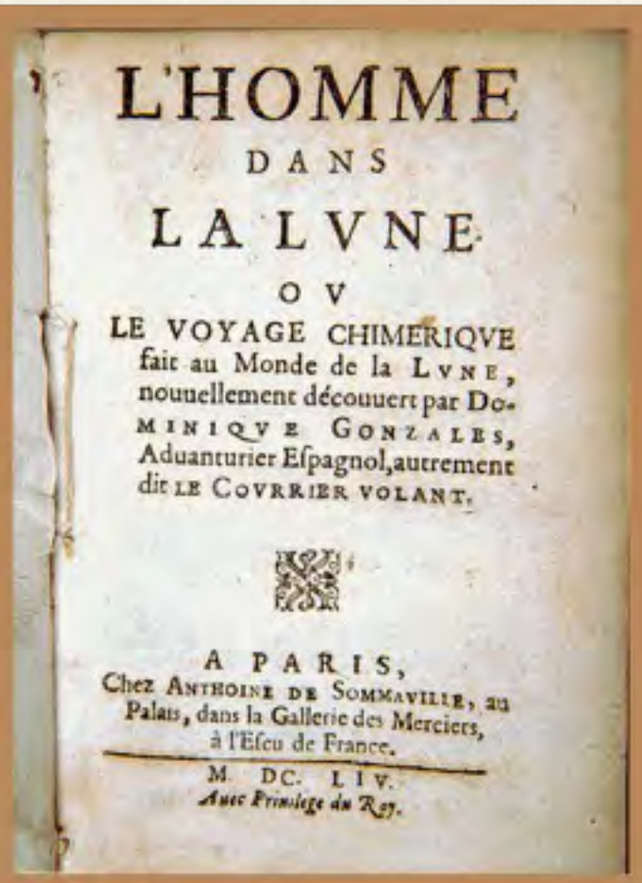
Wilkins, John, bp. of Chester, 1614-1672

Mathematicall magick. Or, The wonders that may be performed by mechanicall geometry. In two books. Concerning mechanicall powers [and] motions. Being one of the most easie, pleasant, usefull, (and yet most neglected) part of mathematicks. Not before treated of in this language. By I.W., M.A. London, Printed by M.F. for S. Gellibrand, 1648.

7 p. 1., 295 p. illus., diagrs. 16.5 cm.
1. Mechanics.
QC123.W68 1648
[Brockett 12900]; [Gamble 5076]; Wing W2198
Other copies and editions in the Gimbel collection: QC123.W68 1680; QC123.W68 1691: 4th ed., London, 1691.

Throughout his life Wilkins puzzled over ways in which manned flight might be achieved. Reconsidering, in this new book, the ideas that he had set out at the end of the revised edition of *The Discovery of a World in the Moone*, he arranged possibilities into categories, deciding that there were "four severall ways whereby this flying in the air, hath beene or may be attempted. Two of them by the strength of other things, and two of them by our owne strength." These he lists as "By spirits or Angels. . . By the help of fowls . . . By wings fastned immediately to the body. . . By a flying chariot" (*Mathematicall Magick*, pp. 199-200). He considers each of these in turn. The first is of no

help to those who wish to achieve things by rational means; the second he thinks not impossible, given sufficient skill in training birds; the third he believes to have been tried already with some success by several men; though difficult, the fourth seems to him to be the most likely to succeed and also potentially the most useful. He then proceeds to devote a chapter to a discussion of the difficulties. Like many others in his day, Wilkins believed that gravity fades away a few miles above the earth's surface and that the flier would need to expend only enough energy to reach that height. Equally interested in the matter, the secretary of the Royal Society, Robert Hooke, consulted him on a number of occasions with designs for a primitive helicopter and techniques for attaching wings to the body.



