SCIENCE IN AN AGE OF MAGIC

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Introduction: The Magus of Mortlake

John Dee (1527–1608 or 1609) is the figure in whom the Renaissance dream of a single, unified knowledge is most vividly embodied. To his contemporaries he was many things at once: mathematician, astronomer, astrologer to Queen Elizabeth I, geographer, adviser on navigation and empire, antiquarian, and collector of one of the largest private libraries in England. To later centuries he became something else again — the archetypal magus, the scholar who spoke with angels, the author of a hieroglyph that claimed to contain the whole of creation, and the master of a scryer who gazed into a crystal and reported the words of spirits.

Dee's life and work refuse the neat divisions that later ages imposed between science and magic. For Dee himself there was no division to refuse. Mathematics was not a cold instrument but a sacred language; alchemy was not a failed chemistry but a philosophy of transformation; and communication with angels was not a superstitious indulgence but a rigorous, recorded, and repeatable practice — an experimental science of the spirit world, pursued with the same documentary discipline he brought to astronomy. This essay follows the magical symbology at the heart of his work: the hieroglyphic monad of the *Monas Hieroglyphica*, the angelic conversations, the scrying sessions with Edward Kelley, and the strange, luminous system of Enochian magic that emerged from them.

Dee was born in London in 1527, educated at St John's College, Cambridge, and travelled widely in the Low Countries and France, where he studied with the great cartographer Gerardus Mercator and lectured on Euclid in Paris to crowds that astonished his hosts. He returned to England with a reputation as a prodigy of the mathematical arts, and by the accession of Elizabeth I in 1558 he was close to the centre of power: he cast the Queen's coronation horoscope, advised on the calendar, and argued for a British maritime empire grounded in the new geography.[1] His house at Mortlake, on the Thames west of London, became a centre of learning — a library of some four thousand books and manuscripts, an observatory, a laboratory, and a meeting place for scholars, courtiers, and seekers.[2]

Yet the very breadth of his learning made him suspect. He was arrested in 1555 under Mary I on charges of calculating — of attempting to determine by astrology the lives of the Queen and her husband Philip of Spain — and though acquitted, the accusation of conjuring followed him for the rest of his life.[3] The rumour that he was a sorcerer dogged his reputation even as Elizabeth relied on his counsel. It is a telling irony: the man who did more than almost anyone in England to advance mathematics, navigation, and the new learning was remembered for centuries primarily as a magician.

The *Monas Hieroglyphica* (1564)

Dee's most famous work of magical symbology is the *Monas Hieroglyphica*, published at Antwerp in 1564 and dedicated to the Holy Roman Emperor Maximilian II.[4] It is a short book — twenty-four theorems in Latin, dense, diagrammatic, and deliberately cryptic — but it contains the whole of Dee's philosophy in miniature. Its subject is a single symbol: the hieroglyphic monad, a figure Dee claimed to have devised as the ultimate shorthand of creation, a character that expressed, in one glyph, the unity of astronomy, astrology, alchemy, geometry, and theology.

The monad itself is built from a small set of elementary signs, combined with geometrical precision. At its base stands a cross, the sign of the four elements — earth, water, air, and fire — and of the material world. Above the cross sits a circle, the sign of the Sun, gold, and spirit. Resting on the circle is a semicircle, the sign of the Moon, silver, and the soul. And crowning the whole, at the top of the figure, are two smaller semicircles joined back to back — the horns of Aries, the sign of fire and of the ram, which in alchemical tradition opens the year and the work.

Together the components form a single continuous line, a figure that can be drawn without lifting the pen: a monad, an indivisible unity.[5]

Dee's claim was extraordinary. He argued that the glyph was not invented but discovered — that it lay latent in the very structure of things, and that by contemplating it, the adept could understand the correspondences between heaven and earth, between the metals and the planets, between the human soul and the cosmos. The twenty-four theorems of the *Monas* unfold this claim in stages: the glyph's geometry is related to the orbits of the planets; its proportions encode the weights and measures of alchemy; its parts map onto the zodiac; its rotations and inversions generate new figures, each revealing a further secret. Dee included elaborate diagrams and tables, and he addressed the Emperor directly in the dedicatory material, presenting the monad as a gift worthy of a ruler — a key to the hidden unity of the world.

