

WORLDS IN COLLISION

What happens when the world of the individual truth seeker collides with the scientific establishment

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This is a strange story.

Its roots lie in the myths of ancient peoples, set down on rock, papyrus, and in the legends of long-dead tongues.

Its scope is the breadth of the solar system, from the core of the sun to the moons of Jupiter, and back to the orbital paths of Mars and Venus.

It spans the globe, from the Red Sea to the tundra of Alaska to the Aztec tribes of Central America.

Yet it is as *infinitesimal*—and as infinite—as the space in a man's mind between an old idea and a new one. For this is also the story about how man finds the truth, and about what kinds of men find what kinds of truth. It is the story of a man who went where he wasn't supposed to, found what could not be true, and just possibly may have found the truths that the wiser men could not see.

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It is almost ludicrous to make the protagonist of such a story a man such as Immanuel Velikovsky. Now in his early seventies, hawk-nosed, with faint wisps of white hair on a high, receding forehead, he bears the gentle mark of a man whose life's work has been scholarship. Born in Russia in 1895, educated in an astonishing number of disciplines including law, medicine, ancient history, and philosophy, he assumed the scholar's life as had his father before him. (He was co-founder of the *Scripps Universitatis*, a series of volumes by outstanding Jewish scholars—including Albert Einstein—which would become the cornerstone of the University of Jerusalem, and which was financed by Velikovsky's father.)

Among Velikovsky's myriad interests was psychology; it was, in fact, this pursuit which was to lead him into bitter and lasting controversy with fields from geology to history to astronomy to physics. In 1939 Velikovsky had begun work on an analytical study of the dreams of Sigmund Freud, a study of the historical figures which psychiatry's founder had himself been obsessed with. Thus it was that Velikovsky, in 1940, found himself in Egypt in preparation for the link to Moses.

It was at this point that an idea—more precisely, an inquiry—began to form in Velikovsky's mind. Recalling the Old Testament narrative of the parting of the Red Sea and the Battle of Jericho, wherein the sun had stood still, Velikovsky began wondering how much errant nonsense could have been found in the same section of the Bible which contains archaeological data of often astounding precision. Velikovsky asked himself a question: what if the Biblical story were true? What if the "sun" (meaning, of course, the Earth) had indeed "stood still"? That question changed the life of Dr. Velikovsky. Instead of dismissing the question out of hand, he attempted to check the incredible hypothesis.

If such an event as the sun standing still had occurred, and if the series of calamities and cataclysms recorded in the Exodus in fact occurred, there would have to be similar legends and tales on the part of other peoples. After laborious searching, Velikovsky located a lamentation by

one Ipuwer on an ancient piece of papyrus, preserved in the British Museum, recounting massive cataclysms, but from a time several centuries earlier than the Exodus. More important, in the fall of 1940, Velikovsky located a tale of a "long night" in which the sun did not rise, in the literature of ancient Mexico. This suggested to Velikovsky that both the Bible and the Mexican legend were describing the same event, from opposite sides of the globe.

These discoveries sent Velikovsky into the library at Columbia University, where for the next half dozen years he ceaselessly pursued ancient folk tales, legends, and myths, as well as archaeological and historical data. Each discovery toppled another domino in the path of long-accepted scientific and scholarly truth; each conjecture led him further and further into proposing alternative hypotheses, which would make the legends form some coherent pattern, some faithful recording of actual, historical events.

By 1946, his studies had led him to a hypothesis which, put as simply as possible, challenged the most fundamental pillars of astronomy, physics, geology, and history. Some of his basic theories were:

1. That the world has seen, within recorded history, repeated catastrophes and cataclysms on a global scale.

2. That these catastrophes were caused by violent perturbations in the orbits of Mars and Venus, which in turn were caused by the entrance of Venus into the family of planets some 11,000 years ago.

3. That Venus is, in fact, a new planet which began as a comet spawned by the planet Jupiter.

4. That these catastrophes included the changing of the Earth's magnetic field, several changes in the Earth's rotation, and the actual slowing down of the Earth—the sun, in other words, did "stand still."

5. That these cataclysms caused violent upheavals in the geological formations of Earth and in evolutionary development; thus, uniformitarianism is an inadequate and inaccurate theory of rock formation, and Darwinian selection is similarly inadequate.

6. That accepted dating of history is inaccurate by some 800 years, and that events assumed to be separate are actually re-tellings of a single historical event.

