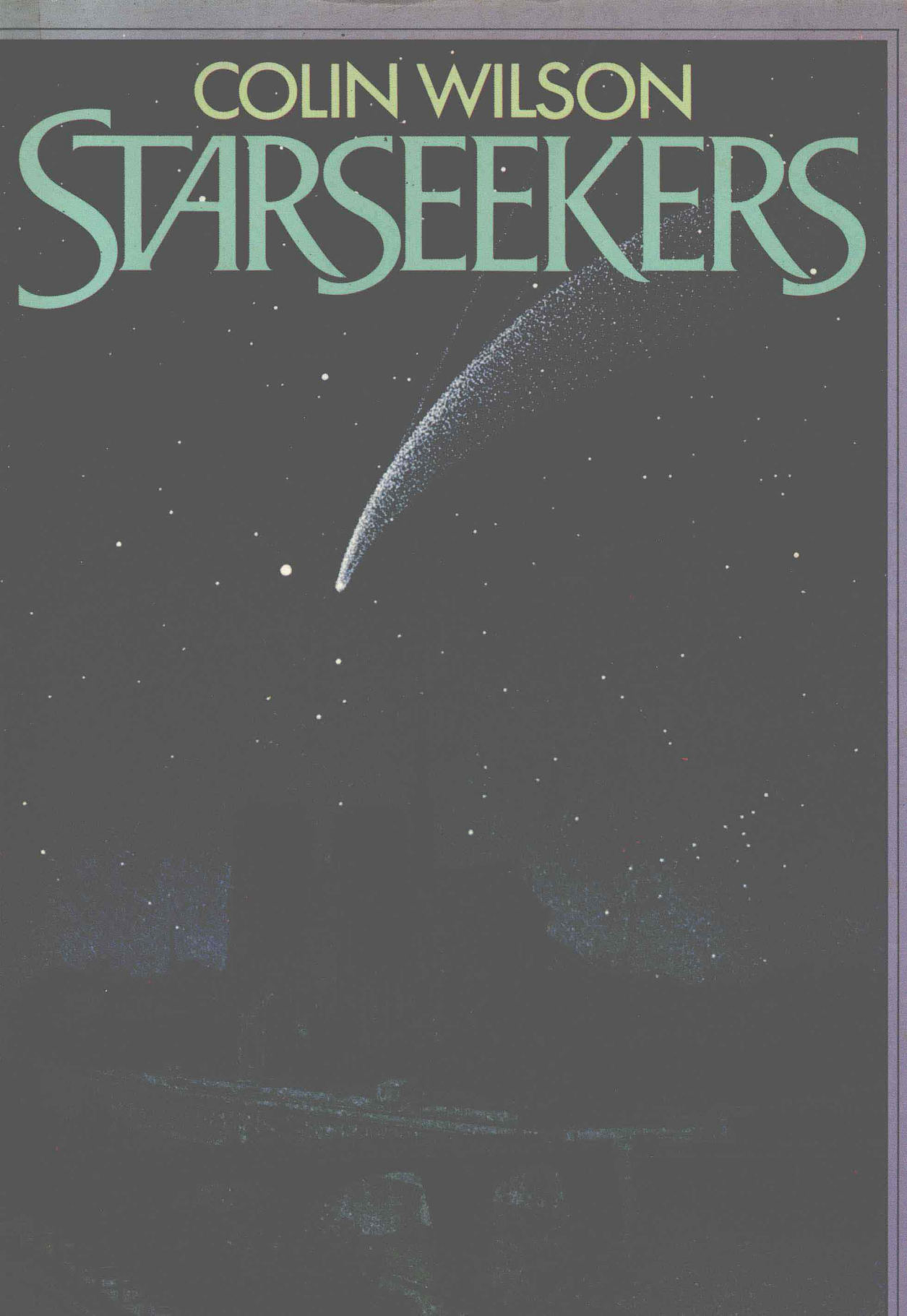
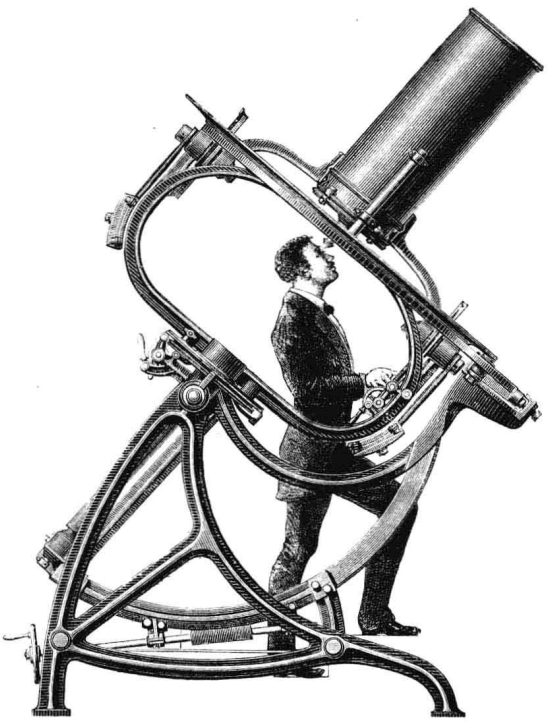
COLIN WILSON