The book was also a deliberate act of occultation. Dee wrote that the monad's meanings could not be conveyed by words alone; the glyph had to be seen, traced, and meditated upon. He warned unworthy readers away and claimed that the book would be understood only by those prepared for it. This was not mere mystification. In Dee's world, a symbol was not an arbitrary label but a real participant in what it signified — a view with deep roots in the Hermetic and Neoplatonic traditions he had absorbed, and one that made the act of drawing and contemplating a figure a form of knowledge in itself.

The *Monas* was read widely on the Continent and became one of the founding texts of later Rosicrucian and alchemical literature.[6] Its glyph — sometimes called the "Dee monad" — has survived as one of the most recognisable symbols of Renaissance magic, reproduced in grimoires, in the emblem books of the seventeenth century, and in modern occult art. Yet its original meaning was precise and systematic: it was Dee's attempt to do for the spiritual sciences what Euclid had done for geometry — to reduce a whole field of knowledge to first principles, expressed in a single figure.

Reading the Monad: Sun, Moon, Cross, and Fire

To understand the monad, it helps to read it from the bottom up, as Dee himself invites the reader to do. The cross at the base is the foundation: the four elements and the material world, the realm of generation and corruption, of bodies that are born, change, and decay. Above it, the circle of the Sun represents gold, the incorruptible metal, and the spirit — the divine light that descends into matter. The semicircle of the Moon stands for silver and the soul, the mediating principle between spirit and body, waxing and waning, receptive and reflective.

The horns of Aries at the crown are the most enigmatic element. Aries, the ram, rules the head of the zodiac and the beginning of spring; in alchemy, the sign governs the first operations of the Great Work, the heating and opening of matter. Dee reads the two semicircles as the twin horns of the ram and, simultaneously, as the two halves of a divided unity — a reminder that the monad contains multiplicity within itself. The whole figure, read as a single line, thus traces a cosmology: from the fiery origin at the top, through the solar spirit and the lunar soul, down into the elemental cross of matter — and back again, in the return of matter to spirit that is the goal of the alchemical art.

Dee was careful to ground the glyph in the astronomy of his day. The theorems relate its proportions to the apparent motions of the Sun and Moon, to the cycles of the planets, and to the geometry of the heavens. He was, after all, an astronomer of real competence, and the *Monas* is full of the quantitative habits of mind that mark his mathematical work. But the numbers in the *Monas* are never merely quantitative. A ratio that describes a planetary period also describes, for Dee, a spiritual proportion — the same harmony, sounding at different levels of reality. This is the doctrine of correspondences in its most rigorous form: as above, so below, not as a poetic slogan but as a research programme.

The monad also encodes Dee's view of the human being. The human soul, like the glyph, is a unity composed of spirit, soul, and body; the adept who contemplates the monad contemplates himself. In this sense the *Monas Hieroglyphica* is a work of spiritual technology: a diagram for meditation, a tool for aligning the microcosm of the practitioner with the macrocosm of the universe. It belongs to the same family as the mandala, the magic circle, and the alchemical emblem — images that are meant to be used, not merely looked at.

Mathematics as a Sacred Language

The *Monas* cannot be understood without Dee's conviction that mathematics was the key to all knowledge — including knowledge of God. In 1570 he wrote the famous "Mathematical Preface" to the first English translation of Euclid's *Elements*, by Henry Billingsley.[7] The Preface is a manifesto: it surveys the mathematical arts — arithmetic, geometry, astronomy, music, optics, navigation, architecture — and argues that number and figure underlie every art and science, from the craftsman's workshop to the motions of the heavens.

