Faustâ vel Pictor, vel Vates dixerit. HIC EST:
Et vultum, et nomen terra scit Antipodum.

Jacobus Albanus Gallesius M. D.
in Rom. Sapientia Eloq. Prof.

The front cover reproduces a portrait of Kircher at age 62, from *Mundus subterraneus* (Item 17).

ATHANASIUS KIRCHER (1602–1680)

JESUIT SCHOLAR

AN EXHIBITION OF HIS WORKS
IN THE HAROLD B. LEE LIBRARY COLLECTIONS
AT BRIGHAM YOUNG UNIVERSITY

INTRODUCTION AND DESCRIPTIONS
BY
BRIAN L. MERRILL

FRIENDS OF THE BRIGHAM YOUNG UNIVERSITY LIBRARY
PROVO, UTAH
1989

Appreciation is expressed to Chad J. Flake, curator of Special Collections, for bibliographical assistance and for the liberal use of the Special Collections; to Robert J. Espinosa, library conservator, for assistance in the binding descriptions, for coordinating the printing of the plates and illustrations, and for mounting the exhibition; to photographer William W. Mahler; to Madison U. Sowell for his help in preparing the manuscript; and to Scott M. Patrick of the Humanities Publications Center for typesetting the catalogue.

Edited by
A. Dean Larsen
Associate University Librarian

FRIENDS OF THE BRIGHAM YOUNG UNIVERSITY LIBRARY NEWSLETTER

NUMBER 33, 1989

Introduction

"It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity." It is difficult not to speak of revolutions in the superlative, for revolutions are the result of polarization, where extremes predominate. A revolution, like a plow, turns one extreme upon another. In the scientific revolution, the soil to be turned was not a handful of aristocrats, nor even a nation, but rather all mankind. The way man thinks, what he thinks about, how he acts—these were all overturned, the old plowed under, the new plowed up. It was the seventeenth century. Modern man was forging a powerful new scientific method and making astonishing advances in every branch of science. He was also destroying a grand, albeit scientifically erroneous, view of the world and of himself. The changes were momentous: the crystal spheres were shattered; the earth was hurled from its ancient and exalted throne at the center of the universe into orbit round a burning ball of gas.

While scientists sought order in this brave new world, orthodox theologians clung to the order of the old. For them the chaotic world laid bare by scientific observation was poor exchange for the perfect beauty and harmony of the ancient world created by reason. The response of orthodoxy came in the form of the Society of Jesus, or the Jesuits. The Jesuit order was founded in 1540, just three years before Copernicus' *De revolutionibus orbium coelestium* (1543) heralded the birth of the revolution. The Jesuits quickly adopted the role of a "watchdog within science" to protect the old world from collisions with the new, to offer an "orthodox" science to the world. In the process, the Society created some of the finest minds in Europe. Foremost of these was Athanasius Kircher.

Μηδὲν κάλλιον ἢ πάντα εἰδέναι (Nothing is more fair than to know all things). This phrase of Plato's appears on the title page of Kircher's work on universal knowledge, the *Ars magna sciendi* (Item 22). It could have been Kircher's motto, for the world has rarely seen one so devoted to knowledge. But in the seventeenth century the

information explosion had already begun. Knowledge was on the brink of fragmentation when Athanasius Kircher, "the last Renaissance man" and "the last of the polymaths," was gathering the encyclopedic knowledge he yearned for. Moreover, Kircher's vast learning was doomed to immediate eclipse by the work of the specialists. When Kircher took up his position as professor of physics at the Roman College, Galileo Galilei, a prisoner at Arcetri, was writing his *Discorsi e dimostrazioni matematiche intorno a due nuove scienze* (Dialogues Concerning Two New Sciences, 1638). While Kircher was compiling his enormous *Mundus subterraneus* (Item 17), Robert Boyle was publishing his *Sceptical Chymist* (1661). The second edition of Kircher's work on optics appeared in 1671, one year before Isaac Newton presented his *New Theory of Light and Colour* to the Royal Society of London. Seven years after Kircher published his work on plagues, *Scrutinium pestis physico-medicum* (Item 15), Robert Hooke's *Micrographia* (1665) completely changed the science of microbiology. It was impossible for a Jesuit in Rome to keep pace with such revolutionary discoveries as were made by the members of the newly founded Royal Society.[1] As a result, Kircher has nearly been forgotten: unjustly forgotten, for he is at once a prime representative of and an important contributor to the revolution that has so obscured him.

Kircher was a representative of his times because he was a product of the three forces that shaped the scientific revolution and gave it its singular character. First, and foremost, was the Renaissance desire for knowledge—not just knowledge in general but universal and encyclopedic knowledge. This desire was moderated by a modern scientific method, which entailed observation, hypothesis, and experimentation. The philosophical basis for this method was empirical (we can know only what we can perceive) and, sometimes, materialistic (what we cannot perceive does not exist). The desire for knowledge and the scientific method were, in turn, tempered, and sometimes fired, by a third force: the orthodox counter-revolution. Its philosophical roots were medieval and included the supremacy of reason, the inferiority of matter, the fallibility of the senses, and the infallibility of divine authority. The Renaissance, the modern, and the medieval—these three converging forces fashioned the revolution. They also

fashioned Athanasius Kircher. He was, on one hand, a Renaissance man in the highest sense of the word. He was, on the other, an enlightened observer and experimenter in the mainstream of the scientific thought of his day. Yet he was also a member of the authoritative and dogmatic Society of Jesus. Kircher was indeed a man of his times, a microcosm of the spirit of the scientific revolution.

Kircher was also a fashioner of his times. The sheer volume of his work—some 44 books and over 2,000 extant letters and manuscripts—and the breadth and depth of his knowledge astounded even the most learned of his colleagues. References to his works are found in the writings of almost all the great scientists of his day. He was a friend and correspondent of Sir Robert Moray (1608?–75), founder and first president of the Royal Society of London; Juan Caramuel (1606–82), Cistercian abbot, co-adjutor bishop of Prague, learned scientist and theologian; Evangelista Torricelli (1608–47), Italian mathematician and physicist, inventor of the mercury barometer; Johannes Hevelius (1611–87), the astronomer; Gottfried Leibniz (1646–1716), the polymath, philosopher, and mathematician; Giovanni Cassini (1625–1712), planetary observer; Marcello Malpighi (1628–94), influential anatomist and discoverer of capillaries; Emmanuel Maignan (1601?–76), physicist; Gottfried Wendelin (1580–1667), astronomer, physicist, and meteorologist; Robert Boyle (1627–91), physicist, chemist, and one of the founders of the Royal Society; and many others. Among his students were William Gascoignes (1612–44), the brilliant lad from Yorkshire who became a Jesuit, studied at the Roman College, and went on to discover the micrometer eyepiece for the telescope; Nicolas Poussin (1594–1665), the French painter, who studied perspective under Kircher and later painted a portrait of his tutor; Marcus Marci (1595–1667), Bohemian physician, physicist, and mathematician, who came to Rome in 1639 to learn Arabic under Kircher; and Gaspar Schott (1608–66), whose main contribution to science was editing the works of his teacher and of other scientists. Today Kircher's contributions to the scientific revolution are often overlooked or ignored, but in his own day he was a giant to be reckoned with.

AMSTELODAMI
Apud IOHANNEM IANSZONIUM à WAESBERGE et Viduam ELIZEI WEYERSTRAET
ANNO MD. C. LXVII.

Engraved title page from *China Monumentis* (Item 20).

Athanasius Kircher was born on 2 May, the feast of St. Athanasius, 1602, to John Kircher and Anna Gansekin, who, at that time, lived in the town of Geisa, near Fulda, in what is now West Germany. Athanasius' father was a devout Catholic. Although a layman, John had earned, by his administrative and scholarly abilities, the esteemed position of bailiff of the abbey of Fulda. John had won a doctorate in philosophy at Mainz and had been an instructor to the Benedictine monks at Heiligenstadt. He therefore knew the importance of an education and devoted much of his energy to educating his nine children. Athanasius, the youngest child, was sent to the local Jesuit school, where he received a firm foundation in Greek, Latin, and mathematics. At the same time, his father arranged for him to study Hebrew under a local rabbi.

Athanasius' youth was not without adventure. One hot summer day he went with some friends to bathe in the river. Just downstream from their bathing place the water rushed down a cataract and over a mill wheel. Athanasius, venturing too near, was swept away by the current and pulled beneath the wheel. Terrified, he prayed to God for help and miraculously escaped without injury. On another occasion he had squirmed his way to the front of a crowd of bystanders at the annual horse race. As the horses approached, the crowd surged forward, throwing the young Athanasius into the horses' path. The crowd screamed at the riders to stop, but it was too late, and Kircher, who had curled up into a tiny ball, was lost in a flurry of dust and hooves. Everyone thought he was dead, but to their amazement, he stood up unharmed.

Kircher's father transferred him to the Jesuit school at Fulda in 1614. There he resolved to become a Jesuit. His application to the Jesuit college at Mainz was refused. Apparently he was not yet as devoted to his studies as a young man entering his novitiate was expected to be. During the particularly severe winter of 1617 he spent much of his time skating on the frozen rivers. One day, in a moment of youthful bravado, he suffered a hernia. Shortly after that, because of long exposure to the cold, severe chilblains appeared on his legs and began

to fester. The sores worsened, but fearing that he would be refused entrance to the order if his condition were known, he sought no medical aid and simply prayed for God's help. The next year he was admitted as a novice to the college at Paderborn. He arrived on 2 October 1618 after a torturous journey. Soon the condition of his legs was discovered; gangrene had already set in, and he was pronounced incurable. He did not bother to mention the hernia. He and his fellow novitiates joined in fervent prayer for his recovery. Late one night, after retiring to a nearby chapel that housed an ancient statue of the Virgin Mary renowned for its miraculous powers, Kircher fervently prayed to be cured. Confident that his prayer had been heard and that he would be healed, he retired to bed. According to his own account, when he awoke in the morning, his legs were completely healed, and his hernia was gone.

The two years of his novitiate passed without further incident, and in 1620 Kircher took his vows. He was unable to continue his studies at Paderborn for long, though; the Thirty Years War (1618–48) was about to burst upon Germany. In 1621 Duke Christian of Brunswick, administrator of the secularized bishopric of Halberstadt, moved his mercenaries into the diocese of Paderborn. Duke Christian was known for his hatred of Catholics and for his cruelty. On 23 January 1622 the Jesuits of the college were ordered to flee. A few were caught, beaten, and imprisoned by a mob that had surrounded the college. Kircher and two companions managed to escape and make their way through the bitter cold and drifted snow to the Jesuit college at Münster. After eight days of recuperation, they continued their journey toward Cologne.

A two-day walk from Münster brought them to the Rhine near Düsseldorf. The river was frozen over, so they asked the local peasants where the ice was safe to cross. They were shown a path that had really not been tested. When Kircher set out ahead of the others, the ice split between them, and the piece Kircher was on was swept down river, bearing him out of sight of his companions. A few miles downstream the floe struck an ice jam, and Kircher clambered over the fractured ice nearer to shore. But a stretch of water about twenty yards across lay between him and the bank. His only choice was to dive in and try to

Engraved title page from *Magnes sive de arte magnetica* (Item 4).

swim. Half frozen, severely battered, and weighted down by his drenched cassock, he managed to reach shallow water and stagger up the bank. Another three hours brought him to the Jesuit college at Neuss where he was greeted with overwhelming joy by his two companions, who were certain that he had perished. Three days later he had fully recuperated, and the novices completed their journey to Cologne.

At Cologne Kircher finished his degree in philosophy and, in 1623, was transferred to Coblenz to review his studies in the humanities and to teach Greek at the Jesuit college. His extraordinary abilities soon aroused envy among the other professors. In order to avoid trouble, his superiors transferred him to the college at Heiligenstadt in Saxony. The path to Heiligenstadt passed through war-torn Germany, and no Catholics, especially Jesuits, were safe inside the now fanatically Protestant country. Kircher was warned to travel in disguise. But being of a stubborn and single-minded character, he refused, saying that he would rather die in his cassock than make it through safely in lay clothes. He nearly got his wish. When he reached the territory around Fulda, which was at the time occupied by the Duke of Brunswick and his vicious mercenaries, he was waylaid by a band of horsemen, stripped, beaten, and dragged between two horses to a tree chosen for his gallows. One of the soldiers, however, impressed by Kircher's quiet demeanor and long-suffering, pleaded for the life of the young Jesuit. The horsemen capitulated and rode off, leaving Kircher's clothes and books behind. While Kircher was dressing, the soldier returned, apologized profusely, gave Kircher money, and urged him to leave the territory as quickly as possible. Kircher arrived in Heiligenstadt two days later.

Kircher was appointed *grammaticus*, or teacher of grammar, but soon he began to teach classes in mathematics, Hebrew, and Syriac. On one occasion he was assigned to prepare the reception and entertainment for legates sent by the elector-archbishop of Mainz. Kircher designed a display of large-scale optical illusions and fireworks. It astounded the legates and so frightened some of the simpler minds in the audience that some accused him of witchcraft, and he was obliged to explain the workings of the exhibits to everyone's satisfaction.

When the legates returned to Mainz with their account of this gifted young Jesuit, the archbishop was determined to have him in his court.

Kircher was subsequently called to the archbishop's residence in Aschaffenburg. There he was occupied mainly with making fireworks and other curiosities for the archbishop, preparing a survey of the archbishop's principality, and working on his own first book, the *Ars magnesia* (Item 1). Only a few months after Kircher arrived, the archbishop died. Kircher went to the college at Mainz, where he took up the study of theology. True to his nature, he did not confine himself to theology, and on 25 April 1625 he acquired a telescope through which he examined the then controversial sunspots. From that day forward one of Kircher's chief interests was astronomy.

In 1628 Kircher was ordained a Jesuit priest and entered his tertianship—the third period of probation before taking final vows, a period devoted to spiritual matters and preparation for the ministry—at Speier. One day he was asked to retrieve a book from the college library. As he browsed through the stacks in search of the book, he stumbled upon a volume containing illustrations of ancient Egyptian hieroglyphics taken from obelisks erected by Pope Sixtus V in Rome. Kircher was fascinated by the mysterious and, as yet, undeciphered symbols. He was determined to be the one to discover their meaning, a pursuit that would continue throughout his life.

A year later, his tertianship completed, Kircher was sent to Würzburg, where he took up a position teaching mathematics, Syriac, Hebrew, and moral philosophy. Doubtless Kircher felt it was not time to settle down; his curiosity and love of adventure would not allow it. In 1630 he petitioned the superior general of the Order to send him as a missionary to China, the mysterious and highly civilized empire that had, just a few decades before, opened its doors to well-educated Jesuit missionaries. His petition was denied. He continued to teach and research, and, in 1631, he published his *Ars magnesia* (Item 1).

The year 1631 did not pass without adventure. One stormy night Kircher was awakened by a noise. He noticed a faint light shining through his window, jumped out of bed, and rushed to see what it was. He was astounded to find armed men drilling in the courtyard. He ran to a neighbor's room but found him and everyone else sound

The emperor of China.
From *China monumentis* (Item 20).

A Chinese lady.
From *China monumentis* (Item 20).

asleep. Fearing that he was hallucinating, he ran to the window again. The soldiers were still there. He finally roused someone to witness the sight, but when he got back to the window the armed men were gone. Kircher considered the experience an omen. In fact, within the year, Gustav Adolph, the warrior-king of Sweden, invaded Franconia. Würzburg was without protection, and the storm came so quickly that Kircher and his fellow Jesuits had to leave all their possessions behind in their flight—for the Protestant Swedes showed no mercy to Jesuits.

Kircher fled to France with his friend and disciple Gaspar Schott, once and for all leaving Germany behind. He took up residence in Avignon, teaching the usual range of subjects at the Jesuit college. His teaching load must not have been too great, for he spent much of his time traveling around the region of Marseilles studying its antiquities and geography, trying to decipher the Egyptian hieroglyphics, and making astronomical observations; he even designed an ingenious planetarium. The results of his work in astronomy were published in his second book, the *Primitiae gnomonicae catoptricae* (Item 2).

Naturally, the period in Avignon could not be without adventure. One day Kircher's curiosity drew him too close to a new horse-drawn irrigation pump recently set up in the college gardens. He became trapped between the drive arm and a retaining wall and was about to be crushed when the horses miraculously stopped, allowing Kircher to scramble to safety.

Kircher's short stay in the relatively peaceful and cosmopolitan Avignon was a major turning point, for while there he was formally introduced into the scientific community. In the early seventeenth century the "scientific journal" was in its infancy. Scientists were still duplicating work already done by others and were consequently wasting valuable time and energy. Near the turn of the century, Francis Bacon (1561–1626), in his *New Atlantis* (printed posthumously in 1627), had sketched out the ideal scientific community, where the exchange of ideas and the division of labor eliminated duplication, thus accelerating the rate of scientific discovery. Bacon's ideal was soon realized. Its first manifestation came in the mid-seventeenth century in the form of a handful of letter-writers styled the "philosophical merchants." Their self-appointed task was to

Engraved title page from tome 2 from *Ars Magna Sciendi* (Item 22).

become acquainted, by correspondence at least, with as many scientists as possible throughout Europe, to gather information, and to redistribute it through their letters. The first of these writers was Henry Oldenburg (1618–77), the secretary of the Royal Society of London. In France the most prominent "philosophical merchants" were the physicist and correspondent Marin Mersenne (1588–1648), a friar of the Franciscan convent in the Place Royale in Paris, and Nicolas Claude Fabri de Peiresc (1580–1637). Peiresc, a wealthy aristocrat and councillor of the Parliament of Aix, was also an avid patron of scholarship and the sciences. News of Kircher's work in Egyptian hieroglyphics reached Peiresc, who, in 1633, invited Kircher to come to Aix to work on several Egyptian papyri that had been given to Peiresc by Father Minucius, a missionary in Egypt and the Levant. Peiresc, impressed with Kircher's work, was certain he had found the man to decipher the mysterious writings. Through Peiresc, Kircher made the acquaintance of the distinguished scientist and expounder of the atomic theory of matter Pierre Gassendi (1592–1655), himself a beneficiary of Peiresc's patronage. Kircher also took up correspondence with Christopher Scheiner (1573–1650), the Jesuit astronomer who, at the time, held a position at the Roman College. Johannes Hevelius (1611–87), the Danzig astronomer, in the course of his travels about Europe, had visited Kircher in Avignon in 1632.

Kircher's stay in Avignon ended abruptly in 1633, when he received a letter from the superior general of the Order telling him to go to Vienna to fill the position of "Mathematician to the Emperor at the Court of Vienna." When Peiresc heard the news, he sent letters to his friend Cardinal Francis Barberini and to Pope Urban VIII asking them to countermand the order. Peiresc feared that the move would upset plans for deciphering the hieroglyphics.

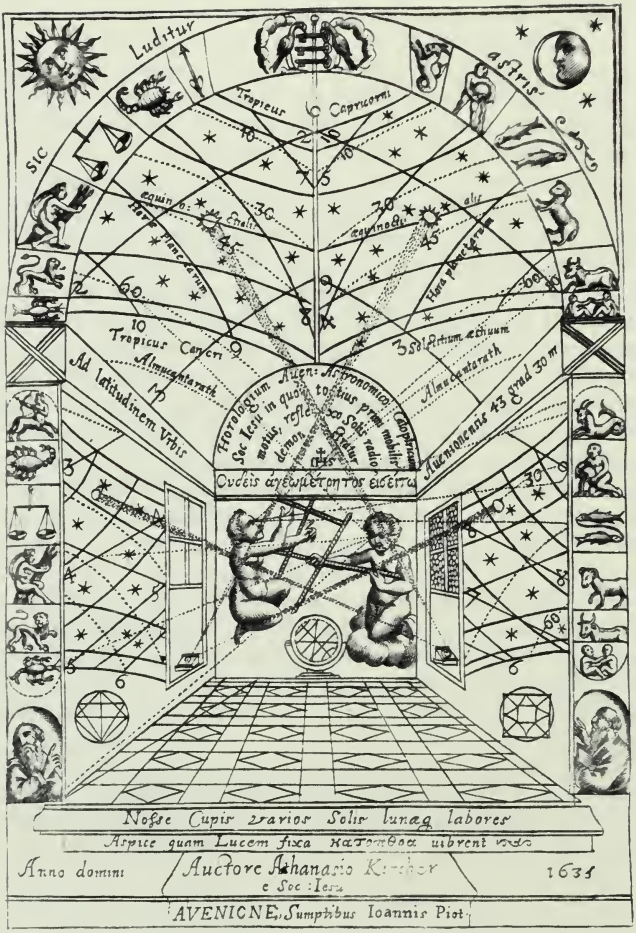
Meanwhile, Kircher had obediently set out on the long journey to Vienna with a few Jesuit companions. The route through Germany was suicide for a Jesuit, especially for one traveling to the emperor's court, so they decided to take a ship from Marseilles to Genoa, and from there to travel through northern Italy into Austria. At Marseilles they paid the captain of a small bark to give them passage, but en route they were waylaid by bad weather, and the captain dropped anchor

in the lee of a small island to wait out the gale. Kircher and his companions were miserably seasick and eagerly accepted a ride to shore. While they slept off their exhaustion on the beach, the captain, enriched by their passage money and their possessions, weighed anchor and left them stranded on the desert island. Later that day the hapless Jesuits managed to hail a fishing boat and, on promising a generous reward, were hauled back to Marseilles.

After a time they were able to raise the money and supplies to set out again—this time on a reputable ship. But it was mid-September, a season when few sailors venture into the Mediterranean for fear of the violent storms. For three days the ship held up in a sheltered cove. Finally the captain decided to risk the high seas. On 16 September they pushed out. The tempest became more violent as the day passed, and passengers and crew alike prayed fervently to the Virgin Mary, promising to make a pilgrimage to her shrine at Loreto if she saved them. Conditions only grew worse as darkness fell. The captain decided to make a desperate attempt to reach a natural cavern tunneled out beneath the rocky mountain of a small island. The entrance was not much larger than the boat and was completely hidden each time a wave struck. As they neared the cave's mouth the captain swung the bow forward, and the ship was hurled with blinding speed into the cavern, barely scraping through the entrance.

Next day, while the sailors repaired the damaged vessel, Kircher and his companions decided they had had enough of the sea for a while and set out to climb the treacherous cliffs to the top of the mountain. From there they made their way over the difficult terrain to a tiny harbor town on the other side of the island. They met their ship on the following day and after a few hours landed at Genoa. After two weeks of recuperation they embarked again on another ship to Loreto, determined to fulfill their promise. But again a gale blew them off course, and they were forced to lay up on the island of Corsica. When they put to sea again, another storm blew them southeast and deposited them in Civitavecchia, the main port of Rome.

Kircher's unintended arrival in Rome proved providential, for when he had walked the 40 miles from Civitavecchia to visit the Eternal City, to his amazement he found that he was expected.



Engraved title page from *Primitiæ gnomonicæ catoptricæ* (Item 2).

Engraved title page from *Musurgia universalis* (Item 8).

Peiresc's entreaties had been effective. Cardinal Francis Barberini had secured Kircher the chair of mathematics at the Roman College, while its current occupant, the astronomer Christopher Scheiner, was sent to the emperor's court in Kircher's place.