L'HOMME
DANS
LA LVNE
OV
LE VOYAGE CHIMERIQVE
fait au Monde de la Lvne,
nouuellement découuert par Dominiqve Gonzales,
Aduanturier Eſpagnol, autrement
dit le Covrrier volant.

A PARIS,
Chez Anthoine de Sommaville, au
Palais, dans la Gallerie des Merciers,
à l'Eſcu de France.

M. DC. LIV.
Auec Priuilege du Roy.

[Godwin, Francis, bp. of Hereford]
1562-1633

L'homme dans la lvne, ov Le voyage chimeriqve fait ou monde de la lvne, nouuellement découuert par Dominiqve Gonzales [pseud.], *Aduanturier Espagnol, autrement dit le Covrrier volant.* A Paris, Chez Anthoine de Sommaville, 1654.

8 p. l., 176 p. illus. 16.5 cm.
1. Voyages, Imaginary. I. Title.
TLE1041.G59

Other copies and editions in the gimbel collection: TLE1041.G59s 1708: . . . *an account of the admirable voyage of Domingo Gonsales. . . to the world in the moon. . .*, in [Nathaniel Crouch], *The English acquisitions in Guinea & East-India*. . . London, 1708; TLE1041.G59s 1768: *The strange voyage and adventures of Domingo Gonsales to the world in the moon*,. . ., 9th ed., London, 1768.

Godwin's *The Man in the Moone* was first published, anonymously, in 1638. The date of composition is uncertain but may have been *ca.* 1628. Immensely popular, it was frequently reprinted and translated into four languages. This abridged French translation by Jean Baudoin first appeared in 1648 and was reissued several times. Despite its popularity (or perhaps because of it: popular books are quickly worn out), the first English edition is extremely rare. After a series of adventures, the hero, Domingo Gonsales, is put ashore on a distant island where he finds wild swans, a flock of which he tames. It occurs

to him to use these to lift him from the earth. After a number of experiments, he eventually succeeds in being raised by twenty-five of them. After further adventures he uses his "gansas," as he calls them, to escape from danger but finds to his surprise that they take him in an unexpected direction: the birds hibernate on the moon. Before they arrive, he finds that he and the birds escape from the effects of the earth's gravity. Like a modern space rocket, the birds no longer need to use power but sail on through the air at great speed, moving their wings only rarely. Not only is physical gravity left behind, but Gonsales feels that he has escaped from all the spiritual heaviness of mortality. Once arrived at the moon, he describes it in great detail. The book had an enduring influence on subsequent writers of science fiction.

Lana de Terzi, Francesco, 1631-1687

Prodromo; ouero, Saggio di alcune inuentioni nuoue premesso all'Arte maestra, opera che prepara il P. Francesco Lana Bresciano della Compagnia di Giesv. Per mostrare li piu reconditi principij della naturale filosofia, riconosciuti con accurata teorica nelle piu

filosofia, riconosciuti con accurata teorica nelle piu segnalate inuentioni, ed isperienze sin'hora ritrouate da gli scrittori di questa materia & altre nuoue dell'autore medesimo. Dedicato alla Sacra Maesta Cesarea del imperatore Leopoldo I. In Brescia, Per li Rizzardi, 1670.

4p. 1., 252 p. 20 pl. (incl. music) 33 cm.
CONTENTS (in part). —Proemio, in cui l'autore dichiara qual sia per essere l'opera che'promette (Magisterium naturae, et artis. Brescia, 1684) p. 1-17. —cap.1. Nuoue inuentioni di scrivere in cifera. —cap. 2. In qual modo un cieco nato possa imparare a scriuere [e] nascondere sotto cifera i suoi segreti. —cap.3. In qual modo si possa parlare senza mandar ne lettere, ne messagiere. —cap.4. Come si possa insegnare a parlare ad uno che per esser nato sordo sia muto—cap.6. Fabricare una naue, che camini sostentata sopra l'aria a remi, & à veli, p.52-61 and pl. [2] fig. III, IV, V. At end of volume a French manuscript translation of this chapter (20 p.) preceded by a manuscript table of contents to the Prodromo in French. —cap.16. L'Arte maestra d'agricoltura. —cap.20. L'Arte maestra di chimica. —cap.21. L'Arte maestra di medicina. —cap.22. L'Arte maestra di aritmetica. L'Arte maestra sopra l'arte della pittura (4 chap.) L'Arte maestra: regole per

