

Multichannel Analyzer World's Smallest 'Pocket MCA'

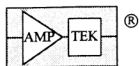


Size: 6.5" x 2.8" x 0.8"
(165mm x 71mm x 20mm)
Weight: <300 grams (including batteries)

The **MCA8000A** is a full featured, low power Multichannel Analyzer intended to be used with a wide variety of detector systems.

- 16k data channels
- Stores up to 128 spectra
- 24 hours of continuous data acquisition from two 1.5V AA batteries
- Conversion time $\leq 5 \mu\text{s}$ ($\geq 200,000$ cps)
- Two stage input analog pipeline
- Differential nonlinearity $< \pm 0.6\%$
Integral nonlinearity $< \pm 0.02\%$
Sliding-scale linearization
- Two peak detection modes:
First peak after threshold (nuclear spectroscopy)
Absolute peak after the threshold (aerosol particle detection)
- Two TTL compatible gates for coincidence & anticoincidence
- Stand-alone data acquisition
- Date-time stamp - Y2K Compliant
- Stored spectra protection via software security & serial ID number
- 115.2 kbps serial interface

Free Windows & DOS software



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6 De Angelo Drive, Bedford, MA 01730-2204 U.S.A.
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complex life exists elsewhere in the Universe. Even if they have not yet convincingly resolved the issue for the reader, Ward and Brownlee have done an admirable job of demonstrating how forefront research in the fields of biology, paleontology, geology, and astronomy is leading us closer to knowing whether we truly are alone in the Universe.

LAWRENCE KRAUSS
Case Western Reserve University
Cleveland, Ohio

Carl Sagan: A Life in the Cosmos

William Poundstone
Henry Holt, New York, 1999.
473 pp. \$30.00 hc
ISBN 0-8050-5766-8

Carl Sagan: A Life

Keay Davidson
Wiley, New York, 1999. 540 pp.
\$30.00 hc ISBN 0-471-25286-7

Among celebrity scientists of the late 20th century, Carl Sagan was probably the best known and certainly was among the more controversial. He was the most visibly opinionated, not only about scientific issues but about pressing political issues that included the survival of the human race and the preservation of nature. He enjoyed a platform so vast that it transcended science itself.

His private life was also unusually visible; urban legends abound. Thankfully, neither of the biographers reviewed here tries to repeat every rumor, dig up every corpse, expose every alleged liaison, follow every pointed finger. What they both do is paint a vivid portrait of the toll that becoming and being Carl Sagan took of the man and of those who were directly involved with him.

From the perspective of science writer William Poundstone's *Carl Sagan: A Life in the Cosmos*, Carl Sagan set out consciously to become Carl Sagan and succeeded in spectacular fashion. From the point of view of Keay Davidson's *Carl Sagan: A Life*, Sagan was a complex and tortured man who filled his life with paradoxes that astounded, enraged, and fascinated contemporaries and mentors alike. Davidson is also a science writer and journalist, but is more sensitive than Poundstone to recent scholarship in science studies and the history of science.

From both authors we get the details of life and the impact on the

young Sagan of a passive father and of a mother who must have been a terror in even the most competitive warrens of Jewish Brooklyn. Both biographers make it quite clear that Sagan's mother was a contentious force who focused her life energies on her son. Both also make much of the mentors Sagan sought out as a student at the University of Chicago and elsewhere—including the geneticist H. J. Muller and the chemist Harold Urey—and how he parlayed these contacts into a career laced from the beginning with conflict and controversy. The authors make it possible to understand why Sagan was both attractive and repulsive to contemporary scientists, and they do a good job of rationalizing Sagan's ability to create and retain mass appeal. They both appreciate the fact that Sagan's pervasive public presence was made possible by new capabilities of visual mass communication, and that he used these more effectively than anyone in science did.

Poundstone is dead-on when he describes how touchy Sagan could be about image. Poundstone also is at his best when describing Sagan's writing method and the demands upon those who seek popular acclaim. He is on somewhat softer ground in technical areas. He neglects very telling episodes, such as Sagan's failures with the Mariner and Stratoscope projects at a time when, as Davidson poignantly describes, Sagan had seriously overextended himself in his mad dash to grab every brass ring.

Poundstone's is a less intimate portrait than Davidson's, and seems more celebratory. Poundstone is also prone to errors, which Davidson avoids by relying upon recent historical scholarship. Poundstone appears awestruck by Sagan's accomplishments; Davidson provides many cogent and insightful critiques.

Davidson does a particularly nice job of exploring the microstructure of Sagan's fame, how he enthralled audiences by describing the planets "vividly, as if he had just returned from them." He sets out a coherent intellectual framework and then rationalizes Sagan's world view centered on the search for life in the universe. One of his more interesting speculative insights comes when he attempts to psychoanalyze Sagan's efforts to design the Pioneer plaque. The only distraction I found in Davidson's otherwise exemplary treatment is that he introduces and repeatedly reintroduces Sagan's wives by name and number.

Both authors identify the search

for life in the universe as an emotional magnet for popular support and federal patronage. Most intriguing is the inference, made more by Poundstone than Davidson but clearly present in both, that patronage issues created a bias toward finding positive indicators of life, leading some (but not Sagan) to overemphasize positive indicators and downplay negative ones.

Historians and scientists alike should find Davidson's treatment more nuanced and complex, and therefore more satisfying. Lay readers may find Poundstone's shotgun approach more digestible. Nevertheless, both books are worthy and welcome additions, and provide a firm basis for future inquiry into the place (and price) of popularization and political activism in science.

DAVID H. DeVORKIN

National Air and Space Museum
Smithsonian Institution, Washington, DC

Quintessence: The Mystery of Missing Mass in the Universe

Lawrence Krauss

Basic Books (Perseus Books Group), New York, 2000. 350 pp.
\$26.00 hc ISBN 0-465-03740-2

The *New York Times* review of Lawrence Krauss's very successful 1995 book, *The Physics of Star Trek* (Basic; Harper Collins) began by calling it "classic bait-and-switch—and to the benefit of the reader." It was more a book about physics than about *Star Trek*.

In *Quintessence*, an updated version of his 1989 popular account of dark matter, *The Fifth Essence* (out of print), Krauss is back at his old tricks. *Quintessence* is actually a first-hand and very readable account of one of the most remarkable periods in the history of cosmology—the past twenty years, which exposed the deep connections between cosmology and particle physics. Krauss's book chronicles this time and conveys both the science and the excitement from the point of view of an important participant. (Krauss heads the physics department at Case Western Reserve University.)

The burst of theoretical activity in the 1980s (called by one particle theorist the go-go junk-bond days of early universe cosmology) was powered by powerful ideas in particle physics. Before the advent of the Standard Model of particle physics in the late 1970s, early-universe cosmology was

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