There is more, much more, but these propositions were enough to make Velikovsky an instant heretic to a wide swath of scientific and scholarly disciplines. Or, as Prof. Harlow Shapley, then director of Harvard College's observatory said in 1946 when a Velikovsky manuscript was offered to him, "If Velikovsky is right, then the rest of us are crazy." In fact, this flip statement is a pivotal point in understanding what is to follow; for, when Velikovsky approached the scientific community with his hypothesis, he was in fact challenging the faith of 400 years.

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To understand what was to happen to Velikovsky, to his supporters, and to his self-appointed enemies, we have to have in mind some notion of the Scientific Method of Truth, and the distinctly non-scientific, emotional connotations that this faith carries with it. Its seeds can be found in the dying days of the Medieval Approach to Truth, when the *a priori* dictates of Right Reason and Divine Revelation were presumed superior to any empirical research. Thus, it is true beyond doubt that Man is the center of God's Universe. Thus, the Earth rotates around the sun. Thus, Giordano Bruno's challenge to Ptolemy is heresy, and he is to be burned at the stake.

The complex latticing of the Aristotelian-Dogmatic

Model of Truth was ultimately its undoing. For, as soon as one "heresy" could incontestably be shown true, the entire structure of Truth was shaken. Yeats might well have been describing the incredulous shock of a smug Aristotelian faced with the certainty of a single error when he wrote:

Things fly apart,
The Center cannot hold;
Mere anarchy is loosed upon the world.

But the new Scientific Model of Truth was far from anarchy, For, while the Model of Truth was tentative and skeptical, the substance of the truth was calm and reassuring. In astronomy, for example, the certainty of God's personal concern reflected in the Ptolemaic Model was replaced by Newtonian mechanics. The solar system and the universe, however, was still a place of incontestable, perfectly balanced, orderly movements of the celestial bodies. Thus, here on Earth, man might have evolved, but he was part of an interlocking set of eternal, unaltered laws of energy and motion, in which the Earth developed systematically, without the shocks of catastrophic intervention. Indeed, if God no longer stepped into the affairs of man directly, He had been replaced by a secure, orderly set of natural laws.

With this order came the Scientific Method for attaining Truth, into which Velikovsky would find himself an unwelcome usurper. The cornerstone of this model was fact, research, statistics, discovery, by men properly trained in the discipline. And, as the Scientific Explosion demonstrated the massive ignorance of men about the world around them, each discipline required more and more specialization, more and more knowledge, until by the middle of the twentieth century, the World of Science was something like a huge series of mazes, only one of which was accessible to any truth seeker, and from which the uninitiated were outlawed. Perforce, those who judged the truth of any new contribution were a small group of men, often the very men who had created the bastions of truth that were to be challenged, all of whom retained the scientific faith in a world of unchanging, orderly, discoverable truths which would reveal themselves to a properly scholarly mind.

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Velikovsky knew that he was a heretic; that he, a non-scientist, had developed a theory which conformed to none of the accepted notions about how the universe worked, and about how the solar system was formed. He thus sought to obtain scientific confirmation or destruction of his beliefs. He selected the planet Venus as a testing ground. If Velikovsky was right—if Venus was a "new" planet born as a comet from Jupiter—then 1) it should still be hot and, 2) its atmosphere should contain dense hydrocarbon clouds, as evidence of its "tail." He inquired of two scientists. They replied that accepted scientific evidence indicated that the surface temperature of Venus was cold, and no evidence of hydrocarbons existed. Nonetheless, Velikovsky decided to leave this hypothesis in his manuscript on the basis of the overwhelming unanimity of the *historical* records. Here was a vital decision: Velikovsky was determined to base his thesis on a source which no astronomer would recognize as valid in the face of accepted scientific knowledge.

Meanwhile, Velikovsky had sent his manuscript of the first book of his theories—called *Worlds in Collision*—to one publisher after another, and had been repeatedly rejected, despite the enthusiastic response that the manu-

script had received at the hands of Jon O'Neill, the science editor of the *New York Herald-Tribune*. Finally, in 1947, Macmillan Company signed an optional contract with Velikovsky and, after extensive review by outside readers, including O'Neill and Gordon Atwater, curator of the Hayden Planetarium, the contract was signed. It was at this point that the road taken by Velikovsky—the non-scholastic method he had been forced to choose to present his theories—began to arouse heated opposition.

In January, 1950, *Harper's Magazine* published an article by Eric Larrabee, called "The Day the Sun Stood Still." Written after consultation with Velikovsky, and restrained in tone (despite the title), the article stirred worldwide interest. But *Harper's*, after all, was not a Scientific Journal, edited by accepted scientists. This sin, however, paled after Fulton Oursler, religious writer for the *Reader's Digest*, wrote a fundamentalist-oriented piece for the *Digest* pointing to Velikovsky's theories as confirmation of the tub-thumping school of word-for-word Belief. Further, *Collier's Magazine*, against the vehement protests of Velikovsky, ran a luridly-illustrated digest of the manuscript, replete with full-color pictures of the Israelites fleeing amidst exploding skies.