The Roman College, the center of the Jesuit educational system and the pattern for all Jesuit colleges throughout the world, had lost some of its prestige in the scientific community by the time Kircher took up his position in 1634. Galileo was beginning his second year of confinement, and the Jesuits were implicated in his trial and persecution. In 1611, Galileo's *Siderius nuncius* had impressed the Jesuits at the College profoundly, and he had been so fêted and adored in Rome that Cardinal Del Monte declared, "Were we still living under the ancient Republic of Rome, I verily believe that a column would have been erected on the Capitol in his honour." Galileo was immediately made a member of the *Accademia dei Lincei*, founded in 1600 as the first scientific society in Europe. But the mutual admiration between Galileo and the Jesuits did not last long. By 1616 Galileo had so exacerbated the Aristotelian theologians by teaching the Copernican system in earnest that he was harshly reproved by the Holy Office. And, in 1632, when his *Dialogo sopra i due massimi sistemi dei mondo tolemaico e copernicano* (Dialogue Concerning the Two Chief World Systems, Ptolemaic and Copernican) came off the Landini press, Urban VIII brought the full weight of the Inquisition to bear on the now aged Galileo. As it turned out, some of the chief instigators of Galileo's trial were Jesuits.

Fortunately, this situation had not cooled the friendship between Kircher and Peiresc, who was an ardent admirer and friend of Galileo. Peiresc urged Kircher to complete his work on hieroglyphics, and Kircher happily obliged. He had been studying the Coptic language and surmised that it was a descendant of the older Egyptian represented in the hieroglyphs and that it would be the key to their interpretation. As it turned out, he was right on both counts, but unfortunately he did not, and could not, go further. Ironically, Kircher could read Coptic and thought he could read ancient Egyptian, but he never put the two together, or even made the attempt. Instead, he maintained the Renaissance conviction that hieroglyphs were

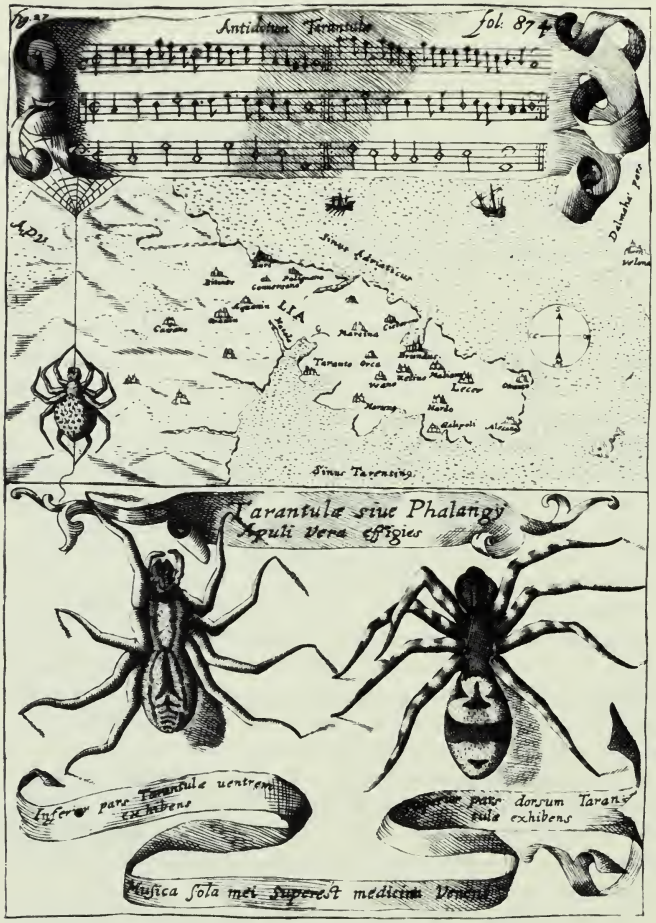
symbolic pictographs, representing the highest theological mysteries. "I dare say," explains Kircher, "that the hieroglyphic wisdom of the Egyptians was nothing other than the science of Divinity and of nature represented by various fables and allegorical depictions of animals and other natural things" (*Œdipus aegyptiacus* II.i.40). On this basis, by 1650, Kircher had developed an elaborate and ingenious system of interpretation, which he explained in his *Obeliscus pamphilius* (Item 9). Egyptian hieroglyphics were destined to remain a mystery until 1822 when Jean François Champollion discovered, with the aid of the Rosetta stone, that hieroglyphs were actually a phonetic system of writing and that ancient Egyptian was, indeed, the ancestor of Coptic.

Kircher's efforts were not fruitless, however. Within 10 years after arriving at the Roman College, he published two major works on Coptic and Egyptian: *Prodromus coptus sive aegyptiacus* (Item 3) and *Lingua aegyptiaca restituta* (1643). The *Prodromus* contained the first Coptic grammar published in the West, and together these two books became the basis for Coptic studies into the eighteenth century. It is not insignificant that the copy of *Lingua aegyptiaca restituta* in the Bibliothèque Nationale in Paris contains marginal glosses in Champollion's hand, suggesting Kircher's important, and often unrecognized, role in the development of the field of Egyptology.

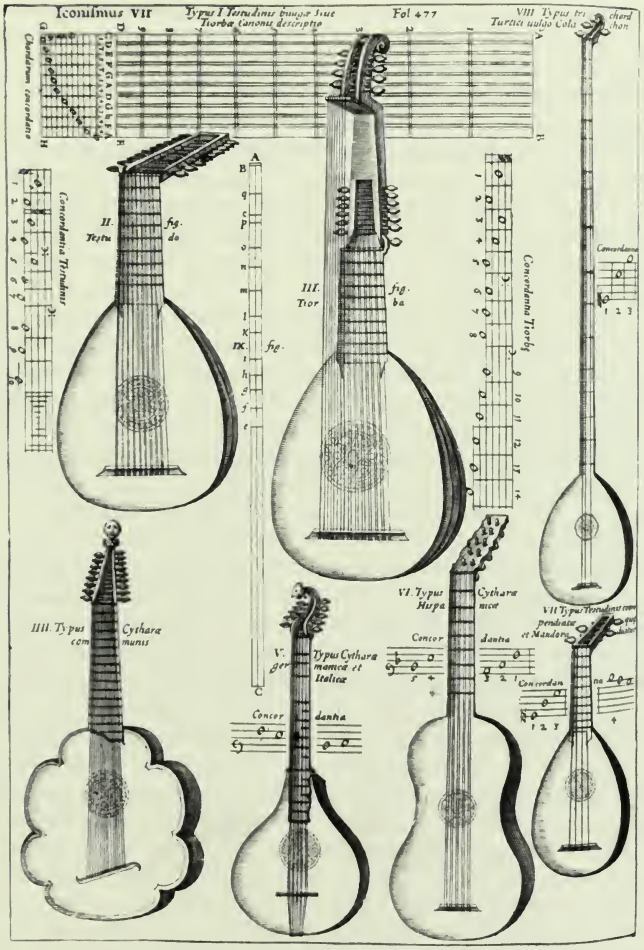
Doubtless the hours spent poring over Coptic manuscripts and scrutinizing hieroglyphs were at once delightful and tedious to the curious and restless Kircher. So, in 1637, when asked to accompany Frederick of Hesse on his journeys through Italy, Kircher took up the assignment with alacrity, hoping to dust the cobwebs from his mind and gather what interesting scientific observations he could.

Frederick of Hesse was landgrave of the Grand Duchy of Hesse-Darmstadt, which included Kircher's hometown of Fulda. Frederick had recently been reconverted to Catholicism, largely through Kircher's efforts, and was coming to Rome to pay his respects to the pope and to tour Italy and the neighboring islands.

The company first set out for Sicily, where Kircher seized the opportunity to test an ancient tradition. Archimedes is said to have set Roman ships afire in the port of Syracuse by concentrating the



Kircher describes the custom, most common in Apulia, in southern Italy, of dancing the Tarantella to cure the tarantulla bite.
From *Magnes sive arte magnetica* (Item 4).



Fingering guide for Renaissance lutes.
From *Musurgia universalis* (Item 8).

sun's rays upon them with mirrors. Kircher tried it and apparently succeeded. He recorded the results of this experiment nine years later in his *Ars magna lucis et umbrae* (Item 7).

While sailing back to Italy, the travelers witnessed an eruption of Aetna and Stromboli; when they arrived at Calabria, the activity of nearby Vesuvius caused a minor earthquake. These geological phenomena sparked Kircher's interest in volcanoes, and he resolved to see Vesuvius up close before leaving southern Italy. Kircher's natural curiosity and spirit of adventure had certainly not waned, for he not only climbed the volcano but had himself lowered into the crater for a closer look.

Kircher did not compile and publish his notes of the journey through Sicily and Italy until 28 years later, when, in 1665, they appeared in a fine and well-illustrated volume of some 800 pages entitled *Mundus subterraneus* (Item 17). In the meantime, upon returning to Rome, he embarked on the most prolific period of his career. In the next two decades he published 11 books, including his two largest, *Musurgia universalis* (Item 8) and *Œdipus aegyptiacus* (Item 10). The latter is the culmination of Kircher's work on Egyptian hieroglyphics.

Egyptology had again become his chief occupation immediately after his journeys in Italy. In 1644 newly elected Pope Innocent X, Giambattista Pamfili, commissioned Kircher to direct the restoration and erection of an Egyptian obelisk in the Piazza Navona—then part of the Pamfili family estate. The great baroque sculptor and architect Gian Lorenzo Bernini (1598–1680), in collaboration with Kircher, designed the famous Fountain of the Four Rivers, which surrounds the obelisk. Kircher issued a work on the obelisk and its inscriptions in 1650 entitled *Obeliscus pamphilius* (Item 9). It was not the first nor the last time that Kircher was called on by the pope to raise a monument. He had a hand in the restoration of the Barberini obelisk for Urban VIII, and in 1667 he again assisted Bernini in the restoration of an obelisk for Innocent's successor, Alexander VII.

The toppled and broken obelisk had been discovered in a building excavation in 1666. Alexander VII commissioned Kircher to interpret the inscriptions on the three visible faces of the obelisk; the fourth

could not be seen until the obelisk was erected. Kircher was in Tivoli at the time and therefore sent his assistant Giuseppe Petrucci to copy the inscriptions. Kircher interpreted the three sides and then, on the basis of these, constructed a probable inscription for the fourth. According to Kircher's account, recorded in his *Obeliscus aegyptiacus* (1666), when the obelisk was raised, his hypothetical inscription was found to match exactly that found on the fourth side.

In 1655, Kircher was commissioned by the pope to design a small gold obelisk as a gift for Christina of Sweden. This daughter and successor of Gustav Adolf, the Swedish king who had earlier ravaged the German countryside and terrorized Jesuits like Kircher, had been converted to Catholicism and consequently, in 1654, abdicated the throne of Lutheran Sweden. The following year, Christina, like Frederick of Hesse before her, traveled to Rome to pay her respects to the pope. In addition to presenting her with the little obelisk, Kircher also organized choral numbers and poetic recitations in her honor. Kircher himself composed the poems in the many languages he had mastered. The next year he did Christina the further honor of dedicating his *Itinerarium exstaticum* (Item 11) to her.

The year 1656 was memorable for Kircher for yet another reason: the plague returned to Rome. Kircher had not been in Italy in 1630, when it was struck by the worst outbreak of the bubonic plague since the fourteenth century. In 1630 many of the towns of Italy lost from one-third to one-half of their population. Now, 26 years later, it seemed to be a repeat of the horror. Within four months 15,000 people died in Rome alone. Pope Alexander VII personally organized relief efforts. He built and staffed hospitals and gathered and commissioned learned men to help the physicians. Although the physicians were no strangers to this disease that had ravaged Europe in varying degrees for centuries, there was little they could do.

Kircher was called upon for his vast knowledge of ancient medicine and plagues. He, like the physicians he advised, spent days on end, at extreme personal risk, caring for the sick. Kircher was also commissioned to search for a cure. By examining under a microscope blood samples of infected patients, he determined that the plague was caused by microscopic *vermiculi*, tiny animals in the blood. What he

probably saw was the larger bacteria attracted to the unsterile blood specimens, not the much smaller plague bacillus. Nevertheless, his method and theory were significant, for his was the first attempt to apply microscopy to the problem of the plague and the first mention of the germ theory of disease. His book on the subject, the *Scrutinium pestis physico-medicum* (Item 15), attracted considerable attention among the members of the Royal Society when, in 1665, the plague broke out in London. It is probable that later advances in microbiology and germ theory were, to some extent, the indirect results of Kircher's work.

The 1660s brought another 10 books to the press, but despite this prodigious output, Kircher's health was in decline. In 1661 he retired to Tybur to restore his waning strength and to gather geographic and historical information for his *Latium* (Item 23). Setting out through the neighboring hills one day, he came upon an ancient church. An inscription near the crumbling altar declared that the shrine was erected by Constantine where Saint Eustachius saw a vision of the crucified Christ between a stag's antlers and was converted. Saint Eustachius is alleged to have been a Roman general of the first century A.D., who, after being thus converted while hunting, refused to sacrifice to pagan gods during the persecutions under Hadrian in A.D. 118. He was subsequently burned inside a brazen bull.

Naturally this discovery piqued Kircher's curiosity, and upon inquiring of the local peasants, he learned that the chapel had been called the Shrine of Our Lady of Mentorella and was a well-known place of pilgrimage in antiquity. Kircher remembered the many perils he had escaped with the Virgin's aid and was determined to restore the shrine to her honor. When he returned to Rome, he wrote a small pamphlet, entitled *Historia eustachio-mariana* (1665), on the history and sanctity of the shrine and sent copies to his patrons. Soon donations began to pour in, and the chapel was restored to its ancient splendor and status as a place of pilgrimage. Every year thereafter at Michaelmas (29 September), Kircher and other Jesuits welcomed pilgrims to the shrine.

The volume of Kircher's writing declined gradually with his health during the last decade of his life. During the 1670s, Kircher

produced only five books. He spent much of his time in spiritual exercises and caring for pilgrims at Mentorella. By 1678 he was at the shrine year round. Much of his work during this period was edited and published by his pupils. On 27 November 1680 Kircher died in Rome. A throng of friends and admirers made up the procession to Il Gesù, a chapel near the Roman College, where he was buried, but his heart was carried to Mentorella and entombed beneath the altar of his beloved shrine.

KIRCHER'S MUSEUM

Kircher, like his contemporary Henry Ashmole, was a collector of curiosities. He was in an excellent situation, at the hub of the Jesuit order, to gather relics, specimens, manuscripts, and any oddities or rarities his fellow Jesuits brought back to Rome from all parts of the world. His study overflowed, and scholars visiting Rome would not think of leaving without visiting Kircher in his study and examining his collection. In 1678, the Museo Kircheriano was at its peak, with a new exhibit hall and a printed catalogue. After his death, Kircher's museum, like Ashmole's of the same date, began to decline. Filippo Bonanni restored it in the first decade of the next century and published a catalogue, *Museum Kircherianum, . . . nuper restitutum, et auctum, descriptum, et iconibus illustratum* (Rome, 1709), but after his death more decay set in. Several more catalogues appeared until 1870, when the Italian government confiscated the Jesuit property in Rome, including the museum. Much of it was integrated into the Museo Nazionale, but a portion still remains within the walls of the Roman College.

A NOTE ON DEDICATIONS AND PRIVILEGES

Two considerations affected the dedications and privileges commonly found in sixteenth- and seventeenth-century books: patronage and protection. The former was necessary because printing

Jackfruit. A tree native to India, and later introduced to Guangdong Province in south China.
From *China Monumentis* (Item 20).

was extremely expensive, particularly when a book contained unusual plates and type fonts. The latter was not a matter of copyright—a modern solution to an ancient problem—but a matter of life and death. The Inquisition was still tactfully to be avoided and the authorities placated, as the hapless Galileo learned in 1632, when he failed to obtain the papal privilege of Urban VIII and was subsequently hauled before the Inquisitor.

Dedicatory epistles were addressed either to the patron who paid for the printing of the book or to a political or ecclesiastical authority who could ensure the book a good reception. Emperors, kings, dukes, popes, cardinals, and archbishops were all viable subjects of these obsequious and flattering dedications. Kircher dedicated several of his works to the popes Urban VIII, Innocent X, and Alexander VII. But he paid particular attention to the Holy Roman emperors Ferdinand III and Leopold X, since they were Kircher's most consistent and magnanimous patrons. Sometimes an author dedicated his book to a nobleman or ecclesiastic in anticipation of his patronage, but the results were often less than the author expected. Cervantes dedicated his masterpiece *Don Quixote de la Mancha* (1605) to the Duke of Bejar, hoping to win the patronage of the wealthy aristocrat, but no remuneration ever came of it. Kircher seems never to have had that problem. The fine plates and illustrations that Kircher's readers came to expect in his books are proof of opulent patronage.

The term *privilege* usually refers to a license granted by a nobleman or ecclesiastical authority to a printer, according him the sole right to print a particular work or type of work. The English composers William Byrd and Thomas Tallis, for instance, were granted in 1575 sole right to print music books in England.

In this catalogue *privilege* refers to the notes appearing at the beginning of the books and giving the author or printer permission to print. These privileges were granted sometimes by the person to whom the book was dedicated, but more commonly by the authority in whose province or jurisdiction the book was to be printed. In Kircher's case, since he was a Jesuit, the privileges were almost always issued by the superior general of the Society of Jesus in Rome. Kircher's privileges were usually followed by the *imprimatur* (literally

"let it be printed")—a type of privilege including only this word and the name of the authority—of the vice gerent and the master of the Palatine, both of whom were ecclesiastical figures.

The privilege was not legally required and was often a mere formality, but it could protect the author, and sometimes the printer, from the disfavor of a disgruntled authority he had failed to recognize. Being mostly from ecclesiastics, the privileges in Kircher's works include approbations of the contents and assurances of orthodoxy. The privileges usually conclude with the formula "We order that this book be printed, and with our seal we grant our protection." A book printed under a privilege to either the author or printer usually bears the formula *cum privilegio* or *superiorum permissu* or, if more than one privilege is included, *cum privilegiis* on the title page.

KIRCHER'S WORKS IN THE HAROLD B. LEE LIBRARY

Within the past decade there has been a resurgence of interest in Kircher. His works are becoming more difficult to acquire as demand increases. It is likely that in the next decade scholars will reevaluate his contributions to such fields as science, Egyptology, and music. Such a reevaluation is long overdue.

The Harold B. Lee Library at Brigham Young University has one of the most significant collections of Kircheriana in the country. The collection reflects the University's commitment to research on the sixteenth and seventeenth centuries. Many departments on campus emphasize this period in their curricula because of the momentous transitions taking place at that time in music, religion, politics, literature, and, of course, science. Kircher's works are an important source for scholars to gain a full picture of the seventeenth century. But Kircher is not important only to the student of the seventeenth century. Although now superseded by modern scholarship, Kircher's work in such fields as Egyptology and religion is still a gold mine of curiosities and information not found in other sources.

The acquisition of Kircher's Egyptian works is the result of the University's long-standing interest in Egyptology, evidenced in the

archeological work currently being carried out in the Fayum and in the extensive collection of works on Egyptology available in the library—including the complete set of the magnificent, 23-volume *Description de l'Egypte* (1809–28), a monumental attempt to describe in full the ruins of ancient Egypt. The Egyptian collection also includes the first edition of Champollion's two-volume work on hieroglyphics *Précis du système hièroglyphique des anciens Egyptiens* (1824).

Kircher's works are especially pertinent to religious studies because they record the conflict between the age of orthodoxy and the emerging age of science, a conflict not only between men but within men. Kircher's works reveal the conflict within himself, between his dogged tenacity to hold to the orthodox and his insatiable desire for scientific knowledge, and the compromises he was forced to make.

The contributions of Kircher to a startling variety of fields will perhaps prove more significant than scholars of the past two centuries have thought. Given BYU's commitment to and interest in these areas and the considerable number of Kircher's works included in the library collections, the University is poised to play a significant role in the reevaluation of Athanasius Kircher.

[1]The Royal Society was founded in 1660 and incorporated as the Royal Society of London in 1662. The fellowship of the Society included the brightest scientific luminaries of the century, both in England and on the Continent. The Society succeeded in turning a band of virtuosi into a cooperative body of scientists.

[2]Kircher, in his old age, wrote a fine autobiography which, according to my sources, was edited and published by H. A. Langenmantel in his collection of Kircher's letters *Fasciculus epistolarum* (Augsburg, 1684; 100 pp.). BYU owns a microfilm copy of this collection, but it contains no autobiography. Perhaps an error has been perpetuated by the many bibliographers who claim that the autobiography is in the collection. It is possible that they were published separately in the same year. The British Museum has a copy of the autobiography without a title-page (BM 123, 715). Reilly mentions a nineteenth-century edition, but I found no other references to such an edition. The autobiography is the source for all of the major biographies on Kircher.

My biographical sketch is based mainly on P. Conor Reilly's superb biography *Athanasius Kircher S.J.: Master of a Hundred Arts, 1602–1680,* Studia Kircheriana, Schriftenreihe der internationalen Athanasius Kircher Forschungsgesellschaft, Band I (Wiesbaden: Edizioni del Mondo, 1974). I have also referred to Joscelyn Godwin's *Athanasius Kircher: A Renaissance Man and the Quest for Lost Knowledge* (London: Thames and Hudson, 1979); G. J. Rosenkranz's "Aus dem Leben des Jesuiten Athanasius Kircher, 1602-1680," in *Zeitschrift für vaterländische Geschichte und Alterthumskunde,* Verein für Geschichte und Alterthumskunde Westfalen, ed. G. J. Rosenkranz and C. J. Geisberg (Münster: Friedrich Regensberg, 1852), 13:11–76; and *The Dictionary of Scientific Biography,* ed. Charles Coulston Gillispie (New York: Charles Scribner's Sons, 1973).

[3]Galileo and Christopher Scheiner had been engaged in a controversy seven years earlier, both claiming to be the first to observe the phenomenon. The orthodox Aristotelian system insisted that the sun is a perfect, unblemished sphere, like the other planets, and it was to Galileo's misfortune and glory to have to butt his head against the monolithic doctrine in his modest but momentous work *Sidereus nuncius* (1610). It was, however, probably Johann Fabricius who first observed sunspots and Christopher Scheiner who wrote the largest work about them, but Galileo was the first to understand their cosmological significance: that they indicate (a) changes on the sun's surface and (b) its rotation upon an axis.

Ars magnesia. Würzburg: Elias Michael Zinck, 1631 (Item 1).

Primitiæ gnomonicæ catoptricæ hoc est horologiographiae novae specularis. Avignon: J. Piot, 1635 (Item 2).

Prodromus coptus sive aegyptiacus. Rome: S. Congregazione, 1636 (Item 3).

Specula melitensis encyclica. Naples: Secundino Roncagliolo, 1638.
Kircher's description of a cylindrical calculating machine of his own invention, used to solve calendrical and astronomical problems.

Magnes sive de arte magnetica. Rome: Lodovico Grignani, 1641 (Item 4); 2d ed., Cologne: Jodocus Kalcoven, 1643 (Item 5); 3d ed., Rome: Vitale Mascardi, 1654 (Item 6).

Lingua aegyptiaca restituta. Rome: Lodovico Grignani, 1643.
This, Kircher's second major work on the Coptic language, became, together with the *Prodromus* (1636), the basis for Coptic studies well into the next century.