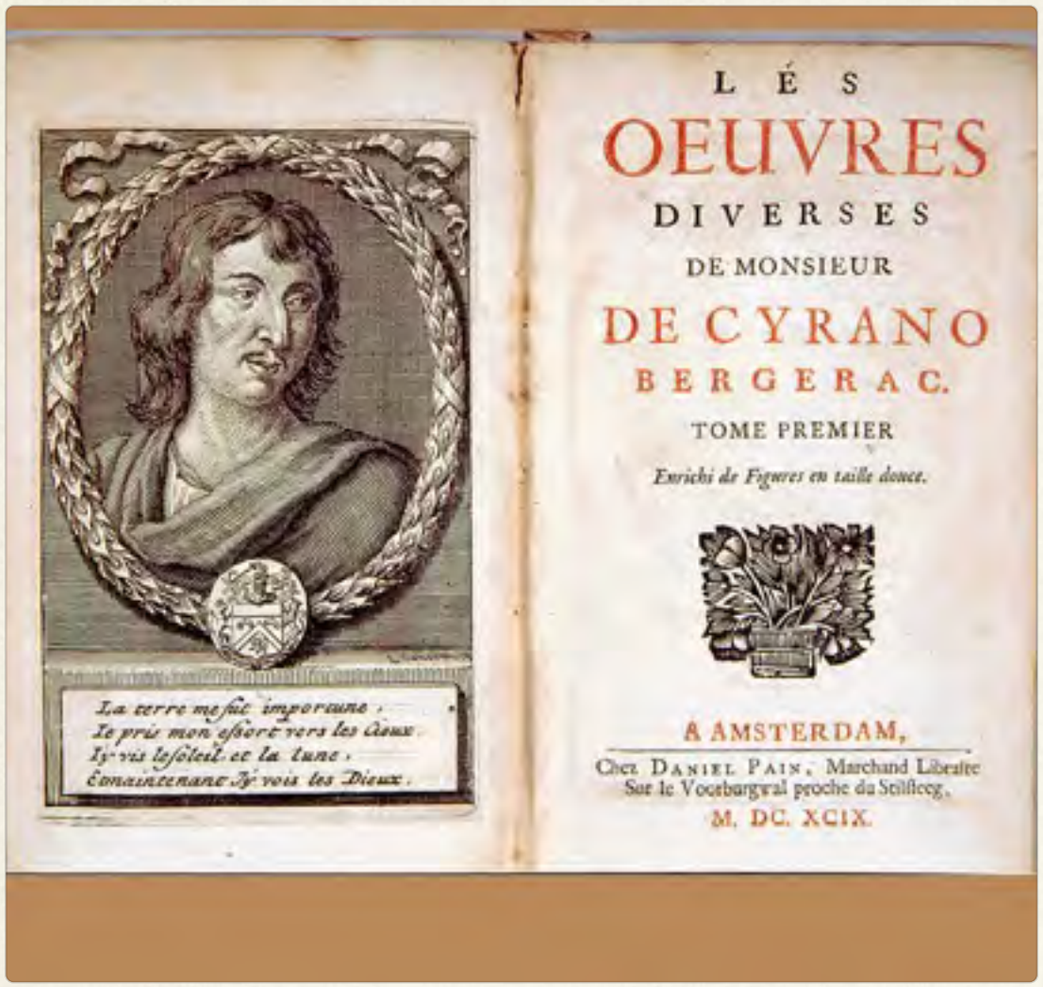
fabricare molte sorti di cannocchiali, e microscopij (8 chap.)

