Books

In the Daze of the Comet

WORLDS IN COLLISION. By Immanuel Velikovsky, MD. 401 pp. The Macmillan Company, New York, 1950. $4.50.

About the year 1500 BC and again some 52 years later, a giant comet suddenly flamed the sky. Defying gravitational and many other natural laws, the comet chased madly after the earth and gave it a double whammy. Storms, earthquakes, floods, fire, lightning, and pestilence struck all at once. The comet, neatly parting the Red Sea, allowed the Israelites to pass. Then, just as neatly, the comet closed the passageway and drowned the pursuing Egyptians.

Joshua stretched forth his hand precisely at the moment that the comet, in effect, wrapped its tail around the earth and brought it to a grinding halt. Joshua thought that he had made the sun stand still, but the comet was really responsible. The Mayans, the Peruvians, and the Choctaw Indians have legends about a night of undue length. Of course, since these races lie in the western hemisphere, one would expect night there, while day hung on over Joshua. The fact that the lore of the eastern and western hemispheres cannot possibly be contemporary is, of course, unimportant, since the legends are so plainly related.

How simple indeed is the universe, now that we have a master key! A new book, *Worlds in Collision,* amply previ wed by several leading magazines, tells the story. Its author, Immanuel Velikovsky, MD, with devastating logic shows how wrong are the astronomers, physicists, mathematicians, geologists, archaeologists, paleontologists, psychologists, chemists, anthropologists, historians, prehistorians, and theologians.

The comet, freshly shot from Jupiter, caused the trouble. Citing folklore and brandishing scripture, Velikovsky shows himself to be a master of the superscience—Biblical and folk-myth Exegesis. The comet peppered the earth with rust or some sort of red dust. The rivers flowed red as blood. The grasshoppers multiplied, and pestilence descended on the world. As partial compensation, the comet served a light snack of heavenly manna and various types of drink (milk, nectar, and soup), as condensations from its hydrocarboniferous tail.

The scriptures do not specifically mention the comet, or its philanderings with the earth and Mars, before it decided to reform and become, as Velikovsky states, the planet Venus. And yet he describes these events as vividly as if he had been present to see that tail pour burning oil and lash the earth with electric sparks. And, although most of experimental and theoretical science bites the dust, Velikovsky often seizes upon some useful and seemingly irrelevant fact as part of the greater truth. For example, he cites geological evidence to show that the magnetic poles of the earth were shifted by the cometary lightning flashes. How masterfully he winnows the observations and discards or revises the laws of nature to fit the fundamental facts of ancient folklore.

No one dare deny that Velikovsky has achieved a most monumental synthesis of world facts. However, I have one or two minor questions to raise. First, of all the devastating cataclysms that he has studied, can Velikovsky have forgotten the famous "year of the hot winter"?

Paul Bunyan, the giant woodsman of the northwest, had transferred his logging operations to Utah. On New Year's Day the sun climbed higher and higher in the sky. The ground baked and cracked. And Babe, the great blue ox, that measured 14 axe handles and a plug of star tobacco between his horns, drank the river dry every fifteen minutes. So heavily did Paul and Babe perspire during the hot winter that the remnants of their sweat exist, even today—in the form of the Great Salt Lake. The mere presence of this saline body of water is scientific proof that the above events or their equivalent occurred substantially as stated.

Then why did Velikovsky fail to include this Bunyan story in his compilation of world shaking cataclysms? The association of the Bunyan legends with the presence of a comet is instantly evident to everyone. As Velikovsky points out, Aaron, brother of Moses, introduced worship of a bull idol at Mount Sinai. The comet with part of its coma pulled upward and forward from its head by the attraction of the sun might naturally be pictured as a horned animal. The presence of Babe, the blue ox, introduces the bull motif: the pure bull that was undoubtedly the comet (or vice versa).

What really happened (now that we have learned to reason like Velikovsky) is as follows. The philandering comet tangled with the earth, producing worldwide catastrophe. A chunk of the comet's head, containing sodium as well as hydrogen and oxygen, had a violent encounter with the state of Utah. (This collision confused the Mormons no end!) These chemical elements, as the spectrograph shows, are common constituents of comets. Hydrogen and oxygen, of course, combine to form water and sodium is an important ingredient of salt. Hence the Great Salt Lake.

The astronomers, it seems, abetted by the physicists and chemists, have made a serious error. Our spectroscopic analysis has deceived us into thinking that a mere teacupful of gas at ordinary pressures would expand to form a cubic mile of the rarefied stuff previously thought to make up a comet's tail. We even thought that the earth's near encounter with Halley's comet (in 1910), when we seemed to pass through the tail with no appreciable ill effects, substantiated our conclusions. But no! We had neither Velikovsky's acumen nor his subliminal perception of the nature of the cosmos.