Ars magna lucis et umbrae. Rome: Lodovico Grignani, 1646 (Item 7); 2d ed., Amsterdam: Johann Jansson, 1671.

Rituale ecclesiae aegyptiacae sive cophtitarum. N.p., 1647.
A translation of the Coptic liturgy.

Musurgia universalis sive ars magna consoni et dissoni. Rome: Lodovico Grignani, 1650 (Item 8); 2d ed., Amsterdam: n.p., 1662.

Obeliscus pamphilius, hoc est, interpretatio nova et hucusque intentata obelisci hieroglyphici. Rome: Lodovico Grignani, 1650 (Item 9).

Œdipus aegyptiacus, hoc est universalis hieroglyphicae veterum doctrinae temporum iniuria abolitae instauratio. Rome: Vitale Mascardi, 1652–54 (Item 10).

Itinerarium exstaticum. Rome: Vitale Mascardi, 1656 (Item 11); 2d ed., *Iter exstaticum kircherianum.* Würzburg: Johann Andrea Endter, 1660 (Item 12); other editions: *Iter exstaticum cœleste.* Würzburg: Johann Andrea Endter, 1671; *Exstaticum cæleste, interlocutoribus Cosmiele et Theodidacto.* Tyrnau: Fridericus Gall, 1729; *Itinerarii exstatici.* Kaschau: Academia Soc. Jesu, 1753.

Iter extaticum II. Rome: Vitale Mascardi, 1657 (Item 13); 2d ed., Würzburg: Johann Andrea Endter, 1660 (Item 14); other editions: Tyrnau: Fridericus Gall, 1729; Kaschau: Academia Soc. Jesu, 1753.
Each of these editions is bound with the corresponding edition of *Iter exstaticum I.*

Scrutinium physico-medicum contagiosæ luis, quæ pestis dicitur. Rome: Vitale Mascardi, 1658 (Item 15); 2d ed., Leipzig: Johannes Baverus, 1659; other editions: Leipzig: Johannes Baverus, 1671; idem, 1674; *Scrutinium pestis physico-medicum publico commodo recusum.* Graeci: Widmanstad, 1740; Dutch translation, Rottterdam: Abraham van Waesberge, 1669; German translation, Augsburg: J. C. Brandan, 1680.

Pantometrum kircherianum, hoc est, instrumentum geometricum novum a celeberrimo viro P. Athanasio Kirchero antehac inventum. Würzburg: Jobus Hertz, 1660; 2d ed., Würzburg: Jobus Hertz, 1669.
On a geometrical instrument invented by Kircher.

Diatribe de prodigiosis crucibus. Rome: Vitale Mascardi, 1661 (Item 16); 2d ed., Rome: Blasius Deversus, 1666 (?); included in Gaspar Schott's *Joco-seriorum naturae et artis* (Würzburg: n.p., 1666) and later translated into German with that work.

Polygraphia nova et universalis, ex combinatoria arte detecta. Rome: Varese, 1663; 2d ed., Amsterdam: n.p., 1680.
Kircher's treatise on a universal language of his own invention.

Mundus subterraneus. Amsterdam: Johann Jansson, 1665 (Item 17); 2d ed., Amsterdam: Johann Jansson, 1668; Dutch translation, *D'Onder-aardse Whereld in Haar Goddelijk Maaksel en wonderbare vitwerkselen aller Dingen.* Amsterdam: Johannes Jansson, 1682; English trnaslation, *The Vulcano's: or, Burning and Fire-vomiting Mountains.* London: J. Darby, 1669 (Item 18).

Historia eustachio-mariana. Rome: Varese, 1665.
A history of the shrine at Mentorella restored by Kircher in 1665.

Arithmologia sive de abditis numerorum mysteriis. Rome: Varese, 1665 (Item 19).

Obelisci aegyptiaci . . . interpretatio hieroglyphica. Rome: Varese, 1666.
Description and interpretation of Egyptian obelisks found around Rome.

China monumentis . . . illustrata. Rome: Varese, n.d.; 2d ed., Amsterdam: Johann Jansson, 1667 (Item 20); Antwerp: Jacob Meurs, 1667; French translation, *La Chine d'Athanase Kirchere.* Amsterdam: Johann Jansson, 1670.

Magneticum naturae regnum. Rome: Ignazio Lazzari, 1667 (Item 21); 2d ed., Amsterdam: Johann Jansson, n.d.

Ars magna sciendi. Amsterdam: Johann Jansson, 1669 (Item 22); 2d ed., Amsterdam: n.p., 1669 (?).

Latium, id est nova et parallela Latii tum veteris, tum novi descriptio. Rome: n.p., 1669; 2d ed., Amsterdam: Johann Jansson, 1671 (Item 23).

Principis christiani archetypon politicum sive sapinetia regnatrix [alternate title: *Splendor domus Joanniae descripta ab Athanasio Kirchero*]. Amsterdam: n.p., 1669; 2d ed., Amsterdam: Johann Jansson, 1672 (Item 24).

Phonurgia nova sive conjugium mechanico-physicum artis et naturae paranympha phonosophia concinnatum. Kempten: Rudolph Dreherr, 1673 (Item 25); German translation, *Athanasii Kircheri . . . Neue Hall-und Thon-Kunst, oder Mechanische Geheimverbindung der Kunst und Nature.* Nördlingen: n.p., 1684; *Phonugia nova: A Facsimile of the 1673 Kempten Edition.* New York: Broude Brothers, 1966.

Arca Noë. Amsterdam: Johann Jansson, 1675 (Item 26).

Sphinx mystagoga, sive diatribe hieroglyphica, qua mumiae . . . exhibetur interpretatio. Rome: Vitale Mascardi, 1676 (Item 27).

Turris Babel, sive archontologia qua primo priscorum post diluvium hominum vita, mores rerumque gestarum magnitudo . . . describuntur et explicantur. Amsterdam: Johann Jansson, 1679.
This compilation of Kircher's researches into the biblical account of the tower of Babel is similar in scope and format to the *Arca Noë* (Item 26). Kircher speculates about the construction of the tower. He also traces the migration of the peoples after the confusion of tongues.

Tariffa kircheriana, id est, inventum aucthoris novum. Rome: Nicolò Angelo Tinassi, 1679 (Item 28).

Engraved title page from *Sphynx mystagoga* (Item 27).

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Clendening	*Athanasius Kircher, 1602–1680: An Exhibition of Books from the History of Medicine Collection*. Kansas City: Clendening Medical Library, 1958.
De Backer	De Backer, Augustin and Aloys. *Bibliothèque des écrivains de la compagnie de Jésus, ou notices bibliographiques*. Liége: L. Grandmont–Donders, 1853–61.
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THE ARRANGEMENT OF THE CATALOGUE

The 31 items in this catalogue are arranged in chronological order by publication date, except when there are two or more editions of the same work, in which case later editions are described immediately below the earliest edition. The descriptions include the following:

item number;

quasi-facsimile transcription of the title page with a vertical line | indicating the end of a line and with the spelling and punctuation peculiarities that appear in the original;

quasi-facsimile transcription of the colophon, if one is present in the work;

dimensions of the book's front cover in centimeters and inches with height given before width;

number of pages, with brackets to indicate when pages are unnumbered and not counting blank pages except when they appear between printed pages;

general description of the book, its binding, printing peculiarities, plates and figures, additional title-pages with quasi-facsimile transcriptions, and the date and significance of the dedication and privilege;

brief description of the contents of the work, its history, and significance;

provenance, if known;

references, including author's name, volume number in roman numerals, and the page or column number followed by a decimal and an entry number where applicable.

1. ARS MAGNESIA, | Hoc est | *DISQVISITIO BIPARTITA-* | *emperica seu experimentalis, Physico-Ma-* | *thematica* | DE NATVRA, VIRI- | BVS, ET PRODIGIOSIS EFFE- | CTIBVS MAGNETIS, | *Quam* | Cùm theorematicè, tùm problematicè proposi- | tam, nouâque methodo ac apodicticâ seu demonstratiuâ | traditam, variisque vsibus ac diuturnâ experientiâ compro- | batam, fauente Deo, tuebitur. | PRÆNOBILIS & ERVDITVS | *D. JOANNES JACOBVS SVVEIGK-* | *hardus à Freihausen, Juris & Mathtema-* | *ticæ Studiosus.* | PRÆSIDE & AVTHORE | R. P. ATHANASIO KIRCHER è SOC. | IESV Philosophiæ moralis, disciplinarum mathematicarum, sacrarumque linguarum Hebrææ & Syræ in illustri Franciæ Orientalis | Academiâ Professore Ord. | [ornament] | *HERBIPOLI,* | Typis ELIÆ MICHAELIS ZINCK. | ANNO M. DC. XXXI. [1631]

20.3 x 14.5 cm. (8 x 5 3/4 in.); [8], 63, [1] pp.

Bound in contemporary calf; gold tooling and lettering on spine; gilt-filleted covers with gilt armorial stamp of Antoine Coeffier-Ruzé d'Effiat; stained edges; browning paper; headpieces; initials; printed signatures and custodes; numerous woodcut illustrations.

The work was submitted for publication by Kircher's superior Joannes Jacobus Sweigkhardus von Freihausen, whose dedicatory epistle to Franciscus, bishop of Würzburg, is dated from Würzburg, 25 September 1631.

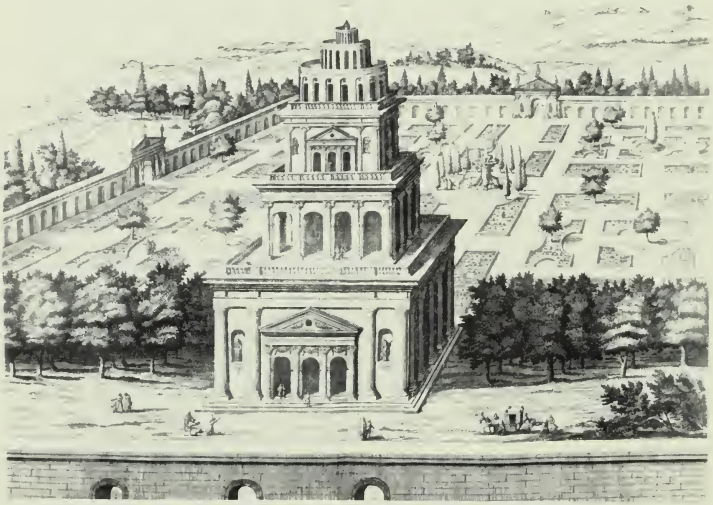
The *Ars magnesia*, Kircher's first work, reflects his interest in the unseen and unexplained forces of nature. The work comprises a series of experiments and demonstrations of the nature of magnets and the consequent theorems and corollaries explaining magnetic phenomena. Kircher also speculates on the various uses of magnetism in mechanics and medicine. He livens the work with several historical anecdotes concerning magnets, lambasts some ancient superstitions, and concludes by explaining how a magnet symbolizes the heavenly authority of the Trinity; the earthly authority of emperor, king, and prince; and the ecclesiastical authority of priest, bishop, and public preacher. Kircher's interest in magnetism continued throughout his life. He later wrote two larger works on magnetism, *Magnes sive de arte magnetica* (Item 4) and *Magneticum naturae regnum* (Item 21).

BYU's copy of the *Ars magnesia* is bound third in a collection of five treatises which includes, in order, François Boussuet's *De natura aquatilium*

carmen (Lyons, 1558), [5], 135 pp., a didactic poem celebrating Guillaume Rondelet's *Libri de piscibus marinis* (Lyons, 1554–55); Bernardinus-Joannes Neydecker Stainer's *Gerocomicon, sive diaeteticum regimen, de conservanda senum sanitate* (Würzburg, 1631), [16], 58, [1] pp., a medical handbook for the elderly; Kircher's *Ars magnesia;* a very rare work by Johann Conrad Gerhard on alchemy and extracting minerals from water, the *Tractatus practicus de chymiatra* (n.p., 1631), [32] pp.; and Daniel Winckler's *Animadversiones in tractatum, qui inscribitur: Dissertatio de vita foetus in utero* (Jena, 1630), 88 pp., a response to a treatise by Gregory Nymann, professor of anatomy at Wittenberg, on the viability of the foetus and its independence from the mother.

PROVENANCE: Antoine Coeffier-Ruzé d'Effiat (1581–1632), protégé of Cardinal Richelieu, superintendent of finance, lieutenant general, and, in 1631, Marshal of France (gilt armorial stamp on covers); Victor Pélissier de Feligonde, S. J. (1726–83) (engraved armorial bookplate dated 1743 and inscription on title page).

REFERENCES: Brunet III, 666 ("ce n'est certainement pas le moins rare de ses écrits"); De Backer I, 422.1; Græsse IV, 21; Sommervogel IV, 1046.1.



Kircher's fanciful depiction of the villa of Quinctilius Varus.
From *Latium* (Item 23).

2. PRIMITIÆ | GNOMONICÆ CATOPTRICÆ | *HOC EST* | HOROLOGIOGRAPHIÆ | *NOVÆ SPECVLARIS* | In qua breuiter noua, certa, exacta, & facilis demonstratur | horologiorum per reflexi luminis radium construendorum | methodus; Item qua ratione prædicto reflexi luminis radio, | in qualibet quantumuis irregulari muri superficie, in inte- | rioribus domorum, aliisque locis obscuris, & vmbrosis, | cum horologia omnis generis, tùm omnium circulorum, | qui in primo mobili considerari possunt, proiecturæ, & cur- | uæ sectorum conorum lineæ, processus solis, & lunæ in pla- | nis indices, aliáque plurima scitu digna repr(a)esentari possint, | variè docetur. | *AVTHORE* | *R. P.* ATHANASIO KIRCHER BVCHONIO, | *è Socieiate* IESV. *Mathematum, & Orientalium* | *linguarum Professore.* | [ornament] | AVENIONE. | Ex Typographia I. PIOT, S. Officij Typographi via Aromataria. | M. DC. XXXV. | *Cum priuilegiis Regis Christmi. ac Rmi. Pro-Vicelegati Auenion.* [1635]

23 x 18.5 cm. (9 1/8 x 7 1/4 in.); [12], 228, [16] pp.

Contemporary limp vellum binding; ink title on spine and bottom edges of leaves; slight damp-staining and browning; headpieces; initials; printed signatures and marginal glosses; numerous woodcut illustrations and diagrams, particularly of sundials; tables.

There is an added engraved title page with the work's alternate title: *Horologium Aven: Astronomico Catoptricum | Soc Iesu in quo totius primi mobilis | motus, refexo Solis radio | demonstratur | Auctore Athanasio Kircher | e Soc :Iesu | Anno domini 1635* | AVENIONE, *Sumptibus* Ioannis Piot.

The work is dedicated to the city council of Avignon and to Claudius Sylvester, assessor of the city. Kircher's dedicatory epistle is dated from Avignon, 10 May 1633. The preliminary pages include four poetic epigrams to the work.

The *Primitiae gnomonicae catoptricae*, one of Kircher's earliest and rarest works, treats the construction and workings of sundials by reflected light (*gnomonicus catoptricus*). It is also an astronomical work, dealing with the motion of the sun and moon. Shortly after Kircher took up residence in Avignon (1631), he began earnest research in, among other things, astronomy. He designed an observatory to study the progress of the sun and moon by reflecting their light with mirrors into the De La Motte tower of

the Jesuit college. This book is the result of his observations and comprises a series of problems, corollaries, and theorems related to those observations.

REFERENCES: Brunet III, 668; Clendening 5.1; De Backer I, 422.2 ("Kircher parai avoir ignoré qu'il existait déjà un ouvrage du P. George Schœnberger, S. J., sur le même sujet"), VII, 285.2; Græsse IV, 22; Sommervogel IV, 1046–47.2 ("La Biogr. univers. cite une édition de 1633. Existe-t-elle?").

3. ATHANASII KIRCHERI | FVLDENSIS BVCHONII | *E SOC. IESV* | PRODROMVS | COPTVS SIVE ÆGYPTIACVS. | *Ad* | *Eminentiss: Principem S.R.E. Cardinalem* | FRANCISCVM BARBERINVM. | in quo | Cùm linguæ Coptæ, siue AEgypiacæ, quondam Pharao- | nicæ, origo, ætas, vicissitudo, inclinatio; tùm hierogly- | phicæ literaturæ instauratio, vti per varia variarum erudi- | tionum, interpretationumque difficillimarum specimina, | ita noua quoque & insolita methodo exhibentur. | [vignette of Christ sending forth his apostles and quotation from Vulgate, Mark 16:15] | Romæ. Typis S.Cong: de propag: Fide.1636. | *Superiorum permissu.*

23 x 17.8 cm. (9 1/8 x 7 in.); [24], 338, [2] pp.

Contemporary Italian binding of limp vellum; ink title and shelf marks on spine; browning paper; tailpieces; printed signatures, custodes and marginal glosses; alphabetic tables and paradigms. Type fonts include Greek, Syriac, Arabic, Hebrew, Estranghelo, Samaritan, Armenian, Chaldean, Rashi, Amharic, "Saracen," hieroglyphic, and of course Coptic—a tour de force of seventeenth-century typography.

The work is dedicated to Cardinal Francesco Barberini, who was instrumental in securing Kircher's position at the Roman College. The dedicatory epistle is dated from Rome, 2 August 1636. The privilege is from Mutius Vitelleschi, superior general, dated from Rome, 23 April 1635. A second privilege from Melchior Inchofer of the Society of Jesus is dated 15 June 1636. Within the preliminary pages are several encomia, or poems, written in honor of Kircher and the work. These were written by Kircher's fellow linguists in rabbinic Hebrew, biblical Hebrew, Aramaic, Syriac, Ethiopic, Arabic, Samaritan, and Armenian, all with Latin translations.

Prodromus coptus sive aegyptiacus, the first Coptic grammar to appear in the West, was for centuries the basis for Coptic studies, along with

Kircher's later work *Lingua aegyptiaca restituta* (1643). Kircher had encountered hieroglyphs during his tertianship (a one-year period of religious study in preparation for the ministry) in Speier, and he was convinced—correctly—that Coptic was a late vestige of ancient Egyptian. While at Avignon he was given several Coptic manuscripts by his friend and patron Nicolas Claude Fabri de Peiresc. Later in Rome Kircher acquired an Arabic–Coptic vocabulary brought from Egypt by Pietro della Valle. On the basis of these, and with Peiresc's encouragement, Kircher compiled the *Prodromus*. As the title reveals, it was to be a precursor of a later work on the Egyptian language, perhaps the *Lingua aegyptiaca restituta*. In both works he stresses the importance of Coptic for interpreting hieroglyphics. Because "things Egyptian" were the rage in seventeenth-century Europe, the *Prodromus* attained immediate popularity and firmly established Kircher's reputation as a scholar.

REFERENCES: Brunet III, 668; Caillet II, 364.5790; Clendening 5.2; De Backer I, 422.4 ("L'Europe savante, dit M. Champollion, doit en quelque sorte à Kircher la connaissance de la langue copte; et il mérite, sous ce rapport, d'autant plus d'indulgence pour ses erreurs nombreuses, que les monuments littéraires des Coptes étaient plus rares de son temps"); Græsse IV, 22; Sommervogel IV, 1047.3.

Engraved title page from book 3 of *Magnes sive de arte magnetica* (Item 4).

4. ATHANASII | KIRCHERI | FVLDENSIS BVCHONII, E SOC. IESV. | MAGNES | siue De | ARTE MAGNETICA | OPVS TRIPARTITVM | Quo | PRÆTERQVAM QVOD VNIVERSA MAGNETIS | Natura, eiusque in omnibus Artibus & Scientijs vsus noua | methodo explicetur, è viribus quoque & prodigiosis effe- | ctibus Magneticarum, aliarumque abditarum Naturæ | motionum in Elementis, Lapidibus, Plantis | & Animalibus elucescentium, multa huc- | usque incognita Naturæ arcana per | Physica, Medica, Chymica, & | Mathematica omnis ge- | neris experimenta | recluduntur. | [title vignette] | Sumptibus Hermanni Scheus sub signo Reginæ. | ROMAE, Ex Typographia Ludouici Grignani. MDCXLI. | *SVPERIORVM PERMISSV.* [1641]

25.5 x 19.3 cm. (10 x 7 5/8 in.); [48], 916, [16] pp.

Bound in contemporary Italian paper; ink title on spine; trimmed edges; initials; tailpieces; printed signatures, custodes, and marginal glosses; numerous tables, woodcut illustrations and diagrams; 34 full-page woodcuts and engravings, 1 fold-out, 1 volvelle to be attached opposite p. 287; printed music; browning paper.

There is an additional engraved title page by the Italian engraver Claudio Dagli: MAGNES | *Siue de* | *ARTE MAGNETICA* | LIBRI TRES | *Authore* | *P. Athanasio Kirchero* | *Fuld: Buchonio é Soc: Ies.* | AD | *Sacratissimum atq. Inuictiss.* | FERDINANDVM III | *AVSTRIACVM* | Rom: Imperat: | *Semper* | *Augustum.*

Book 3 also has an additional engraved title page: ATHANASII KIRCHERI | FVLDENSIS BVCHONII SOCIET. IESV | MAGNES | SIVE DE MAGNETICA ARTE | LIBER TERTIVS | Romæ sumptibus Hermanni Scheus, sub signo Reginæ MDCXLI. G. B. Rinalduci is named as the engraver.

A note at the end of book 3 gives the editing date as 2 May 1641, Kircher's thirty-ninth birthday. The year of Kircher's birth is noted as 1601. The dedicatory epistle to Emperor Ferdinand III of Austria is dated from Rome, 4 nones of May (4 May) 1641. The privilege from Superior General Mutius Vitelleschi is dated from Rome, 30 November 1639.

Kircher's *Magnes sive de arte magnetica* is his second and largest work on magnetism. In 1631 at Würzburg he published his *Ars magnesia* (Item 1), a small book of 63 pages, in which he introduced many of the observations discussed later in his *Magnes* and *Magneticum naturae regnum* (Item 21). William Gilbert's *De magnete* (1600), the first thoroughly modern treatment of magnetism, influenced Kircher considerably. Gilbert's work has been called the "first classic of modern physics," but, however empirical and

experimental Gilbert's treatise was, he, like Kircher and other scientists of the day, did not separate magic from science, and magnetism was usually regarded as a magical force. Kircher adapts Gilbert's theories of magnetism and Kepler's work in astronomy and does not hesitate to refute either.

Kircher's *Magnes* is filled with curiosities, both profound and frivolous. The work does not deal solely with what modern physicists call magnetism. Kircher discusses, for example, the magnetism of the earth and heavenly bodies; the tides; the attraction and repulsion in animals and plants; and the magnetic attraction of music and love. He also explains the practical applications of magnetism in medicine, hydrolics, and even in the construction of scientific instruments and toys. In the epilogue Kircher moves from the practical to the metaphysical—and Aristotelian—when he discusses the nature and position of God: "the central magnet of the universe." This work contains the first use of the term ἠλεκτρο-μαγνητισμός, "electro-magnetism" (p. 640).

Kircher's *Magnes* contains all that was known in his day on electricity and magnetism, forces that even today baffle scientists.

This copy of *Magnes* is the first edition. Also in the BYU collections are the second edition, published at Cologne in 1643, and the third edition, published in Rome in 1654 (items 5 and 6).

