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calls of alarm which induced an expensive and ill-fated international eradication program. These and other examples strongly reflect upon the almost complete absence of knowledge concerning the behavior of large ecological systems. What may be quite devastating to a component of a system may in fact perpetuate the survival of the whole system over a longer time span.

The contemporary physical environment of the regional ecosystem of southwestern Florida is characterized by increased upland water drainage and concomitant changes in the hydroperiod and the salinity regime in the downstream estuaries and bays (for example, shorter periods of lower salinities and longer periods of higher salinities). The general reduction in the ratio of land surface to water surface caused by Sphaeroma in the Ten Thousand Islands region may eventually prove to be compensatory by reestablishing old salinity regimes and tidal-flushing patterns. Not to be discounted is the possible short-term importance of mangrove-derived allochthonous materials shuttled into estuarine food webs by Sphaeroma.

To the extent that we continue to ignore ecosystem phenomena in a long-term context, we continue to perpetuate the vacuum of knowledge concerning macroscale biology and the self-adapting mechanisms of ecosystems. Man could do well to study how natural systems continually adapt to changing environments for long-term survival.

SAMUEL C. SNEDAKER
Resource Management Systems
Program, Institute of Food and Agricultural Sciences, University of Florida, Gainesville 32611

The title and tone of the report by Rehm and Humm, "Sphaeroma terebrans: a threat to the mangroves of southwestern Florida," betray a botanical and terrestrial bias. As a longtime admirer of marine crustacea in general and isopods in particular, I applaud rather than deplore the destruction of the mangroves by Sphaeroma, so beautifully illustrated in the cover photograph, and propose an alternative title, such as, "Mangrove roots of southwestern Florida: a new resource for Sphaeroma terebrans, a new hope for the marine ecosystem." This hitherto rare (1) and underprivileged isopod seems to be making a comeback (or an initial breakthrough) to its rightful place as a conspicuous and important member of the intertidal fauna; in the process, it may well be contributing to the abatement of terrestrial intrusion into the Gulf of Mexico occasioned by mangroves.

I am pleased, for the sake of isopods and the marine community, that the isopod-weakened mangroves may be undercut by wave action and that storms may cause groups of weakened trees to topple into the water. This will provide more food for the isopods and their marine compatriots, and return to the marine ecosystem stretches of habitat which rightly belong there. This extravagant use of resources by Sphaeroma may eventually lead the isopods to an energy crisis, but in that eventuality, we can hope that other marine crustacea, better adapted to a marine climax community, will complete the mopping-up operation.

There are, however, other grounds for alarm. The authors state that in the Florida Keys, where Sphaeroma is absent, "... expansion and land-building activities of red mangroves ... are continuing." I protest the authors' use of the term "normal" to describe a situation which, instead, represents "extensive" depredations of the marine habitat by mangroves. Their "infestations" of the coastline constitute an "extremely severe" terrestrial invasion which may well develop into a "ecocatastrophe of serious magnitude."

All biases aside, I am concerned about the possible consequences of this kind of reporting. What if the state of Florida should propose a massive effort to control by pesticides this fascinating and apparently completely natural ecological event taking place in an arena that is of no evident economic significance except to land developers? When enlightened self-interest does not dictate policy—as it may in the realm of agriculture—and when there is no clear evidence that man has already (perhaps unwittingly) intervened, so as to require further intervention to redress a prior wrong, I advocate ecological non-alignment. Those organisms that cannot survive the direct depredations of man may well belong to an endangered species list; but if the mangrove cannot survive the isopod in southwestern Florida, I see no a priori justification for helping one at the expense of the other.

J. T. ENRIGHT
Scripps Institution of Oceanography,
La Jolla, California 92037

References

SCIENCE, VOL. 183
In 1950 Dr. Immanuel Velikovsky was pronounced a heretic and his unorthodox theories were banned from discussion at scientific gatherings.

In June, 1974, leading scholars and scientists from around the world will gather in Ontario on the theme, "Velikovsky and the Recent History of the Solar System."

Many things have happened during the last 24 years. *Pensee* is one of them.

### A REPORT ON THE VELIKOVSKY AFFAIR

In the Spring of 1972 the Student Academic Freedom Forum (*Pensee* magazine) initiated a special series of publications examining the work of Immanuel Velikovsky. In his bestseller, *Worlds in Collision*, Velikovsky questioned the fundamental assumptions of disciplines ranging from psychology to physics to ancient history, and he claimed that Earth suffered near-annihilating catastrophes several times during recorded history. That thesis, once scoffed at, has gained more respect with each passing year. The one-time heretic is now in strong demand at scholarly gatherings around the United States and elsewhere. Here is a summary of some of the more important events since the appearance of our first special publication in 1972:

#### NASA Ames Research Center, August 14, 1972.

Following Velikovsky's invited lecture and consultations with Ames personnel, Dr. Richard Haines, a research scientist at the center, wrote in *Pensee*: "I believe that the time has come to leave the debating table and begin the enormous task of evaluating empirically those hypotheses of Dr. Velikovsky's that are amenable to scientific study."