STARSEEKERS





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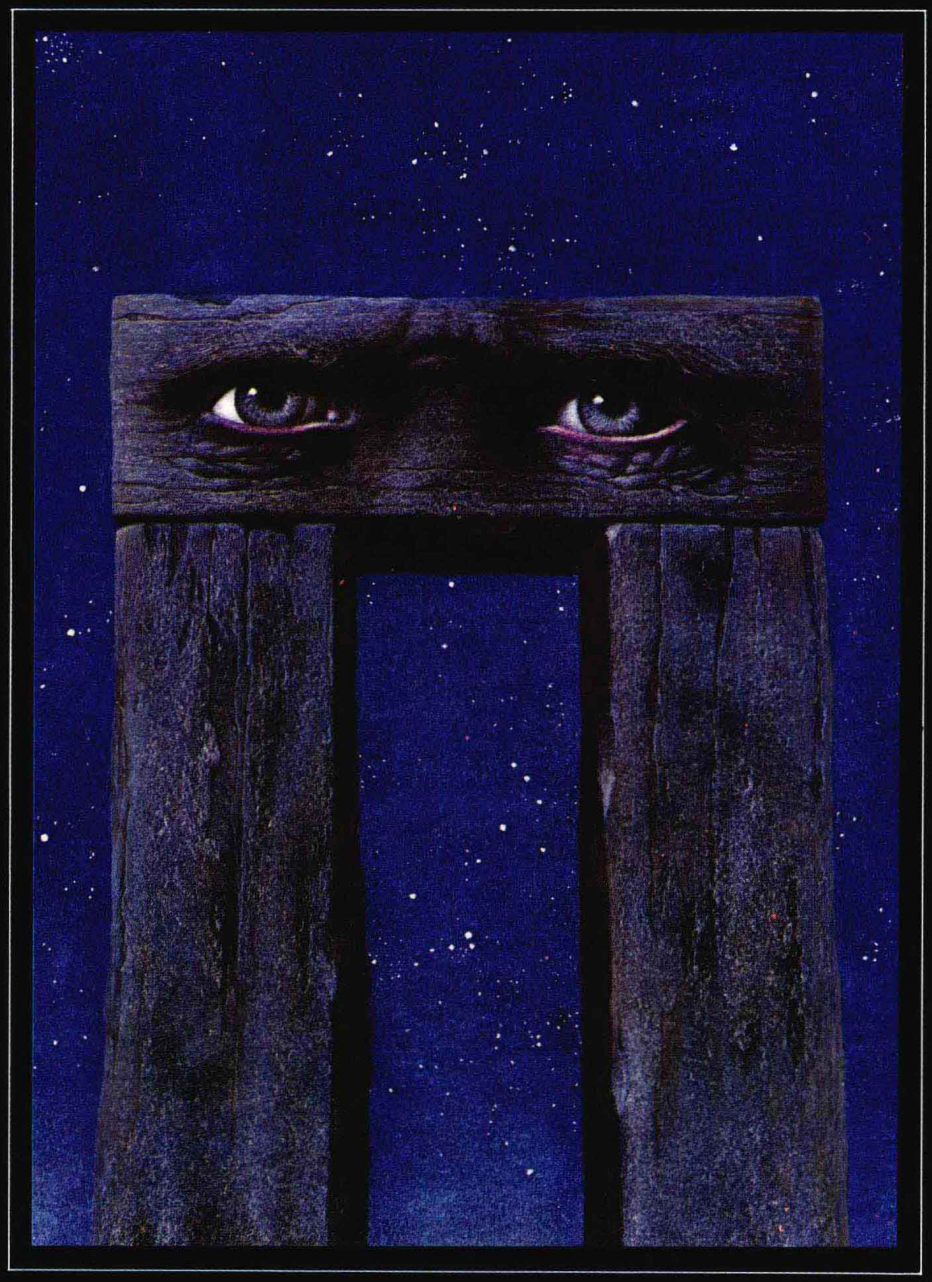
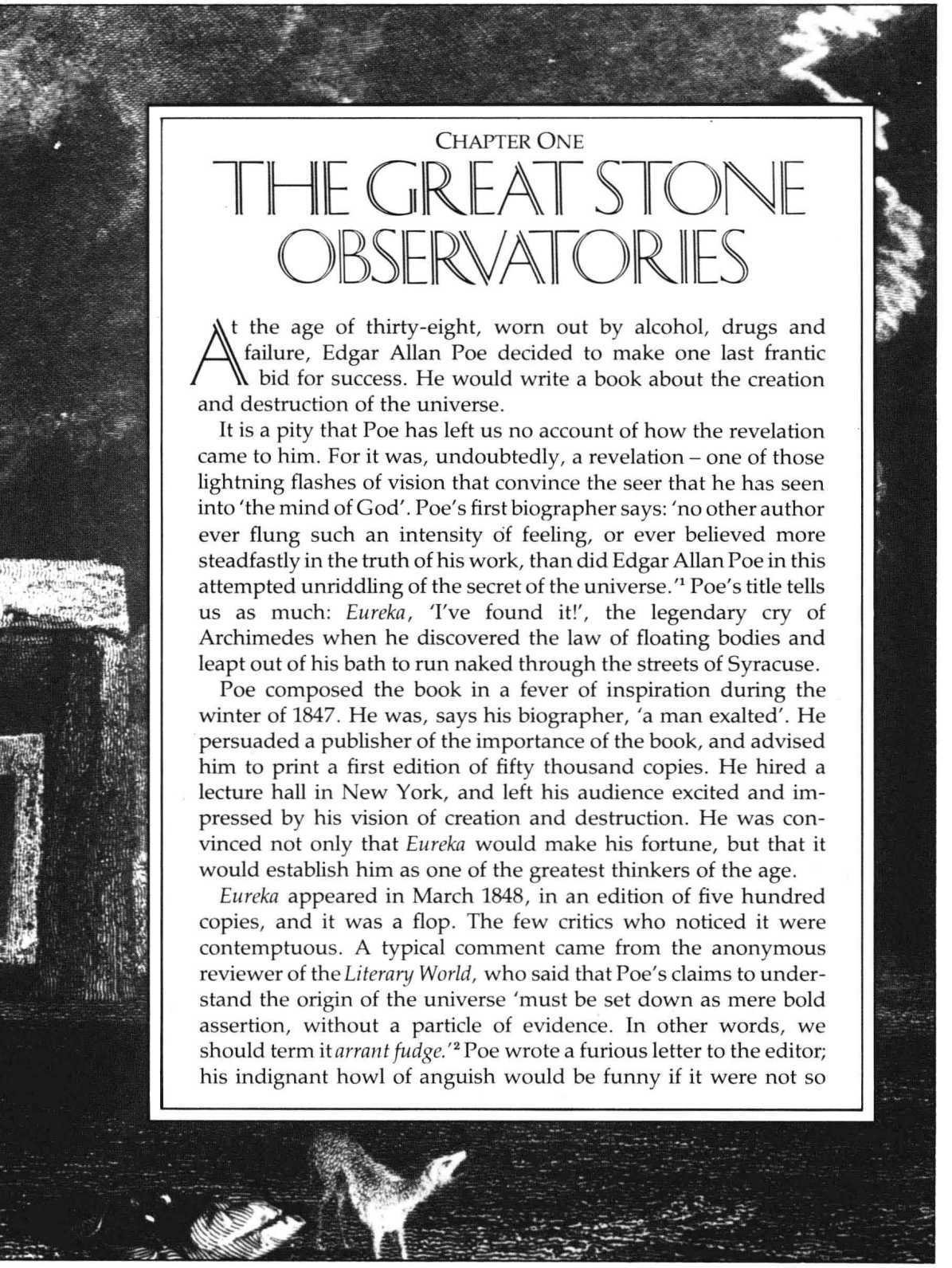


