

Reports and Letters

Wisconsin's Science Writing Program

The need for reporting of scientific events has been recognized by the press and the popular magazines for a long time. A recent survey [*Science* 123, 95 (20 Jan. 1956)] has shown that articles on scientific subjects are consistently among the most interesting to newspaper readers. Scientists generally have realized the need for wider dissemination and greater understanding of the findings, aims, and methods of science, so that applications can be made quickly for human welfare. Our experience has shown that news of scientific developments often reaches many scientists first through the nontechnical press. For these reasons, accurate popular reporting is important, and many of the larger scientific centers now employ specialists to disseminate accurate nontechnical accounts of research work.

To train specialists in science writing, a science-writing research assistantship, supported by the Wisconsin Alumni Research Foundation's annual research grant to the university, was established in 1948 as part of the program of the University of Wisconsin News Service. The assistantship fund is allocated to the news service by the university's research committee, of which Conrad A. Elvehjem is chairman. The holders of assistantships, two of which are provided each year (since 1954), enjoy a wide latitude of expression (press, radio, television), and they may study for advanced degrees in any field of science or journalism. Through the program, Wisconsin has become a pioneer center for the development of skill in this field, for testing old techniques and developing new ones.

All who have held the assistantship so far have been employed later as science writers, two with federal organizations (U.S. Department of Agriculture and U.S. Forest Products Laboratory), one for a university (State University of New York), and one for the Canadian Medical Association. Two assistants held the post longer than 1 year. The second writer trained under the program, Jane (Davidson) Schultz, wrote a paper in

partial fulfillment of the M.S. degree (granted in zoology) on readability of technical scientific writing. One interesting phase of her study concerned fairly marked differences in readability between the papers on parasitology appearing in four journals. Technical words and phrases are needed in scientific communication, she points out, but many writers compound reading difficulty by using multisyllable nontechnical words where simple ones would do. Among the examples she found were *multifarious*, *contemporaneous*, *cerebration*, *informational*, and *desideratum*. Summarizing, she wrote: "One, scientists use too many words in their sentences; two, they employ a supporting framework of nontechnical words which are chuck full of syllables."

Much of the Wisconsin science-writing program is devoted to the development of skills in straight reporting of scientific news and in writing feature articles. Most students holding the assistantships have had training in the biological and medical sciences or in science writing in these fields. Personally valuable to them is the field work interviewing scientists, translating scientific reports into news stories and articles, with readers of the popular and semi-popular press in mind, checking stories back with scientists, and evaluating the reception of their work in the press.

An account of the assistants' experience with the familiar techniques might be of some interest here. We have made fairly extensive use of the article series—three or four short articles intended for publication over as many days—to describe work in a broad field, such as cancer research. These are picked up widely by the state press and often have been adapted for one use or another by many types of publications. A second technique, one that eliminates any chance that rewriting will result in inaccuracies, is the matting of feature articles, with text usually accompanied by a photograph. Once prepared, such stories are easily cast into type and, for this reason, are particularly well received by small weekly papers.

To my knowledge, Wisconsin has the only graduate program in which research

assistants are permitted to specialize in science reporting exclusively and study for a higher degree in any field (thesis research must, however, be carried on independently of the science-writing program if necessary for a degree). The yearly stipend is \$1620. It would seem that greater effort to train writers on scientific subjects must be made if we are to progress as rapidly in interpreting science as science has progressed in devising ways to reveal new knowledge of the universe.

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Use and Abuse of English in Science

The following remarks are part of the leading article that appeared under the title used here and in the same issue of Nature (5 Nov. 1955) in which John R. Baker's article (see page 713) was first published. This excerpt is reprinted here by permission.

On the question of the use of a German construction for the sequence of adjectives and nouns, Dr. Baker is probably right in stating that the practice is growing. In some cases—and Dr. Baker quotes examples—only the judicious use of the occasional hyphen can save a phrase from meaning the reverse of what is intended; the meaning may still be obvious from the context, but it should not be necessary to have to go to the context in such short phrases. It is difficult to find any real justification for the use of this style. To a limited extent it may give crispness to a statement and save the use of the word *of*; but its general adoption seems dangerous and unnecessary. Dr. Baker's examples could readily be multiplied, and point to the growth of a new style in scientific writing which has nothing to commend it.

Pasing now beyond Dr. Baker's article, reference may be made to another tendency—perhaps it is only a mannerism—which has been noticed in recent years, namely, an unusual use of some common verbs. Thus an author may write that he "reacted zinc with hydrochloric acid," or he "combusted" something, or that "a metal distorts upon cooling," or that "a wave propagates in a straight line." Such phrases are frequently seen in communications submitted to *Nature*, from Great Britain as well as elsewhere, and sometimes it is difficult to be sure whether or not a new technical meaning is being given to a hitherto common word. Unless some particular quality is intended by the use of common words in this way, it would seem that an unnecessary grammatical change is being introduced. The English language, in spite of its lack of

inflexions, is wonderfully fluid and surely does not need to be subjected to such twists in order to accommodate new terms or to reexpress old ones.

Another problem which is causing increasing concern—to printers as well as to editors—is the frequent and indiscriminate use of abbreviations in the form of a single capital letter, or a group of capitals, to represent the name of a substance, or perhaps even an adjective or adverb. The printer is concerned because a page of text sprinkled with capital letters is not pleasing in appearance; and, like other craftsmen, he feels that his efforts are being frustrated. It may be argued that this is of no concern to the scientist; but surely his work is worthy of good presentation, and there is satisfaction and even advantage in recording the results of research in an elegant style.

