Letters

Darwin and Pandora's Box

A report on evolution by T. Dobzhansky [*Science* **127**, 1091 (1958)] discusses the persistence of popular interest in this subject. Dobzhansky cited evidence from his own experience that, in the 100 years since Darwin announced his views, interest in evolution had spread all over the world, from Punta Arenas to the Egyptian desert. In the reference article, Dobzhansky concluded that evolution had as one of its consequences the extinction of all species. That is, for the species, the steps of evolution, existence, and extinction parallel the birth, life, and death of the individual. He states that "no biological law can be relied upon to insure that our species will continue to prosper, or indeed that it will continue to exist."

The conclusion should be considered in the light of the impact on human behavior of our knowledge of human mortality. The fact that the increased intelligence of *Homo sapiens* led to a knowledge of the inevitability of death is an element of anthropology. Carleton S. Coon treats this subject in terms of the myth of Pandora's box. As part of the search for knowledge, the box was opened, and knowledge of death came out. "One way, and one way only, permitted man to retain his peak efficiency with this problem on his mind—the belief in life after death" [*The Story of* Man (Knopf, New York, 1954), page 67].

One form that this belief has taken has been a reliance on immortality through one's descendents—through the persistence of the species. Yet one consequence of the understanding gained from our concept of evolution is the knowledge that species become extinct—not just occasional species, as an odd incident, but all species, inevitably, as part of the order of things. Dobzhansky says: "Man has gained some knowledge which is a basis for hope that the problem of the ultimate extinction of *Homo sapiens* is not impossible of solution." Even so the wise men of prehistory who first perceived the universality of individual mortality must have hoped to find a way to avoid its personal application.

Popular interest in the findings of astronomers since Copernicus and of biologists since Darwin has focused on the question: "Is our planet or our species, by some exceptional chance, immortal?" Isaac Asimov says, in considering the wellspring of science fiction, "There used to be the consolation that even though we, as individuals, might die, life would continue, spring would come, flowers would bud. But now we have brought ourselves to such a pass that we wonder whether the planet itself might not die with us." [R. Bretnor, Ed., *Modern Science Fiction: Its Meaning and Its Future,* (Coward-McCann, New York, 1953), p. 188]. And in point of fact, extinction of our species can, on probability, be expected much sooner than annihilation of our planet.

Homo sapiens has had less than a century to adjust to the concept of species mortality that came from the Pandora's box opened by Darwin. Man's search for a way "to retain his peak efficiency with this problem on his mind" continues, from Punta Arenas to the Egyptian desert.

H. K. Livingston
Wilmington, Delaware

Publication versus Communication

A recent editorial, "Journal publication in microform" [*Science* **127**, 1145 (1958)] reminds us that science per se did not exist until communication was established among scientists. One of the most effective methods of communication was publication.

Publishing, or making public, brought with it a variety of problems. One of these, the productivity of scholars, is old (*1*); the other, editorial reduction of manuscripts, is relatively new (*2*). In fact, the editor was originally the publisher. The word is derived from *editus,* past participle of *edere,* to give out, put forth, publish. (*Editeur,* appearing as part of the title page in French books, still is used to designate the publisher). Originally, scholars wrote their manuscripts and brought them to printers, and the printers then published and sold them. The role of the editor of today is a refinement of this earlier and simpler process.

As a result of editorial selectivity, communication, "the blood-stream of science," is, in many cases, being slowed so greatly that cyanosis is apparent. In my own field, that of psychology, the overcrowding of journals with manuscripts suitable for publication has resulted in (i) a two-year publication lag; (ii) requests to condense manuscripts to a single page for publication; (iii) an elimination of all historical or theoretical material from papers intended for publication even as monographs; (iv) editorial fiats regarding the reduction of reference lists by 90 per cent. I have experienced all these restrictions.

Indeed, the situation has become so serious that communication often seems to actually be impaired by publication. The patient (science) can see one of his members (psychology) turning blue now if he looks. Possibly other parts are similarly affected.

A substantiating complaint comes

from a theorist who ascribed much of the criticism directed against his theoretical framework to a serious lack of understanding. "The major difficulty is that the studies have appeared only in experimental [psychology] journals in which space limitations have required that theoretical discussions be kept to a minimum" (*3*). Result? The theory has received only piecemeal presentation, and communication seems to have been hindered by publication.

In psychology a rule of thumb in regard to preparing manuscripts for publication has arisen: a journal article should be so written (because of rigid space requirements) that any problems another scientist may have in repeating the experiment should be capable of removal by the exchange of a maximum of two letters.

The *Science* editorial recognizes the need for restoring detail to scientific publication and suggests it be accomplished by microphotographic reduction of journals. Details eschewed in publication are needed for communication. True. But, I do not know whether microform journal publication is the best solution. As the editorial itself points out, such a method "has not as yet achieved success" despite demonstrated merits. I would suggest that consideration be given to auxiliary publication. At least two methods of auxiliary publication—that is, the guaranteed availability of materials that cannot achieve journal publication—exist and have been used successfully. These are: (i) library deposit; libraries that have interlibrary loan policies or that, for a fee, can make microfilm or photostatic reproductions are excellent auxiliary outlets; and (ii) the method used by the American Documentation Institute of the Library of Congress; the institute freely accepts, for reproduction, materials cited in published articles and prepares 35-millimeter film or 6-by-8-inch photocopies. In both cases, specific citations are necessary so that requests from communicants can be fulfilled.

Both methods of auxiliary publication would seem to help restore the function of communication to publication. Microform publication of journals may be too drastic a step. Reducing the blood-stream may be more damaging than diverting part of its flow. Other methods of restoring a healthy color, less experimental and already available, may serve as well.

DELL LEBO
Richmond Professional Institute, Richmond, Virginia

References

1. D. Lebo, *Am. Psychologist* **12**, 158 (1956).
2. J. Farrar, "Securing and selecting the manuscript," in C. B. Grannis, Ed., *What Happens in Book Publishing* (Columbia Univ. Press, New York, 1957), p. 31.
3. K. W. Spence, *Am. Psychologist* **13**, 131 (1958).