For Dee, this was a theological claim as much as a practical one. God, he believed, had created the world according to number, weight, and measure — the phrase from the Book of Wisdom that Renaissance thinkers quoted endlessly[8] — and therefore the study of mathematics was a form of worship, a way of reading the mind of the Creator. The hieroglyphic monad was the logical extension of this belief: if all knowledge is mathematical, then the ultimate knowledge should be expressible as a single geometrical figure. The monad was Dee's attempt to write the universe as one character.

This conviction also shaped his practical work. Dee's mathematics served navigation and empire: he advised on the Northwest Passage, devised instruments, and wrote on the tides and the calendar. He believed that the same geometry that governed the heavens could guide a ship across the Atlantic. There was no gap, in his mind, between the abstract and the applied, or between the sacred and the technical. A table of planetary positions and a prayer could appear on the same page of his notebooks without incongruity, because both were ways of attending to an ordered cosmos.

It is worth stressing this point, because it corrects a common caricature. Dee was not a credulous mystic who happened to know some mathematics; he was a serious mathematician who believed that mathematics opened onto mystery. His magic was not the opposite of his science but its extension — the application of the same habits of precision, recording, and system-building to phenomena that lay beyond the reach of instruments: the nature of spirits, the structure of the heavens, the language in which angels spoke.

The Turn to the Angels

By the late 1570s, Dee's interests had shifted decisively toward the direct investigation of the spirit world. The *Monas* had been an attempt to read the cosmos through a symbol; now he sought a more immediate source of knowledge — conversation with the angels themselves. In Dee's Christian cosmology, angels were real beings, ministers of God, possessors of knowledge far beyond human learning. If they could be contacted, and their words recorded accurately, then the uncertainties of philosophy, alchemy, and prophecy might be resolved at their source.

The practice he adopted was scrying: gazing into a polished surface — a crystal, a mirror, a stone — in a state of prayerful attention, until visions appeared. Dee himself seems not to have been a gifted scryer; he needed an intermediary, a person with the faculty of seeing. For a time he worked with various assistants, but the decisive partnership began in March 1582, when Edward Kelley arrived at Mortlake.[9]

The "Actions with Spirits," as Dee called the sessions, were conducted with elaborate care. Dee and Kelley would pray together, often for hours; the scrying stone would be placed on a table, sometimes on a wax seal inscribed with

divine names; Dee would sit with pen and paper, recording everything Kelley reported, while Kelley gazed into the stone and described what he saw and heard. The records — the *Mysteriorum Libri*, the Books of Mysteries — run to thousands of pages in Dee's meticulous hand, preserved today in the British Library and elsewhere.[10] They are among the most extraordinary documents of the Renaissance: a day-by-day laboratory notebook of attempted conversations with angels, complete with false starts, confusions, corrections, and moments of apparent breakthrough.

The angels who appeared in the sessions had names and distinct characters: Uriel, Gabriel, Michael, Raphael, and a host of others, along with beings with stranger names — Madimi, a childlike spirit; Il, and Jubanladace. They spoke, through Kelley, about the state of the world, the reform of religion, the future of England, and the hidden structure of creation. They delivered prayers, gave instructions for the making of seals and tables, and — most famously — dictated a language.

Edward Kelley and the Shew-Stone

Edward Kelley (1555–1597 or 1598) remains one of the most enigmatic figures of the period. He arrived at Mortlake presenting himself as a seer, and he quickly became indispensable to Dee's angelic work. Kelley was also, by reputation, an alchemist who claimed the secret of transmutation, a man with a shadowy past — there were stories of forgery, of a clipped ear, of dealings with spirits before he met Dee — and later scholars have argued endlessly about whether he was a genuine visionary, a fraud, a self-deceived enthusiast, or some unstable mixture of all three. Dee himself seems never to have doubted him, even when the angels' demands became painful and bizarre.[11]