Ex libris: Gaston Tissandier. Vellum binding. Spine title. Plate sheets divided, tipped in, recto, at end. 1. Mechanical engineering—Early works to 1800. 2. Science—Early works to 1800. 3. Aeronautics. 4. Flying-machines. 5. Deaf and dumb—Means of communication. 6. Blind—Printing and writing systems. 7. Telescope. 8. Microscope and microscopy. I. Lana de Terzi, Francesco, 1631-1687. Magisterium naturae, et artis. II. Title.
TJ144.L24
Brockett 7107; Gamble 1134
Other copies in the Gimbel collection: five complete copies.
1: Vellum binding. Spine title. Each double sheet of plates bound between gatherings. 2: Vellum binding. Spine title. Plates sewn and bound at end. Bookseller's advertisement. 3: Vellum binding. Spine title. Bookplate of Mr. Howard A. Scholle. Library card of Williams College. 4: Vellum binding. Spine title, with cataloguer's label. Plate sheets divided, tipped in, recto, at end. Bookseller's typed note. 5: Modern binding. Plates loose, sewn as gathering. Bookplate of Theodore von Karman Memorial Collection. Bookseller's typed note.

The *Prodromo* of the Jesuit priest Francesco Lana de Terzi is among the most frequently cited early books of aviation. Although his proposal for an airship began as little more than a scientific *jeu d'esprit*, it rapidly became very famous and was often taken seriously. It was frequently copied, embellished, and plagiarized. Lana surmised that large globes emptied of air would rise. He proposed that, on the basis of his calculations, the four globes, of thin copper or bronze (about 0.1 mm in thickness), should be twenty feet in diameter. He was aware of the experiments with the "Magdeburg spheres" (1654) that had so dramatically demonstrated the strength of air pressure (see Appendix, Guericke, *Experimenta nova*, 1672) and hoped—in vain, of course—that a purely spherical form would prevent the globes from collapsing. In a later treatise he suggested that the globes could be made of very light wood, such as is used for musical instruments. (Lana deTerzi, *Magisterivm natvrae, et artis II*, Brixiæ, 1686, pp. 293-294. See Appendix.) Such a structure should be strengthened with thin wooden laths bonded to it, and the whole might need to be varnished to keep it airtight. His calculations showed that globes so made need be only ten feet in diameter. In the last paragraph of his description in the *Prodromo*, Lana

commented that the greatest difficulty confronting anyone who might try to build such a machine would be insurmountable: God would not permit men to have at their disposal something so readily capable of destroying the fabric of society by immoral and violent means. He concluded by describing explicitly what he meant. His aerial ship could be used as a new weapon of war. It could carry soldiers to attack cities, private dwellings, and vessels at sea; iron weights, bombs, and fireballs could be dropped on ships and their crews; houses, fortresses, and cities could be destroyed with impunity since the aerial ship could operate from beyond the reach of defensive fire. This reads in part as a serious warning and in part as conventional self-protective rhetoric—withdrawal from personal involvement in a dangerous proposal.

Lana's proposal is akin to a much older idea. That a ship filled only with the "ether" that used to be thought to lie above the atmosphere could float on the surface of air, just as an air-filled ship floats on water, was the basis of a thought experiment by Nicole Oresme as early as 1377. Repeated several times by later writers, the idea was mentioned in 1640 by Bishop Wilkins.



Cyrano de Bergerac, Savinien, 1619-1655

Les oeuvres diverses de Monsieur de Cyrano Bergerac.
A Amsterdam, Chez Daniel Pain. 1699.