ANCIENT COSMOLOGY



CHAPTER ONE

THE GREAT STONE OBSERVATORIES

At the age of thirty-eight, worn out by alcohol, drugs and failure, Edgar Allan Poe decided to make one last frantic bid for success. He would write a book about the creation and destruction of the universe.

It is a pity that Poe has left us no account of how the revelation came to him. For it was, undoubtedly, a revelation – one of those lightning flashes of vision that convince the seer that he has seen into 'the mind of God'. Poe's first biographer says: 'no other author ever flung such an intensity of feeling, or ever believed more steadfastly in the truth of his work, than did Edgar Allan Poe in this attempted unriddling of the secret of the universe.'[1] Poe's title tells us as much: *Eureka*, 'I've found it!', the legendary cry of Archimedes when he discovered the law of floating bodies and leapt out of his bath to run naked through the streets of Syracuse.

Poe composed the book in a fever of inspiration during the winter of 1847. He was, says his biographer, 'a man exalted'. He persuaded a publisher of the importance of the book, and advised him to print a first edition of fifty thousand copies. He hired a lecture hall in New York, and left his audience excited and impressed by his vision of creation and destruction. He was convinced not only that *Eureka* would make his fortune, but that it would establish him as one of the greatest thinkers of the age.

Eureka appeared in March 1848, in an edition of five hundred copies, and it was a flop. The few critics who noticed it were contemptuous. A typical comment came from the anonymous reviewer of the *Literary World*, who said that Poe's claims to understand the origin of the universe 'must be set down as mere bold assertion, without a particle of evidence. In other words, we should term it *arrant fudge*.'[2] Poe wrote a furious letter to the editor; his indignant howl of anguish would be funny if it were not so

obviously the cry of a soul in torment. But one phrase reveals his continuing conviction of the book's greatness. Defending himself against the accusation that his main ideas were stolen from Laplace, Poe declares: 'The ground covered by the great French astronomer compares with that covered by my theory, as a bubble compares with the ocean on which it floats.'[3] Pierre Simon de Laplace, it may be mentioned in passing, was the author of the most important volume on celestial mechanics since Newton's *Principia*.

And is *Eureka* Poe's masterpiece, as at least one critic believes?[4] The answer, I am afraid, has to be 'no'. This portentous attempt to describe the 'physical, metaphysical, mathematical, material and spiritual universe' is abstract and pretentious. Moreover, some imp of the perverse drove him to introduce it with an epistle in his silliest 'humorous' manner, attacking various predecessors in cosmology, 'a Turkish philosopher called Aries and surnamed Tottle', 'whose illustrious disciples were one Tuclid, a geometrician, and one Kant, a Dutchman'. After this buffoonery, Poe goes to the opposite extreme, and talks darkly about ratiocination, axiomatic suppositions and 'the impossibility of attributing supererogation to Omnipotence'. As if to convince the reader that these pseudo-profundities deserve the closest attention, he places every other word in italics.

