EDITORIAL NOTE

Our Use of 'Biosphere', 'Ecosystem', and now 'Ecobiome'

The above first two familiar terms for vital concepts are still apt to be employed in such various ways, even by eminent scientists, that we feel it necessary to put in this further plea for their clear definition and stabilization henceforth. Thus in announcing the 'Symposium on Global Change' to open their 'First Multidisciplinary Symposium', the International Council of Scientific Unions (ICSU), which we have long thought of as the world's scientific 'summit', refers in its preamble to 'the terrestrial environment (geosphere) and the life that inhabits it (biosphere)'—so using the latter term in the 'web-of-life' sense. This and subsequent references in the ICSU announcement and 'Preliminary Programme' clearly confirm their limitation of the term 'biosphere' to the actual living matter of our world, without paying any attention to the environment in which it exists*, whereas the meaning which we have employed exclusively for many years is that it is the *sphere of life*, namely the global terrestrial and atmospheric 'envelope' in which any form of life exists naturally. It thus comprises a zone around the world, ranging from the deepest rock strata to which chemosynthetic organisms penetrate right up to the highest levels of the atmosphere to which dormant spores are wafted, while excluding artificial projections into space.

Without going into semantics or questions of origin, this latter seems to have been the understanding of most early users of the term, including Vernadsky, and is the basis of our World Campaign for The Biosphere and its adopting World Council For The Biosphere—as has repeatedly been indicated in *Environmental Conservation* and elsewhere. However, in the hope of dispelling any doubts or further question about this matter we were glad, when so requested in April of this year, to propose an *ad hoc* resolution to the Miami International Symposium on The Biosphere, who (as indicated on page 189 of the present volume of our Journal) were unanimous in 'deploring the continuing use of the key term of Biosphere in a confusing plurality of senses [and resolved] henceforth to restrict its use to that of the "envelope of life" of Planet Earth, urging others to do likewise throughout the world.' A few weeks later, in New Delhi, we put the matter to the still larger audience comprising the First General Assembly of the twin World Council For The Biosphere (WCB)–International Society For Environmental Education (ISEE) and the International Workshop on Development and Biosphere Stability, who approved it overwhelmingly—indeed with only one abstention on the debated issue of desiring more of an 'integrated life-and-life-support system' emphasis as is now effected below.

Likewise in employment of the term 'ecosystem' —probably nowadays the most-used in all ecology —even leading scholars are apt to refer for example to 'the global ecosystem' (presumably meaning the entire Biosphere) or in other ways to indicate that their use of the term can be very different from ours. For this we can claim such priority as may stem from having been the only Advanced Student taken by the initiator of the term when deliberating on it at Oxford University in the mid-1930s. Becoming worried recently about this varying use of the term when convening the last few chapters of a book on 'Ecosystem Theory and Application', we consulted two of the most respected and senior scholars in all ecology, one of whom agreed with our use but the other of whom replied: 'I very early decided that people were going to misuse the term [and so] have stood off its employment as much as possible.' Consequently we feel constrained to reiterate our use of the above first two terms only as follows:

Biosphere (with capitalization also of the initial letter of 'The' (*sic*) when immediately preceding it): *The integrated living and life-supporting system comprising the peripheral envelope of Planet Earth together with its surrounding atmosphere so far down, and up, as any form of life exists naturally.*

Ecosystem: *The total components of an immediate environment or recognizable habitat, including both the inorganic and dead parts of the system and the various organisms which live together in it as a social unit, so far as its characteristic dominance or influence-sphere extends.* This latter, spatial delimitation is for us a necessary refinement of the sense given for his new term of ecosystem by the aforementioned initiator, A.G. Tansley, when originally publishing it (in *Ecology*, **16**, pp. 299 *et seq.*, 1935).

The ecosystem so defined is subsidiary to the wider econ, usually composed of a plurality of ecosystems, which might be termed an *ecobiome*—made up of the biota (of particular life-form dominance) comprising the biome *plus* all the involved inert components of soil, atmosphere, etc. Inclusion of any 'influence-sphere' in the above concept of ecosystem and, consequently, ecobiome, allows for possible autogenic and/or allogenic effects *outside* the immediate area of characteristic dominance: examples are the extended shading and root-effects of plant components of terrestrial ecosystems around their margins, the influence of ranging animals on land, and the virtual dominance especially of many aquatic systems by migrating etc. animals. For us the ecosystem is characterized primarily by species dominance and the ecobiome by life-form dominance.

*This was widely remedied on the actual occasion (in Ottawa, Canada—*see* the Conferences & Meetings section of this issue) following wide circulation of a draft and then proof of this note, but still persisted with some speakers thirteen days later in Lausanne, Switzerland, in the pertinent part of the International Astronautical Federation's first international symposium on 'Global Habitability: The Biosphere', though it is gratifying to note the now-widespread use of this last term.

NICHOLAS POLUNIN

Environmental Conservation, Vol. 11, No. 3, Autumn 1984—© 1984 The Foundation for Environmental Conservation—Printed in Switzerland.