2 v. 16 cm.
With front. (port.) in each volume; and other illus.
PG1793.A1 1699
[Brockett 3234]; [Gamble 48]

Other copies and editions in the Gimbel collection: PQ1793.A1 1709: *Les oeuvres de Monsieur de Cyrano Bergerac*, illus., Amsterdam, 1709; PQ1793.A1 1710; PQ1793.A2A 1899: *A voyage to the moon*, an edition by C.H. Page of Lovell's translation, New York, 1899; PQ1793.A2A 1899: another copy of the previous item; PQ1793.A2K: *L'autre monde. . .* preface by Steffi Kiesler, Paris, [194-]; PQ1793.A2Sc: *Mondstaaten und Sonnenreich*, trans. Martha Schimper, Leipzig, 1913; PQ1793.A2Al: *Voyages to the Moon and the Sun*, trans. Richard Aldington, London [n.d.]

Following its first publication in 1650, new editions of *Histoire comique des estats et empires de la lune* (included in vol. 1 of this collection) continued to appear throughout the century. This high-spirited work of the imagination is a series of outrageous scientific spoofs. Cyrano's fictionalized alter ego made several attempts to fly to the moon. For the first he attached phials of dew to his body so that when the dew began to rise because of the sun's warmth he would be carried with it. By this means he flew high but

mismanaged the balance of gravity and upward force and failed to reach the moon. A second attempt with an ornithopter also failed. He had better success, though inadvertently, when soldiers attached rockets to the wreck of his machine, which carried him up with it. The machine fell away beneath him and as he approached the moon he turned over, the lesser gravity of the moon having replaced that of the earth. He crash-landed on his feet. Another flight followed, this time a return journey made by the magical power of his attendant spirit. His next and most imaginative journey was undertaken with an ingenious and still more incredible machine. Cyrano traveled past all the planets using a large, frail box with holes drilled in the top and bottom. Over the upper hole he placed a crystal vessel in the shape of an icosahedron, also with holes drilled in it, the one at its bottom coinciding with the upper hole in the box. The sun's rays filled the space in the crystal vessel, heating the air, which was driven out through its top hole. A "great abundance of Air" then rushed up through the hole in the bottom of the box and the energy of the air's movement carried the whole thing aloft. Once again Cyrano eventually lost his machine, which fell unharmed to Poland while he continued to the surface of the sun. Although, naturally enough, no one believed a word of this, Cyrano's sparkling imagination encouraged inventors to develop yet further ideas for motive force.

