◎THE LIVING EARTH

◎ The Times of India, June 28, 1992.

GAIA- The Growth of an Idea, by Lawrence E. Joseph. Arkana Books, 1991. Pounds 5.99.

Throughout history, from the Ancient Greeks to Native American tribes, most cultures have revered our planet as Mother Earth; and this "living creature " has formed an integral part of the way people have perceived and understood their environment. But ◎scientists speaking of a "living, active earth" is not only significant but highly controversial. In 1979, James Lovelock, a British atmospheric scientist with many patents to his credit, published his ` Gaia: A New Look at Life on Earth' and introduced his Gaia theory. Since then, his theory has inspired many seminars and conferences, has divided the scientific community into the supporters of Gaia and its opponents and has virtually transformed into a movement.

What is the Gaia hypothesis? The name derives from the Greek goddess of the Earth. The essential idea is to look at earth not only as a geological entity but also as a biological system. The earth's atmosphere has been regulated by life ever since the first signs of life emerged on the planet. The mechanism for this regulation is a feedback loop; the same mechanism which works in the refrigerator's thermostat which controls the temperature. In biology, this regulation is called homeostasis. This regulation of the atmosphere is evident if we look at the earth's atmosphere. Oxygen and methane are two gases which react with each other under normal circumstances. In the atmosphere however, these are found in much higher quantities than we would expect. It is Lovelock's contention that this disequilibrium is an essential sign of biological regulation.

Lovelock's ideas were initially dismissed by the mainstream scientists as being too speculative and general. But he did manage to attract a small group of followers who were willing to take him seriously. Amongst them was Lynn Margulis, a microbiologist who became famous for her pioneering work on microbes. While Lovelock was primarily interested in the geological and atmospheric aspect of Gaia, Margulis strongly believed that the microcosmic reality was the controlling influence on global environment. It was their perseverance that finally brought the scientific community to take the idea of Gaia seriously enough to discuss it. It is only recently that major conferences and symposia have been organized to debate the validity of this new way of perceiving our planet.

The hypothesis itself is certainly novel. Traditionally, mainstream science has looked at our environment within the reductionist paradigm. Our environment was just another system which could be broken up into smaller sub-systems and studied. But lately it is being realized that not only is the environment an enormous system, its parts are also interlinked

in a way that in reducing them into smaller systems, something important is lost. The system has to be studied as a whole for certain important effects to show up. For example, depletion of rain forests in the Amazonia, not only has local effects in terms of erosion in the basin etc. but also contributes significantly to global warming. This kind of fundamental interrelatedness is gradually becoming evident in the study of our environment; from the ozone hole because of CFC emissions to the greenhouse effect causing a catastrophic increase in temperatures around the world. And even die hard reductionists are reluctantly conceding that at least in ◎the case of systems like the earth and its environment, a more holistic approach could be useful

It is not only the scientists who are talking of the Gaia hypothesis. New Age groupies have obviously taken in a big way to the idea of a living earth. In fact, more meetings are arranged on the religious, mystical, shamanistic aspects of the idea than there are serious conferences to debate the validity of the theory! There are Gaia festivals, Gaia songs and even a full scale choral mass called `Missa Gaia'! This appropriation of Gaia by the countercultural, whole-grain circuit has left the originators none too pleased. What they conceive of as a testable, scientific hypothesis is being touted as the underlying basis for religious and mystical mumbo-jumbo. But then this tendency does not invalidate the theory; just as the theory of relativity or quantum mechanics survive as valid theories even after abuse by pop-gurus and New Age mystics! And as Lovelock himself points out, the value of the hypothesis is not in its validity alone, but in the questions it raises and its testability.

Lawrence Joseph's book is a gripping account of this saga. It gives an elementary introduction to the complicated ideas involved in the Gaia hypothesis. The author interweaves the personal lives and work of the scientists in a fascinating and immensely readable style. He has taken pains to present an `objective' account of the status of the theory by describing the objections raised by the detractors in some detail. The book is an excellent introduction to an idea which will no doubt be of ◎great importance in the future when global warming, ozone hole and other catastrophic implications of humanity's unplanned technological march will make their presence felt.

(831 words)

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