How do we account for this aberration in a man of genius? Megalomania? Alcoholic insanity? Neither, I believe, is the correct solution. For here we come to the most surprising part: anyone who persists and makes his way through this jungle of verbiage will discover that *Eureka* contains some staggering, almost incredible insights. To understand how remarkable they were, we have to try to forget the scientific advances of the past century and a half, and imagine ourselves in America in the 1840s. The atomic theory of John Dalton was less than half a century old, and atoms were still thought of as tiny hard balls; yet Poe asserts confidently that matter can be reduced to attraction and repulsion – an observation that would only be confirmed with Ernest Rutherford's discovery of the structure of the atom fifty years later. The great cosmologist Laplace, whose influence is obvious throughout *Eureka*, set out to demonstrate that the solar system is as stable as a grandfather clock, while Alexander von Humboldt's *Kosmos*, the other major influence on Poe's thinking, obviously takes the same view of the entire universe. Yet Poe declares that the universe began as a single ball of matter, and then exploded outwards to form the stars – anticipating by seventy years Willem de Sitter's theory of the expanding universe, first published in 1917. Poe also asserts that the universe will eventually collapse inwards again, and end in annihilation – and here he has outlined a theory of the universe that we owe to modern radio astronomy. According to this theory the universe began with a 'big bang', will eventually reach a certain limit – because the speed of expansion is less than the speed of 'escape' – and will then contract again, ending as a collapsing star or black hole. Poe also throws off the casual suggestion that space and time are the same thing, an insight that seemed obvious nonsense at the time, and that did not begin to make sense until Einstein's appearance. Poe even recognized that the Milky Way is a galaxy, and that galaxies are island universes, and not mere star clusters – another notion that would not be confirmed until the twentieth century. (I have a compendium on astronomy published in about 1930, and a photograph of the Milky Way has a caption that includes the words: 'some astronomers are of the opinion that it marks the limit of the visible universe, and that an immense space, empty to our senses, lies on the further side of it.') And when Poe states that the

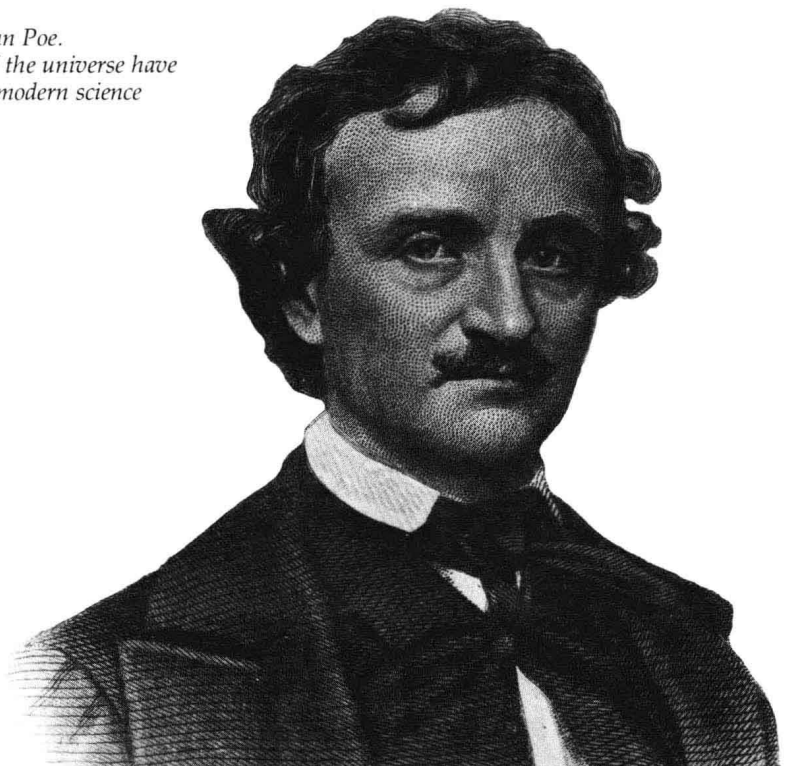
universe ends in annihilation, and then begins all over again, he anticipates one of the most recent theories of cosmology: that a black hole does not continue to collapse indefinitely, but that it finally reaches a limit, and then explodes again.

'What I propound here is true,' Poe insists in the preface, and he repeats this conviction with megalomaniac obstinacy throughout the book. In fact, he continued to believe it throughout the year of life that still remained to him (he died after a drunken debauch in Baltimore in October 1849). It was natural for most of Poe's biographers to assume that this was an attempt at self-deception – the desperation of a man of genius whose work was ignored; but then, they were unaware of the basic accuracy of his insights. The more we consider these insights, in the light of what we know about modern cosmology, the more it begins to look as if Poe was in the grip of some powerful intuition that carried him far beyond the speculations of Humboldt and Laplace.

It would not be the first time in history this has happened. The Greek philosopher Heraclitus (*c.* 540–480 BC) stated that the universe is a living organism that is subject to birth and death; when it dies, it leaves behind a seed, from which it grows again. Everything derives from fire, and moves in a cyclical process. Again, we seem to have a vision of an expanding and contracting universe.