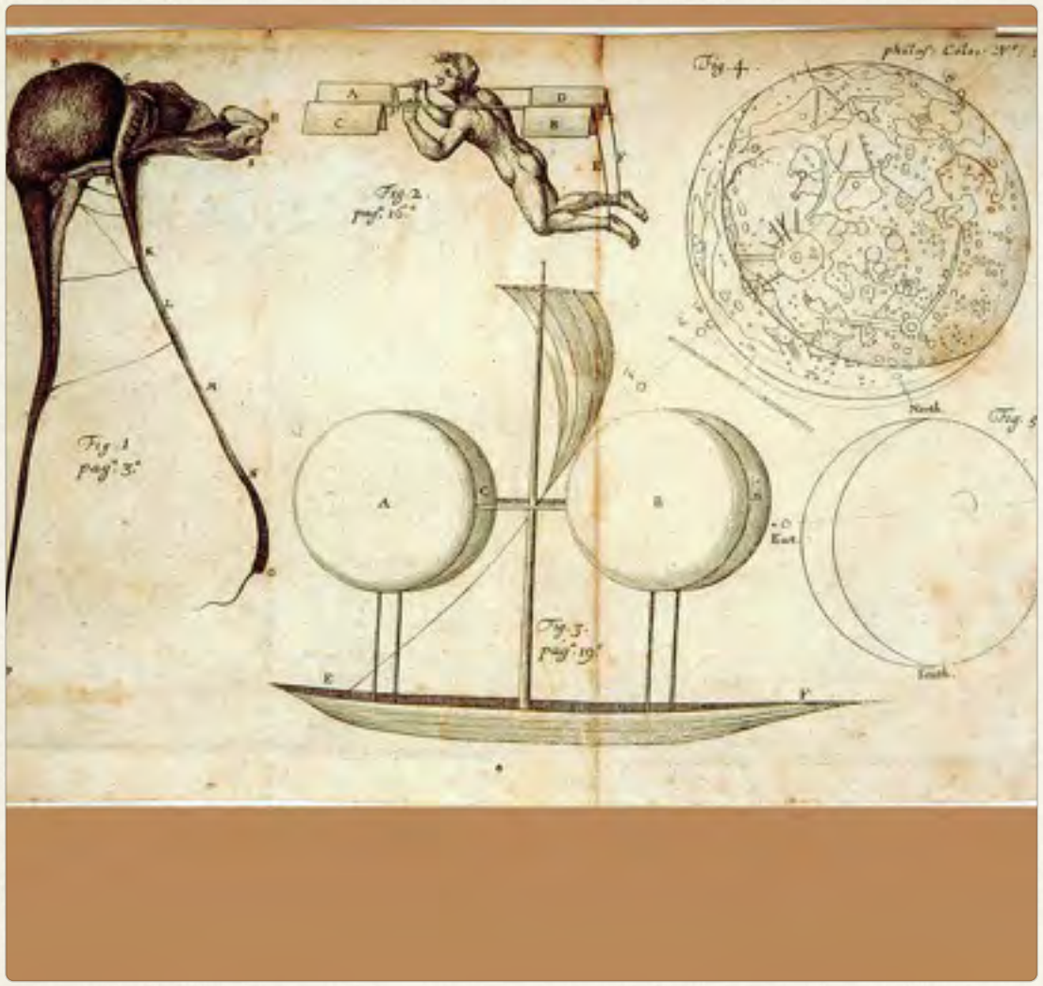
Happel, Eberhard Werner, 1647-1690

...Grösseste Denkwürdigkeiten der Welt, oder so genandte Relationes curiosæ... Hamburg, Thomas von VViering, 1689.

600 p. illus. 20 cm.
At head of title: E.G. Happelii. Vierter Theil.
[Issued in 5 v., 1683-1690. *Cf.*BL 446.b.3-6.]
Partial contents: Das in der Luft seeglende Schiff, p. 308. Plate (Lana).
1. Geography. 2. History, Universal. 3. Natural history. I. Title.
G114.H25

This book of natural "wonders"—an early encyclopedia—is one of many to copy Lana's design, with imaginative improvements. One of the crew steers the airborne ship by means of a rudder, which evidently needs little effort to manipulate. As in Lana's original, and in innumerable designs for steerable balloons and airships well on into the nineteenth century, the sail is falsely shown filled out by the wind and carrying the ship along. An awareness of the truth about relative speeds in the air was slow to develop. The earthbound onlookers, including the dogs, are astonished. The detail of the upward leaping dog is borrowed from representations of the shepherd-boy Ganymede, carried aloft by Jupiter, of which one of the best known is by Correggio (*ca.* 1530) in the Kunsthistorische Museum, Vienna. The skills of the modern scientist and

engineer are shown to have surpassed the forces of pagan divinity.



Hooke, Robert, 1635-1703

Philosophical collections, containing an account of such physical, anatomical, chymical, mechanical, astronomical. . . experiments and observations as have

lately come to the publishers hands...
[London, Printed for John Martyn,1679-1682].