PROVENANCE: "Wolfgang Engelbert von Auersberg, inscribed in his catalogue 1655" (inscription on added title page); bookplate of the Fuerstlich Auerspergsche Fideicommisbibliothek zu Laybach.

REFERENCES: Caillet II, 362.5778; De Backer I, 422–23.5; Græsse IV, 21; Sommervogel IV, 1048–49.6 ("Entre la p. 524 et 525, il y a 8 ff. d'ind. pour les 2 premiers livres," but in the BYU copy this index is bound among the preliminary leaves).

5. ATHANASII | KIRCHERI | FVLDENSIS BVCHONII, E SOC. IESV, | MATHEMATVM IN COLLEGIO ROMANO | EIVSDEM SOCIETATIS PROFESSORIS ORDINARII | MAGNES | Siue | DE ARTE MAGNETICA | OPVS TRIPARTITVM, | Quo | PRAETERQVAM QVOD VNIVERSA | MAGNETIS NATVRA, EIVSQVE IN OMNIBVS | Artibus & Scientijs vsus noua Methodo explicetur, è viribus quoque | & prodigiosis effectibus Magneticarum, aliarumq; abditarum Naturæ | motionum in Elementis, Lapidibus, Plantis & Animalibus elucescentium, | multa hucusque incognita Naturæ arcana per Physica, Medica, | Chymica, & Mathematica omnis generis experimenta | recluduntur. | *Editio secunda post Romanam multò correctior.* | [title vignette] | *COLONIÆ AGRIPPINÆ* | Apud IODOCVM KALCOVEN, | ANNO M.DC.XLIII. | *Consensu Auctoris, Superiorum Facultate, & speciali* | *S. Cæsareæ M. Privilegio.* [1643]

20.8 x 15 cm. (8 3/16 x 6 in.); [30], 798, [38] pp.

Bound in contemporary stiff-board vellum, northern European; ink title on spine; initials; tailpieces; printed signatures, custodes, and marginal glosses; numerous tables, woodcut illustrations and diagrams; 32 full-page woodcuts and engravings, 1 fold-out, 5 tipped in, 1 volvelle to be attached opposite p. 244; printed music.

There is an additional engraved title page closely resembling that of the first edition (Item 4): MAGNES | *Siue de* | *ARTE MAGNETICA* | LIBRI TRES | *Authore* | P.Athanasio Kirchero | *Fuld: Buchonio é Soc: Ies.* | AD | *Sacratissimum atq. Inuictiss* | FERDINANDVM III | *AVSTRIACVM* | Rom Imperat: | *Semper* | *Augustum* | COLONIÆ AGRIPPINÆ | apud IODOCVM KALCOVEN.

As in the first edition, a note at the end of book 3 gives the editing date as 2 May 1641. The dedicatory epistle and privileges are the same as those in the first edition save that a new privilege, dated from Cologne, 13 March 1643, has been added from Gosvinus Nickel, provincial of the Jesuit province below the Rhine. There is also a privilege, given from Regensburg, 10 September 1640 from Ferdinand III to Jodocus Kalcoven, the printer, according him sole right to print this book.

This second edition of *Magnes sive de arte magnetica* was corrected and enlarged by the author shortly after the first edition was published. The subjects treated remain the same (see Item 4).

PROVENANCE: Bookplate of Harrison D. Horblit; illegible oval stamp on title page.

REFERENCES: Brunet III, 667; Caillet II, 362.5779; Clendening 5.3; De Backer I, 422–23.5; Græsse IV, 21; Sommervogel IV, 1048–49.

A fanciful sundial.
From *Magnes sive arte magnetica* (Item 4).

6. ATHANASII KIRCHERI | SOCIETATIS IESV. | MAGNES | SIVE | DE ARTE MAGNETICA | OPVS TRIPARTITVM | *QVO* | Vniuersa Magnetis Natura, eiusque in omnibus Scientijs & Artibus vsus, noua me- | thodo explicatur: ac præterea è viribus & prodigiosis effectibus Magnetica- | rum, aliarumque abditarum Naturæ motionum in Elementis, Lapidibus, | Plantis, Animalibus, elucescentium, multa hucusque incognita | Naturæ arcana, per Physica, Medica, Chymica, & Mathe- | matica omnis generis Experimenta recluduntur. | EDITIO TERTIA. | *Ab ipso Authore recognita, emendataque, ac multis nouorum Experimentorum | problematis aucta.* | [engraved vignette with printer's device] | ROMÆ MDCLIV. | Sumptibus Blasij Deuersin, & Zanobij Masotti Bibliopolarum. | Typis Vitalis Mascardi. Superiorum permissu, & Priuilegijs. [1654]

33 x 21 cm. (13 x 8 1/4 in.); [32], 618, [28] pp.

Bound in modern stiff-board vellum; ink lettering on spine; triple, blind-stamped fillets on covers; blued edges; title page in red and black; head- and tailpieces; initials; printed signatures, custodes, and marginal glosses; numerous engraved and woodcut illustrations.

There is an additional title page with a miniature portrait of Ferdinand IV, engraved by F. Valentini: ATHANASII KIRCHERI | SOCIETATIS IESV | MAGNES | SIVE DE MAGNETICA ARTE | LIBRI TRES | ROMÆ MDCLIV | Sumptibus Blasij Diuersini et Zenobij Masotti | AD FERDINANDVM IV ROMANORVM REGEM SEMPER AVGVSTVM.

The work is dedicated to Ferdinand IV, son of Ferdinand III, the reigning emperor. The dedicatory epistle is dated from the Roman College, 1 January 1654. Ferdinand IV died the same year at the age of 21. The privilege from Superior General Goswinus Nickel is dated 29 October 1653.

This third edition of *Magnes,* the finest and most complete of the three editions, was greatly enlarged by Kircher. It contains many observations and experiments not in the two previous editions; however, the subjects treated remain the same (see items 4 and 5). The third edition is the first folio edition of *Magnes.*

PROVENANCE: Stamp of C. E. Rappaport, bookseller in Rome; Società Chimica Italiana in Rome, 19 April 1963 (printed preliminary leaf).

REFERENCES: Brunet III, 667; Caillet II, 362.5780; De Backer I, 422–23.5; Græsse IV, 21; Sommervogel IV, 1048–49.6.

Engraved title page from *Ars magna lucis et umbrae* (Item 7).

7. ATHANASII KIRCHERI | FVLDENSIS BVCHONII | E SOC. IESV PRESBYTERI; | Olim in Herbipolensi, & Auenionensi Societatis IESV Gymnasijs | Orientalium linguarum, & Matheseos, nunc huius | in Romano Collegio Professoris ordinarij. | ARS MAGNA | LVCIS ET VMBRAE | In decem Libros digesta. | *QVIBVS* | ADMIRANDAE LVCIS ET VMBRAE | in mundo, atque adeò vniuersa natura, vires effectusq. | vti noua, ita varia nouorum reconditiorumq. | speciminum exhibitione, ad varios mor- | talium vsus, panduntur. | *Cum priuilegio Sacr. Cæsar. Maiestatis.* | כחשיכה באורה | ὡς τὸ σκότος αὐτῆς οὕτως τὸ φῶς αὐτῆς | sicuti tenebrae eius ita & lumen eius. *Psal.* 138 | [title vignette] | ROMAE, Sumptibus Hermanni Scheus. MDCXLVI. | *Ex Typographia Ludouici Grignani.* | SVPERIORVM PERMISSV. [1646]

COLOPHON: ROMÆ, Sumptibus Hermanni Scheus sub signo Reginæ. MDCXLVI. | *Ex Typographia Ludouici Grignani.* | Superiorum Permissu, & cum Priuilegio Sac. Cæsar. Maiestatis.

32 x 21.8 cm. (12 9/16 x 8 1/2 in.); [40], 935, [15] pp.

Modern blind-tooled calf facsimile binding; green lettering piece on spine; initials; tailpieces; printed signatures, custodes, and marginal glosses; numerous woodcut diagrams, maps, and illustrations; tables; 34 full-page woodcuts and engravings, 1 fold-out.

Preliminary leaves 6 and 7 are missing from BYU's copy. An additional, engraved title page by the Burgundian engraver Petrus Miotte displays the effigy of Archduke Ferdinand of Austria, to whom the work is dedicated, and reads: ATHANASII KIRCHERI. S.I | ARS MAGNA | LVCIS ET VMBRÆ | *Ad* | *Serenissi. princip* | FERDINANDVM | ARCHIDVCEM AUSTRIÆ | CÆSARIS FILIVM | *Romæ Apud Hermannum Scheus.*

Archduke Ferdinand was the eldest son of Kircher's patron, the Emperor Ferdinand III. In August 1646, after this work was published, the young Ferdinand was made king of Hungary and in the following year king of Bohemia, the natural processes in anticipation of election as emperor of the Holy Roman Empire. But in 1654 the heir apparent died, and his younger brother Leopold Ignatius became heir. The dedicatory epistle is dated from the Roman College, 1 November 1645. The privilege from Ferdinand III is dated from Vienna, 1 June 1644.

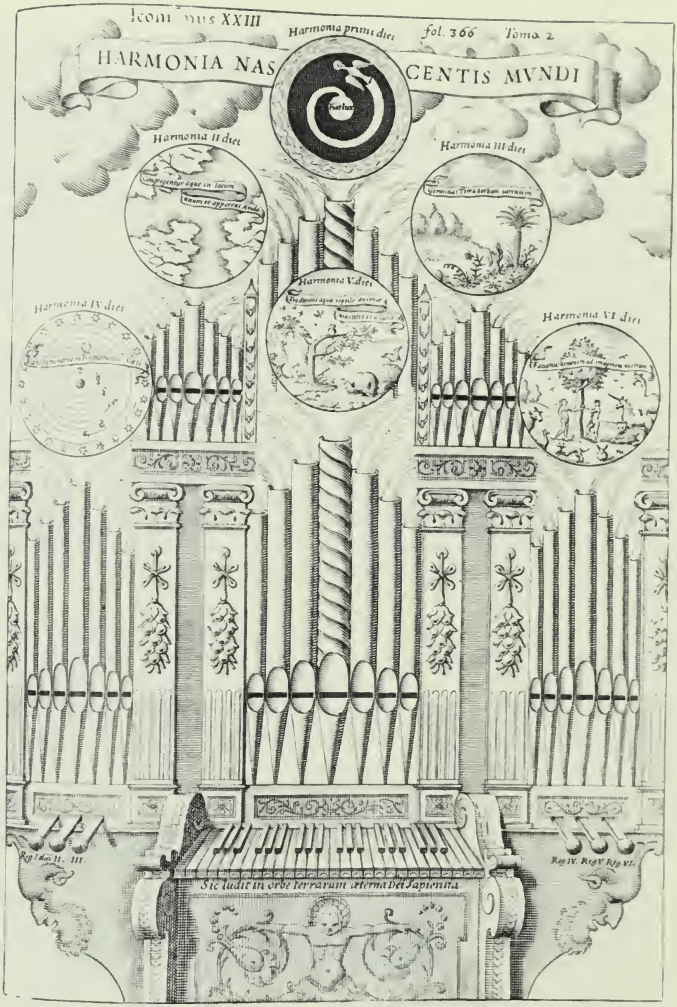
In *Ars magna lucis et umbrae* Kircher discusses the sources of light and shadow. The work deals especially with the sun, moon, stars, and planets. Kircher also treats phenomena related to light, such as optical illusions, color and refraction, projection and distortion, comets, eclipses, and instruments that use light, such as sundials and mirrors. He theorizes about the type of mirror supposed to have been used by Archimedes to set Roman ships afire, drawing from notes of his own experiments performed in the harbor of Syracuse. The work includes one of the first treatises on phosphorous and fireflies. Here Kircher also published his depictions of Saturn and Jupiter as he saw them through a telescope in Bologna in 1643. On that occasion he observed that the planets were neither perfectly round nor self-luminous, contrary to the popular Aristotelian belief that they are perfect, unchanging spheres.

Kircher takes a great interest in sundials and mirrors in this book, and several interesting engravings are of fanciful sundials. He had written extensively on these subjects in his previous work, the *Primitiæ gnomonicæ catoptricæ* (Item 2). In *Ars magna lucis et umbrae* Kircher also discusses an odd ancestor of the modern projector: a device called the "magic lantern," of which he is generally, though erroneously, considered the inventor.

Before writing this work, Kircher had read Kepler's *Ad vitellionem paralipomena* (1604), the first modern work on optics, a copy of which is in BYU's collection, and was influenced to some extent by it. The *Ars magna lucis et umbrae* reveals Kircher's contribution as an astute observer and cataloguer of natural phenomena.

BYU's copy is the first edition; a second edition was published in Amsterdam in 1671.

REFERENCES: Brunet III, 666; Caillet II, 360.5770; Clendening 5.4; De Backer I, 423–24.7; Græsse IV, 21; Sommervogel IV, 1050.9.



The six days of creation are here represented in the six registers of an organ. From *Musurgia universalis* (Item 8).

8. ATHANASII KIRCHERI | FVLDENSIS E SOC. IESV PRESBYTERI | MVSVRGIA | VNIVERSALIS | SIVE | ARS MAGNA | CONSONI ET DISSONI | IN X. LIBROS DIGESTA. | Quà Vniuersa Sonorum doctrina, & Philosophia, Musicæque tam Theoricæ, quam practicæ | scientia, summa varietate traditur; admirandæ Consoni, & Dissoni in mundo, adeòque | Vniuersà Naturà vires effectusque, vti noua, ita peregrina variorum speciminum | exhibitione ad singulares vsus, tum in omni pœnè facultate, tum potissimùm | in Philologià, Mathematicà, Physicà, Mechanicà, Medicinà, Politicà, | Metaphysicà, Theologià, aperiuntur & demonstrantur. | Tomus I. | Pulsare certant plectra Victori repens | Cicada, fractam voce suppleuit fidem. | *Factum Eunomij & Aristonis ex gemma Veterum.* | [title vignette] | ROMAE, Ex Typographia Hæredum Francisci Corbelletti. Anno Iubilæi. MDCL. | *SVPERIORVM PERMISSV.* [1650]

32.2 x 22.5 cm. (12 3/4 x 8 7/8 in.; both volumes); [22], 690 pp. (tome 1); [2], 462, [36] pp. (tome 2).

Rebound in twentieth-century towed pigskin restoration binding by the BYU Library conservation laboratory (previously bound in contemporary German stiff-board vellum, in poor condition when acquired); gold lettering on spine; head- and tailpieces; initials; printed signatures, custodes, and marginal glosses; printed music; tables; woodcut illustrations and diagrams; 22 full-page woodcuts and engravings, 1 bi-folio, 1 fold-out.

An engraved portrait, dated "Antwerpe, 1649," of Archduke Leopold Wilhelm of Austria, to whom the work is dedicated, was designed by the Austrian papal artist Johannes Paul Schor and engraved by Paulus Pontius, a student of Rubens and one of the finest Flemish engravers of his time. Archduke Leopold, the younger brother of Emperor Ferdinand III, was made regent over the empire after Ferdinand's death in 1657. He refused the offer of the imperial crown in preference to Ferdinand's second son and emperor-elect, Leopold Ignatius, who was crowned Leopold I in 1658.

Tomes 1 (books 1–7) and 2 (books 8–10) are bound separately. Tome 1 has an added engraved title page: ATHANASI KIRCHERI SOC. IESV | MVSVRGIA VNIVERSALIS *siue* ARS M[...] | AD SERENISSO LEOPOLDVM GVILIELMV ARCHIDVCEM AVSTRIÆ. Johannes Paul Schor is named as the designer, and in the bottom right appears "Baronius F. Romæ," the engraver perhaps being Jean Baron, the Toulousan engraver who died in Rome shortly after 1650.

The dedicatory epistle is dated from Rome, 8 December 1649, and the privilege from Superior General Vincentius Carrafa is dated from Rome, 16 June 1648. Tome 2 has no separate title page.

Musurgia universalis is one of Kircher's most important, enduring, and informative works. Kircher attempted to compile in this book all the musical knowledge available in his day, making it the first exhaustive encyclopedia of music. For musicologists it has long been an invaluable source of information on baroque concepts of style and composition. Kircher wrote the *Musurgia* at the time of the great transition when the old Renaissance polyphony, still in use in the Church, was giving way to the new baroque style in secular music, most notably in opera. Kircher reveals an astounding knowledge and understanding of contemporary music and of this transition. Indeed, he gives the earliest account of the "doctrine of the affections," the baroque idea that music should imitate emotions.

Kircher reproduces many complete musical pieces of the sixteenth and seventeenth centuries to illustrate various styles—he even includes a three-part fantasy of his own—and musicologists have Kircher to thank for preserving many instrumental pieces of Frescobaldi, Froberger, and other early baroque composers. The work even features a musical composition by Emperor Ferdinand III. Kircher was aided in his research by the Italian composer Antonio Maria Abbatini, the maestro di capella at the Lateran. Besides his interest in contemporary music theory, Kircher was also firmly established in classical music theory. Like many of his predecessors and contemporaries, he followed Boethius and emphasized the mathematics of music and its relationship to the harmony of the body, per Robert Fludd, and of the solar system, per Kepler.

A portion of the work is devoted to ancient Hebrew and Greek music, but Kircher's speculations on ancient music were often grossly inaccurate. To this day controversy still rages over a musical setting he gave to a poem of Pindar transcribed from a manuscript he is supposed to have seen in Sicily but which has since disappeared. The *Musurgia* is also interesting for the history of instrument-making. Many plates are of ancient and contemporary instruments. Kircher begins the work by illustrating the anatomy of voice and hearing, the most common instrument. He includes a treatise on acoustics, a subject he would take up again in the *Phonurgia nova* (Item 25).

Kircher also discusses many of his own inventions, like the talking statue, the megaphone, and numerous mechanical music-makers. One of these inventions, a product of his mathematical concept of music, is an ingenious composing computer called an *arca musarithmica* or *musurgia mechanica*. The *arca* was a chest containing numbered rods, which the composer could move about and combine to produce melodic and rhythmic patterns. This mathematical method of composition would perhaps seem less odd to the student of modern music than it did to Kircher's contemporaries. A surviving *arca* can be seen today in the Pepysian Library, Magdalene College, Cambridge.

Kircher's *Musurgia* gained immediate and lasting popularity. Samuel Pepys recorded in his *Diary*, 22 February 1668, "Up, and by coach through Ducke lane; and there did buy Kircher's *Musurgia*, cost me 35*s*, a book I am mighty glad of, expecting to find great satisfaction in it." The *Musurgia* remained the standard exhaustive encyclopedia of music into the eighteenth century.

BYU's copy of *Musurgia* is the first edition. A second edition was published in Amsterdam in 1662.

REFERENCES: Brunet III, 668; Caillet II, 363.5785; Clendening 6.5; De Backer I, 424.8; Græsse IV, 21; Meibom I, preface; Sommervogel IV, 1051.11.

Orpheus charming Cerberus with his lyre.
Engraved frontispiece from vol. 2 of *Musurgia universalis* (Item 8).

9. ATHANASII KIRCHERI | E SOC. IESV | OBELISCVS | PAMPHILIVS, | HOC EST, | INTERPRETATIO | Noua & hucusque intentata | OBELISCI HIEROGLYPHICI | Quem non ita pridem ex Veteri Hippodromo Antonini Caracallæ | Cæsaris, in Agonale Forum transtulit, integritati restituit, | & in Vrbis Æternæ ornamentum erexit | INNOCENTIVS X. | PONT. MAX. | In quo post varia Ægyptiacæ, Chaldaicæ, Hebraicæ, Græcanicæ Antiquitatis, | doctrinæque quà Sacræ, quà Profanæ monumenta, Veterum tandem | Theologia, hieroglyphicis inuoluta symbolis, detecta | è tenebris in lucem afferitur. | [arms of Innocent X] | ROMÆ, Typis Ludouici Grignani. Anno Iubilei MDCL. | *SVPERIORVM PERMISSV*. [1650]

COLOPHON: [device] | ROMÆ, Typis Ludouici Grignani. Anno Iubilæi MDCL. | *SVPERIORVM PERMISSV*.

33 x 22.5 cm. (13 x 8 7/8 in.); [68], 560, [30] pp.

Contemporary limp vellum Spanish binding; decorative inking and title on spine; head- and tailpieces; initials; printed signatures, custodes, and marginal glosses; engraved portrait of Innocent X; 1 fold-out engraved plate with detailed diagram of obelisk; 6 full-page woodcuts and engravings; illustrations.

The work includes an added engraved title page: OBELISCVS | PAMPHILIUS | ATHANASII | KIRCHERI. The title page was designed by Giovanni-Angelo Canini, the Italian painter, engraver, and archeologist who, in 1654, came under the patronage of Christina, the former queen of Sweden. The engraver was Cornelis Bloemaert II, the Dutch engraver and member of a family of distinguished artists.

The dedicatory epistle to Pope Innocent X is dated from Rome, 4 October 1650. A letter to Kircher from Emperor Ferdinand III is dated from Regensburg, 30 October 1640.

The *Obeliscus pamphilius* is Kircher's first complete exposition of his principles for translating Egyptian hieroglyphs. The work was occasioned by his commission under Pope Innocent X to study and restore the fallen obelisk the pope was reerecting in front of the Palazzo Pamfili. The obelisk was actually restored by Gian Lorenzo Bernini under Kircher's direction. In this work Kircher maintains the symbolic method of interpretation he hinted at earlier in his *Prodromus coptus sive aegyptiacus* (Item 3) and *Lingua aegyptiaca restituta* (1643). Like most of Kircher's works, this book is filled with fascinating arcana, and Kircher's interpretations of Egyptian mythology and lore are of particular interest.

PROVENANCE: "Collegio de la compania de Jesus de Cordoba" and "BBS[?]" (inscriptions on title page and added title page).

REFERENCES: Brunet III, 668; Caillet II, 364.5787; Clendening 6.6; De Backer I, 424.9; Græsse IV, 22; Sommervogel IV, 1052.12.

Engraved title page from *Obeliscus pamphilius* (Item 9).

Œdipus (Kircher himself) solves the riddle of the Spinx.
Engraved title page from *Œdipus ægyptiacus* (Item 10).