The instrument of the visions was the shew-stone — "shew" in the old sense of "show": a stone that shows things. Dee owned several scrying devices, including a polished obsidian mirror, now in the British Museum, traditionally said to have come from Mexico, and a crystal ball of smoky quartz.[12] The most famous of these is the crystal: a sphere in which Kelley claimed to see the angels appear, sometimes standing in the stone, sometimes in the room, sometimes in a vision of a landscape — a hill, a castle, a garden — that unfolded as the session continued. Dee recorded Kelley's descriptions in exhaustive detail: the colour of the angels' robes, the objects they carried, the letters that appeared, one by one, in grids and tables within the stone.

The discipline of the sessions is striking. Dee treated the angelic communications as data: he cross-checked them, asked the angels to repeat and clarify, noted contradictions, and recorded his own doubts in the margins. When the angels dictated tables of letters, he copied them with the care of a scribe, and when the same material was delivered twice with differences, he noted the differences. The diaries read, at times, like the minutes of a scientific experiment — an experiment whose instruments were prayer, a crystal, and a gifted but volatile young man.

The partnership lasted for years and carried the two men across Europe: to Poland and to Prague, to the court of the Emperor Rudolf II, a great patron of alchemy and the occult sciences, and into the orbit of the Polish nobleman Albert Łaski. The travels brought patronage and danger in equal measure, and the angelic sessions continued wherever they went, the diaries accumulating. The most notorious episode came in 1587, when the angels — through Kelley — commanded Dee and Kelley to share all things in common, including their wives.[13] Dee recorded his anguish and his obedience; the command was, it seems, carried out, and the partnership never fully recovered. Kelley drifted away, became involved with Rudolf's court, was imprisoned, and died in 1597 or 1598 after an attempted escape. Dee returned to England in 1589 to find his library at Mortlake looted and his standing diminished. He spent his last years in relative obscurity, seeking preferment that never came, and died in 1608 or 1609, poor and largely forgotten by the court he had once advised.

Enochian Magic: The Language of Angels

The most enduring product of the angelic sessions is the system now known as Enochian magic. Its name comes from the biblical patriarch Enoch, who "walked with God" and was taken up into heaven — a fitting patron for a system that claimed to restore the language spoken by angels and by Adam before the Fall. According to the diaries, the angels dictated to Kelley, letter by letter, a complete language: its alphabet, its vocabulary, its grammar, and a set of invocations — the Calls, or Keys — by which its speakers might address the hierarchies of the spiritual world.

The Enochian alphabet consists of twenty-one letters, each with a name and a meaning — *Un* for A, *Pa* for B, *Veh* for C, and so on[14] — and the language itself, as recorded, has a strange, resonant sound: the opening of the First Call runs "Ol sonf vorsg, goho Iad balata" — "I reign over you, saith the God of Justice." The Calls, forty-eight in number (with a forty-ninth, the Call of the Æthyrs), are structured invocations that address the governors of the thirty Æthyrs, the regions or heavens of the spiritual world, and the angels of the four Watchtowers[15] — the great elemental tablets, one for each quarter of the earth, covered in grids of letters from which the names of angels are derived.

The system's architecture is characteristically Dee-like: tabular, combinatorial, and mathematical. The Great Table, revealed in the sessions, is a grid of letters twenty-five squares by twenty-seven; from it are extracted the four Watchtowers — Air, Water, Earth, and Fire — each a twelve-by-thirteen grid; and from the Watchtowers, by rules of reading across rows and columns, are derived the names of hundreds of angels, each governing a region, a nation, a day, or an hour. The practitioner who could read the tables could, in principle, call upon any angel in the hierarchy, by name, for a specific purpose. It was, in effect, a directory of heaven — a spiritual technology as systematic as a set of navigational tables.

