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An Editorial

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A scientist usually has little time to read publications, and is seldom requested to closely examine manuscripts, other than those in his own field. But as an editor of a journal he must read the manuscripts submitted to that journal. He thus becomes aware of the tribulations of the authors in their struggle to do worthwhile research and to report it in a form easily understood by, and of interest to, the readers. The authors' problems become, in a way, the editor's as well, because he accepts or rejects their research reports for publication in his journal. Whatever the breadth of his own knowledge, in making his decisions he should rely heavily on the opinions of scientists who are knowledgeable and competent in the disciplines concerned. This is good procedure because these scientists are also most generous and efficient with their reviews, and the editor as well as the authors cannot but benefit by their advice. However, perusal of many manuscripts and reviews leads eventually to disillusionment on the part of a conscientious editor. From that disillusionment arises a desire to be of assistance, if he can, to his colleagues and those about to become his colleagues. Hence this editorial!

Those who deny vehemently their need for assistance may wish to read no further. I hope they will reconsider, for surprisingly they usually require more guidance than most in some phase of their work or manuscript preparation or both.

My first comments concern the student who is entering our intriguing world of science. A critical reading of manuscripts submitted by him *and* his professors reveals that: the primary reason for publishing one's work has not been impressed on the student, and the arts of scientific writing and preparation of illustrations have been omitted from his curriculum; his professors neglect these most important aspects of his education because they themselves have conveniently forgotten the former and have never learned the latter. The exceptions are few. Yet students become professors or take scientific positions in other large institutions. As a result, with the constantly increasing amount of material being presented for publication, the unending difficulties for everyone, author, editors, reviewers and readers, are enormous. For the students who have already acquired a knowledge of good grammatical construction this situation is easily corrected: emphasis, probably in the form of a course, on the art of scientific expression (with its pitfalls) and on the "why" and "how" of the preparation of manuscripts for publication is needed in every university. Perhaps the steadily rising cost of publication will force this issue if all else fails, but the need is essential and urgent.

There are numerous informative and lucid articles on preparing scientific papers and their accompanying illustrations, and a few are listed at the end of this editorial. I strongly recommend that these articles be read and reread. However, for the immediate benefit of the student and to refresh the memories of all of us I stress the following.

1. The procedures chosen to solve a problem can result in time and energy spent most profitably or completely wasted; because of faulty direction, years of intensive effort occasionally accomplish nothing. Therefore, the methods should be carefully considered and, if not productive within a reasonable period of time, should be discarded and replaced by others more profitable.

2. To know when a project has reached the stage that a formal account of its results should be given is also important. Progress reports have their place, but seldom in a research journal; conclusions drawn in one article and withdrawn in the next show insufficient study and too much haste to appear in print; inconclusive statements indicate the same faults; and both result in the reader's loss of confidence in, and respect for, the author. Additional papers on a single project that contain little additional knowledge and often appear in different journals only irritate the scientist who has to search for and read them. How much better therefore to delay publication until the problem has been unquestionably solved or until those directing the research are certain no better solution can be obtained under existing circumstances.

3. We publish primarily so that our colleagues, no matter what tongue they speak, may easily understand and make use of our research. The reason often given for the use of obscure terminology is that such terms are commonly used by the scientists in the author's area of interest. If then the research is to be understood by only those in that area, which sometimes includes no more than four or five workers, there is no need for the expense and delay of publication – copies of the manuscript are sufficient and practical. But we must remember those who will enter that field in the future, those who are now interested but not active in it, and frequently those in other disciplines. Our research should be of use to the largest possible number of readers today and tomorrow as well. If we fail even partly in that objective, then again much time, energy, and expense, the last usually not our own, have been wasted. Therefore, the preparation of a research report for publication is without doubt as important as the research itself, and requires the same intelligent and assiduous attention.

4. The need for economy of words in preparing a manuscript, including the title, cannot be emphasized too strongly. Verbosity increases the cost of publication, annoys the reader and wastes his time, delays the publication of succeeding manuscripts, and nearly always reduces clarity. And it should be remembered that expressing one's thoughts precisely, with logical organization and without ambiguity, is apparently as difficult for those with a large vocabulary as for those with a small one. A cursory examination of the manuscripts of the former may impress, but a critical examination reveals the inability to clearly express.

5. Well-prepared taxonomic descriptions in the preferred telegraphic rather than the telephonic style are excellent examples of the economic use of words, but

only when well prepared. Taxonomists often fail to choose precise terminology; to divide lengthy descriptions into appropriately headed sections or paragraphs; to subdivide the latter into "sentences"; and to use the sentence for the complete description of a single structure, with each characteristic of that structure separated from the others by a semicolon. They sometimes fail to organize a series of descriptions so that discussion of each structure is consistent in its position in all descriptions. And a common and conspicuous fault is the unwarranted change from one style to the other. A description of one or more pages subdivided by little more than semicolons and commas can so frustrate the reader that he will refer to the illustrations and entirely ignore the description; also, the opportunities in such descriptions for ambiguous statements seem to be innumerable. A taxonomic description and its accompanying illustrations should be timeless in their usefulness. What better reason can one have to prepare them in a form that makes them a pleasure to read, to understand and to use?

6. Illustrations when well executed and well assembled cannot be equalled as an aid for clarity in communication; that they are worth far more than the written word in this respect is well known. What appears to be less well known is that the best reproduction for publication is obtained from the pen and ink drawing itself and not from a photograph of that drawing, especially not from a photograph in which the drawing is reproduced at a size similar to or not much larger than that which is to appear in print. And because too much reduction causes a loss in detail and the blocking in of lettering, no drawing should be more than twice as large as its intended reproduction in a journal; therefore no single drawing or plate of drawings should be more than twice as large as the page of the journal to which it will be submitted. Furthermore, the closer together individual figures can be placed in composing a plate, the less reduction required for those figures and often the better they appear in print.

7. Those interested in perfecting their work should never forget that to ask for, and *to accept*, constructive criticism indicates not weakness but strength. The weakness appears rather in the refusal to admit to faults obvious to others, such as inability to write, carelessness, or impatience; lack of good judgment here indicates, only too often, a similar lack in one's research. *No* manuscript should be submitted for publication without its critical examination by at least one conscientious and capable colleague; those of some depth should be reviewed by at least one scientist outstanding in the field. If the work involves subjects ancillary to the author's own branch of entomology, for instance statistics, chemistry or the physical sciences, opinions from specialists in these subjects should be obtained. These statements refer to manuscripts of scientists of all levels.

I cannot conclude this editorial without reference to the integrity of the scientist and of those who direct his research and submit his manuscripts for publication. The scientific content of too many manuscripts clearly shows that the strongest desire of many a scientist is to add a title to those he already has in print. By permitting such a manuscript to be forwarded, his superiors tacitly encourage inferior work or indicate inability to appraise the manuscript. In any case, it is evident that not a few of us feel that we obtain recognition, support for our work and financial reward primarily as a result of the *number* of papers that

we publish, and not by the quality and quantity of our research. What then the price of integrity for the scientist, and of sound research for those who pay for it! A good editor can and does refuse to accept inferior research but his refusal often results only in that research appearing in a journal of lesser reputation, and the author has his title! A more profound understanding of the scientist's work on the part of management, more meaningful criteria by which to judge his productivity, including much greater recognition of the value of long-term research projects and comprehensive reports of these projects, will go far in permitting the scientist to retain his integrity and will raise the standards of entomological research.

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