

## Part III

# The Distortions Continue

## Kendrick Frazier

Immanuel Velikovsky may have died last November, but the promotion of his eccentric brand of planetary-origin theory continues undiminished. An advertisement in the April 20, 1980, *New York Times Book Review* symbolizes the start of the posthumous stage of Velikovskianism and serves as an interesting mini case-study of the subject.

The ad, placed by Doubleday, the publisher of all of Velikovsky's books in hardcover, is titled, "Velikovsky: The Controversy Continues." The ad reminds us that all of Velikovsky's books are still in print. It also announces that he left behind manuscripts for several new books "which will doubtless . . . interest intelligent and open-minded readers in search of an understanding of the forces that have shaped our world."

But it also briefly reviews the Velikovsky controversy, labeling it "one of the most heated controversies in the history of science," and goes on to make some specific assertions about recent discoveries of planetary science and Velikovsky's role in supposedly anticipating them.

What particularly caught my eye was the statement that findings of the recent Pioneer probe of Venus's atmosphere supported Velikovsky's theories about that planet's origins. Those theories, you will recall, postulate that Venus was born about 3,500 years ago as a comet ejected out of Jupiter and that this comet grazed Earth around 1500 B.C., causing, among other things, the earth to temporarily stop rotating and accounting for various biblical legends. Then, in the seventh and eighth centuries B.C., the comet knocked Mars into several near-collisions with Earth and the atmospheres of all three intertwined. The comet then settled into a circular orbit and became the planet we now call Venus.

---

*Kendrick Frazier, editor of the SKEPTICAL INQUIRER and former editor of Science News, has written extensively on the geophysical sciences. His recent book, The Violent Face of Nature, deals with geophysical disasters on Earth.*

---

"Velikovsky's assertion that Venus is a young planet, expelled from Jupiter only thousands of years ago," the Doubleday ad states, "has received strong support from the evidence of the Pioneer probe which revealed so little surface erosion and such an abundance of primordial Argon 36 that scientists now speculate that Venus was formed more recently than the other planets and by a different process."

The ad also states that Velikovsky claimed that space is not a void "but is filled with electromagnetic fields and radiations. This claim completely contradicted the accepted view. But the first satellites encountered magnetic fields, solar winds, and radiations, and 'heresy' became fact." It also mentions Velikovsky's claims that Venus should be hot (due to its recent violent birth) and that "Venus should be surrounded by a blanket of petroleum hydrocarbons." Even this last prediction, the ad claims, has now been verified. "Methane (hydrocarbons) has been found on Venus."

I have always been fascinated by planetary astronomy, and as a professional science writer and editor I have closely followed the past decade's striking discoveries about the planets. This is a remarkable age of discovery. In just the past four years our spacecraft have landed on Mars, sent probes down through the atmosphere of Venus, photographed Jupiter and its moons at close range, and flown inside the rings of Saturn. We have discovered rings around Uranus and Jupiter, a fourteenth and fifteenth satellite of Jupiter, another set of rings and several moons around Saturn, and volcanoes in eruption on the Jovian moon Io. We've detected lightning on Venus, directly measured the composition of its dense atmosphere, and found a surprisingly ordered wind system around the planet. Soviet spacecraft have landed on Venus and photographed its surface. We've found the solar system to be extraordinarily interesting.

But I could not seem to recall any report that we've discovered Venus to be a very young planet, born in historic times and scooting about in the neighborhood of Earth as recently as 2,700 years ago. Certainly I couldn't remember any such announcement coming out of the Pioneer Venus mission to that planet in late 1978. But perhaps I missed something.

I decided to send copies of this ad to a number of noted planetary scientists and ask them about its assertions. Most of the scientists queried had participated in the remarkable observations and studies of the planets—especially Jupiter and Venus—in the past few years. They, more than anyone, would know whether, as the ad claims, the recent findings have verified Velikovsky's theories. With only a few exceptions they had not previously spoken out on Velikovsky's theories. I received responses from about half those queried and followed up by phone calls to about half of the nonrespondents.

There was overwhelming agreement from the planetary scientists that

the substantive claims in the ad were wrong. Some put it far stronger than that. "The ad is thoroughly dishonest," said A. G. W. Cameron of the Harvard-Smithsonian Center for Astrophysics. "The ad, like the Velikovsky books it is promoting, contains more falsehoods in a paragraph than one can refute in a chapter," said Edward Anders, a University of Chicago cosmochemist who has specialized in chemical studies investigating the early history of the solar system.