This kind of treatment only inflamed the scientific community, already put out by both the outlandish theories of Velikovsky and his persistence in publicizing them against the judgment of the community of scholars. What was surprising was that the most respected scientists sought not rebuttal of Velikovsky, but suppression.

The clearest sign was that Harlow Shapley, the Harvard College Observatory director, whose help Velikovsky had vainly sought, wrote a letter to Macmillan Company's trade books editor, James Putnam, reminding him of the possibilities of intellectual fraudulence, and declaring that publication of *Worlds in Collision* would "cut off" all relations between Shapley and Macmillan. He also warned Macmillan Company of the damage to its reputation. This was no idle threat; Macmillan had a large textbook division, and damage to its reputation in the academic community could have severe repercussions. The company decided immediately before publication to submit the manuscript to three readers, unidentified, for their judgment. By a 2-1 vote, the readers gave the book their approval.

Publication of *Worlds in Collision* was a sensation. It is probable that not until William Manchester's *Death of a President* has any book since received the explosive attention, the furious commentary, of Velikovsky's theory. Looking back on the writings, it is apparent that whether by design or instinct, the scientific community almost to a man wheeled out the heavy artillery in an attempt at instant discrediting. And they did so while acknowledging—indeed, boasting—that they had not read the book and did not intend to do so.

Thus, in the February 25, 1950 issue of *Science News Letter*, a publication under the direction of Harlow Shapley, authorities in the fields of astronomy, archaeology, orientology, and two other fields published denunciations of *Worlds in Collision*—before the book had come off the presses. And on March 14th, Harvard astronomer Cecilia Payne-Gaposchkin published a piece in the *Reporter* called, judiciously, "Nonsense, Dr. Velikovsky!", in which she accused him of deliberately misrepresenting ancient writings to prove his thesis. *The New York Times Book Review* branded the book a "remarkable farrago"; four Yale scholars in fields touched on by Velikovsky wrote

separate attacks on the theories which received banner notices in the *New Haven Register* as an "exposé".

What is remarkable about the attacks, viewed from a perspective of seventeen years, is their utter failure to *rebut* Velikovsky's theories. Almost without exception, the reviews by the scientific establishment consisted of witticisms, invective, and assertions—undoubtedly true and probably irrelevant—that nobody believes what Velikovsky is telling us. For example, Harrison Brown, writing in the *Saturday Review of Literature*, asserted that Velikovsky's "errors of fact and conclusions" would fill a letter "thirty pages in length." He supplied not one instance.

Another favorite response was outrage. "Science means measuring, weighing, calculating to the tenth decimal place," wrote one critic. "Where are Velikovsky's data? What were his experiments? What are his variables, his controls?" The whole point, of course, was that if the earth had experienced a monumental interruption of the normal patterns of celestial mechanics, and if the proof lay in part in historical evidence, and if the tools for empirical verification were either lacking (a satellite probe of Venus) or denied to Velikovsky, then the lack of such data could be labeled a flaw in Velikovsky.

There was a more powerful weapon for the opponents of Velikovsky, however, than invective and abuse. In May of 1950, Velikovsky was summoned to the offices of a Macmillan official who reported that professors at several universities had refused to see Macmillan salesmen for textbook orders because of the publication of Velikovsky's book. At the time, *Worlds in Collision* was number one on the *Times* and *Tribune* best-seller lists. But for Macmillan, an organized campaign against their texts could have disastrous financial consequences.

Thus, in mid-1950, in what must be the strangest such transaction in publishing history, Macmillan transferred the rights of *Worlds in Collision* to Doubleday & Company, which had no textbook division. All participants conceded that the transfer was the direct result of pressure brought on Macmillan by members of the scientific community, who presumably were all dedicated advocates of a free marketplace of ideas.

While the book continued to sell well, and became the single biggest non-fiction best-seller of the year (although, curiously, it is not listed among the best-sellers in the 1950 Encyclopaedia Britannica Book of the Year), Velikovsky eventually faded into apparent obscurity. Science had branded him a hoax, a fraud, a crank, a hoodwinker, as one who was unwelcome in the ranks of the scientists or whose ideas did not merit testing for truth or falsity.