10. [Tome 1:] ATHANASII KIRCHERI | E SOC. IESV, | OEDIPVS | AEGYPTIACVS. | *HOC EST* | Vniuersalis Hieroglyphicæ Veterum | Doctrinæ temporum iniuria abolitæ | INSTAVRATIO. | Opus ex omni Orientalium doctrina & sapientia | conditum, nec non viginti diuersarum linguarum | authoritate stabilitum, | *Felicibus Auspicijs* | FERDINANDI III. | AVSTRIACI | Sapientissimi & Inuictissimi | Romanorum Imperatoris semper Augusti | è tenebris erutum, | Atque Bono Reipublicæ Literariæ consecratum. | Tomus I. | [ornament] | ROMÆ, | Ex Typographia Vitalis Mascardi, M DC LII. | *SVPERIORVM PERMISSV*. [1652]

[Tome 2, Part 1:] ATHANASII KIRCHERI | SOC. IESV | OEDIPI | AEGYPTIACI | Tomus Secundus. | GYMNASIVM | *SIVE* | Phrontisterion Hieroglyphicum in Duodecim | Classes distributum, | *IN QVIBVS* | Encyclopædia Ægyptiorum, id est, Veterum Hebræorum, Chal- | dæorum, Ægyptiorum, Græcorum, cœterorumque Orientalium | recondita Sapientia, hucusque temporum iniuria perdita, per | artificiosum sacrarum Sculpturarum contextum de- | monstrata, instauratur, | *Felicibus Auspicijs* | FERDINANDI III. | CAESARIS. | PARS PRIMA | Complectens Sex priores Classes. | ROMÆ, | Ex Typographia Vitalis Mascardi, Anno M DC LIII. | *SVPERIORVM PERMISSV*. [1653]

[Tome 2, Part 2:] ATHANASII KIRCHERI | SOC. IESV | OEDIPI | AEGYPTIACI | Tomi Secundi | PARS ALTERA | Complectens Sex posteriores | Classes. | *Felicibus Auspicijs* | FERDINANDI III. | CAESARIS. | [device with the imperial arms and the Hapsburg eagle] | ROMÆ, | Ex Typographia Vitalis Mascardi, Anno M DC LIII. | *SVPERIORVM PERMISSV*. [1653]

[Tome 3:] ATHANASII KIRCHERI | SOC. IESV | OEDIPI | AEGYPTIACI | Tomus III. | THEATRVM HIEROGLYPHICVM, | *HOC EST*, | Noua & hucusque intentata | OBELISCORVM | Cœterorumque Hieroglyphicorum Monumen- |

torum, quæ tùm Romæ, tùm in Aegypto, ac | celebrioribus Europæ Musæis adhuc | supersunt, | INTERPRETATIO | Iuxta sensum Physicum, Tropologicum, Mysticum, Hi- | storicum, Politicum, Magicum, Medicum, Mathemati- | cum, Cabalisticum, Hermeticum, Sophicum, Theo- | sophicum; ex omni Orientalium doctrina | & sapientia demonstrata. | *Felicibus Auspicijs* | FERDINANDI III. | CAESARIS. | ROMÆ, | Ex Typographia Vitalis Mascardi, Anno à Partu Virgineo M DC LIV. | *SVPERIORVM PERMISSV.* [1654]

COLOPHA: ROMÆ, | Ex Officina Typographica Vitalis Mascardi, | ANNO M DC LIV. [1654] (tome 2, part 1); ROMÆ, | Ex Typographia Vitalis Mascardi, M DC LIV. | *Superiorum permissu.* [1654] (tome 2, part 2); ROMÆ, | Ex Typographia Vitalis Mascardi, M DC LV. | *SVPERIORVM PERMISSV.* [1655] (tome 3).

38.5 x 27 cm. (15 3/16 x 10 5/8 in.; volume 1); 38.5 x 27.2 cm. (15 3/16 x 10 3/4 in.; volume 2); 38.9 x 27.2 cm. (15 5/16 x 10 11/16 in.; volume 3); 39 x 26.4 cm. (15 3/8 x 10 3/8 in.; volume 4); [96], 424, [40] pp. (tome 1); [2], 440, [30] pp. (tome 2, part 1); 546, [13] pp. (tome 2, part 2); [2], 590, [36] pp. (tome 3).

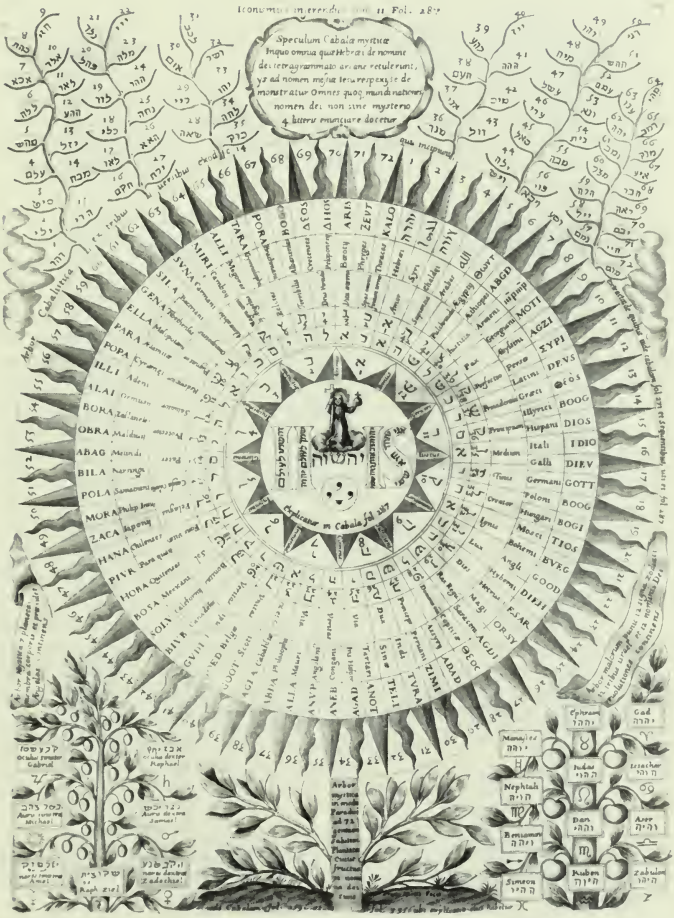
Three tomes bound in four volumes; all bound in contemporary limp vellum; ink lettering on spine; trimmed edges; browning paper; head- and tailpieces; initials; printed signatures, custodes, and marginal glosses; numerous engraved and woodcut illustrations; 12 fold-out engravings.

There is an additional, engraved title page in tome 1 designed by Giovanni-Angelo Canini and engraved by Cornelis Bloemaert II: ATHANASII KIRCHERI E SOCIETATE IESV | OEDIPVS ÆGYPTIACVS | AD FERDINANDVM III CÆSAREM SEMPER AVGVSTVM.

Tome 1 contains a fine portrait of Ferdinand III—to whom the work as a whole is dedicated—designed by the Italian portraitist Jacopo Bicchi and engraved by Cornelis Bloemaert II.

The dedicatory epistle is dated from the Roman College, 1 January 1655. It is followed by 56 pages containing 27 elogies to Ferdinand in as many different languages—including Chinese, Bohemian, Coptic, and Egyptian—composed by Kircher and his fellow churchmen. The privilege from Superior General Goswinus Nickel is dated 12 January 1655. Small portions of the work are dedicated individually to various political and ecclesiastical authorities.

Œdipus aegyptiacus, Kircher's largest and most astounding work, is the culmination of years of research in Egyptology. The work is an exhaustive treatise on every aspect of ancient Egypt, from history and geography to



The 72 names of God in 72 languages. The scheme is based on the Cabbala.
From *Œdipus ægyptiacus* (Item 10).

science, religion, and magic. Tome 1 gives a general overview of Egypt, her geography, the nature of the Nile, and the workings of ancient Egyptian government. Kircher also introduces here the Egyptian pantheon and demonstrates how Egyptian gods were carried into Greek and Roman worship. He discusses Egyptian religious influence on the Hebrews, Syrians, Babylonians, Persians, Samaritans, and others. The tome culminates with a discussion of the affinities between Egyptian religion and the religious practices and mythologies of China, Japan, India, Mongolia, and, interestingly enough, the Aztec culture of America. The similarities, according to Kircher, result from common ancestry.

Part 1 of tome 2 begins with a discussion of hieroglyphics, their origin, and Kircher's method of interpretation. Because Kircher was certain that hieroglyphs were pictographs symbolizing the Egyptians' highest philosophical and theological concepts, he made an exhaustive study of all the literature on Egyptian philosophy and religion. No information was passed over. He then compared these with subsequent developments among later cultures. In the remainder of part 1, Kircher expounds these mysteries and their affinities with the writings of Hermes Trismegistus, Zoroaster, Orpheus, Proclus, Plato, Psellus, the Alexandrian Fathers, the Greek myths, the Book of Enoch, and the Chaldean Oracles. He includes a large section on the Hebrew Cabbala. In the second part of tome 2, under what he calls "Hieroglyphic Mathematics," Kircher discusses the significance of numbers, geometric shapes, music and its relation to the order of the universe, and astrology. He does the same with hieroglyphic medicine, hieroglyphic alchemy, hieroglyphic magic, hieroglyphic theology, and the "Mechanics of the Egyptians." In short, tome 2 of *Œdipus aegyptiacus* is filled with the type of recondite learning that only a polymath like Kircher could amass.

Kircher begins tome 3 with a further discussion of the origin of hieroglyphics and the relationship of Egyptian hieroglyphics to other writing systems, most notably to Chinese characters and Aztec hieroglyphs. He devotes the bulk of the tome to interpretations of the hieroglyphs found on the Bembine tablet (so called for its former owner, Cardinal Torquato Bembo), several obelisks, sarcophagi, amulets, and other ancient artifacts.

PROVENANCE: Engraved bookplate with inscription "LPN" on inside cover of each volume.

REFERENCES: Brunet III, 668 ("Ce savant ouvrage est le plus recherché, et l'un des plus rares de tous ceux du P. Kircher"); Caillet II, 364.5788; Clendening 7.7; De Backer I, 424–26.10; Græsse IV, 22; Sommervogel IV, 1052–56.13.

An Aztec inscription sent to Kircher by a fellow Jesuit in Mexico. Kircher attempted to demonstrate similarities between the Aztec and Egyptian writing systems. From *Œdipus ægyptiacus* (Item 10).

11. ATHANASII KIRCHERI | E SOC. IESV | ITINERARIVM | EXSTATICVM | *QVO* | MVNDI OPIFICIVM | *ID EST* | Cœlestis expansi, siderumque tam errantium, quàm | fixorum natura, vires, proprietates, singulorum- | que compositio & structura, ab infimo Telluris globo, | vsque ad vltima Mundi confinia, per ficti raptus | integumentum explorata, noua hypot[hesi] | exponitur ad veritatem | INTERLOCVTORIBVS | COSMIELE ET THEODIDACTO | *AD* | *SERENISSIMAM* | CHRISTINAM | ALEXANDRAM | Suecorum, Gothorum, & VVandalorum | Reginam. | ROMÆ, Typis Vitalis Mascardi, Anno 1656. | SVPERIORVM PERMISSV.

23.5 x 18 cm. (9 1/4 x 7 in.); [8], 464, [24] pp.

Bound in contemporary stiff-board vellum, probably Dutch; ink title on spine; blued edges; some browning and damp-staining; initials; head- and tailpieces; printed signatures, custodes, and marginal glosses.

The dedicatory epistle to the former Swedish Queen Christina Alexandra is dated from the Roman College, 1 June 1656 . The privilege from Goswinus Nickel, the superior general, is dated 15 November 1655.

Itinerarium exstaticum is one of Kircher's most curious works. He wrote the treatise in the form of a narrative in which a certain Theodidactus—Kircher himself—is caught up in a dream–vision or an ecstatic journey and is guided through the heavens by a spirit named Cosmiel. The genre was not uncommon: the *Somnium Scipionis* of Cicero, a popular example from antiquity, and Kepler's *Somnium*, published posthumously in 1634, both recount dream–journeys to the moon. In the first dialogue, Kircher recounts the journey to the moon, which he finds scarred with mountains and craters, contrary to the Aristotelian view. He flies on to Venus, which he discovers is made of the four elements, and so on to each of the other planets and through the region of the fixed stars. The sun itself has blemishes, Kircher proclaims. He himself had seen sunspots through a telescope several years earlier.

Kircher rejected the Aristotelian and Ptolemaic cosmologies in favor of that of Tycho Brahe (1546–1601), who argued that the sun orbits the earth and is in turn orbited by the planets and the fixed stars. The Tychonian system was adopted by most of Kircher's fellow Jesuits, since it allowed them to maintain geocentric orthodoxy while espousing, at least in part, the new, more scientific heliocentricity advocated by the Copernicans. Kircher broaches this subject more directly in the second dialogue, where he deals with the creation of the earth, its position in the universe, its various

characteristics and limitations, and finally, its eventual destruction. To support his views Kircher cites scriptural and scientific authorities in his conclusion. Among the latter are the astronomer Johannes Hevelius, the influential astronomer and meteorologist Gottfried Wendelin, Galileo, and other less-orthodox scientists of his day. This scientific, religious, and semimystical work testifies to Kircher's dubious poise at the juncture of two ages.

Itinerarium exstaticum is bound with *Iter extaticum II* (Item 13); also in the BYU collections is the second edition, published in Würzburg in 1660 (Item 12). Other editions were issued at Würzburg in 1671, Tyrnau in 1729, and Kaschau in 1753.

PROVENANCE: "Monasterii Weingare[tensis] 1691," "Monasterii Hofensis" (inscriptions on title page); seal of the [Köni]gliche [B]and Bibliothek (?) on title page.

REFERENCES: Brunet III, 667; De Backer I, 426.11; Græsse IV, 21; Sommervogel IV, 1056–57.14.

Kircher's speculation on the Northern Zodiac as conceived by the Egyptians. From *Œdipus ægyptiacus* (Item 10).

12. R. P. | ATHANASII KIRCHERI | E SOCIETATE JESU | ITER EXSTATICUM | COELESTE, | Quo Mundi opificium, id est, Coelestis Expansi, siderumq; | tam errantium, quàm fixorum natura, vires, proprietates, singulo- | rumq; compositio & structura, ab infimo Telluris globo, usq; ad ultima | Mundi confinia, per ficti raptus integumentum explorata, | novâ hypothesi exponitur ad veritatem, | *INTERLOCUTORIBUS* | *COSMIELE ET THEODIDACTO:* | Hac secundâ editione Prælusionibus & Scholiis illustra- | tum; ac schematismis necessariis, qui deerant, exornatum; nec | non à mendis, quæ in primam Romanam editionem irre- | pserant, expurgatum, | IPSO AUCTORE ANNUENTE, | *A* | P. GASPARE SCHOTTO | REGISCURIANO E SOCIETATE JESU, | Olim in Panormitano Siciliæ, nunc in Herbipolitano | Franconiæ Gymnasio ejusdem SOCIETATIS JESU | Matheseos Professore. | *Accessit ejusdem Auctoris* | ITER EXSTATICUM TERRESTRE, | & | SYNOPSIS MUNDI SUBTERRANEI. | *HERBIPOLI* | Sumptibus Joh. Andr. & Wolffg. Jun. Endterorum hæredibus, | *Prostat Norimbergæ apud eosdem.* | ANNO M. DC. LX. [1660]

21 x 17 cm. (8 1/4 x 6 5/8 in.); [24], 512 pp. (paginated continuously with Item 14).

Contemporary mottled calf binding with deterioration associated with mottling; tight back sewn over four cords; lettering piece on spine; paper edges mottled in blue and red; initials; head- and tailpieces; printed signatures, custodes, and marginal glosses; tables; 12 full-page engravings and woodcuts, including a diagram of the sunspots.

BYU's copy is missing plate 2. The arms of Joachim von Gravenegg, abbot of Fulda, appear on the verso of the title page. There is an additional engraved title page: ITER EXSTATICUM | KIRCHERIANUM, | Prælusionibus & Scholijs | illustratum, schematibusq; | exornatum | *à P. GASP. SCHOTTO,* | *Societatis JESU.* | 1660.

For a description of the contents of this work, see the first edition (Item 11). The second edition of *Iter exstaticum coeleste* was prepared by Kircher's friend and disciple Gaspar Schott (1608–66), whose dedicatory epistle to Joachim von Gravenegg, abbot of Fulda and archchancellor of the emperor over Germany and France, is dated from Würzburg, 8 September 1660. Two privileges from Ricquinus Göltgens, provincial of the Jesuit upper

Rhine province, are given—one to the author and one to the printer—both dated from Würzburg, 27 June 1660. Schott appended 27 pages of apologetics in defense of Kircher against accusations of heresy by a fellow Jesuit, Melchior Corneus.

This second edition of *Iter extaticum coeleste* is bound with the second edition of *Iter extaticum II* (Item 14).

PROVENANCE: Bookplate and stamp of Phillips Library of Harvard College Observatory; "Harvard College Library from the library of Robert Wheeler Willson January 12, 1927" (stamp on verso of additional title page); second stamp "Transferred to Astronomical Observatory"; "dHC" (inscription on title page).

REFERENCES: Brunet III, 667; Caillet II, 361.5776; Clendening 8.9; De Backer I, 426.11; Græsse IV, 21; Sommervogel IV, 1056–57.14.

Miniature portrait of Kircher with the angel Cosmiele. Engraved title page from *Iter exstaticum kircherianum* (Item 12).

13. ATHANASII KIRCHERI | E SOC. IESV | ITER EXTATICVM II. | Qui & Mundi Subterranei | PRODROMVS dicitur. | QVO | GEOCOSMI OPIFICIVM | SIVE | Terrestris Globi Structura, vnà cum abditis | in ea constitutis arcanioris Naturæ Re- | conditorijs, per ficti raptus inte- | gumentum exponitur ad | veritatem. | In III. Dialogos distinctum. | AD SERENISSIMVM | LEOPOLDVM IGNATIVM | Hungariæ, & Bohemiæ Regem. | ROMÆ, Typis Mascardi. M.DC.LVII. | *SVPERIORVM PERMISSV*. [1657]

23.5 x 18 cm. (9 1/4 x 7 in.); [24], 237, [13] pp.

Bound in contemporary stiff-board vellum, probably Dutch; ink title on spine; blued edges; some browning and damp-staining; initials; tailpieces; printed signatures, custodes, and marginal glosses.

The dedicatory epistle to Leopold Ignatius, king of Hungary and Bohemia and son of Kircher's patron Ferdinand III, is dated from Rome, 1 November 1657. The next year Leopold was crowned emperor. The privilege from Joannes Rhò, the provincial of the Jesuit province of Rome, is dated 2 August 1657.

This first edition of *Iter extaticum II* continues the dialogues of the *Itinerarium extaticum* (Item 11). Having journeyed through the heavens with the angel Cosmiel, Theodidactus (i.e., Kircher) descends with a second guide, Hydriel, and examines the waters and their natures. Cosmiel then returns and shows him the land, its geography, its characteristics, and wonders. This dialogue also treats animals and plants and their generation and corruption. In the third dialogue they explore the wonders of the submarine world, and in the fourth the subterranean world. The work is, as the title indicates, a *prodromus* or prolegomenon, an introduction to Kircher's later work *Mundus subterraneus* (Item 17). At the end of *Iter extaticum II* Kircher appended a synopsis of this forthcoming work.

Iter extaticum II is bound with *Itinerarium extaticum* (Item 11); also in the BYU collections is the second edition of *Iter extaticum II* (Item 14). Other editions were published at Tyrnau in 1729 and Kaschau in 1753.

PROVENANCE: (See Item 11).

REFERENCES: Brunet III, 667; De Backer I, 426.12; Græsse IV, 21; Sommervogel IV, 1057.15.

The Pamphilian obelisk.
From *Obeliscus pamphilius* (Item 9).

14. ATHANASII KIRCHERI | E SOC. JESU | ITER EXTATICUM II. | Qui & Mundi Subterranei | Prodromus dicitur; | Quo | GEOCOSMI OPIFICIUM, | SIVE | Terrestris Globi Structura, unà cum abditis in ea consti- | tutis arcanioris Naturæ Reconditoriis, per ficti ra- | ptus integumentum exponitur ad | veritatem. | In III. Dialogos distinctum, & hac se- | cundâ editione à mendis, quæ in primam Roma- | nam irrepserant, expurgatum. | Accessit in fine SYNOPSIS Mundi Subterranei | ejusdem Auctoris. [1660]

21 x 17 cm. (8 1/4 x 6 5/8 in.); 176, [19] pp. (paginated continuously with Item 12).

Contemporary mottled calf binding with deterioration associated with mottling; tight back sewn over four cords; lettering piece on spine; paper edges are mottled in blue and red; initials; head- and tailpieces; printed signatures, custodes, and marginal glosses.

For a description of the contents of this work, see the first edition (Item 13). This second edition of *Iter extaticum II* was prepared by Kircher's friend and disciple Gaspar Schott. A synopsis of Kircher's forthcoming *Mundus subterraneus* (Item 17) is appended.

This second edition of *Iter extaticum II* is bound with the second edition of *Iter extaticum coeleste* and comprises pp. 513–689 (Item 12).

PROVENANCE: (See Item 12).

REFERENCES: Brunet III, 667; Clendening 8.9; De Backer I, 426.12; Græsse IV, 21; Sommervogel IV, 1057.15.

15. ATHANASII KIRCHERI | E SOC. IESV | SCRVTINIVM | PHYSICO-MEDICVM | Contagiosæ Luis, quæ PESTIS dicitur. | *QVO* | Origo, causæ, signa, prognostica Pestis, nec non insolentes | malignantis Naturæ effectus, qui statis temporibus, | cælestium influxuum virtute & efficacia, tum | in Elementis; tum in epidemijs hominum | animantiumque morbis elucescunt, | vnà cum appropriatis remediorum | Antidotis nouâ doctrinâ in | lucem eruuntur. | AD | ALEXANDRVM VII. | PONT. OPT. MAX. | [ornament] | ROMÆ. Typis Mascardi. MDCLVIII. | *SVPERIORVM PERMISSV*. [1658]

24.7 x 17.5 cm. (9 3/4 x 6 7/8 in.); [16], 252, [16] pp.

Bound in contemporary Italian limp vellum; ink title and shelfmark on spine; initials; tailpieces; printed signatures, custodes, and marginal glosses; engraving of the arms of Pope Alexander VII on verso of title page.

The dedicatory epistle to Alexander VII is dated from the Roman College, 22 February 1658. The privilege from Superior General Goswinus Nickel is dated 1 November 1657.

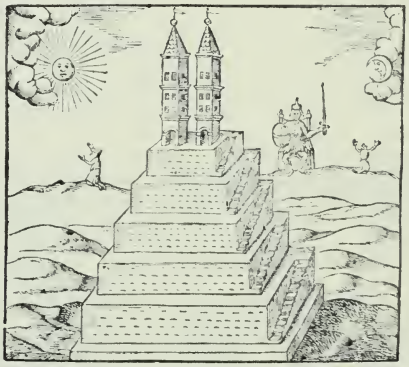
The bubonic plague had ravaged Europe for centuries, but in 1656 it hit Rome with unusual ferocity. Within four months 15,000 victims had died. Pope Alexander VII sponsored hospitals and urged physicians to remain in Rome and do their best to cure the sick. Because of his vast knowledge and his fame as a scientist, Kircher was called upon to assist the physicians in their search for a cure. He worked assiduously alongside the physicians, many of whom died for their compassion. Armed with the results of his experiments and observations, Kircher wrote the *Scrutinium* and published the first edition two years after the outbreak at Rome. Naturally the book was extremely popular; it quickly went through three editions and was translated into German and Dutch.

Kircher begins the work with the pious and ancient assertion that the plague is the scourge of God for man's sins. But passing quickly from theology he distinguishes a plague from sporadic and endemic illnesses, following Hippocrates and Galen. He then discusses the causes of the plague, listing the traditional possibilities like bad air, putrefying bodies, and decaying matter. Kircher was perhaps the first to suggest that physicians themselves may spread the plague through unclean hands and instruments. Although Kircher expends not a few pages refuting oddities like the astrological causes of plagues and antidotes from the juices of toads, he also records several significant observations.

