

vary and species will change; and change is the material of evolution.

The antievolutionists never consider all of the evidence; rather, they attend only to the parts that fit their interpretation best. Because of the admitted gaps in the fossil record, paleontology is usually subject to their most critical fire; comparative anatomy, physiology, biochemistry, embryology, genetics, and the experimental aspects of evolution (including laboratory-produced mutations) are conveniently ignored. The favorite theme of the attack *via* paleontology is not what the fossil record does show but what it doesn't show—the thesis evidently being that the gaps in the record serve to damn evolutionary theory. (I am of the opinion that if the fossil record were complete in every detail, evolutionary doctrine would still be unacceptable to fundamentalists.)

A second favorite ploy is to take phrases out of context. In the 1930s I was privileged to take a course from Richard Goldschmidt, then at the University of California at Berkeley. No one who knew Goldschmidt could doubt that he was a confirmed evolutionist. To find his words used against the theory of evolution is equivalent to hearing that Paul spoke disparagingly of Christianity. Straining as they do to find tidbits from the evolutionists' table, fundamentalists lose sight of the fact that their quotations are taken mainly from articles debating the *mechanisms* of evolution—not from articles deprecating the general theory. Macroevolutionists and microevolutionists disagree not on evolution but on the means of

evolution. This is the way science makes progress: proponents of various hypotheses rebut one another and continue further experimentation.

Fundamentalists take refuge in adjectives that purport to give validity to their statements. For example, Gish's article says "Not a single, *indisputable* fossil has ever been found in Precambrian rocks!" If one takes indisputable to mean unquestionable, then perhaps the author is correct: few things are unquestionable. In this light, the known Precambrian fossils obviously are not indisputable, for the author does indeed dispute them. Semantic dodges of this kind serve to becloud the issue and need to be challenged, as by the New Englander who said, "It is correct, but it ain't right."

Still another gambit of the fundamentalists is to present no evidence or data of their own but simply to quote enough people out of context to make them appear to be in conflict with one another. It is like editing a collection of audio tapes, taken at different times and in different localities from different speakers, to make it appear that the speakers were in colloquy—when in fact the conversations never happened.

A newer development in the fundamentalists' anti-evolution drive has been to attempt to equate religion and science. The establishment of a Creation Research Society implies that matters of faith and belief are subject to experimental research. But religion is a matter of faith and deep personal conviction, and science is a matter of ordered hypotheses capable of experimental analysis: to make the assumption that either is strengthened by the philosophy of the other is as ridiculous as trying to make an elm tree out of an automobile. The Creation Research Society will hasten the demise of religion if it persists in the attempt to transmute religion from a matter of unquestioned faith into one of *ersatz* science.

William V. Mayer  
University of Colorado  
P.O. Box 930, Boulder 80302

---

## "Let No Man Fear . . ."

The grounds upon which Christian scientific men can stand secure were admirably stated by Professor Dana in his recent lecture before the seniors, in which the subject of Darwin's theory was considered. In the course of his remarks he stated that belief in a development theory was not atheism, that the facts of science clearly indicate some plan of development, that Darwin's book was a work of great merit and that his theory accounts for the origin of some species. As for genera and higher groups, there will probably be found other laws to account for them. Let no one fear scientific investigation, for its results are only another name for God's truth. Such belief, enunciated by men of science whose position as men of Christian faith is unquestioned, should calm the fears of those who tremble before every new discovery, and show no faith in the strength and majesty of truth.

—*Scientific American*, July 1870  
(reprinted in the July 1970 issue)

## Enhancement-Effect Experiment

Regarding the article in the September issue, by W. E. Rauser, on the Emerson enhancement effect, permit me to quote C. D. Sculthorpe (1967: *The Biology of Aquatic Vascular Plants*, St. Martin's Press, New York; p. 115):

. . . these early experiments may be criticised for their use of the bubble-counting technique for estimating the rate of photosynthesis. This technique, which still survives as the notorious "*Elodea* experiment" of elementary textbooks, is inherently unsuitable for its alleged purpose. Bubbles are only evolved when the internal gas pressure reaches a certain value and even then their composition may vary enormously in a single species, under apparently similar conditions, and over a very short time. The rate of bubbling is thus a highly inaccurate estimate of the rate of photosynthesis, even if corrections are made for the varying oxygen concentration of the bubbles.

The enhancement demonstration is a simple and attractive experiment, which I will use in plant physiology; but I would like to get Rauser's and readers' comments on Sculthorpe's criticism.