"No reputable scientist 'now speculate[s] that . . . Venus was formed more recently than the other planets,'" said Anders.

"The statements [in the ad] are not accurate," said geophysicist William M. Kaula of the University of California at Los Angeles. "As a Pioneer Venus co-investigator, I am not aware of any support in the scientific community for Venus being a young planet. The Pioneer probe did not reveal anything conclusive about surface erosion; its relevance to origin is very slight, in any case. The excess of argon-36 suggests, if anything, that Venus is older, since the solar wind swept volatiles out of the nebula with time."

"Several of the statements in the ad are outright lies," said University of Hawaii astronomer David Morrison, particularly the assertion that scientists now speculate that Venus is a young planet. "While the large amount of argon-36 discovered by Pioneer has indeed upset current ideas about the conditions (particularly pressure) in the solar nebula when the planets formed, a recent birth of Venus is not in any way indicated."

"Anyway," said UCLA astronomer George O. Abell, "Velikovsky never mentioned argon-36." Abell and Morrison, a former deputy director of lunar and planetary programs for NASA, are two respondents who have in the past tried to clarify issues in the Velikovsky debate.

According to chemist Vance I. Oyama of NASA's Ames Research Center, the argon-36 abundances for Mars, Earth, and Venus are con-

## Velikovsky. The Controversy Continues.

In 1950 the publication of *Worlds in Collision* created one of the most heated controversies in the history of science. Challenging many of the accepted views about the order of the universe, Immanuel Velikovsky's book became a #1 bestseller. It was attacked by experts as well as vested interests as heresy. It was respectfully or enthusiastically received by other renowned scholars and general readers. Now, thirty years later, the controversy continues and Velikovsky's work is the subject of books, magazines and articles as well as symposia held throughout the world.

Operating on the basis of his central idea—that our solar system has undergone catastrophic changes in historical times—Dr. Velikovsky presented unorthodox claims about the nature of the planets and interplanetary space. For example, he claimed that space is not a void, but is filled with electromagnetic fields and radiations. This claim completely contradicted the accepted view. But the first battles encountered magnetic fields, solar winds, and radiation, and "heresy" became fact. Similarly, Velikovsky's assertion that Venus is a young planet, expelled from Jupiter only thousands of years ago, has received strong support from the evidence of the Pioneer probe which revealed so little surface erosion and such an abundance of primordial Argon-36 that scientists now speculate that it appears Venus was formed more recently than the other planets and by a different process. These findings upset their uniformitarian view of the solar system.

In the decades since the publication of *Worlds in Collision*, dozens of Velikovsky's claims have been verified. Indeed, William Plummer wrote in *Science*, "Some of the least expected discoveries made by planetary astronomers in recent years were correctly predicted by Velikovsky. He argued that Jupiter should be a strong source of radio waves, that

the earth should have a magnetosphere, that the surface of Venus should be hot, that Venus might exhibit an anomalous rotation, and that Venus should be surrounded by a blanket of petroleum hydrocarbons. All except the last of these predictions have been verified, most of them by accident." In fact, in the time since this was written in 1969, the last of these predictions has been verified. Methane (hydrocarbons) has been found on Venus.

In the preface to his yet-to-be-published *The Test of Time*, Velikovsky looks back on his career and writes: "I was compelled by logic and by evidence to penetrate into so many unexplored territories of the house of science. I freely admit to having repeatedly caused fires, though the candle in my hand was carried only for illumination." Immanuel Velikovsky died last November, hard at work on that process of illumination. Though he is gone now, he left behind the manuscripts of several new books which will doubtless fuel the debate about heresy, stimulate original thinking, and interest intelligent and open-minded readers in search of an understanding of the forces that have shaped our world.

The Velikovsky books (all are in print) are available through your local bookseller or postpaid direct from Doubleday & Company, Inc., Garden City, New York 11530. They are *Worlds in Collision* (\$10.95), *Ages in Chaos* (\$10.00), *Earth in Upheaval* (\$8.95), *Cedrus and Alchizaron* (\$8.95), *Peoples of the Sea* (\$10.00) and *Ramesses and His Time* (\$10.00). Also available is *Velikovsky Recorders* (\$8.95) by the editors of *Parade*. If you look at the Velikovsky controversy



DOUBLEDAY

The publisher's ad and its key claims

sistent with the model that volatiles are incorporated into the grains that formed these planets, provided the large pressure differences, but small temperature differences, characterized the region of the nebula that gave birth to the solar system some 4.5 billion years ago. "The argon-36 amounts in the atmosphere then are suggestive that Venus's position in the solar system is approximately correct," Oyama said.