Velikovsky did not stop his research, nor his publications. In 1952 he published *Ages in Chaos*, which set forth his assertion that Egyptian history is 600 years too long; that in fact events which are listed twice are superfluous repetitions. This reconstruction, spurred by apparent incongruities in the recounting of calamities among different civilizations which, for Velikovsky, must have occurred at the same time, was largely ignored by the scientific press.

Similarly, when *Earth in Upheaval* was published in 1955, challenging the Lyellian principle of uniformity as a full explanation of evolutionary and geologic development, his work was all but dismissed. Harrison Brown, who had written six years earlier of the "thirty page" letter he could fill with Velikovsky's errors, again declined any specific attack on the arguments in *Upheaval*

in his *Scientific American* article, preferring to recall Velikovsky's effrontery in presenting his cosmological theories to the academic community.

Logically, this story should end here; Velikovsky should fade into the obscurity reserved to the defrauder; and the scientific community, again triumphant over the fraud, should take a modest bow and return to its laboratory, its observatory, and its expeditions, in search of the proper new fragments of truth, except that, while Velikovsky was forgotten, scientists were making new experiments, and slowly changing old ideas about the earth, about the solar system, about truth. And occasionally, someone remembered that a scholar from outside the scientific world had observed that indeed such might be what experimenters might find . . .

One of the suggestions made by Velikovsky, to account for the energy sources required for the planetary movements he had described, was that electromagnetic influences were prevalent in the solar system; that the sun and the planets were not electrically neutral, and that magnetic fields did exist in space. One of his more adamant opponents, although a longtime personal friend, was Dr. Albert Einstein. Yet, in 1955, Einstein and the rest of the physicists and astronomers were astounded by a report from two Carnegie Institute scientists, who disclosed that they had accidentally discovered a radio noise emanating from Jupiter. Such a phenomenon had been suggested by Velikovsky two years earlier; and it may have been this recollection of their private debates that prompted Einstein to promise to push for further tests. This promise was never fulfilled; Einstein died only two days after learning of the discovery from Jupiter.

In December, 1956, Velikovsky suggested to the committee planning for the International Geophysical Year that "the possibility should not be discounted that the magnetic field above the ionosphere is stronger than at the earth's surface." Such a field, he suggested, might account for previously unexplained "rocking movements" of the moon. The most celebrated discovery of the IGY experiments was the discovery of the Van Allen belt—a far-reaching belt of electrically charged particles.

If any doubt remained that the long-accepted notion of a celestial sea was correct, the launching of Pioneer V in 1960 destroyed it. As *Newsweek* reported the NASA findings, "gone forever is any earthbound notion of space as a serene thoroughfare for space travelers . . . a fantastic amount of cosmic traffic . . . rushes by at high speeds, circles, crisscrosses, and collides." Magnetic fields and electric currents surrounding the earth were also charted.

As if to come full circle, the Mariner II Venus fly-by of late 1962 nailed down what Velikovsky had recognized more than a decade earlier as a crucial testing point for his theory: the status of the planet Venus.

Velikovsky, as noted, had suggested that if Venus was a "new" member of the family of planets, it was probable that it was still hot, and probably had a unique, retrograde rotation. Further, its atmosphere should hold a remnant of the hydrocarbonous tail. Mariner II found a dense cloud of hydrocarbons surrounding Venus, and further found a temperature of about 600°F—far hotter than had previously been accepted.

Stated broadly, the empirical data which had so thoroughly overthrown the Dogmatic Model of Truth was beginning to plague those who had insisted on the total

invalidity of the Velikovsky thesis. As early as 1955, in the volume *Earth in Upheaval*, Velikovsky could abandon the shaky framework of simple historical texts and move to the observable world in his presentation of the case for cataclysmic interpretation of natural history.

If uniformity is the *sole* explanation of the earth's past, argued Velikovsky, then how do the scientists explain the huge rifts under the seas; the Arctic Islands which have the preserved bones of rhinoceroses and mammoths; animal bones from totally different climes commonly interred; the undigested greens in the organs of suddenly frozen, now extinct animals; and the whole series of anomalies which gradual, uniform shifts in climate and geography cannot explain? The point is *not* that uniformity explains *nothing*; rather, Velikovsky argued, this orderly process had been interrupted by other, natural, scientifically explainable catastrophes, which had heavy influence on the physical and natural evolution of the Earth.

What was happening, then, in the years between 1950 and 1963 was that science was doing its job. It was finding that the comfortable assertions of a decade ago would not explain the new findings that new technology was making available. The impossible astronomical or cosmological conditions necessary to buttress Velikovsky's theories might not be so impossible after all.