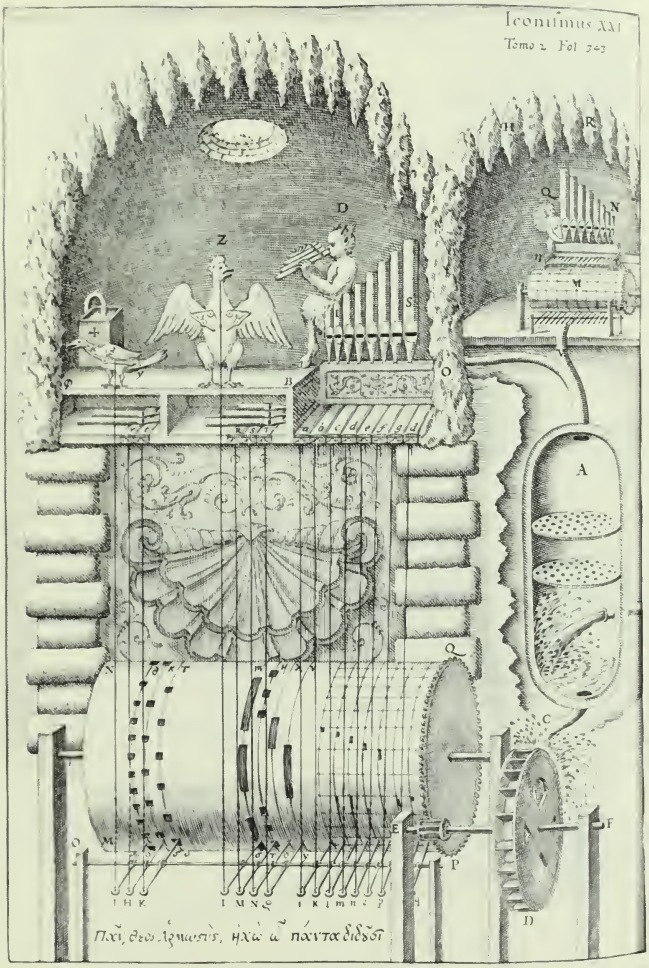
Kircher was the earliest of the microscopists and certainly the first to apply microscopy to medical research. By scrutinizing blood samples from infected patients , he was able under a microcope to detect *vermiculi*, or tiny animals, invisible to the naked eye. These, he hypothesized, could be the cause of the plague and could be spread through the air or through the pores by contact. Clearly, it was not the illusive plague bacillus *Pasturella pestis* that Kircher saw, but perhaps much larger bacteria spawned in the unsterile blood specimens. The actual bacillus was not discovered until 1894 by Kitasato and Yersin with the aid of high-powered microscopes and advanced staining processes. Nevertheless, Kircher was undoubtedly the first to advance the theory that infectious diseases are caused by microscopic living organisms. He suggested further that diseases may be spread not only by man but also by animals, especially household pets, and by insects, although he was unaware of the exact carriers of the plague: the rat and its passenger, the flea. These observations alone give the *Scrutinium* a seminal place in the history of medicine. In the conclusion, Kircher gives a chronological list of the great plagues recorded by man.

The *Scrutinium* was published again in Leipzig in 1659, 1671, and 1674, and in Graeci in 1740. A Dutch translation was issued in Rotterdam in 1669, and a German translation was published in Augsburg in 1680.

REFERENCES: Brunet III, 668; Caillet II, 365.5792; Clendening 7.8; De Backer I, 426.16; VII, 286.13; Garrison/Morton 589.5118; Græsse IV, 22; Sommervogel IV, 1057–58.16.



Aztecs depicted worshipping the sun and the moon.
From *Œdipus ægyptiacus* (Item 10).



A mechanical music maker powered by a waterwheel.
From *Musurgia universalis* (Item 8).

16. ATHANASII KIRCHERI | SOC. IESV | DIATRIBE. | De prodigiosis Crucibus, quæ tam | supra vestes hominum, quam | res alias, non pridem post | vltimam incendium | Vesuuij Montis | *NEAPOLI* | *comparuerunt*. | [ornament] | ROMÆ | Sumptibus Blasij Deuersin. | M. DC. LXI. | SUPERIORVM PERMISSV. [1661]

COLOPHON: Romæ, Typis Vitalis Mascardi, 1661. | *Superiorum permißu*.

16.7 x 11.1 cm. (6 5/8 x 4 3/8 in.); [8], 103, [1] pp.

Contemporary marbled paper binding; lettering piece on front cover and on spine with shelf mark; speckled edges; damp-staining; initials; tailpieces; printed signatures, custodes, and marginal glosses; 1 fold-out plate; 1 figure.

The dedicatory epistle to Leopold William, archduke of Austria, brother of the former emperor Ferdinand III and uncle to Emperor Leopold I, is dated from the Roman College, 25 March 1661. The privilege from Superior General Goswinus Nickel is dated 21 January 1661.

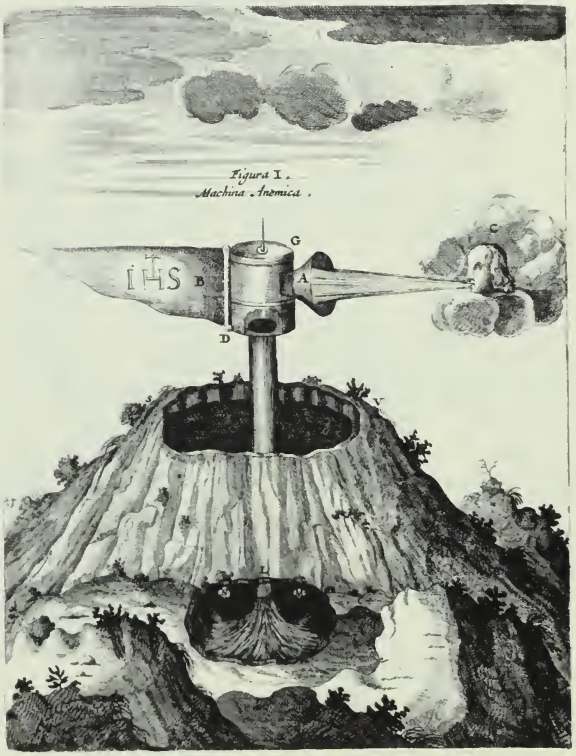
This is the first edition of the *Diatribe de prodigiosis crucibus*, one of the rarest of Kircher's works. Kircher attempts to explain the uncanny appearance of crosses on clothing and other objects immediately after an eruption of Vesuvius. He begins by discussing the history of similar appearances and the nature of miracles in general. God, he says, works by natural means, and miracles can therefore be explained rationally. Kircher maintains that the crosses are the result of a mixture of minerals and vapors reacting with the sun's light upon certain materials. Nevertheless, he argues, the crosses are a portent from God warning the people to repent. This approach is an excellent illustration of Kircher's position between the two worlds of the seventeenth century, the scientific and the orthodox.

A second edition of the *Diatribe* was published in Rome in 1666. A German translation appeared in Gaspar Schott's *Joco-seriorum naturae et artis* (Würzburg, 1666).

Engraved title page from vol. 2 of *Mundus subterraneus* (Item 18).

PROVENANCE: Bookplate of the Fuerstlich Auerspergsche Fideicommis-bibliothek zu Laybach; "Ex Dono Authoris" (contemporary inscription on inside front cover); "Wolfg. Engelb. S.R.J. Com. ab Aussperg Cat. Inscr: Anno 1663" (inscription on title page).

REFERENCES: Brunet III, 667; Clendening 9.12; De Backer I, 426–27.15; Græsse IV, 21; Sommervogel IV, 1059.18 ("Ce petit volume très rare a été réimprimé par le P. Gaspar Schott, à la suite de son *Joco-Seria*, pag. 307. Traduit en allemand avec l'ouvrage du P. Schott").



Kircher's device for supplying fresh air to mine shafts.
From *Mundus subterraneus* (Item 18).

17. [Tome 1, books 1–7:] ATHANASII KIRCHERI | E Soc. Jesu | MUNDUS | SUBTERRANEUS, | In XII Libros digestus; | *QUO* | Divinum Subterrestris Mundi Opificium, mira | Ergasteriorum Naturae in eo distributio, verbo παντάμορφον | Protei Regnum, | *Universæ denique Naturæ Majestas & divitiæ summa* | *rerum varietate exponuntur. Abditorum effectuum causæ acri indagine* | *inquisitæ demonstrantur; cognitæ per Artis & Naturæ conjugium ad* | *humanæ vitæ necessarium usum vario experimentorium apparatu,* | *necnon novo modo, & ratione applicantur.* | TOMUS I. | *AD* | ALEXANDRUM VII. | PONT. OPT. MAX. | [vignette] | AMSTELODAMI, | Apud JOANNEM JANSSONIUM & ELIZEUM WEYERSTRATEN, | Anno M DC LXV. *Cum Privilegiis.* [1665]

[Tome 2, books 8–12:] ATHANASII KIRCHERI | E Soc. IESU | MUNDI SUBTERRANEI | TOMUS II^us^ | IN V. LIBROS DIGESTUS Quibus | Mundi Subterranei fructus exponuntur, et | quidquid tandem rarum, insolitum, et portentosum | in foecundo Naturæ utero continetur, ante oculos | ponitur curiosi Lectoris. | Orpheus | Ὸς νάεις κατὰ πάντα μέρη κόσμοιο γενάρχα | Ὸς δαπανᾶς μεν ἅπαντα, καὶ αὔξεις ἐμπαλιν ἄντους | *Omnes qui partes habitas, mundique Genarcha* | *Absumis quæ cuncta eadem, quæ rursus adauges.* | *AMSTELODAMI, Apud Joannem Janssonium et Elizeum Weyerstraten. 1664.*

40.7 x 24 cm. (16 x 9 3/4 in.); [34], 346, [6] pp. (tome 1); [12], 487, [9] pp. (tome 2).

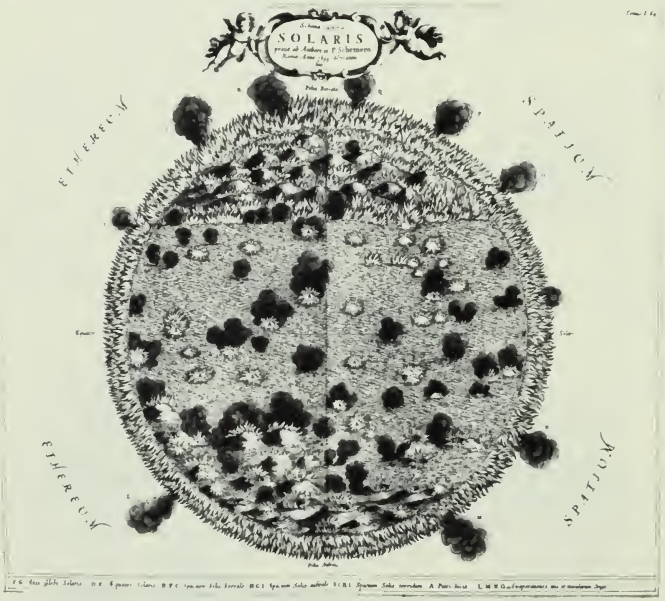
Tomes 1 and 2 bound together in contemporary blind-stamped stiff-board vellum, perhaps Dutch; twentieth-century rebacking in goat with vellum and twentieth-century end-bands; single fillets on covers with moorish center medallion; initials; tailpieces; printed signatures, custodes, and marginal glosses; numerous tables, including 18 full-page, 5 double-page, 1 fold-out; maps: 10 in-text, 2 full-page, 5 double-page, 2 fold-out; 4 full-page and 5 double-page engravings; 251 figures, 2 of which are volvelles.

Tome 1 has an added title page designed by the papal artist Joannes Paul Schor and engraved by the Dutch engraver Theodor Dirck Matham: ATHANASII KIRCHERI | E Soc. Jesu | MUNDUS | SUBTERANEUS | *AMSTERODAMI* | *Apud Joannem Janssonium et Elizeum Weyerstraten.* | *Romæ. 1664.*

Tome 1 also contains a portrait of Pope Alexander VII, to whom the tome is dedicated, and Kircher's own portrait with a Latin inscription: *Frustra vel Pictor, vel vates dixerit, HIC EST: Et vultum, et nomen terra scit Antipodum* ("Painter and poet declare in vain 'he's here'; his face and name the ends of the earth revere").

The title page to tome 2 was designed by "C. vande Pas"—probably Crispin de Passe II, Dutch designer and copper engraver—and engraved by his pupil Anthony Heeres Siourtsma. It includes a miniature portrait of Leopold I.

In tome 1 a privilege from Charles II, "king of England, France and Ireland," is dated from Westminster, 15 August 1664. There are also privileges from Superior General Joannes Paulus Oliva dated from Rome, 19 April 1662, from Emperor Leopold I dated 28 July 1662, and a printer's privilege from the state of Holland dated 19 January 1665. In tome 2 the dedicatory epistle to Leopold I is dated from the Roman College, 1 June 1663.



Kircher believed sunspots were the result of smoke rising from the surface of the sun.
From *Mundus subterraneus* (Item 18).

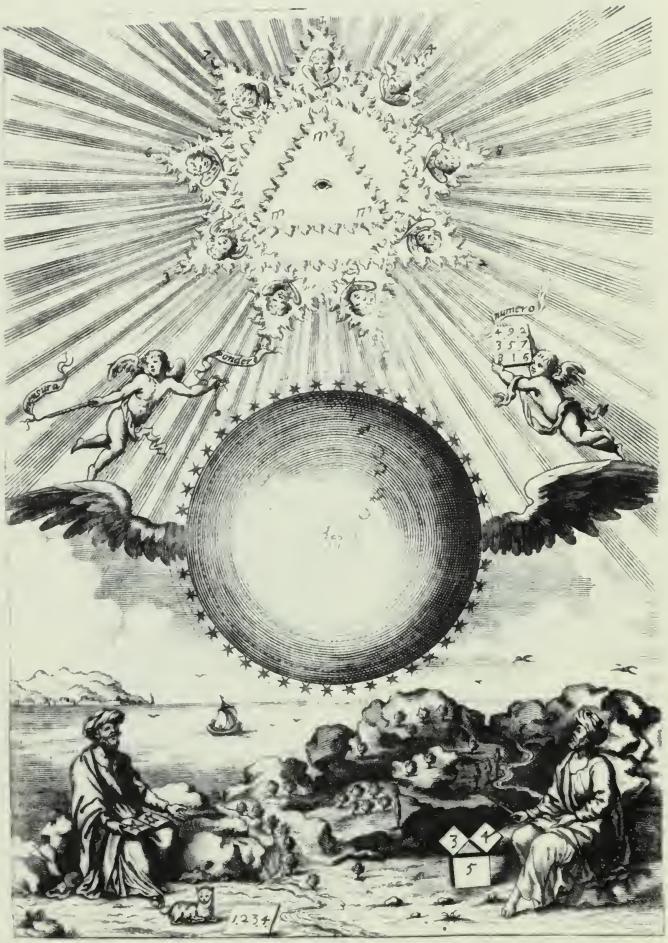
The *Mundus subterraneus*, perhaps the most popular of Kircher's works in his day and the best known in ours, is cited in the letters and works of such contemporaries as Martin Lister (1639–1712), the zoologist and geologist; Robert Moray (1608?–73), chemist, metallurgist, and first president of the Royal Society; the philosophers Baruch Spinoza (1632–77) and John Locke (1632–1704); Henry Oldenburg (1618–77), the secretary of the Royal Society and the first professional scientific administrator; Nicolaus Steno (1638–86), the anatomist and geologist; and the physicist Christian Huygens (1629–95). The basis and impetus for the *Mundus subterraneus* was Kircher's visit to Sicily in 1637–38, where he witnessed an eruption of Aetna and Stromboli. He prefaced the work with his own narrative of the trip, including his spectacular descent into Vesuvius upon his return to Italy. His observations of these volcanoes led him to conclude that the center of the earth is a massive internal fire for which the volcanoes are mere safety valves.

But the work is not solely geologic. Kircher continues with fantastic speculations about the interior of the earth, its hidden lakes, its rivers of fire, and its strange inhabitants. Major topics include gravity, the moon, the sun, eclipses, ocean currents, subterranean waters and fires, meteorology, rivers and lakes, hydraulics, minerals and fossils, subterranean giants, beasts and demons, poisons, metallurgy and mining, alchemy, the universal seed and the generation of insects, herbs, astrological medicine, distillation, and fireworks. In this work he discloses his experience with palingenesis: he had allegedly resuscitated a plant from its ashes. Much of the work deals with alchemy. Kircher ridicules Paracelsus' belief in transmutation and discredits the work of alchemists in general, complaining about the obscurity of their writings. This diatribe brought him vicious criticism and abuse later in life from alchemists who no longer feared the authority of the Jesuit order. Kircher does, however, praise the work of the "true chemist," the *chymiotechnicus*.

Because *Mundus subterraneus* is Kircher's textbook of the physical sciences, it is replete with illustrations. BYU's copy is the first edition. A second edition was published in Amsterdam in 1678. Portions of the work were published separately in Graeci in 1739 and 1741. A Dutch translation was published in Amsterdam in 1682. Portions of the work were translated into English and published in London in 1669 (Item 18).

PROVENANCE: "Illustrissimi ac Generosis Domini Baronis Gustavi Banear [?] Caroli filii dono hic liber in meam devenit potestatem Anno Domini 1668–12 Octobr." (contemporary inscription on inside front cover).

REFERENCES: Brunet III, 667–68; Caillet II, 363.5783; Clendening 10.16 (1668?); De Backer I, 427–28.17; Græsse IV, 21; Sommervogel IV, 1060–63.21.



Frontispiece from *Arithmologia* (Item 19).

18. THE | VULCANO'S: | OR, | Burning and Fire-vomiting MOUNTAINS, | Famous in the World: | VVith their REMARKABLES. | Collected for the most part out of *KIRCHER'S* | *Subterraneous World;* | And expos'd to more general view in *English*, upon the Relation | of the late Wonderful and Prodigious Eruptions of *ÆTNA.* | Thereby to occasion greater admirations of the Wonders of Na- | ture (and of the God of Nature) in the mighty Element of Fire. | *Res semper aliquid apportat novi.* | *None sadlier knows the unresisted Ire,* | *Then Thou, Poor* London! *of th' all-raging Fire.* | *But these occasion'd kindlings are but Blazes,* | *To th' mighty Burnings, which fierce Nature raises.* | *If then a Town; or Hills blaze be so dire;* | *What will be th' last, and Universal Fire?* | Licensed and Entred according to Order. | *London,* Printed by *J. Darby,* for *John Allen;* and are to be sold by him, | at the *White Horse* in *Wentworth* near *Bell Lane;* And by *Benjamin* | *Billingsly* at the *Printing-press* in *Broad-street* near *Gresham-Colledg*, 1669.

19.8 x 13.6 cm. (7 13/16 x 5 3/8 in.); [10], 68 pp.

Bound in contemporary paper with side-stitching; browning and dust-stained paper; fore-edge margin has been excessively trimmed, interfering with pagination and marginalia but not with text; engraved frontispiece; initials; head-pieces; printed signatures, custodes, and marginal glosses.

The leaf comprising pp. 65 and 66 is missing. The leaf comprising pp. 67 and 68 has been stitched in and seems to be from a different impress. It contains an appendix with the story, extracted from *Sands's Travels,* of the miser Sir Thomas Gresham (1519?–79), who was reformed after hearing a voice from the volcanic Mount Strombolo; it also includes the *errata.*

This English translation of portions of *Mundus subterraneus* (Item 17) includes only the parts of Kircher's vast treatise that deal specifically with volcanoes. The book is divided into six parts, discussing in part 1 the subterranean lakes and rivers of fire that supply the volcanoes; in part 2 the volcanoes themselves in general; in part 3 those of Italy; in part 4 the eruptions of volcanoes in general; in part 5 the eruptions in Italy in particular; and, in part 6, Aetna in particular. The latter includes Kircher's detailed description of Aetna's crater and a chronology of its eruptions. The book closes with two stories related to volcanoes. The title refers to the great fire of London which, in 1666, only three years before, had destroyed much of the city. Doubtless that fire's fury was still vivid in the minds of Londoners and

perhaps sparked interest in this description of the even more furious volcanic fires.

Kircher might or might not have been aware of the publication of this translation. It is not likely that he had a hand in its publication. The translator is not named in the work.

REFERENCES: BM 123, 713; NUC 297, 460; Wing II, K624, and III, V688.

19. ATHANASII KIRCHERI | E SOCIETATE IESV | ARITHMOLOGIA | SIVE | De abditis Numerorum mysterijs | *Qua* | Origo, Antiquitas & fabrica Numerorum exponitur; | Abditæ eorundem proprietates demonstrantur; | Fontes superstitionum in Amuletorum fabrica aperiuntur; | Denique post Cabalistarum, Arabum, Gnosticorum, | aliorumque magicas impietates detectas, vera | & licita numerorum mystica significatio | ostenditur. | [device of the Society of Jesus] | ROMÆ, Ex Typographia Varesij. MDCLXV. | *SVPERIORVM PERMISSV.* [1665]

24.5 x 17.4 cm. (9 5/8 x 6 7/8 in.); 136 pp.

Bound in late seventeenth- or early eighteenth-century Italian blind-tooled calf, very similar to and probably in the same workshop as Item 24; gold tooling, lettering and shelf mark on spine; edges stained red; engraved frontispiece; arms of Francisco de Nadasd, to whom the work is dedicated, on verso of title page; initials; printed signatures, custodes, and marginal glosses; numerous tables, 2 fold-out, 1 of which is in red and black; 1 fold-out chart; figures.

The dedicatory epistle to Francisco de Nadasd (or Nadasti), "a ruler of Hungary and advisor to the Emperor," is dated from the Roman College, 17 July 1665. Francisco, a volatile and fiery man, was count of Forgatsch in Hungary. Championing the cause of his fellow Hungarian nobles, he attempted to regain some of the privileges they had gradually lost to the encroachments of the Hapsburg emperors. In 1666 he led a committee of nobles to petition Leopold I for a diet to consider the plight of Hungary. He also petitioned that the recently vacated office of Count Palatine be bestowed upon a certain Hungarian noble. Both petitions were refused. Francisco went away insulted and incensed, and he vowed to assassinate the emperor. After an aborted attempt to stab him and a foiled attempt to poison him, Francisco was arrested

Matteo Ricci, Italian Jesuit missionary to China.
From *China monumentis* (Item 20).

and executed in 1671. The privilege from Superior General Joannes Paulus Oliva is dated from Rome, 18 November 1664.

The *Arithmologia*, one of Kircher's more curious works, is a veritable gold mine of curiosities: magic formulas, amulets, and symbolic matrices. For Kircher all knowledge was to some extent bound up in mystery, and this was particularly true of numerology. The mystical nature of numbers had been the object of volumes of both Hebraic and Greek treatises, from Pythagoras to the Cabbala, since antiquity. Kircher did not accept the mysticism uncritically, however. Indeed, much of the work is dedicated to discrediting common superstitions about numbers. He begins the book with a speculative history of the origin of the Greek and Roman numerals; he later gives the history of the Hebrew and Arabic numerals. Much of the work deals with the alleged mystical numerology of the Gnostics, Cabbalists, and Neopythagoreans. Kircher is not slow to accuse these groups of superstition and paganism.