Michael B. McElroy, a Harvard University atmospheric chemist and a specialist in studies of planetary atmospheres, put the argon/age question into perspective. The noble gases on Venus are indeed abundant and puzzling, he said, and in his opinion Venus may be *slightly* younger than Earth. "But, by slightly, I still mean 4.5 billion years old," he said. McElroy thinks the likely age difference is only about 1 million years. As for the ad's assertion that scientific support has been found for Venus being a young planet, "Obviously, I don't agree," he said.

Even if there had been any serious questions about Venus's age, they would have been settled this past spring. On May 28, scientists announced that the Pioneer Venus satellite's radar indicated the presence of an apparently ancient supercontinent on the planet, with a crust that could be 4 billion years old.

McElroy, who said he had read Velikovsky's *Worlds in Collision*, noted the difficulty scientists have in responding to claims that the author's predictions have been verified. Velikovsky did say Venus should be hot, for example, and it is; but he predicted that it would be hot because he thought it had been born as a comet out of Jupiter 3,500 years ago. "That," says McElroy, "is not true." A pronounced "greenhouse effect" is the leading explanation for Venus's high temperatures. That view has been strongly supported by the Pioneer Venus data.

What about the ad's claim that Velikovsky's prediction of "a blanket of petroleum hydrocarbons" surrounding Venus has been verified by a recent discovery of methane on Venus? That assertion is false, both in fact and in implication.

Oyama was the principal investigator for the gas chromatograph experiment on our Pioneer probes of Venus. "The Pioneer Venus gas chromatograph was capable of measuring methane, ethane, and propane, but none of these molecules could be detected," he said. "If they exist in the Venus lower atmosphere, their level is less than a part per million. It may be concluded that the surface of the planet is hardly likely to be 'blanketed' with a layer of petroleum."

"Hydrocarbons have been found on Venus in only trace amounts," said Kaula. Ethane (C<sub>2</sub>H<sub>6</sub>) of less than one part in a million is the only one reported from the mass spectrometer, he said, while the gas chromatograph found none and set upper limits of less than 5 parts per million of

methane, ethylene, ethane, and propane. "Such drastically low levels are evidence against Venus's having come from Jupiter, since it would be difficult to imagine a process of stripping these gases, abundant on Jupiter, off a planet so completely if it emerged therefrom."

The petroleum hydrocarbon assertion "is an example of the meaninglessness of Velikovsky's 'predictions,' because of their lack of quantitiveness," Kaula said. It should be remembered that Velikovsky's references to Venus's petroleum were quite literal. He wasn't referring to trace gases. He believed that from the comet Venus "oil rained on the desert of Arabia and on the land of Egypt" and that this "rain of fire-water contributed to the earth's supply of petroleum." Was Venus a regular cosmic gusher? Alas, the facts don't support this grand conception.

The respondents similarly labeled as absurd the ad's claim that Velikovsky first predicted the fact that interplanetary space is filled with electromagnetic fields and radiations. "Before Velikovsky, every astronomer knew that space was filled with electromagnetic radiations and fields," said one. "How else could light get to Earth from distant galaxies."

"Everything we see in the sky we see by means of electromagnetic waves from those objects," pointed out Abell. "Velikovsky, of course, didn't know what 'electromagnetic radiation' means."

"That interplanetary space is not a void, and in particular that the earth has a magnetosphere, was predicted, and serious calculations were carried out by scientists long before Velikovsky," noted Kaula. He referred to Stormer's pre-1910 calculations on charged particles in the magnetic field to explain the aurora, Chapman and Ferraro's solar-wind models in the 1920s and 1930s to explain magnetic storms, and work before 1950 by Bierman, Alfvén, Forbush, and others on solar-emitted ions and their interactions with comets, the earth's magnetic field, and so forth.

Several respondents also disputed the ad's implication that the Velikovsky controversy was among scientists. "The Velikovsky hypothesis was *never* controversial among scientists," said Abell. "It is, and was recognized at once as, a crank idea." Said another, "There is no controversy about Velikovsky in the science community. It is only between scientists and admirers of Velikovsky who are not experts in astronomy, physics, chemistry, or geology." Those comments were borne out by the other respondents, none of whom considered Velikovsky's views serious scientific hypotheses.

A number of respondents addressed broader scientific and philosophical issues in the Velikovsky debate.

