

the globe, so producing the miracle described in the Book of Joshua. About eight centuries later, a lesser set of catastrophes was produced by the planet Mars, which repeatedly came near the earth and at one point collided with Venus. The result was that both bodies settled down in the orbits in which we know them today. In the process the length of the earth's year was changed from 360 days to the present 365 and a fraction.

There is a great deal more. Velikovsky feels his analysis helps explain an enormous range of things, from such trivialities as why thirteen is considered an unlucky number, to the origin of the species (Darwin was largely wrong) and celestial mechanics (Newton was wrong in important respects). Except in the most general way, Velikovsky offers no explanation of how it is possible that things could happen the way he suggests. His view is that "the solar system is actually built like an atom" and that the planets occasionally hop about from one orbit to another, more or less as electrons were supposed to do in Niels Bohr's conception of the atom. Velikovsky also assumes the existence of massive, and thus far undetectable, electromagnetic forces in the solar system. Velikovsky points out in his preface to *Worlds in Collision*, "no formula and no hieroglyphic will stand in the way of those who set out to read it."

As a consequence, there are limited opportunities for a technical argument with Velikovsky. He describes a theory which does not seem to make sense, and he does not pretend to offer any detailed explanation about how his theories can be made to make sense. For example, it appears to be inherently impossible for Mars to collide with Venus at some point outside the earth's orbit, as Velikovsky proposes, with the consequence that Venus is knocked into a nearly circular orbit well within the earth's orbit, and Mars remains in a nearly circular orbit outside the earth's orbit. This seems to be the case for the same kind of reason that you cannot pour two quarts of water into a one-quart jar; the world, as far as we can tell, simply isn't built that way.

But that the Velikovsky theories seem to make no sense is not necessarily sufficient reason for regarding his

work as hokum. It is at least conceivable, if however remote, that almost everyone is wrong and that Velikovsky is right.

More plausibly, it would be possible that the details of the Velikovsky theories, as he propounded them, are wrong, but that his general insight is sound, and that something like what Velikovsky suggests did happen.

Thus there is no scientific way to examine Velikovsky's conclusions and on that basis prove that his work is worthless. He could be wrong on almost every detail, and still be magnificently right in at least part of his conception. As a result, Velikovsky must be met on his own chosen ground, with an examination of his use of the "accumulated records of human experience." If these do support his thesis, then the scientific community is indeed gravely at fault for refusing to look through this telescope. But what happens Velikovsky so emphatically is that even if his theories violated none of the presently accepted understandings of how the world works, they would have to be rejected as nonsense anyway; for as anyone who spends a few hours in a library checking Velikovsky's sources will discover, *Worlds in Collision* is, if nothing else, a matchless compendium of how you can prove anything if you are only careless enough. If you wish to find refutation of Velikovsky's arguments, you have merely to look up the sources he cites in his footnotes.

When Velikovsky wishes to provide confirmation that the biblical story of the Exodus is literally accurate, he cites an inscription found on a shrine found at el-Arish, on the border between Palestine and Egypt. He quotes a passage from the inscription describing a period of prolonged darkness and storm, which parallels the biblical account of three days' darkness. He goes on:

"That both sources, the Hebrew and the Egyptian, refer to the same event can be established by another means also. Following the prolonged darkness and the hurricane, the pharaoh, according to the hieroglyphic text of the shrine, pursued the evil-doers to the place called Pi-Khiroth. The same place is mentioned in Exodus 14:9: But the Egyptian pursued them, all the horses and chariots of Pharaoh . . . and overtook them encamping by the

sea, beside Pi-ha-Khiroth. The inscription on the shrine also narrates the death of the pharaoh during this pursuit under exceptional circumstances. Now when the majesty fought with the evil-doers in this pool, the place of the whirlpool, the evil-doers prevailed not over his majesty. His majesty leaped into the place of the whirlpool. This is the same apotheosis described in Exodus 15:19: For the horse of Pharaoh went in with his chariots and his horsemen into the sea, and the Lord brought again the waters upon them."

Velikovsky refers to this evidence again a few pages later: "On the shrine found in el-Arish the story is told of a hurricane and a prolonged darkness when nobody could leave the palace, and of the pursuit by the Pharaoh Taoui-Thom of the fleeing slaves whom he pursued to Pi-Khiroth, which is the biblical Pi-ha-Khiroth."

Now if you look up the actual inscription, you notice some curious things: for example, the two incidents of the storm and the leap into the whirlpool are not sequential, as Velikovsky presents them. They are described as taking place at widely different places at widely different times with no relation between them, and they involve not the same king, but two different kings, neither of them named Taoui-Thom. There is no mention of the pharaoh pursuing the fleeing slaves to Pi-Khiroth, or any other place. In fact, there is no mention of fleeing slaves. But there is mention of a place called Pekharti, which Velikovsky alters into Pi-Khiroth, so making it more similar to the place actually mentioned in Exodus, Pi-ha-Khiroth, which Velikovsky has altered into Pi-ha-Khiroth, further enhancing his evidence. But Pekharti is not the name of the place near the whirlpool. It is the place where a king (not the king who leaps into the whirlpool) catches and rapes a lady. Furthermore, the king does not leap to his death when he jumps into the whirlpool; rather, to quote from the inscription, "his legs become those of a crocodile, his head that of a hawk with bull thorns upon it: he smote the evil doers in the Place of the Whirlpool." In fact, the whole inscription has nothing to do with historical events at all, but is about the mythological god-kings of Egypt, from whom the Pharaohs were to claim descent, and the king who