In December of 1962, Princeton physicist V. Bargmann and Columbia University astronomer Lloyd Motz wrote a letter to *Science* magazine. While making it clear that they rejected Velikovsky's thesis, the two scientists pointed to separate experiments revealing that decade old predictions of Velikovsky were indeed correct—Venus was hot, Jupiter was emitting radio noises, an immense magnetosphere did circle the earth. They urged a restrained, objective re-examination of Velikovsky's argument.

In August of 1963, Eric Larrabee, who had first brought Velikovsky into public attention with his 1950 *Harper's* article, wrote once again in *Harper's*. Entitled "Scientists in Collision: Was Velikovsky Right?" Wrote Larrabee, "There is scarcely one of Velikovsky's central ideas—as long as it was taken separately and devoid of its implications—which has not since been propounded . . . by a scientist of repute." He called for "an act of agonizing reappraisal."

The article brought a flurry of replies from scientists, who seemed resentful that the long-dead issue of Velikovsky was once again surfacing. But this time their dismissals were not so easily accepted; for example, Harvard College observatory director Donald Menzel (apparently the job carries with it an obligation to discredit Velikovsky) argued against electromagnetism as an influence on solar mechanics, he was rebutted not merely by humanists, but by the theses and experiments of reputable astronomers. Indeed, in 1952 Menzel had sarcastically observed that if Velikovsky were right about such electromagnetic influences, the sun would have to have an electric potential of ten billion billion volts—a total impossibility. Yet in 1960, Australian physicist V. A. Baily calculated that the sun is charged, and with a potential of about ten billion billion volts.

The counter-attack grew stronger when the *American Behavioral Scientist* devoted an entire issue in late 1963 to the Velikovsky case, with special emphasis on the "politics of science," and the grave implications of a scientific community attempting to suppress, rather than to rebut, a challenge to accepted theory. The magazine gained wide-

spread currency on college campuses in particular.

In fact, Velikovsky was fast becoming a hero to a generation of college students. While he was still treated with disdain by the world of science, those students who could rejoice in a non-scientist mounting some successful challenges to the impenetrable fortress of the Scientific Fortress took him up as a cause celebré. When he lectured at Brown University, the student newspaper, the *Brown Daily Herald* put out a special four-page supplement on the Velikovsky case. His visit to Yale in 1966 drew a packed crowd to hear him explain that the Egyptian pyramids may have been chiefly used as fallout shelters to protect the leaders from recurring catastrophes.

Because of the widespread interest in his theories, a Velikovsky-oriented "Cosmos and Chronos" study group was established at Princeton in early 1965. Founded by Velikovsky's long-time friend H. H. Hess, the club billed itself as a "campus study group in interdisciplinary synthesis"—reflecting Velikovsky's desire, as he told his Yale audience, that students "not be afraid to cross disciplines to find the truth."

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The strange tale of Velikovsky is not over. Now in his seventies, Velikovsky spends his time in further research, readying further publications, and lecturing to his growing audiences on campuses. He is convinced that he will ultimately be vindicated. But more important, he now has a solid coterie of defenders, some of whom may prove to be his worst enemies.

At one level, of course, are the genuine cranks who, almost since the onset of Velikovsky's publicity, congratulated him on his insight and then pressed him with stories of *their* discoveries of flying saucers, hidden worlds, and the like. Even today, an ad in the *New York Times Book Review* carries a pitch for a book proving the existence of a super-race living inside the earth, and cites some of Velikovsky's geological evidence as "proof."

A far more subtle, yet more dangerous, threat to Velikovsky is the creation of a cult of followers. There is a danger, small but definite, that some of Velikovsky's adherents are among the frustrated, "true believers" anxious to strike out at the scientific establishment. In their pursuit, they often try to prove too much.

They cite the Motz-Bergmann letter incessantly, for example, yet often forget to mention that these two scientists explicitly expressed their disagreement with his theories. They are anxious for debate on the Velikovsky affair; and committed to the belief that no opposition to Velikovsky can be sound, regardless of how restrained.

Yet such developments do not change the basic dimensions of this story. The star fact remains that a man who pieced together an impossible theory resting on the myths of long-dead civilizations has managed to stand at least partially vindicated in the face of a unanimous scientific community which insisted that the portrait of the universe painted by Velikovsky was fraudulent.

And, more important, whether Velikovsky is ultimately proven right or wrong, the world of science has been convicted of conduct unbecoming a free institution; of seeking to rest too comfortably on its serene, ordered cosmos; and of seeking to banish rather than to correct the vision of a stranger to their guild who dared to challenge the maps of the world they had drawn. Suppression, retaliation, in-
vective, are poor instruments for the job they have to do. □