"VELIKOVSKY SYMPOSIUM," LEWIS AND CLARK COLLEGE. August 16-18, 1972. For three successive days 50 "invited scholars" and 200 "observers" crowded into the Council Chambers at Lewis and Clark College (Portland). Coming from as far away as Europe, they comprised the first large-scale symposium on Velikovsky's work. The papers were subsequently published in *Pensee*.

#### MEDIA DOCUMENTARIES, 1972–

Both the Canadian and British Broadcasting Corporations have produced major-length television documentaries on Velikovsky's work. Titled "Velikovsky: The Bonds of the Past" (CBC) and "Worlds in Collision" (BBC), the documentaries were each shown at least twice. A Dutch television network recently aired a whole series of programs on Velikovsky, and Voice of America is preparing a presentation of its own.

#### NASA Langley Research Center.

December 10, 1972. Responding to an enthusiastic invitation to lecture at Langley, Velikovsky predicted that Mars will be found to show the effects of near-collisions with Earth.

"VELIKOVSKY'S CHALLENGE TO SCIENCE;" A SYMPOSIUM SPONSORED BY THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. February 25, 1974. The largest scientific body in the country held the symposium at its annual convention in San Francisco. The speakers: Immanuel Velikovsky; Peter Huber (professor of the history of science, Eidgenössische Technische Hochschule, Switzerland); Irving Michelson (professor of mechanics and mechanical aerospace engineering, Illinois Institute of Technology); J. Derral Mulholland (professor of astronomy, University of Texas); Carl Sagan (professor of astronomy, Cornell University); Norman Storer (professor of sociology, Baruch College, City University of New York).


"VELIKOVSKY AND THE POLITICS OF SCIENCE." A SYMPOSIUM. November 2, 1974. Scheduled as part of the Philosophy of Science Association biennial convention, Notre Dame University, Indiana.

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RECENT DEATHS

George H. Bishop, 84; professor emeritus of neurophysiology, Washington University School of Medicine; 11 October.

Walter H. Dickerson, 59; professor of agricultural engineering, West Virginia University; 14 August.

John H. Dingle, 64; professor of preventive medicine, Case Western Reserve School of Medicine; 15 September.

John W. Dodd, 80; former professor of education, Long Island University; 29 September.

Arthur A. Esslinger, 69; director, School of Education, State University of New York at Buffalo; 15 September.

Eugene S. Farley, 74; president emeritus, Wilkes College; 17 September.

Frank H. J. Figge, 68; former chairman, anatomy department, School of Medicine, University of Maryland; 25 October.

Donald E. H. Frear, 67; former director, pesticide research laboratory, Pennsylvania State University; 11 October.

Harry J. Fuller, 65; former professor of botany, University of Illinois; 24 August.

Harry H. Garner, 63; chairman, psychiatry and behavioral sciences department, Chicago Medical School; 2 October.

Haim Ginott, 51; adjunct professor of psychology, New York University, and clinical professor of psychotherapy, Adelphi University; 4 November.

Thomas A. Gonser, 74; former vice president, Northwestern University; 19 September.

Francis B. Gordon, 68; director, microbiology department, Naval Medical Research Institute, National Naval Medical Center; 21 October.

Lee N. Gulick, 80; professor emeritus of mechanical engineering, University of Pennsylvania; 9 October.

Claude W. Hibbard, 68; professor of geology, University of Michigan; 9 October.

Henry V. Howe, 77; professor emeritus of geology, Louisiana State University, Baton Rouge; 27 September.

Holbrook M. MacNeille, 66; professor of mathematics and statistics, Case Western Reserve University; 30 September.
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(Continued from page 1070)

use of the treatment should be suspended until its oncogenicity can be determined in animals.

A large percentage of the human population has been exposed to one or more of the herpesviruses, yet relatively few get cancer. Most investigators think that other factors—in addition to DNA viruses—must contribute to initiation of the disease. Of prime interest is the role of the immune system (which will be discussed more fully in a future article). The immune system is generally thought to prevent tumor development by detecting tumor cells—because of their tumor- or virus-associated antigens—and destroying them. A deficiency in the immune system, whether the result of a genetic defect, infection, or immunosuppression (as in transplant patients who suffer an increased cancer incidence), could therefore contribute to cancer development.

Another possibility is that two or more viruses may cooperate in initiating transformation. For example, Sol Spiegelman and his colleagues at Columbia University, New York, found particles resembling RNA tumor viruses in Burkitt's lymphoma cells. These findings raised the possibility of an interaction between EBV and an oncogenic RNA virus in Burkitt's tumors. Spiegelman and his colleagues used an animal model to test this hypothesis. From experiments on chickens, in which they studied the interaction of Marek's disease virus (an oncogenic herpesvirus of chicken) and an RNA tumor virus, Spiegelman concluded that both could contribute to tumor growth under their experimental conditions.

Although evidence implicating DNA viruses in the etiology of human cancer is accumulating, numerous questions remain unanswered: What viral genes are necessary for transformation? Where and how is the virus maintained in the human body during the long latent period before cancer develops? How is viral DNA incorporated into cellular DNA? What controls the expression of viral DNA and triggers transformation? What is the role in cancer initiation of other human cancer virus candidates? of chemicals? and of the immune system? The cancer problem sometimes seems to have as many questions as Hydra has heads—and when one is lopped off, two grow back.—JEAN L. MARX