Velikovsky himself indicates that the comet may have been a cow rather than a bull. This correction of cometary sex is necessary, not only because the object eventually becomes the feminine planet Venus. The reported flow of sugared milk, sweet nectar, and soup certainly is compatible only with a cow comet—and a rather remarkable cow at that, with so diversified a range of raw products. The output even included (at one stage of the ter-

restrial encounter) petroleum and gasoline. What a remarkable celestial filling station such a comet must be!

One other bovine encounter, forgotten by Velikovsky, deserves mention. In 1871 a tremendous fire destroyed the city of Chicago. A cow, history has alleged, started the conflagration. But now we know! A comet, of course, was the fire bug, a fact that the O'Learys the world over will undoubtedly rejoice to learn. Don't worry about the slight discrepancy that seems to exist between 1500 BC and the recorded time of the fire. The incident really happened at the earlier date, but Chicagoans were so hypnotized by the catastrophe (as indeed were other ancient historians, according to Velikovsky), that they did not awake until 1871. For further details see "The Sleeping Beauty" by the eminent historians, the brothers Grimm.

This clarification of cometary sex also resolves another age-old mystery. We have all read of the cow that jumped over the moon, and perhaps have worried about the details of such remarkable bovine activity. The whole event becomes clear, however, if the cow and comet assume identical or associated personalities.

Even the other characters of the nursery rhyme take visible shape. The "cat and the fiddle", of course, are none other than the heavenly constellations Lynx and Lyre. The minor alteration of name is poetic license; "Lyre" obviously does not rhyme with "Diddle". The fact that both names begin with "Ly" is also significant of *something or other*. The "little dog" is *the constellation* Canis Minor. The dish that ran away with the spoon was the original flying saucer. And the spoon, clearly the Little Dipper, was used as a paddle to propel the unusual vehicle through the sky. The Milky Way marks the trail left by the cow in its magnificent leap, but science has not yet determined whether or not the milk is homogenized. Cannot Velikovsky help here? Anyway the milk was probably not pasteurized. Velikovsky indicates that vermin and germs inhabited the comet's tail. If terrestrial cows were equally unsanitary we should call in the board of health.

Mother Goose is full of cow references: Little Boy Blue, The Purple Cow (or was that Mother Goose? No matter! It serves the purpose quite as well). But don't forget the Cow with the Crumpled Horn! The comet, no doubt, after her sad encounter with old Mother Earth!

What fun the Velikovsky method is—and how relaxing! Out go the tomes on differential equations and wave mechanics. Goodbye to hydrodynamics and electromagnetic theory. No more cyclotrons or electronic brains. Bring on Mother Goose, Grimm's Fairy Tales, and Aesop's Fables. Here's to the science of tomorrow!

Donald H. Menzel
Harvard College Observatory

Unity, Knowledge, and Control

MODERN SCIENCE AND ITS PHILOSOPHY. By Philipp Frank. 324 pp. Harvard University Press, Cambridge, Massachusetts, 1949. $4.50.

The present collection of essays, by one of the well known adherents of modern positivism, deserves attention from scientific workers on at least two counts. First, it deals with important topics in science and the philosophy of science. Second, the movement which the author represents claims an especially close affinity with the scientific spirit, a claim about which those in science should wish to form their own judgment. The seventeen essays included in the book have been written over a period of about forty years. About half of this material has been published in a previous collection (*Between Physics and Philosophy*) now unavailable. Four general categories would include most of the essays: discussion of problems raised by the developments in physics within the last hundred years, culminating in relativity theory and quantum mechanics; expositions of positivist philosophy; critical examination of other philosophers and philosophies; and essays concerned with the cultural relations of science and with the broadening of science curricula to give recognition to these relations. These rough categories are not exclusive, and most of the essays fall in more than one.

The philosophy of Ernst Mach, to which the second and third essays are devoted, forms the acknowledged starting point of modern positivism. In Frank's opinion (and in this reviewer's) Mach has been widely misunderstood to be a proponent of a kind of Berkeleyan subjectivism (which for that matter Berkeley himself did not always or even predominately hold), according to which the "real constituents" of the objects of our experience are sensations, these objects then being classified as "mental" or "physical" depending on the nature of our selective interest in them. According to Frank the real motivation and meaning of Mach's position was in no sense metaphysical. Mach is not talking about the "nature of things" at all, but attempting to lay the foundations for a program of unification in science. For this purpose he found it necessary to go back to the foundations of all knowledge in sense-experience. Concepts which cannot be interpreted in such terms have no ultimate place in science, and propositions which involve such concepts in an irreducible way are unverifiable and "metaphysical".

According to Mach, and Frank adopts this view as his own, no other analysis of the propositions of science will permit the unification of such diverse sciences as physics and psychology, which if interpreted "metaphysically" by such concepts as "mind" and "matter" are either unrelatable or implicitly contradictory. Moreover the "auxiliary concepts" of science are doomed to evolution, whereas the known associations among phenomena form an empirical network to which all future theories must conform. In a period such as our science has lived through since the time of Maxwell, when older conceptualizations such as those of mechanics have been shown inadequate to the purpose of science, science is liable to attack from