"Science requires quantitative statements presented with likely errors," said Edward L. Fireman of the Harvard-Smithsonian Center for Astrophysics. "Science does not accept predictions (whether right or wrong)

unless accompanied by a statement of the required assumptions and the proper deductive formalities. Any soothsayer can make vague predictions about Venus or any other subject and later boast that most of the predictions turned out to be right when the measurements are done. Scientists, in contrast, usually discuss the discrepancies (and errors) between the predictions and the measured results and try to find possibilities for improvements." That point was reiterated by Abell. "Velikovsky's predictions were vague and general, and the so-called predictions said to come true were all formulated post hoc."

Several of the planetary scientists contacted felt that scientific response to the claims of Velikovsky promoters only served to give the mistaken impression that scientists took his views seriously. "I personally don't think [the ad] deserves comment," said one of the principal investigators in our Voyager mission to Jupiter. "I'd be happy to comment on things for which there is some more supportive information."

A NASA research scientist prominently involved in the Pioneer Venus mission said, "Quite frankly, I really don't want to get involved in anything to do with the subject of Velikovsky. I think a mistake was made by some people in the early years in taking him too seriously. It only led to more sales and publicity." As for the Doubleday ad, this scientist said simply, "I don't know where they got some of their claims. There were a number of misstatements." He was one of several who felt the overwrought scientific reaction of the early 1950s was a mistake. McElroy, while not agreeing with Velikovsky's views, also regretted that Velikovsky had been "treated harshly" in the fifties.

One of the most thoughtful replies came from Johns Hopkins University geophysicist Walter M. Elsasser, originator of the dynamo theory of the origin of the earth's magnetic field. "I not only have read some of Mr. Velikovsky's writings but even knew him personally at one period of my life," said Elsasser. "My only drawback is that I am a reasonably successful academic scientist, which in the eyes of some segments of the public makes me a representative of 'vested interests.' I do not, however, consider myself as biased in the matter.

"I have often observed Velikovsky's method of making 'scientific' predictions. He makes a whole string of predictions. Then he waits until some experiments show up, and from the results he picks those that happen to verify some things that he predicted previously, forgetting simply all the other predictions of his that were not verified. This, in my opinion, and in that of anybody familiar with scientific method, is not a scientific procedure at all; it is a form of fraud.

"I do not think that Velikovsky as a person had any intent to defraud . . . He was undoubtedly a man of phenomenal intelligence; and it is a

tragedy to see such talent being used in an utterly asocial manner as he did by trying to give his personal fantasies a 'scientific' validation."

To return once again to the ad and its assertions: every scientist contacted for this article felt the ad was at best misleading, at worst dishonest.

"I am used to distortions by the Velikovsky supporters, but this ad seems to be particularly reprehensible," said David Morrison. "I would think Doubleday could make a perfectly good case for selling Velikovsky's books, which have long enjoyed a wide and enthusiastic readership, without sinking to the level of this ad."

"If Doubleday were trying to sell appliances rather than books with such doubletalk," said Edward Anders, "it would be in trouble with the FTC, the Better Business Bureau, and perhaps even the U.S. Chamber of Commerce."

No one disputes the right of a publisher to promote its books in any way it sees fit. We've long learned to accept exaggerations and distortions in advertising of all kinds. And Doubleday, a respected publisher, could probably even make a case that the phenomenal economic success of Velikovsky's books over the decades has helped enable it to market less lucrative but legitimate works of science. There is no reason to believe that as a publisher it is motivated by a desire to promulgate pseudosciences; it has published many excellent science books, including works by Isaac Asimov and astronomer E. C. Krupp that have included strong critiques of Velikovskianism.

But having said all that, scientists and others also have the right to criticize and evaluate the scientific claims a publisher makes on behalf of a work of fringe science it is promoting. Assertions like those made in the Velikovsky ad have long helped reinforce the idea among the well-meaning public, including some portions of the nonscience academic community, that Velikovsky did not get a fair hearing. I have attempted in this article to determine whether several very specific assertions have any validity. They do not.

There is near-zero hope, nevertheless, that the promoters and consumers of Velikovskian confusion will suddenly change their ways. The psychological appeal of Velikovskianism to certain segments of society is too powerful. It's best to keep one's humor and sense of proportion. As William Kaula said: "My normal second thought after being irritated by nonsense in the name of science is like the submariner's response to the urge to exercise: lie down until the feeling goes away, since the likelihood of satisfying resolution is low." But sometimes it is enjoyable, and maybe even marginally useful, to try. ●