The seals and instruments of the system were equally precise. The angels instructed Dee and Kelley in the making of the *Sigillum Dei Aemeth*, the Seal of God, a wax disc inscribed with divine names, the names of the seven archangels, and the forty names of God, to be placed beneath the shew-stone[16]; of the Holy Table, a square board bearing the names of God and the angels; and of the lamen, the breastplate worn by the practitioner. Every detail — the dimensions, the materials, the inscriptions, the colours — was dictated and recorded. The system was not a vague mysticism but a craft, with tools, procedures, and a language, all of it received, as Dee believed, from the angels themselves.

Modern scholarship has subjected the Enochian material to intense scrutiny. Linguists have noted that Enochian's grammar resembles English more than any ancient tongue, and that its vocabulary shows patterns consistent with a language generated — consciously or unconsciously — by a speaker of English.[17] Whether Kelley invented it, whether Dee collaborated in its creation, or whether it emerged from some deeper, shared process of visionary imagination, remains an open question. But the question of its origin, fascinating as it is, should not obscure what the system was for Dee: the culmination of his life's work, the point at which mathematics, symbology, and spiritual practice converged into a single instrument — a language in which human beings might speak with the powers that govern the world.

One Knowledge: Mathematics, Alchemy, and Angelic Communication

What holds Dee's work together — the monad, the mathematics, the alchemy, the angels — is a single conviction: that reality is one, and that its unity can be known. The *Monas Hieroglyphica* expresses that unity as a figure; the "Mathematical Preface" expresses it as number; the alchemical work expresses it as transformation; and the angelic conversations express it as dialogue. Each is a different way of attending to the same ordered cosmos, and Dee moved between them without any sense of contradiction.

Alchemy, for Dee, was the practical counterpart of the monad. The transmutation of base metals into gold was not, in his understanding, a trick for getting rich — though Kelley certainly hoped it might be — but the demonstration, in matter, of the same spiritual law the monad expressed in figure: that the low can be raised to the high, that matter can be perfected, that the elements are not fixed but fluid, capable of returning to their source. The alchemical laboratory at Mortlake, with its furnaces and vessels, was the counterpart of the study: one place where the unity of things was contemplated in symbols, another where it was enacted in fire.

The angelic work, in turn, was the counterpart of the mathematics. Dee's geometry mapped the heavens; the angels, if they could be reached, could confirm the map and extend it beyond the reach of instruments. His diaries show him asking the angels precisely the questions a mathematician and natural philosopher would ask: about the motions of the heavens, the nature of the elements, the structure of the earth, the causes of disease, the future of kingdoms. The answers were often cryptic or disappointing, but the method was consistent — put the question clearly, record the answer faithfully, and compare it against what is already known.

This is why Dee remains a figure of enduring interest to historians of science. He stands at the hinge between two worlds: the Renaissance world in which magic, religion, and natural philosophy were a single enterprise, and the modern world in which they have been separated. His notebooks, with their careful records of failed experiments and unanswered prayers, show a mind of real empirical discipline applied to questions that later science would abandon as unanswerable. He was wrong, by modern standards, about the existence of angels and the powers of the monad — but he was not irrational. He was systematic, sceptical in his own way, and honest about his results, including his failures.

Legacy: From Casaubon to the Golden Dawn

Dee's reputation after his death went through a long eclipse. In 1659 the antiquarian Meric Casaubon published a large selection of the angelic diaries as *A True & Faithful Relation of What Passed for Many Years between Dr. John Dee and Some Spirits*.[18] Casaubon's purpose was hostile: he intended the volume as a warning, presenting Dee as a man deceived by evil spirits, a cautionary tale of learned pride. But the effect was the opposite of what he intended. The *True & Faithful Relation* made Dee's spirit diaries famous, and the Enochian material it contained became the foundation of later occult practice.

