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An Ancient Greek Computer

The Antikythera Mechanism kept a calendar, tracked the motions of heavenly bodies and even predicted eclipses. John J. Miller reviews "A Portable Cosmos" by Alexander Jones.

By John J. Miller

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Near an island about halfway between the Peloponnese and Crete, two boats of Greek divers sought shelter from a storm. The year was 1900, and the men were either on their way to the sponge banks near Libya or heading home from them. One diver took a plunge, hoping to add to his harvest. He came up with a bronze arm. In the depths below, he had located a 2,000-year-old shipwreck—and the biggest hoard of ancient Greek sculptures ever found.

A rescue operation eventually hauled up a treasure trove. The most noteworthy items, including a bronze statue known as the "Antikythera Youth," are now on display in the National Archaeological Museum in Athens.

One of the last objects that the rescuers found was a fragile slab of corroded metal. It didn't look like much. Yet it turned out to be a remnant of "the most important artifact of ancient science that archeology has ever brought to light," writes Alexander Jones in "A Portable Cosmos." A professor of history at New York University, Mr. Jones provides a detailed account of how the world's first analog computer—now called the Antikythera Mechanism—came to be built and lost more than two millennia ago, found more than a century ago, and understood only in recent years.

If the contraption hadn't surfaced, few people would dare imagine it. As researchers have learned, it was once an intricate system of gears enclosed in a case about the size of a bread box. It kept a calendar, tracked the motions of heavenly bodies and even predicted eclipses. The technology was beyond anything else known to have existed at the time.

One of the device's early investigators, the science historian Derek de Solla Price, likened its discovery to "opening a pyramid and finding an atomic bomb." When the physicist Richard Feynman gazed on a reconstruction of the mechanism's fragments in 1980, he called it "so entirely different and strange that it is nearly impossible." It also fired the imagination of science-fiction author Arthur C. Clarke, who offered the wishful suggestion that, had Greek technology continued to develop apace, "we would not merely be puttering around on the Moon, we would have reached the nearer stars."

A fragment of the Antikythera Mechanism. **PHOTO:** ASSOCIATED PRESS

A PORTABLE COSMOS

By Alexander Jones

Oxford, 288 pages, $34.95

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The long effort to understand the Antikythera Mechanism represents a feat of science worthy of the object itself. For half a century after its discovery, its fragments remained stashed away in cigar boxes. Scholars barely knew it existed. Serious work began in the 1950s and leapt forward in the 1970s, when X-ray imaging allowed glimpses of hitherto hidden gears and inscriptions. As methods improved, so did insights. By 2006, says Mr. Jones, "a gradual, interdisciplinary process" that involved archaeologists, scientists and technicians finally allowed the device to be rebuilt according to its original design.

A historian of science and technology, Mr. Jones played a role in this endeavor. His job was to link the complexities of the Antikythera Mechanism to what the ancient Greeks believed about the astronomy of a geocentric universe. His virtue as an author is an exhaustive knowledge of his subject, such as how Greek calendars varied from city to city and how pre-Copernican astral calculations accounted for the mystery of the planets' retrograde motion.

Unfortunately, such erudition doesn't always translate into great storytelling. Although he promises "a minimum of specialized jargon," Mr. Jones can write sentences such as: "The outer scale was divided in the same manner into 12 equal sectors and a 13th smaller sector subtending one-sixth of the arc subtended by the larger sectors." There is probably no way to avoid some of this, but stretches of "A Portable Cosmos" feel like a species of technical literature. Readers who seek a more accessible introduction to the Antikythera Mechanism should turn to "Decoding the Heavens," a 2009 book by science journalist Jo Marchant.

Even so, Mr. Jones can be refreshingly candid, avoiding scholarly habits of overcaution. Although he admires the Antikythera Mechanism, he stops short of reverence, calling it "a remarkable creation, but not a miracle of perfection." Its flaws include "inefficient gearwork" that would have made it prone to "intermittent jamming," and its astronomy may not have been state-of-the-art for its time. He also envisions the workshop of its creation, proposing "a true collaboration between someone possessing a degree of astronomical knowledge and someone with outstanding mechanical skill and creativity."

So what was it for? "I do not believe that its purpose was to compute data or make predictions to be applied in some practical context," writes Mr. Jones. Instead, he thinks it was a teaching aid—the closest thing the ancient world would have had to an episode of the documentary series "Cosmos," using visual elements to promote "the diffusion of the basics of astronomy among students of philosophy and the educated elite." He speculates that it was

manufactured on the island of Rhodes and bound for an owner in Epirus, a region that straddles present-day Albania and Greece. On its doomed voyage, writes Mr. Jones, "we may conjecture that it was in the care of a technician trained to operate it and maintain it in working order."

Then, around 60 B.C., it sank. We can't possibly know what happened to Mr. Jones's technician, though the shipwreck has revealed the remains of several people. A partial skeleton became known only last summer, buried below pottery shards and sand in what Archaeology magazine called one of the top 10 discoveries of 2016. Experts hope to conduct DNA testing and learn ever more about the people who came before us—and whose ingenuity we underestimate.

—Mr. Miller is director of the Dow Journalism Program at Hillsdale College and a writer for National Review.