Poe himself would have scorned the idea that knowledge can be obtained through direct intuition. Although he insists that the basic ideas of *Eureka* are a matter of intuition – and that this is why he is so sure they are true – he then hedges his bets by giving a thoroughly rationalistic definition of intuition: '. . . the conviction arising from these inductions or deductions of which the processes are so shadowy as to escape our consciousness, elude our reason, or defy our capacity for expression.'[5] In other words, intuition is subconscious observation. Yet his final appeal to a Creator – to set the whole operation in motion – suggests that he is less of a rationalist than he sounds. Certainly, Heraclitus would have accepted a quite different definition – the notion of intuition as a kind of direct insight that defies rational processes.

Edgar Allan Poe.
His 'crank' theories of the universe have been borne out by modern science



Now this notion is, in fact, less preposterous than it sounds. The branch of science known as split-brain research tells us that the cerebral hemispheres of the brain have quite different functions. The left is the rationalist, the logician – the scientist; the right is the intuitionalist, the apprehender of patterns – the artist. Odder still, the person you call 'you' lives in the left half. If the knot of nerve fibre joining the two halves is severed – as it may be to prevent epilepsy – the patient virtually turns into two different persons. If he is shown an apple with the left half of the brain (which is connected to the right visual field) and an orange with the right, and he is asked, 'What have I just shown you?', he replies, 'An apple.' Asked to write what he has seen with his left hand (connected to the right hemisphere), he writes, 'An orange.' If he is not allowed to see what he has written, and he is asked what it is, he replies, 'Apple.'

The 'left you' is the one who uses language; the 'right you' is non-verbal. Yet it *can* convey information. In an experiment performed by the psychologist Roger W. Sperry, red or green lights were flashed at random in the left visual field of a split-brain patient, and he was asked to guess what colour had just been flashed. The score should have been random, because the left-brain ego does not see the colours. In fact, the score was well above chance. The patient would say, 'Red', and then jump, as if someone had nudged him in the ribs, and say, 'No, sorry, green.' The right brain had heard the incorrect answer, and conveyed the information by, so to speak, kicking him under the table. The left and right brains behave like two different entities; in fact, like two independent minds.

The significance of all this will become clear in a moment, when we discuss the very early history of astronomy. Meanwhile, it is important to grasp the full extent of the difference between these Siamese twins and their ways of apprehending the universe.