Through the seventeenth and eighteenth centuries, Dee's monad and his angelic system circulated in manuscript and in print among alchemists, Rosicrucians, and Freemasons. In the nineteenth century, the Hermetic Order of the Golden Dawn — the most influential magical order of the modern era — took up the Enochian system wholesale, integrating the Watchtowers, the Calls, and the Æthyrs into its rituals and its system of grades.[19] Aleister Crowley, a product of the Golden Dawn, made Enochian visionary work central to his own practice, publishing his explorations of the thirty Æthyrs as *The Vision and the Voice*. Through these channels, a system dictated to a scryer gazing into a crystal at Mortlake in the 1580s became one of the enduring languages of modern Western occultism, still practised today.

The *Monas Hieroglyphica*, too, has never quite disappeared. Its glyph has been reproduced in countless books on alchemy and the occult, and its claim — that a single figure might contain the unity of knowledge — continues to fascinate. Modern readers, whether they approach it as history, as art, or as spiritual practice, find in it the same thing Dee's contemporaries found: a beautiful, compact, and endlessly suggestive image of a world that makes sense as a whole.

Dee's deeper legacy, however, lies in the questions he asked. He asked whether mathematics could describe the spiritual as well as the material world; whether symbols could be instruments of knowledge rather than mere signs;

whether human beings could speak with powers beyond themselves, and whether such speech could be recorded, tested, and systematised. The answers he arrived at belong to his age, but the questions have not gone away. They return, in new forms, whenever science reaches the edge of what it can measure — in the interpretation of quantum mechanics, in the search for a unified theory, in the debate over whether consciousness can be explained by the physics of the brain. Dee's magic was, in the end, a science of the unknown: a disciplined attempt to extend knowledge beyond its frontier, using every tool he had — number, figure, fire, prayer, and a crystal stone.

Conclusion: Science in an Age of Magic

To call John Dee a magician is true, but it is not the whole truth. He was a magician because his age had not yet decided that magic and science were different things, and because he pursued the unity of knowledge with a seriousness that left no part of reality outside his enquiry. The hieroglyphic monad was his attempt to compress the universe into a single character; the angelic conversations were his attempt to open a direct channel to its authors; the Enochian language was his attempt to give that channel a grammar; and the shew-stone, held in the hand of Edward Kelley, was his instrument — his telescope turned inward, toward a heaven that no lens could reach.

We can now see the limits of his project with a clarity Dee himself could not have had. The monad did not unlock the secrets of nature; the angels, if they spoke at all, spoke through the mind of a gifted and troubled young man; the Enochian language, whatever its source, has no demonstrable existence outside the diaries that record it. But to dismiss Dee on these grounds is to miss what makes him worth studying. His work preserves, in remarkable detail, a moment in the history of thought when the desire to know was not yet divided into disciplines, when a mathematician could also be an alchemist and an angelologist, and when the boldest hypothesis was that the whole of reality might be legible — in a figure, in a number, in a word spoken by an angel in a stone.

That hypothesis failed, as hypotheses do. What survives is the record of the attempt: the monad, the diaries, the tables, the Calls — a body of work that remains, four centuries later, one of the richest archives of the magical imagination, and one of the most honest accounts ever written of what it is like to seek knowledge at the very edge of what can be known.

Notes

1. R. Julian Roberts, "Dee, John (1527–1609), mathematician, astrologer, and antiquary," *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004), for Dee's life: his Cambridge education, his studies with Gerardus Mercator, his Paris lectures on Euclid, and the coronation horoscope he cast for Elizabeth I.
2. Julian Roberts and Andrew G. Watson, *John Dee's Library Catalogue* (London: Bibliographical Society, 1990), reconstructing the Mortlake library from Dee's own catalogue.
3. Deborah E. Harkness, *John Dee's Conversations with Angels: Cabala, Alchemy, and the End of Nature* (Cambridge: Cambridge University Press, 1999), on the 1555 arrest and the reputation for conjuring that followed Dee.
4. John Dee, *Monas Hieroglyphica* (Antwerp: Willem Silvius, 1564), dedicated to the Emperor Maximilian II; English translation with commentary by C. H. Josten, "A Translation of John Dee's *Monas Hieroglyphica*," *Ambix* 12 (1964): 84–221. See also Roberts, "Dee, John," *Oxford Dictionary of National Biography*.
5. Dee, *Monas Hieroglyphica*, in Josten, "A Translation," *Ambix* 12 (1964), for the construction of the monad from the cross, the circle, the semicircle, and the horns of Aries.
6. Frances A. Yates, *The Rosicrucian Enlightenment* (London: Routledge & Kegan Paul, 1972), on Dee's place in the Rosicrucian current and the circulation of the *Monas*.