210 p. illus. 23 cm.
Issued in 7 numbers; continuous paging; imprint varies.
1. Science—Early works to 1800. I. Title.
Q155.H78

Hooke, the irascible secretary of the Royal Society, showed a lifelong interest in flight. In the first issue of *Philosophical Collections* he reports on the abortive trials of a Mr. Gascoyn, carried out sometime around 1640 but about which nothing is known. Hoping to succeed where Gascoyn had failed, Hooke sketched many ideas for equipment to supplement human muscle power and once designed a helicopter, the details of which have not survived. He is also credited with having invented a model bird powered by "springs and wings," which "rais'd and sustain'd it self in the Air." Although like many other inventors in the period he looked first to birds for his ideas, he was unusual in also considering the wings of bats and even those of flying fish. Along with a sketch of Lana's airship, the illustration includes a design for a flying machine that had been published in Amsterdam only a few months before and was the

nominal subject of Hooke's note. It shows Besnier, a locksmith of Sablé, flying with hinged wings made of taffeta stretched over frames and flapped by both arm and leg power. Besnier did not claim to have been able to rise from the earth, but he did allege that, starting from a height, he could sustain himself in a glide for long enough to be able to cross a river. The illustration, representing Besnier in classically nude style, is highly schematic. If he were indeed able to remain airborne at all, his equipment must have been very different from that shown. The wings must have been much larger and would not, of course, have flapped alternately as is sometimes shown in other illustrations (see, for example, Cambridge, *The Scribleriad*, 1751).

Nachricht
Von dem
Fliegenden
Schiffe /
So aus
Portugal /
Den 24. Junii in Wien mit seinem
Erfinder /
Glücklich ankommen.

Von neuen nach dem allbereit gedruckten Exemplar in die Naumburger Meß gesandt.
Anno 1709.

Nachricht von dem fliegenden Schiffe / so aus Portugal / den 24. Junii in Wien mit seinem Erfinder / glüklich ankommen... [n.p.,] 1709

[4] p. 27 cm.
English tr. (ts.) laid in.
1. Gusmão, Bartholomeu Lourenço de, 1685-1724.
TLB154.N2 1709

In 1709, the Brazilian Bartholomeu Gusmão managed to persuade the king of Portugal to grant him a patent for a flying machine that would be capable of covering distances of more than 200 miles a day. He called the machine a *Passarola* (great bird). Drawings of the *Passarola*, with a bird-shaped fuselage, feathered wings, and a sail-like canopy over the top, circulated rapidly and were frequently reproduced. There is some evidence that Gusmão had successfully built small hot-air balloons, and it is possible that he also demonstrated some form of glider. Many people were persuaded that he had achieved complete success with a man-carrying machine. This account, based on an imaginary news report from Vienna, tells of Gusmão's demonstration of manned flight before an awe-struck audience of the inhabitants. Gusmão is said to have started from Lisbon at 6 a.m. the day before and to have passed by the moon on the way. Before he reached the city, some of the citizens, not knowing what was going on, thought that perhaps the Day of Judgment was beginning. The *Passarola* arrived, preceded and

surrounded by a great flock of birds, like a celestial chariot encircled by angels. The landing, however, was less than divine: a sudden gust caused the canopy to be snagged on the spire of Saint Stephen's Cathedral, in the center of the city, where Gusmão hung for a couple of hours. As no one was willing to help, he had to free himself before landing a short distance away near the Hofburg. He related how, during the journey, he had frequently to fight off the attentions of strange celestial birds.

Martello, Pierjacopo, 1665-1727

Versi, e prose, di Pierjacopo Martello. In Roma, Per Francesco Gonzaga, 1710.

16 p. l., 324 p. front., pl. 20.5 cm.
Title vignette. Initials.

CONTENTS—*Degli occhi di Gesù, libri sei, ad Amarilli—Del volo. —Della poetica, sermoni.*

At the end of book IV of *Degli occhi di Gesù (*first published Bologna, 1707*)* Martello describes an airship and its imaginary voyage. When this edition of the poem was published, he added the four prose dialogues entitled "Del volo"; in later editions the fourth dialogue ("Mattina ultima") was suppressed. *Cf.* Boffito, G., *Biblioteca aeronautica italiana*, 1929, p. 276; Venturini, G., *Da Icaro a Montgolfier*, 1928, I. 272-298.