For Kircher, as for most of his contemporaries, the universe was hierarchical and orderly. He was convinced that that order could be represented by numbers in a mystical and meaningful way. The work of his contemporaries Leibniz (1646–1716) and Newton (1642–1726) resulted from this faith in mathematics and its power to circumscribe the universe. The *Arithmologia*, like most of Kircher's works, appears at the juncture between the mystical numerologies, handed down from antiquity, and modern mathematics. Yet the gulf between these is not without a bridge, and few modern mathematicians would reject, without pause, Kircher's (and Pythagoras') conviction that "all creation is filled with numbers."

REFERENCES: Brunet III, 666; Caillet II, 360.5769; Clendening 8.11; De Backer I, 428.19; Græsse IV, 21; Sommervogel IV, 1063.22.

20. ATHANASII KIRCHERI | E Soc. Jesu | CHINA | MONUMENTIS, | *QUA* | Sacris *quà* Profanis, | *Nec non variis* | NATURÆ & ARTIS | SPECTACULIS, | Aliarumque rerum memorabilium | Argumentis | ILLUSTRATA, | *AUSPICIIS* | LEOPOLDI PRIMI, | ROMAN. IMPER. SEMPER AUGUSTI, | *Munificentißimi Mecænatis.* | A Solis Ortu usque ad Occasu(m) | Laudabile Nomen D(omi)ni [Psalms 112:3] | [ornament with device of the Society of Jesus] | *ANTWERPIÆ,* | Apud JACOBUM à MEURS, ANNO M. DC. LXVII. [1667]

COLOPHON: Juxta Exemplar ROMÆ, Typis Varesii. SUPERIORUM PERMISSU.

32.5 x 21.8 cm. (12 13/16 x 8 5/8 in.); [18], 237, [11] pp.

Nineteenth-century diced Russian, full-paneled calf; crude twentieth-century rebacking; stained edges; portrait of the author with inscription (see Item 17); initials; tailpieces; printed signatures, custodes, and marginal glosses; numerous tables, 10 full-page tables of Chinese vocabulary; 5 full-page copper-plate engravings of Sanskrit alphabet and elements; 1 fold-out facsimile of Chinese–Syriac inscription on Sino–Chaldean monument; 1 full-page Chinese inscription; 14 full-page engravings and woodcuts; 1 fold-out engraving; 41 engravings in text; 21 woodcut figures, 1 pasted in over engraving; 5 fold-out maps; type fonts include Chinese, Arabic, Syriac, Estranghelo, Ethiopic, Hebrew, Coptic, and Devanagari.

There is an added engraved title page: ATHANASII KIRCHERI SOC. IESV | CHINA ILLVST[RATA] | *AMSTELODAMI* | Apud IOHANNEM IANSZONIUM à WAESBERGE et Viduam ELIZEI WEYERSTRAET | ANNO MD. C. LXVII. [1667].

The dedicatory epistle to the superior general of the Society of Jesus, Joannes Paulus Oliva, is dated from Rome, 8 December 1666. The privilege had been given by Oliva two years earlier on 14 November 1664.

China, like Egypt, was to Kircher an ancient and mysterious land, highly civilized, filled with strange creatures and unimaginable marvels, and, above all, having an origin and universality common with all nations. This work is, in effect, Kircher's search for that universality. China had been open to Christian missionaries for only a few decades when Kircher, at 28, applied to go there. He was refused, but the refusal only whetted his curiosity. Over the next 37 years he maintained a voluminous correspondence with fellow Jesuits in China, gleaning all the information he could from their letters and journals.

Adam Schall, Jesuit missionary to China.
From *China monumentis* (Item 20).

Most notable among his sources were Johann Adam Schall von Bell (1591–66), missionary in China from 1622, reviser of the Chinese calendar, and chief of the Bureau of Mathematics and Astronomy in Peking; Martino Martini (1614–61), Kircher's former pupil, mathematician of the Chinese imperial court, and author of the first detailed map and geographic description of China, *Novus atlas sinensis* (1655); and Johann Grueber (1623–80), who went to China in 1656, became assistant to Schall, and returned to Rome in 1661. Yet another important source is Michael De Boym (1612–59), a missionary in India from 1643 and in China from 1650. De Boym returned in 1652 to Europe, where he published his *Flora sinensis* (1654), a description of China's flowers, fruits, and animals.

Kircher's major source was undoubtedly Matteo Ricci's *Commentaries* (1615), the account of the Jesuit missions in China from their inception in 1582 until Ricci's death in 1610. Matteo Ricci (1552–1610) was one of two Jesuit missionaries called by the visitor general of the Society, Alexander Valignano, to open the first Chinese parish within the empire at Macao in 1582. Kircher gleaned most of his information on India and the Sanskrit language from Heinrich Roth (1620–68), a missionary to India and the first European scholar of Sanskrit and Indian philosophy, when Roth came to Rome briefly in 1664.

China illustrata is a compilation of these missionaries' notes and journals. Kircher readily acknowledges in the preface his debt to his colleagues in China and India for the information, but the book is liberally sprinkled with Kircher's own philosophy. Kircher compiled a detailed and considerably accurate account of Chinese geography, history, culture, and language, and, as his readers had learned to expect, the book is filled with delightful engravings illustrating the curious habits of the Chinese.

The book is divided into six parts. The first discusses the famous Nestorian inscription, written in Chinese with a portion in Syriac. The monument was erected by Nestorian missionaries near the city of Hsi-an fu in A.D. 781, establishing the incursion of Christianity into China as early as the eighth century. The transcription and transliteration, together with Father Michael De Boym's translation of the inscription, first printed here by Kircher, constitute the first Chinese vocabulary ever printed in the West. It became the standard text for the study of Chinese until the nineteenth century. Kircher believed that the Chinese language was related to Egyptian, a hypothesis bolstered by alleged similarities in the two writing systems.

The second part gives a history of China and of her introductions to Christianity. Relying on the Bible, Kircher claims that Ham took his people from Egypt through Persia and India to the "land of Mogor," where they settled and founded China. By that means Chinese characters could have originated from Egyptian hieroglyphics.

Idolatry, the subject of part 3, was considered yet another Egyptian influence in China, since, as Kircher claims, there were numerous parallels in the pantheons of the two cultures. These influences spread to Japan and India, and it is in the latter country that Kircher suddenly takes a great interest. He includes a Sanskrit grammar and vocabulary prepared by the intrepid Jesuit explorer, and the first European to master the Sanskrit language, Heinrich Roth. This was the first printing of a Sanskrit grammar and of the Devanagari script in Europe, and it, like the Chinese vocabulary in the same work, became the primary source for the study of the language.

Part 4 Kircher devotes to describing China's government, its cities, and its natural wonders—mountains, lakes and rivers, plants, animals, and minerals. Part 5 details China's architectural and mechanical marvels, such as the great bells of Peking. Finally, in part 6, Kircher returns to the Chinese language and the origin of its characters.

China illustrata was one of the most popular of Kircher's works. Within its first year, 1667, it was published in Rome and Antwerp, although Sommervogel says the latter was really another, inferior Amsterdam edition by Jacob Muers. Translations appeared in French (Amsterdam, 1670) and Dutch (Amsterdam, 1668), and portions were translated into English (London, 1669). BYU's copy of *China illustrata* is the first edition.

PROVENANCE: Presentation copy to "Wm Rowley Stamforth with the love of his affectionate mother Elmsleigh-Paigatos, January 26th 1845" (inscription on flyleaf).

REFERENCES: Brunet III, 666–67 ("il existe deux éditions de cet ouvrage, sous la même date, et dont l'une est en plus gros caractères que l'autre, et renferme des cartes grav. sur une plus grande échelle; du reste le contenu est le même"); Caillet II, 361.5773; Clendening 9.14; De Backer I, 428–29.21; Græsse IV, 21; Sommervogel IV, 1063–65.24.

Engraved title page from *Magneticum naturae regnum* (Item 21).

21. ATHANASII KIRCHERI | E SOC. IESV. | MAGNETICVM NATVRAE | REGNVM | SIVE | DISCEPTATIO PHYSIOLOGICA | De triplici in Natura rerum MAGNETE, iuxta | triplicem eiusdem Naturæ gradum digesto | INANIMATO | ANIMATO | SENSITIVO | Qua | Occultæ prodigiosarum quarundam motionum vires & | proprietates, quæ in triplici Naturæ Oeconomia | nonnullis in corporibus nouiter detectis ob- | seruantur, in apertam lucem eruuntur, | & luculentis argumentis, experientia | duce, demonstrantur. | Ad | Inclytum, & Eximium Virum | ALEXANDRVM FABIANVM | Noui orbis Indigenam. | [ornament] | Romæ. Typis Ignatij de Lazaris. 1667. Sup. Permissu

22.5 x 16.8 cm. (8 7/8 x 6 5/8 in.); 136 pp.

Bound in full contemporary Italian calf; lettering piece on gold-tooled spine; speckling on edges; browning paper; initials; tailpieces; printed signatures, custodes, and marginal glosses.

There is an additional engraved title page: ATHANASII KIRCHERI | *Regnum Naturæ* | *magneticum* | *in triplici magnete* | *Inanimato Animato Sensitiuo* | *dispositum.*

The dedicatory epistle to Alexander Fabianus, Spanish administrator and scholar in Mexico, is dated from the Roman College, 1 January 1667. The privilege from Superior General Joannes Paulus Oliva is dated 20 February 1667.

The *Magneticum naturae regnum* contains Kircher's final words on the principle of magnetism in nature. Much of the work repeats what was said earlier in his much more extensive *Magnes sive de arte magneticum* (Item 4). Kircher discusses the role of magnetism in man (attraction and repulsion, friendship and hatred, likes and dislikes, sympathy and antipathy), in inanimate nature (attraction and repulsion among the elements, weight and gravity, the planets, poisons), in animate or vegetative nature (attraction of heliotropes and selenitropes to the sun and moon, on the use of roots to cure illnesses), and sensitive nature (magnetic nature of the wind and of oars, a type of magnet which causes stupor). He asserts that the principle of attraction and repulsion can explain the most obscure phenomena of physics and that there is no secret in nature that cannot be penetrated and understood by astute observation—an attitude characteristic of his time. This volume is unusual for its lack of illustrations.

REFERENCES: Brunet III, 667; Caillet II, 362.5782 (number 5781 gives an Amsterdam edition without date); Clendening 10.15; De Backer I, 429.22; Græsse IV, 21; Sommervogel IV, 1065.25.

22. [Tome 1, books 1–5:] ATHANASII KIRCHERI | *E Soc.* Jesu | ARS MAGNA | SCIENDI, | In XII Libros Digesta, | QUA | NOVA & UNIVERSALI METHODO | *Per Artificiosum Com binationum contextum de omni* | *re proposita plurimis & prope infinitis rationibus disputari, omniumque* | *summaria quædam cognitio comparari potest.* | *AD* | Augustissimum Rom. Imperatorem | LEOPOLDUM PRIMUM, | *Justum, Pium, Felicem.* | [printer's device] | *AMSTELODAMI,* | APUD JOANNEM JANSSONIUM à WAESBERGE, | & Viduam Elizei Weyerstraet. Anno M DC LXIX. *Cum Privilegiis.* [1669]

[Tome 2, books 6–11:] TOMUS II. | ARTIS MAGNÆ | *SEU* | COMBINATORIÆ | SCIENDI, | *QUO* | Omnia, quæ in præcedenti Tomo per | Regulas & Canones descripsimus, hîc ad praxin | per exempla ad omnes Artes & Scientias | applicata, reducuntur; | ESTQUE | *Practicus & Paradigmaticus omnium eorum, quæ sub* | *quæstionem cadere possunt.*

39.4 x 26 cm. (15 1/2 x 10 13/16 in.); [16], 482, [10] pp. (The engraved title page to tome 2 has been tipped in and is not included in the pagination, which is continuous through both tomes).

Tomes 1 and 2 bound together in full contemporary calf over boards; gilt lettering and gold-tooled *fleur aldine* on spine with single fillets along bands; gilt filleted covers; stained edges; browning paper; initials; tailpieces; printed signatures, custodes, and marginal glosses; replete with tables, 6 double-page; figures, including 1 volvelle; 2 woodcut plates requiring volvelles.

Tome 1 has an additional engraved title page: ATHANASII KIRCHERI Soc. Jesu | ARS MAGNA SCIENDI | Sive | COMBINATORIA | *Quâ ad omnium Artium Scientiarumque cognitionem brevi adquirendam, amplissima porta recluditur,* | *quod uti Inventum novum est, ita quoque ejusdem subsidio usuque instructus, quilibet, de quavis re proposita,* | *infinitis pænè rationibus disputare, omniumque summariam quandam cujuslibet Doctrimæ notitiam obtinere poterit.* | AMSTELODAMI 1669.

Likewise, tome 2: ATHANASII KIRCHERI Soc. Jesu | ARTIS MAGNÆ COMBINATORIÆ | TOMUS II. PARADIGMATICUS | *Quo* | *Omnes Scientiæ, variis propositis Paradigmatis, per Artis* | *Regulas & Canones ad praxin exponuntur & demonstrantur.* | AMSTELODAMI | *Apud* Joannem Janssonium à Waesberge & Viduam | Elizæi Weyerstraet *Anno 1669.*

The dedicatory epistle to Emperor Leopold I is undated. Two privileges are included from Superior General Joannes Paulus Oliva: one for tome 1, dated 1 September 1665, and a second for tome 2, dated 19 July 1666.

The saying of Plato "Nothing is finer than to know all things" is engraved on the throne of Sophia, Divine Wisdom. From *Ars magna sciendi* (Item 22).

Ars magna sciendi is Kircher's elaboration and adaptation of the "Combinatoric Art" of Ramon Lull, the thirteenth-century Majorcan philosopher. Kircher attempts nothing less than the categorization of all knowledge under the nine ideal attributes or dignities of God. These attributes, he argues, are the superstructure of the universe, the pattern for all creation. The universe, if it is to be comprehended *in toto,* must be organized in the mind according to the same pattern. The *modus operandi* of the art is, therefore, to move, like Plato's dialectic, from universals to particulars. Kircher consequently designs a system and method for teaching all disciplines in the style of the encyclopedic movement. However, like Lull's *Ars demonstrativa,* the emphasis of Kircher's work is not pedagogical. Kircher advocates an ambitious scientific method, a type of logic applicable to all branches of learning, a method of finding truth. Much of the book applies the "Combinatoric Art" to a vast variety of disciplines from theology to medicine to logic, rhetoric, and debate.

The *Ars magna sciendi* represents the seventeenth-century search for a universal language that would allow scientists and philosophers to describe and circumscribe all knowledge into a unified system. The Lullian Art was at the center of the search. Philosophers realized then, as they do now, that common language is inadequate for discovering and conveying truth and that a language patterned after the basic structure of the universe could be the key to the exact ordering and verification of all knowledge. For the sake of facility and objectivity, words would have to be replaced by symbols or some type of notation. Kircher devised his own universal language of symbols in his earlier work *Polygraphia nova* (1663), but it attracted little attention. This search for a universal language is also a consideration in Kircher's *Arithmologia* (Item 19). The encyclopedist and mathematician Leibniz (1646–1716), possessed by this same desire for a pure symbolic language, studied Lull avidly. Leibniz never found the universal language, but he did discover calculus, the symbolic language with which scientists have most nearly circumscribed the known universe.

A second copy of the *Ars magna sciendi* is bound with *Sphinx mystagoga* (see Item 27). It lacks the added title page but includes a fine portrait of Leopold I not in the first copy. The second copy is, in all other respects, similar to the first.

PROVENANCE: "Ex-Libris Alberti Vialis Bibliotheca Kircheriana" (bookplate).

REFERENCES: Brunet III, 666; Caillet II, 360.5771; Clendening 10.17; De Backer I, 429–30.23; Græsse IV, 21; Sommervogel IV, 1066–67.28.

Engraved title page from *Principis christiani archetypon politicum* (Item 24).

23. ATHANASII KIRCHERI | *è Soc.* Jesu | LATIUM. | *ID EST,* | NOVA & PARALLELA | LATII tum VETERIS | tum NOVI | DESCRIPTIO. | QUA | *Quæcunque vel Natura, vel Veterum Romanorum Inge-* | *nium admiranda effecit, Geographico-Historico-* | *Physico Ratiocinio, juxta rerum gestarum,* | *Temporumque seriem exponitur &* | *enucleatur.* | [printer's device] | *AMSTELODAMI,* | Apud JOANNEM JANSSONIUM à WAESBERGE, | & Hæredes ELIZEI WEYERSTRAET. *Anno* M DC LXXI. *Cum Privilegiis.* [1671]

37.6 x 25 cm. (14 13/16 x 9 13/16 in.); [24], 263, [9] pp.

Rebound in twentieth-century stiff-board vellum; author's name in ink on spine; stained edges; browning paper; portrait of Pope Clement X; initials; tailpieces; printed signatures, custodes, and marginal glosses; 2 full-page and 5 double-page engraved maps; engraved illustrations: 10 full-page, 8 double-page, 1 fold-out; 19 engraved and woodcut figures.

There is an additional title page engraved by Romeyn de Hooge (or Hooch), Dutch painter and engraver known for his lively and original engravings, nephew of painter Pieter de Hooch: ATHANASII KIRCHERI | E Soc. Jesu | LATIUM. | *Cui par nihil est, nihil secundum* | *Lipsius.* | AMSTELÆDAMI, *Apud Joannem Janssonium à Waesberge* | *et Hæredes Elizæi Weyerstraet. 1671.*

The dedicatory epistle to Pope Clement X is dated from the Roman College, 1 May 1670, and the privilege from Superior General Joannes Paulus Oliva is dated 17 April 1668.

From 1635 until his death Kircher resided in Rome, researching, teaching, writing, and exploring the Italian countryside. *Latium* is a compilation of his topographical impressions of Rome and its environs. Kircher's fascination with Italy, however, was not merely topographical and scientific, but also, and above all, historical. For him Italy was antiquity itself; it represented the history of mankind back to Noah, under whom Kircher claims it was first colonized. "Latium" is, in fact, the ancient name of the area from Rome southward to Capua.

Kircher reveals his avid regionalism in the dedication to Pope Clement X, in which he descibes Latium as "the primæval seat and colony of the earliest mortals, the realm of Saturn, the native home of great heroes, kings, and Caesars, the fount and origin of human wisdom, knowledge, and Latin erudition." *Latium* is a guide to the regions around Rome and northward into Etruria, to its landmarks, villas, and towns, both ancient and modern. The work contains several fine engravings of baroque villas.

Sommervogel mentions an earlier edition (Rome, 1669); no publisher is given. There is no other reference to such an edition.

PROVENANCE: Bookplate with inscription "BL"; "Carmeli Araubingani 1746" (inscription on title page).

REFERENCES: Brunet III, 667; Caillet II, 361.5777; Clendening 10.18; De Backer I, 430.24; Græsse IV, 21; Sommervogel IV, 1067.29.

24. PRINCIPIS CHRISTIANI | ARCHETYPON | POLITICUM | *SIVE* | SAPIENTIA | REGNATRIX; | QUAM | Regiis instructam documentis ex antiquo | Numismate | HONORATI JOANNII | CAROLI V. IMP. & PHILIPPI II. | Aulici. | Caroli *Hispaniarum Principi Magistri nec non Oxo-* | *mensi Ecclesiæ Antistitis.* | Symbolicis obvelatim integumentis, Reip. Literar. evolutam | exponit | ATHANASIUS KIRCHERUS *è Soc.* JESU. | [ornament] | *AMSTELODAMI,* | Apud JOANNEM JANSSONIUM à WAESBERGE. *Anno* 1672.

COLOPHON: *AMSTELODAMI,* | Excudebat *Joannes Janssonius* à *Waesberge,* | ANNO 1672 | Cum Privilegiis S. C. Majestatis. | *ET* | *Ordinum Holl. & West-Frisiæ.*

25.7 x 19.8 cm. (10 x 7 3/4 in.); [17], 235, [1] pp.

Bound in late seventeenth- or early eighteenth-century Italian blind-tooled calf, very similar to and probably from the same workshop as Item 19; twentieth-century rebacking; gold tooling and lettering on spine; edges stained red; initials; printed signatures, custodes, marginal glosses; 10 engraved and woodcut figures; 1 fold-out chart; 1 full-page engraving.

Book 1 has an additional engraved title page: SPLENDOR et GLORIA | DOMUS JOANNIÆ | Descripta ab ATHANASIO KIRCHERO *Soc. Jes.* | Amstelodami. *Apud Joannem Janßonium à Waesberge. 1672. cum Privilegiis.* The book also contains an engraved portrait of Antonius Joannius de Centellas.

Book 2 has an additional title page: LIBER SECUNDUS, | *SIVE* | SPLENDOR & GLORIA | DOMUS JOANNIÆ, | QUO | Tùm Viri gestarum rerum gloriâ | præstantes, tùm potissimùm | *Maximum ejus Ornamentum, & grande* | *Decus* | HONORATUS JOANNIUS | Oxomensis Ecclesiæ Antistes | *Nec non* | CAROLI PRINCIPIS HISPANIARUM | *quondam Magister, unanimi Hispaniæ sui* | *ævi*

Scriptorum conspiratione, | Meritis Laudibus Literario Orbi ad | exemplum proponitur. Book 2 also contains the engraved portrait and arms of Honoratus Joannius.

The dedication to Antonius Joannius, marchio of Centellas and great nephew of Honoratus Joannius, whom this work is about, is dated from the Roman College, 1 September 1666. The privilege from Superior General Joannes Paulus Oliva is dated 20 November 1669.

The *Archetypon politicum* is Kircher's handbook of the virtues proper to a prince; it is also an encomium of Honoratus Joannius (1507–66), who, according to Kircher, embodied those virtues.

In book 1, Kircher discusses the characteristics of the ideal prince and of good government. Kircher interprets various symbols inscribed on a coin stamped with the effigy of Honoratus Joannius. The symbols, such as Honoratus' aquiline nose, the olive tree, the serpent, and the Aeolian harp, are all made to represent different virtues characteristic of Honoratus and proper for a prince. Kircher draws on his store of Egyptian hieroglyphs to interpret the coin's inscription. He even sets up Egypt itself as a paradigm of proper rule. In the final two parts of the first book, Kircher discusses the vices of a bad ruler and the advantages of good economic counsel.

Book 2 gives a history of the Joannius family, tracing the family's roots back to Constantinople and the eastern emperor, or *basileus*, Michael Joannes Balbus, or Michael I, who was crowned emperor of the Eastern Roman Empire in 820. The Joannius family, according to Kircher, continued on the imperial throne at least through the reign of Calo Joannes in 1357. Kircher then traces the migrations of branches of the family to Padua, Naples, Catalonia, France, and Majorca. Honoratus' branch, according to Kircher, moved to Valencia, where his ancestors became trusted counselors to the king. According to Kircher, they then moved to Naples, where the family remained as regents.

In book 3 Kircher narrates Honoratus' life. Honoratus, says Kircher, rose by the fame of his vast learning to become, in 1554, counselor to Charles V, king of Spain and Holy Roman emperor, and tutor to Charles' son Philip. Near the end of his life, Honoratus was elected bishop of Castile. Kircher concludes with an account of Honoratus' learning, political experience, and death.