7. Euclid, *The Elements of Geometrie of the Most Ancient Philosopher Euclide of Megara*, trans. Henry Billingsley (London: John Day, 1570), with Dee's "Mathematicall Praeface"; modern edition edited by Allen G. Debus, *John Dee: The Mathematicall Praeface to the Elements of Geometrie of Euclid of Megara* (New York: Science History Publications, 1975).
8. Wisdom 11:20: "thou hast ordered all things in measure and number and weight" (King James Version).
9. Harkness, *John Dee's Conversations with Angels*, ch. 2, "Building Jacob's Ladder: The Genesis of the Angel Conversations," on the beginnings of the angelic work and Kelley's arrival at Mortlake in March 1582.
10. John Dee, *John Dee's Five Books of Mystery: Original Sourcebook of Enochian Magic*, ed. Joseph H. Peterson (York Beach, ME: Weiser Books, 2003), from the *Mysteriorum Libri Quinque*; the principal English sessions survive as British Library, Sloane MS 3188.
11. Harkness, *John Dee's Conversations with Angels*, on Kelley's career, his reputation, and the partnership with Dee.
12. British Museum, Collection Online, "Dr Dee's mirror," museum number 1966,1001.1 (polished obsidian mirror of Mexican origin); the crystal ball attributed to Dee is also in the British Museum's collection.
13. Harkness, *John Dee's Conversations with Angels*, on the 1587 command to share wives, the breach with Kelley, and Dee's return to England in 1589; the episode is recorded in Meric Casaubon, ed., *A True & Faithful Relation* (London, 1659) — see note 18.
14. Dee, *Five Books of Mystery*, ed. Peterson (2003), for the Enochian alphabet and the text of the Calls, including the First Call, "Ol sonf vorsg, goho Iad balata."
15. Dee, *Five Books of Mystery*, ed. Peterson (2003); Egil Asprem, *Arguing with Angels: Enochian Magic and Modern Occulture* (Albany: State University of New York Press, 2012), on the structure of the system — the forty-eight *Claves angelicae*, the thirty Aires or Æthyrs, the four Watchtowers, and the Great Table.
16. Stephen Clucas, "John Dee's Angelic Conversations," in *John Dee: Interdisciplinary Studies in English Renaissance Thought*, ed. Stephen Clucas (Dordrecht: Springer, 2006), showing the *Sigillum Dei Aemeth* to be modelled on a sigil in the fourteenth-century *Liber iuratus Honorii*; the Sigillum is preserved in British Library, Sloane MS 3188.
17. Asprem, *Arguing with Angels* (2012), on the modern linguistic assessment of Enochian.
18. Meric Casaubon, ed., *A True & Faithful Relation of What Passed for Many Years between Dr. John Dee (A Mathematician of Great Fame in Q. Eliz. and King James Their Reignes) and Some Spirits* (London: D. Maxwell for T. Garthwait, 1659).
19. Asprem, *Arguing with Angels* (2012), on the Golden Dawn's adoption of the Enochian system; Aleister Crowley, *Liber 418: The Vision and the Voice*, first published as a supplement to *The Equinox* 1, no. 5 (1911), recording his exploration of the thirty Æthyrs in Algeria in November–December 1909 with Victor Neuburg.