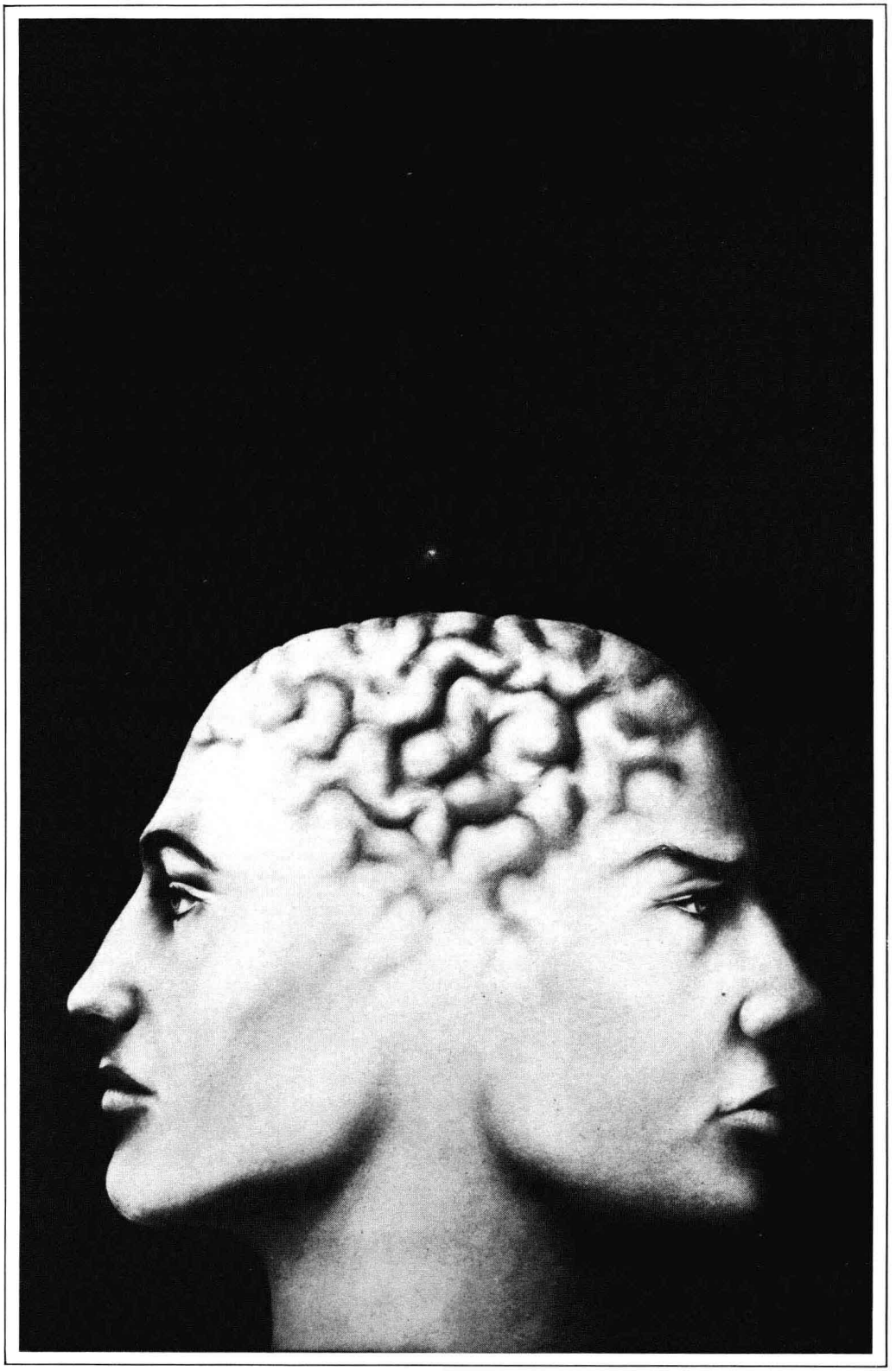
The left brain could be compared to a microscope; it is concerned with detail, with particularities. The right is more like a telescope; it is more concerned with emerging patterns. This means, for example, that ordinary calculation – like adding up the grocery bill – is performed by the left, while 'creative mathematics' – let us say, working out some interesting geometrical problem – involves the right.

This enables us to consider a concrete example of 'direct intuition'. The seventeenth-century mathematician Pierre de Fermat believed that a certain formula* always generates prime numbers – that is, a number that cannot be divided by any other (for example 3, 5 and 7). The first five numbers generated by this formula are 3, 5, 17, 257 and 65537 – all known to be primes. The sixth number in the series – in which $n = 5$ – is enormous: 4 294 967 297. Is this number a prime?

Now oddly enough, there is no general method for discovering whether a given number is a prime, except by painfully dividing every other number into it – a process of elimination. Yet in the mid-nineteenth century a Canadian 'lightning calculator', a boy named Zerah Colburn, was asked whether this number is a prime and replied after a moment's thought, 'No, it can be divided by 641.' He could not explain how he arrived at this answer. But it cannot have been by any 'rational' process since (apart from the elimination method) none exists.

The whole topic of calculating prodigies is still something of a mystery. They are usually uneducated, and not particularly intelligent – some have literally been idiots. Their unusual powers tend to vanish as they get older, as if the coming of adulthood, with its practical problems, demanded a rearrangement of their mental powers. And

* The formula is $2^{2^n} + 1$.



since it is the left brain that copes with down-to-earth problems, this suggests that the powers of lightning calculation are associated with the right – a conclusion that seems to be supported by Colburn's feat.

Robert Graves has an interesting anecdote of a calculating prodigy in his short story *The Abominable Mr Gunn*. Grave's form-master – Mr Gunn – had set the class a difficult arithmetical problem. One boy named Smilley wrote the answer immediately in his exercise book; when Mr Gunn wanted to see his calculations, he explained that 'it had just come to him'. Mr Gunn suggested that Smilley had looked up the answer in the back of the book; Smilley admitted that he had – afterwards – and added that the last two figures given in the answer were wrong anyway. Mr Gunn declined to believe him, and sent him off to be caned.