So far as the use of abbreviations themselves is concerned, the subject was discussed some time ago in these columns. As was pointed out then, a little consideration will show that abbreviations can often be replaced by pronouns without loss of clarity or accuracy. No one writing for the general reader would willingly use the same noun several times in a single sentence; yet when abbreviations or symbols are adopted, there seems to be no hesitation in repeating them—often as many times as possible. Biochemists are great offenders in this respect, and their excuse must be that many of the substances they use have unwieldy names. Similarly, organic chemists are hampered by a cumbersome nomenclature, which however admirable from the point of view of describing a substance, invites the use of abbreviations; indeed, the industrial organic chemist has found it necessary to invent names or use specific symbols like DDT for the sake of the users of his products. But a sense of proportion must be maintained in devising and using specialized terms; thus it seems pointless to write $p\text{-ClHgBA}$ for *p*-chloromercurobenzoate, and positively dangerous to use H for histidine. The habit—for it is little else—of introducing abbreviations is now spreading through physical chemistry to physics and to mathematics; indeed, to all sciences. Thus E has been used for *enzyme*, with the derived symbols ES for *enzyme substrate* and ESI for *enzyme substrate inhibitor*, and M.O. for *molecular orbital*; and what is the physicist to think when he finds a plentiful sprinkling of the term MIT on a page, only to find on careful reading that it is an abbreviation for moniodotyrosine and not the Massachusetts Institute of Technology? Then, again, can the use of ARG for *autoradiograph* be justified? Mathematical signs occasionally appear in a line of text, especially the sign for *is equal to*.

These examples are taken from manuscripts submitted to *Nature*, and many others might readily be quoted.

It may be claimed that, if an author writes out the name or term, followed by his chosen abbreviation, on the first occasion of its use, or includes a list of the abbreviations he proposes to use, then he is justified in employing his abbreviations throughout the remainder of that particular piece of writing. But is every scientific communication to have its own glossary? Consider the confusion—and additional space required—which would occur in a journal such as *Nature*, in which two dozen or so specialized communications appear every week. The fact is that these abbreviations are, in the main, laboratory and notebook shorthand, or even slang, very valuable in their proper place, but nevertheless a new language, which at present does not seem suited for the considered statement offered for discussion and appraisal by other workers.

The use of abbreviations, especially initial letters, is now becoming so fashionable among scientists that one suspects authors sometimes go out of their way to use them; for example, SV for *seminal vesicle*. With the increased sliding growth among the various disciplines of science, resulting in such departments of research as biochemistry and biophysics, this fashion may, if not checked, defeat its own ends and produce a veritable "Tower of Babel." Indeed, the time does not seem far away when high-school pupils will have to learn a new table of symbols apart from those atomic.

A further problem, which may not occur to most writers, has to be faced in the preparation of an index. Abbreviations or initials sometimes occur alphabetically in quite a different position from that which would be occupied by a full term, thus causing confusion during reference.

New Look in Soviet Genetics

American geneticists have been aware for nearly 2 years of a change in the attitude toward their science in the Soviet Union, and particularly of the declining influence exerted by T. D. Lysenko and his colleagues on Russian biology. Until recently, most of us were skeptical over the development of any genuine change in attitude that would permit our science to develop as it did in the Soviet Union before 1936. Recent events, however, are showing that the change is a real one, and that Mendelian genetics is apparently reviving there. A report from the editors of "*Drosophila* Information Service" indicates that two outstanding geneticists,

M. S. Navashin and N. P. Dubinin, are again coming into prominence and are organizing genetics laboratories in Leningrad and Moscow, respectively.

An additional indication is given by a recent review of the book *Hybrid Corn*, which is an illustrated, 360-page collection of articles translated into Russian by M. L. Belgovsky, Y. I. Lashkevich, and V. V. Khvostova. The book was published in Moscow in 1955 by Foreign Literature Publishers. The review, of which a partial translation follows, appeared in the November–December 1955 issue of *Botanicheskii Zhurnal*, the Soviet counterpart of the *American Journal of Botany*. The reviewer, D. V. Lebedev, is unknown to me. I am very grateful to my colleague, I. M. Lerner, for assistance with the translation.

"Speaking at the conference of genetics and breeding called in October 1939 by the editors of the journal 'Under the banner of Marxism,' and giving a survey of the contemporary situation of world science in these fields of knowledge, Academician N. I. Vavilov dwelt particularly on the use of heterosis in corn breeding. Producing the official data on the areas occupied by hybrids of inbred lines in the U.S.A. in 1938–1939, and on the increase in yield which resulted from the entrance of these hybrids into production, he evaluated hybrid corn as the most valuable practical achievement of genetics. N. I. Vavilov asserted that 'on the basis of genetic investigations which had been carried out by theoretical workers, not practical men or breeders, the theory of inbreeding was worked out on corn material, a theory now widely used in practice.' (Vavilov, 1939: 129). In his lecture he cited a letter from American corn specialists, who wrote that the breeding of this important food and fodder crop, which had marked time in the course of a whole century, as a result of this new work moved forward all at once at an extraordinary rate.

"The time that has elapsed since this address of N. I. Vavilov has demonstrated completely the basic correctness of the high value that he ascribed to the theoretical and practical knowledge of hybrid corn.

"The decisions of the January Plenum of the Central Committee of the Communist Party of the Soviet Union established the task of the wide application of new breeding methods for corn, and the complete transformation of this crop in the course of a few years to sowing hybrid seeds. There is no doubt that one of the conditions for completing the task which has been set is the very rapid use of all the experiments of foreign science, an acquaintance with those works which have been and are being carried on