The *Archetypon politicum* is interesting not so much for its content—the history is unreliable—as for its noble and lucid style. Appended to the work are various poems in praise of Honoratus, composed in Latin, Greek, Hebrew, Spanish, Italian, French, German, Arabic, Syriac, Aramaic, Samaritan, and Coptic—an impressive display of Kircher's virtuosity as a linguist.

BYU's copy of *Archetypon politicum* is the second edition. The first edition was published in Amsterdam in 1669.

REFERENCES: Brunet III, 668; De Backer I, 430.24; Græsse IV, 22; Sommervogel IV, 1068.30.

The coming of the Flood.
From *Arca Noë* (Item 26).

25. ATHANASII KIRCHERI | E SOC. JESU. | PHONURGIA | NOVA | *SIVE* | Conjugium Mechanico-physicum | ARTIS & NATVRÆ | PARANYMPHA PHONOSOPHIA | Concinnatum; | quâ | *UNIVERSA SONORUM NATURA, PROPRIETAS, VIRES* | *effectuúmq. prodigiosorum Causæ, novâ & multiplici experimentorum exhibitione enu-* | *cleantur; Instrumentorum Acusticorum, Machinarúmq. ad Naturæ prototypon* | *adaptandarum, tum ad sonos ad remotißima spatia propagandos, tum in abditis domo-* | *rum receßibus per occultioris ingenii machinamenta clam palámve sermo-* | *cinandi modus & ratio traditur, tum denique in Bellorum tumul-* | *tibus singularis hujusmodi Organorum Usus, & praxis* | *per novam Phonologiam describitur.* | [title vignette] | *CAMPIDONÆ* | Per RUDOLPHUM DREHERR. ANNO M. DC. LXXIII. [1673]

32 x 22 cm. (12 9/16 x 8 5/8 in.); [42], 229, [16] pp.

Rebound in twentieth-century cloth case with leather spine; original contemporary calf covers pasted to cloth, blind-tooled with distinctive heart-shaped pattern framed in several borders of pointillé typical of the seventeenth century and stamped "1687"; gauffred edges; portrait of Leopold I; initials; head- and tailpieces; printed signatures, custodes, and marginal glosses; numerous woodcut figures; 16 engraved illustrations; 2 full-page engravings.

There is an additional engraved title page designed by Felix Cheurier: ATHANASII | KIRCHERI | E *Soc.* IESV | PHONVRGIA | *Admirandorum* | *p(er) Sonos effectuum* | *Productrix* | *Ad Leopoldum* | *R.I. Semp(er) Augustu(m).*

Kircher dedicated this book to Emperor Leopold I. The dedicatory epistle is dated from the Roman College, 12 February 1673. The privilege from Superior General Joannes Paulus Oliva is dated 1 December 1672.

Phonurgia nova is, in part, Kircher's response to Sir Samuel Morland (1625–95), a fellow of the Royal Society of London, who claimed, in a paper published in the January 1672 *Philosophical Transactions*, the recently established circular of the Society, to have invented the megaphone. Numerous testimonies from Kircher's admirers, such as James Alban Gibbs and Gaspar Schott, are appended to the work defending Kircher's claim as the inventor of the *tuba stentorophonica*, as Morland called it. Kircher had indeed written extensively on the device in his *Musurgia* (Item 8) and had been using the "speaking trumpet" for years at the shrine of Mentorella to call people to services. He therefore had a legitimate claim to its invention.

The *Phonurgia* treats the science and applications of sound amplification and echoes. It was the first book published in Europe devoted

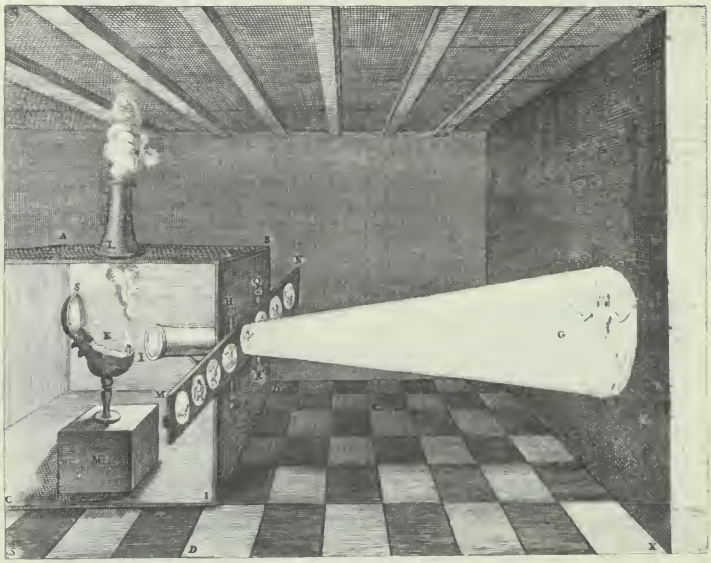
Noah's descendants.
From *Arca Noë* (Item 26).

entirely to acoustics. Kircher had discussed acoustics extensively in his *Musurgia*, and much of the *Phonurgia* repeats the work done there. As he did in the *Musurgia*, Kircher here describes and illustrates many bizarre and curious inventions like talking statues, an Aeolian tuba and lyre, eavesdropping devices, and hordes of odd-shaped trumpets.

The work appeared in a German translation in 1684. A facsimile edition was produced in New York in 1966.

PROVENANCE: Bookplate of Dr. Bettman.

REFERENCES: Brunet III, 668; Caillet II, 364.5789; Clendening 11.19; De Backer I, 430.28; Græsse IV, 22; Sommervogel IV, 1068.31.



The magic lantern, similar to the modern projector.
From *Ars magna lucis et umbrae* (Item 7).

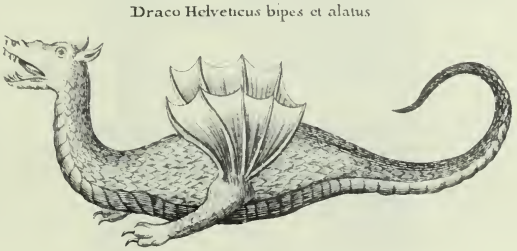
26. ATHANASII KIRCHERI | *è* Soc. Jesu | ARCA NOË, | *IN* | TRES LIBROS | DIGESTA, | QUORUM | I. *De rebus quæ ante* Diluvium, | II. *De iis, quæ ipso* Diluvio *ejusque duratione*, | III. *De iis, quæ post* Diluvium *à* Noëmo *gesta sunt*, | Quæ omnia novâ Methodo, | *NEC NON* | *Summa Argumentorum varietate, explicantur, & demonstrantur.* | [printer's device] | *AMSTELODAMI*, | Apud JOANNEM JANSSONIUM à WAESBERGE. | ANNO M DC LXXV. *Cum Privilegiis.* [1675]

38.1 x 25 cm. (15 x 9 3/4 in.); [18], 240, [16] pp.

Full contemporary calf binding, rebacked in nineteenth century with corners repaired; gilt lettering and stepped fret on spine; marbled end-sheets, perhaps French, added when rebacked; edges sprinkled in red; browning paper; portrait by C. Decker of Charles II of Spain, to whom the work is dedicated; initials; tailpieces; 1 full-page and 2 fold-out maps; 1 fold-out, 4 full-page, 10 double-page engravings; 5 full-page tables, including a table of animal names in various languages and a chronological table of the Flood; numerous engraved and woodcut illustrations, especially fine woodcuts of beasts and birds with descriptions, most of common animals, some of imaginary creatures such as the mermaid, unicorn, and gryphon; 1 woodcut illustration tipped in.

The work includes an additional engraved title page: ATHANASII KIRCHERI | S. J. | ARCA NOË | *Magna Rerum* | *Varietate explicata.* | *Cum Privilegijs* | *AMSTELODAMI* | *Apud JOANNEM JANSSONIUM à WAESBERGE. Anno. 1675.*

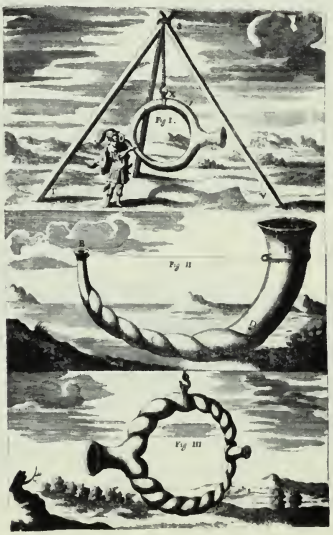
The dedication is dated from the Roman College, 24 June 1673, and the privilege from Superior General Joannes Paulus Oliva is dated 20 November 1669.



Arca Noë is Kircher's fanciful and speculative elucidation of the biblical story of the Flood. Kircher figures such specifics as the year of the Flood, the time from the first raindrop until Noah stepped out on dry land, the dimensions and shape of the ark (considered symbolic of the human body bearing the soul), the materials the ark was made of, where the various animals were placed, which animals would have been excluded, where the ark landed, and where everyone dispersed after the Flood. The book is a fascinating and delightful piece of imaginative exegesis, filled with curious speculations. Kircher applies all of his erudition to the work; yet the tone of the *Arca Noë* is half-playful. Of all of Kircher's works, this one would most delight a child, and it is fitting that the book was dedicated to Charles II, the king of Spain, who was only twelve years old when the book was published.

PROVENANCE: "École libre a Villefranche, N. D. de Mongré" (stamp on title page); "Bibl. Mongr." (lettering on spine).

REFERENCES: Brunet III, 666; Caillet II, 360.5768; De Backer I, 430.26; Græsse IV, 20–1; Sommervogel IV, 1068–69.33.



27. ATHANASII KIRCHERI | è Societ. Jesu, | SPHINX MYSTAGOGA, | *Sive* | DIATRIBE HIEROGLYPHICA, | Qua | *Mumiæ, ex Memphiticis Pyramidum adytis erutæ, &* | *non ita pridem in Galliam transmissæ, juxta veterum* | *Hieromystarum mentem, intentionemque, plena fide* | *& exacta exhibetur* | INTERPRETATIO. | *Ad* | Inclytos, abstrusiorumque Cognitionum peritia instru- | ctissimos Galliæ Philologos directa. | [device] | AMSTELODAMI, | Ex Officina JANSSONIO-WAESBERGIANA. | Anno MDCLXXVI. [1676]

37.3 x 26.2 cm. (14 5/8 x 10 3/8 in.); [20], 72, [6] pp.

Twentieth-century calf-skin facsimile binding; original calf-skin covers, perhaps contemporary; lettering-piece on spine; damp-staining, some browning; initials; printed signatures, custodes, and marginal glosses; engraved frontispiece showing 2 sarcophagi; numerous woodcut illustrations, 2 fold-out; some engraved illustrations.

The work includes a half-title page: SPHINX | MYSTAGOGA, | SIVE | DIATRIBE HIEROGLYPHICA | DE MUMIIS. There is an added title page engraved by C. Decker: De | CŒMITERIIS; *sive* | ADYTIS ÆGYPTIORUM | *Veterum.*

The work is dedicated to Camillus de Neufville, archbishop of Lyons, the dedicatory epistle to whom is dated from Rome, 25 December 1675. The privilege from Johannes Paulus Oliva, the superior general, is dated 2 December 1673.

In 1672 a sarcophagus was discovered in Egypt and brought to Lyons by a Mssr. De Four, who wrote Kircher a letter, dated from Lyons, 15 June 1673, asking him to interpret the inscriptions found on the sarcophagus and on the mummy's wrappings. Kircher's reply is dated from Rome, 14 August 1673. Both letters were published in the preliminary pages to this work.

Kircher published his researches on this sarcophagus and others in this, his final book on Egyptology, the *Sphinx mystagoga.* This work, like Kircher's other Egyptian treatises, is filled with arcane curiosities. Kircher includes sections on Egyptian burial practices, metempsychosis, and reincarnation. He also appends his interpretations of hieroglyphs inscribed on various amulets and stellae.

This copy of *Sphinx mystagoga* is bound with a second copy of *Ars magna sciendi,* comprising pages [16], 482, [10] (cf. Item 22).

REFERENCES: Brunet III, 668; Caillet II, 365.5793; Clendening 11.21; De Backer I, 431.30; Græsse IV, 22; Sommervogel IV, 1069.34.

28. [Part 1:] TARIFFA | KIRCHERIANA | ID EST | INVENTVM AVCTHORIS | NOVVM | *Expeditâ, & mirâ arte combinatâ methodo,* | *uniuersalem Geometriæ, & Arithmeti-* | *cæ Practica Summam continens.* | [title vignette] | Εν τῇ Μονάδι πάντα, καὶ ἐν τῷ Τριγώνῳ | πάντα τῆς Γεωμετρίας, καὶ τῆς Αριθμητι- | κῆς ἄρρητα Μυστήρια. | MustÆria. Plato in Tim. | ROMAE, Sumptibus Nicolai Angeli Tinassij 1679. | *SVPERIORVM PERMISSV.*

[Part 2:] TARIFFA | KIRCHERIANA | SIVE | Mensa Pythagorica expansa, | Ad Matheseos quesita accommodata per quin- | que columnas, quarum numeri in fronte | sunt multiplicantes, & in prima columna dicuntur multiplicandi. | *R. Q. C. ubicunque occurrunt significant* | *Radices, Quadrata, & Cubos in tra-* | *uersa numerorum serie.* | [ornament] | ROMÆ, M. DC. LXXIX. | Typis, & Sumptibus Nicolai Angeli Tinassij. | *SVPERIORVM PERMISSV.* [1679]

15.1 x 11.2 cm. (5 15/16 x 4 3/8 in.); [22], 316, [6] pp. (part 1); [406] pp. (part 2).

Bound in contemporary limp vellum; ink title and shelf mark on spine; trimmed edges; initials; printed signatures and custodes; tables; numerous woodcut illustrations; 24 plates; music; part 2 composed entirely of mathematical tables; third preliminary leaf out of sequence.

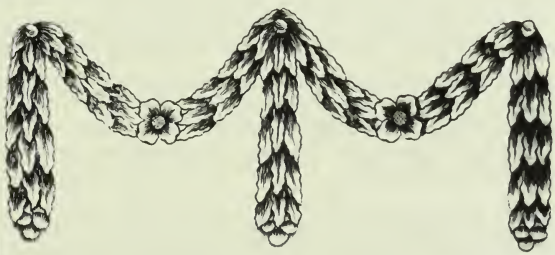
Part 2 has an additional title page: TARIFFA | KIRCHERIANA. | [title vignette] | ROMÆ, M. DC. LXXIX. | Typis, & Sumptibus Nicolai Angeli Tinassij. | *Superiorum Permissu.*

The dedication is to Livius Odescalchi, duke of Caerae, in southern Italy, and nephew of Pope Innocent XI (Benedetto Odescalchi), and is dated 27 July 1679.

The *Tariffa*, perhaps the rarest of all Kircher's works and his least characteristic, is entirely mathematical. It treats primarily geometrical figures and simple trigonometry. The work is organized in the traditional format for mathematical works, with problems, propositions, and proofs. The term *tariffa* was used in Kircher's day for compilations of tables used by navigators "from which valuable knowledge might be had without labor," but, as is explained in the preliminary pages, Kircher titled his book *Tariffa* "not only because valuable knowledge might be had, but because one may understand [from it] the universal art of mathematical computation."

A Greek encomium to Kircher by Ioannes Theodorus Fritzer Trevirensis, Kircher's pupil and the alleged editor of this work, is included in the preliminary pages. The dedication and preface are signed by Benedictus

Table des hieroglipheа des Egipтiens, où Sont
décrits en général les caracteres des hommes,
Selon le temс de leuv naissance, et Suivant leс
jmpressionс qu'ilс reçoivent de la position où
Setrouve le Zodiaque
C'est le Pere Kirti, qui a obtenû le manuscrit
qui etoit écrit en langue Copthe, jl l'a traduit en
Françaiс, et nén a fait present qu'à la personne
qui a fait faire ceс planchec en cuivre. Cet habile
Astrologue convient que, quoique on ne puisse
pac s'abliv une connaissance aussi parfaite Suv
Ceс inblec que Suv un thême d'astrologie
judiciaire, fait expreс Suv chaque personne;
Cependan elles contiennent un fond de verité
auxquellec on doit avoiv assés de confiance



Title page from the proof copy of *Les hieroglyphes* (Item 30).

de Benedictis, professor of mathematics at Rome—Kircher's pseudonym. This is the only work published by Kircher pseudonymously.

PROVENANCE: "Dono fatto al P. Pro[vin]ciale per gli Scolastici" (contemporary inscription on inside front cover); bookplate of Giorgio Fanan; stamp of the Bibliotheca Scholastica Theologica of the Roman College on title page.

REFERENCES: Brunet III, 669; Clendening 12.24; De Backer I, 431.31; Græsse IV, 22; Sommervogel IV, 1070.37.

29. PHYSIOLOGIA | KIRCHERIANA | EXPERIMENTALIS, | QUA | SUMMA ARGUMENTORUM | MULTITUDINE & VARIETATE | Naturalium rerum scientia per experimenta | Physica, Mathematica, Medica, Chymica, Musica, Magne- | tica, Mechanica comprobatur atque stabilitur. | QUAM | EX VASTIS OPERIBUS | *Ad^{m}. Rev^{di}.* P. ATHANASII KIRCHERI | *extraxit, & in hunc ordinem per classes redegit Romæ,* | *Anno* M. DC. LXXV. | JOANNES STEPHANUS KESTLERUS Alsata, | Authoris discipulus, & in re litterariâ assecla, & coadjutor. | [printer's device] | *AMSTELODAMI,* | *Ex Officinâ* JANSSONIO-WAESBERGIANA. | *Anno* M D C LXXX. [1680]

32 x 22 cm. (12 3/4 x 8 1/2 in.); [8], 248, [8] pp.

Unbound; traces of cloth on end-bands, original binding perhaps northern European; has been bound more than once; stained edges; head margin excessively trimmed but does not interfere with text; initials; tailpieces; printed signatures, custodes, and marginal glosses; numerous woodcut illustrations; 3 engraved illustrations.

There is an additional engraved title page: PHYSIO- | LOGIA | KIRCHERIANA | Experimentalis | per | *Joannem Stepha-* | *num Kestlerum* | *conscripta.* | *AMSTELÆDAMI.* | Apud JANSSONIO-WAESBERGIOS. Anno 1680.

The work is dedicated to Cardinal Nithardus, the dedicatory epistle to whom is dated from Rome, 15 October 1675.

This work, edited by one of Kircher's pupils, Johann Stephan Kestler, is a codification of Kircher's observations and experiments across the entire spectrum of his researches in physics. Naturally there are large sections on light and shadow, magnetism, acoustics, and music; but there are also

experiments and observations in hydrolics, alchemy, and a myriad of other topics. This compendium was perhaps a response to entreaties from Kircher's fellow scientists, who appreciated his keen observations and experiments but did not care to wade through some 40 volumes to glean them. The book is an example of what Kircher's writings could have been like at the hands of a good editor. Kircher died the year this book was published, and it is uncertain to what extent he was involved in its publication. The *Physiologia* is not only a measure of Kircher's scientific curiosity and the vast range of his scientific researches, but also a barometer of his age, a catalogue of the scientific concerns of his time.

PROVENANCE: "Ad Bibliotheca Can. Reg. Lat. in Zeysberg" (contemporary inscription on title page).

REFERENCES: Brunet III, 669; Caillet II, 365.5796; Clendening 13.26; Garrison/Morton 80.580 ("Includes the first recorded experiment in hypnotism in animals").

30. *Table des hiérogliphes des Egiptiens, où sont | décrits en général les caracteres des hommes, | selon le tems de leur naissance, et suivant les | jmpressions qu'ils reçoivent de la position où | setrouve le Zodiaque | C'est le Pere Kiriti, qui a obtenû le manuscrit | qui etoit écrit en langue Copthe, jl l'a traduit en | français, et n'en a fait present qu à la personne | qui a fait faire ces planches en cuivre Cet habile | Astrologue convient que, quoique on ne puisse | pas établir une connaissance aussi parfaite sur | Ces tables que sur un thême d'astrologie | judiciaire, fait expres sur chaque personne; | Cependan(t) elles contiennent un fond de verité | auxquelles on doit avoir assés. de confiance.* [late seventeenth century]

25.1 x 17.2 cm. (9 7/8 x 6 15/16 in.); [1] leaf, [35] leaves of plates (individual plates numbered in manuscript).

Bound in blue paste paper over boards; browning paper; single leaves sewn with overcast stitching; 36 engraved plates, some printed on verso of leaves; contemporary manuscript corrections in pen and pencil.

An engraved plate with manuscript corrections.
From the proof copy of *Table des hierogliphes des Egiptiens* (Item 30).

The *Table des hiérogliphes* is a curious work comprising 36 engraved plates featuring symbolic representations of Egyptian mythological characters. Each plate has an engraved caption giving the name of the character in Roman letters and Coptic and a brief description of the character's attributes. The plates are alleged to have been based on a Coptic manuscript discovered by Kircher, who translated it into French and delivered it "only to the person who had these copperplates made" ("n'en a fait present qu'à la personne qui a fait faire ces planches en cuivre"). It cannot be ascertained whether these plates were meant to be part of a larger work on Coptic or to be published as they are.

This proof copy of the extremely rare work contains corrections in manuscript of the Coptic type throughout, as well as manuscript notes in the bottom margin. It is uncertain whether the corrections are in Kircher's hand or in that of one of his pupils: it is, however, likely that the editor was familiar with Coptic. It is equally uncertain whether Kircher was involved in this work at all or whether it was published in his lifetime.

REFERENCES: Caillet II, 365.5794 ("Très curieux et très rare ouvrage entièrement et naïvement gravé en taille douce et comprenant un titre et 35 pl.").

31. *Table des hiérogliphes des Egiptiens, où sont | décrits en général les caracteres des hommes, | selon le tems de leur naissance, et suivant les | jmpressions qu'ils reçoivent de la position où | setrouve le Zodiaque | C'est le Pere Kirker, qui a obtenû le manuscrit | qui etoit écrit en langue Copthe, jl l'a traduit en | français, et n'en a fait présent qu'à la personne | qui a fait faire ces planches en cuivre Cet habile | Astrologue convient que, quoique on ne puisse | pas établir une connaissance aussi parfaite sur | Ces tables que sur un thême d'astrologie | judiciaire, fait expres sur chaque personne; | Cependant elles contiennent un fond de verité | auxquelles on doit avoir assés. de confiance.* [late seventeenth century]

26.8 x 18 cm. (10 1/2 x 7 in.); [1] leaf, [36] leaves of numbered plates.

Bound in red paper wrapper; browning paper; single leaves sewn with overcast stitching; 36 engraved plates.

This later impress of *Table des hiérogliphes* includes all of the corrections made in manuscript in the previous impress (Item 30). Again, the book provides no clue to the purpose of the plates, their provenance, or whether Kircher really had a hand in their printing. This impress, at least, was done with much more care than the previous: there are no plates on the verso of leaves, and Kircher's name, spelled Kiriti on the title page of the previous impress, is corrected to Kirker.

PROVENANCE: "Couchoud 3e(m)" (contemporary inscription on flyleaf).

REFERENCES: (See Item 30).

Friends of the Brigham Young University Newsletter
Number 33, 1989
Published by the Friends
Harold B. Lee Library, Provo, Utah 84602