1. Jesus Christ—Poetry. 2. Airships. 3. Aeronautics.
TLB154.M37 1710
[Brockett 8072]
Other copies and editions in the Gimbel collection: TLB154.M37 1729: 2nd ed., expanded, Bologna, 1729.

Poets as well as satirists frequently focused on the growing interest in manned flight. Martello's long poem *Degli occhi di Gesù* describes a journey to the earthly paradise, guided by the great aeronautical charioteer of the Bible, Elijah (2 Kings 2:11). The

prophet's flying machine is, however, supplanted by a new one based on a simplified version of Gusmão's *Passarola*. Martello's ship, vastly bigger than Gusmão's, has landing gear: a set of grapples to hold the earth. He is also more explicit than Gusmão about the method of propulsion—so explicit, indeed, as to show that he treats the whole thing as an amusing fiction. The wings are attached to oars manipulated by a hundred galley slaves, all of whom are apes. Evidently aware of the real needs of eighteenth-century galleys, Martello describes two shifts of rowers who relieve each other by turns. He evidently has no faith in the common idea that flight in the regions above the lower atmosphere was effortless.

In the third part of the tract *Del volo*, attached to *Degli occhi di Gesù*, Martello discusses flight in general and comments on the flying machine that he described in the poem and which he assures the reader was only a poetic invention. He discusses problems of stability, pointing out that any lack of coordination among so many rowers would have worse consequences than in a ship on water and would lead to the machine's crashing to the earth. He therefore suggests a mechanism for keeping the oars synchronized. Martello gives a full description of the *Passarola*, this time much closer to Gusmão's, shown coming to grief in the second illustration along with a version of Lana's flying ship.

GOMGAM
OU
L'HOMME PRODIGIEUX,
TRANSPORTÉ
DANS L'AIR, SUR LA TERRE,
ET SOUS LES EAUX.
Livre veritablement nouveau.
TITETUTEFNOSY.
SECONDE EDITION.
Augmentée du dénouëment de l'histoire du Docteur Dirto, de ses sentences & jugemens, de ses bons mots, d'une maniere extraordinaire inventée pour punir un Satyrique, d'une Figure qui en represente l'execution, & de plusieurs autres.
TOME PREMIER.
A PARIS,
Chez PIERRE PRAULT, en la Boutique de la Veuve Saugrain, sur le Quay de Gesvres, du côté du Pont au Change, au Paradis.
M. DCC. XII.
Avec Approbation & Privilege du Roy.

[Bordelon, Laurent] 1653-1730

Gomgam, ou l'homme prodigieux, transporté dans l'air, sur la terre, et sous les eaux. Livre veritablement nouveau. Titetutefnosy. Seconde édition. A Paris, Chez Pierre Prault, 1712.

2 v. illus. 16.5 cm.
Tissandier, p. 7.
1. Voyages, Imaginary. I. Title.
PQ1957.B67A64 1712
[Brockett 2039]
Other copies and editions in the Gimbel collection:
PQ1957.B67A64 1713: new ed., Paris, 1713.

First published in 1711, this fantasy is a loose adaptation of the tale of Abaris, a legendary Scythian servant of Apollo who, in some Greek accounts, is said to have flown around the world on a golden arrow (see, for example, Origen, *Contra Celsum*, III.31). If there is any truth behind the story, it is probable that Abaris merely carried with him the golden arrow that is a symbol of Apollo's authority. The flying legend is explicitly mentioned toward the end of Bordelon's first volume, where it is said to be nothing but a fable; by contrast, the aerial power of Gomgam's golden arrow, which he acquires about halfway throughout the story, is alleged to be a reality. Despite a few passing comments about the nature of the physical universe, the frivolous tone of the book is in sharp contrast with aeronautical fiction of the previous century based on the imaginative development of scientific theories. One of Gomgam's

journeys does nevertheless take him to examine and theorize about a rainbow.