In the same story, Graves describes a related experience of his own: 'One fine summer evening as I sat alone on the roller behind the cricket pavilion . . . I received a sudden celestial illumination: it occurred to me that I knew everything. I remember letting my mind range rapidly over all its familiar subjects of knowledge; only to find that this was no foolish fancy. I did know everything.' He goes on to qualify this: 'To be plain: though conscious of having come less than a third of the way along the path of formal education . . . I nevertheless held the key to truth in my hand, and could use it to unlock any door. Mine was no religious or philosophical theory, but a simple method of looking sideways at disorderly facts so as to make perfect sense of them.'[6] He tells how, the following day, he tried to record his 'secret' in a notebook, but his mind ran too fast for his pen (a typical problem associated with right-brain insights), and he began crossing out – a fatal mistake. When he tried again that evening, the insight had vanished.

Graves has also recorded how, many years later, another 'unsolicited enlightenment' caused his mind to outrun his pen. He was reading the *Mabinogion*, 'when I suddenly knew (don't ask me how) that the lines of the [Taliesin] poem, which had always been dismissed as deliberate nonsense, formed a series of early mediaeval riddles, and that I knew the answer to them all – although I was neither a Welsh scholar, nor a mediaevalist. . . .'[7] These insights, and others like them, formed the basis of *The White Goddess* – a book that argues that such flashes of knowledge belong to the realm of the moon goddess. In fact, the basic argument of *The White Goddess* is that there are two distinct forms of knowledge: solar knowledge – that rational, scientific knowledge which has become typical of Western man – and 'lunar' knowledge – which springs from intuition, from the unconscious. Lunar knowledge, which is connected with poetry and magic and the irrational, is far older than solar knowledge, which finally ousted it.

The distinction may sound artificial. After all, knowledge in itself is not really 'lunar' or 'solar': only the *method* by which I arrive at it can be labelled intellectual or intuitive. But then what Graves is trying to point out is that Western man now makes an unconscious assumption that knowledge is intellectual by nature, and that intuition is simply a crude way of groping towards intellectual conclusions. In other words, anything that can be seen by moonlight can be seen better still by sunlight. This is untrue; certain things – like candle flames – become invisible in strong sunlight. And the human spirit itself resembles a candle flame in this sense. It can be most clearly seen – or felt – by a magical half-light. Moreover, when it is seen and felt, man's relation to his universe is altered. He becomes aware of himself as an *active* principle, rather than as a passive object. While he accepts himself as passive – as a creature who

The Babylonian world system, based on the much earlier Sumerian cosmology

is acted upon – his relationship to objects (his knowledge) is somehow false. Thus our 'solar' view of knowledge falsifies the universe.

And so, by a rather circuitous route, we come back to cosmology – that is, man's relation to the universe. And we find that Graves's view of knowledge is the key to an interesting mystery.

The 'first astronomers', in the modern sense of the word, were the Babylonians or 'Chaldeans', who merged with the Assyrians – being conquered by them – in the seventh century BC. In the Bible, the word Chaldean is usually synonymous with 'wise man' – meaning a magician or astrologer. Astronomy, in the sense of scientific observation of the heavens, begins (roughly) around 800 BC. (The Chinese had their own tradition, but it will not concern us in this book.) Yet the Mesopotamian peoples had been studying the heavens for at least three thousand years by this time, and noting the movements of the moon. The reason, obviously, is that any society that depends on agriculture needs to be able to predict the seasons, and the moon forms a highly convenient clock.

As for more northerly countries of Europe – like England and France – it was assumed that their knowledge of the heavens consisted of little more than this lunar rule of thumb. Their natives were too concerned with fighting, and with conducting rituals in temples like Stonehenge and Carnac, to be interested in the heavens.

In 1897, a disputatious note was sounded when a Frenchman named Félix Gaillard published *L'Astronomie préhistorique*, in which he argued that prehistoric stone monuments – like the great avenues of stone at Carnac – were each a kind of astronomical calculator, built to determine such matters as solstices and the nineteen-year lunar