D. M. Swan  
State University Agricultural  
and Technical College  
Farmingdale, N.Y. 11735

#### The Author Replies:

I submit the following reply to D. M. Swan's comment on my recent paper. I agree entirely with Sculthorpe that the rate of photosynthesis in *Elodea* cannot be measured reliably for research purposes by the bubble-counting technique. However, my experiment on the Emerson enhancement effect is a *demonstration*. For this reason photosynthesis is measured in as simple a manner as possible so that the basic principle can be demonstrated without the need of largely unavailable scientific gadgetry. The reader may note that my procedure calls for a selection of those sprigs of *Elodea* that are bubbling uniformly, thus ensuring high internal gas-pressure. Despite the ensuing inaccuracies of oxygen content of the bubbles, the experiment does demonstrate the Emerson enhancement effect. To my knowledge, the Emerson enhancement effect has not been shown in intact higher plants, only in chloroplasts derived from them.

W. E. Rauser  
University of Guelph  
Guelph, Ont., Canada

---

#### RECOGNITION OF "EARTH WEEK"

A Senate Joint Resolution naming the third week in April of each year "Earth Week" has been introduced by Wisconsin Senator Gaylord Nelson. The same measure has been introduced as a House Joint Resolution by California Congressman Paul N. McCloskey, Jr.

Nelson said the purpose of the annual Earth Week resolution "is to give appropriate Congressional recognition to the need for a continuing nationwide effort to increase the awareness of environmental problems and how to deal with them."

Participants in Earth Day activities on April 22, 1970, included 3,000 colleges and universities, 10,000 high schools and grade schools, and 2,000 communities.

"Earth Day," said Nelson in a Senate floor statement, "has come to symbolize a great awakening across the country to the serious and growing threat to our environment and consequently to the quality of American life."

A resolution declaring the third week in April Earth Week in all the states was adopted unanimously by the National Governors' Conference when it met in August 1970.

Conservation News

## SUGGESTIONS FOR CONTRIBUTORS

STYLE. *American Biology Teacher* would rather receive an ill-written article containing worthwhile ideas than a stylistic masterpiece that says little: our editors can mend bad writing in a good cause. However, we do hope for clear terse prose, free of jargon. Sensible advice for writers will be found in the Conference of Biological Editors' *Style Manual for Biological Journals*, 2nd ed., published by the American Institute of Biological Sciences; and *How to Write Scientific and Technical Papers*, by Sam F. Trelease.

In matters of punctuation, enumeration, and the like we follow generally the above-mentioned C.B.E. manual and the University of Chicago *Manual of Style*. Our spellings are usually those preferred by *Webster's Third New International Dictionary* (G. & C. Merriam Co., 1965) and its abridgments.

Technical measurements are in metric, not English, units.

Avoid footnotes of any kind. References to the literature are made on-line (not by means of superscripts) within the text. If only one, two, or three works are cited, each is given in full, in the form "A. B. Smith, 1969: *Elements of Biology*, 4th ed., Jones Publishing Co., New York" for a book and "W. X. White and Y. Z. Green, 1965: 'The Inquiry Process,' *Journal of Pedagogy* 7 (2): 53-56" for an article. If four or more works are cited, they are presented at the end of the article as a bibliography arranged alphabetically by (principal) authors' last names, in the following forms for books and journals.

SMITH, A. B. 1969. *Elements of biology*, 4th ed. Jones Publishing Co., New York.

WHITE, W. X., and Y. Z. GREEN. 1965. The inquiry process. *Journal of Pedagogy* 7 (2): 53-56.

(Note that publishers' names and addresses are given and that names of periodicals are not abbreviated.) Reference to the bibliography from the text takes the parenthetical form "(Smith, 1969)"; if the same title is cited a second time this short form is repeated or, better, the reference is recast as, for example, "Smith also says. . ." The aim is to disburden the text of apparatus—*ibid.* and its relatives. Within text or bibliography a reference may be made precise by adding, for example, "pp. 123-145" or "ch. 8." Responsibility for exact quotation lies with the writer, not the editor.

MANUSCRIPT. Double-space *all material*, on one side only of standard (8½-by-11-inch) bond paper, allowing 1½-inch margins all around. Avoid line-end division of words.

ILLUSTRATIONS, ETC. Photos should be glossy prints not less than 5 inches wide. Other kinds of illustrations should be rendered in black ink on heavy paper, preferably with labeling done expertly on a transparent overlay. Key each illustration, on the back, to its legend ("caption") written on a separate sheet—being sure to mention credits, including "photo by author." Tabular material, too, must be presented on separate sheets—regardless of length. Within the body of the manuscript simply indicate relevance at the proper place, as, "see fig. 1" or "see table."

GENERAL CONSIDERATIONS. The editor welcomes letters of inquiry describing, in some detail, articles he may wish to see. Manuscripts that arrive unannounced may be considered, but will not be returned unless accompanied by a stamped, self-addressed envelope.

We acknowledge receipt of manuscript immediately. During preparation of articles for the press we expect authors to answer queries promptly and to observe deadlines rigorously. Authors will be given two opportunities to make changes: substantially on a copy of the manuscript as edited, minimally on galley proofs.

Offprints may be purchased at rates that will be quoted by the printer.