

COMMENTS

by Readers

During the war and throughout the two years since its conclusion, the problem of the study of foreign languages, as related to scientists in general, has taken on new importance. At no time in history has it been so necessary to keep abreast of the technological developments of foreign countries as now. This fact, coupled with the tendency of students to avoid the serious study of foreign languages, makes it advisable to review the problem briefly, with particular emphasis on the language requirement for the Ph.D. degree. The war initiated intensive methods into the study of languages. It became necessary for more persons to know foreign languages and to know them better than previously. The rather large number of persons who had "passed" German and French at some previous time in fulfilling the requirements for the Ph.D. found that their knowledge of the languages was entirely inadequate. As a consequence, it now appears to many that in the field of science something should be done to rectify the situation.

There are two obvious difficulties in the present method. One is that the scientist often does not come into contact with foreign languages—except for the high school exposure, if any—until he has passed beyond the M.S. degree. Second, his contact with languages in the Graduate College is insufficient to be of any real use to him. Two alternatives exist: either the language requirement can be eliminated or more intensive training in one language can be substituted. The first alternative is contrary to the present trend and necessity; the second suffers from lack of support on the part of educators concerned with the particular problem. In support of the second alternative there may be listed the following:

(1) The student may make effective use of the language earlier in his school career.

(2) A good knowledge of one language has a cultural value which the M.S. or Ph.D. in science cannot afford to miss, especially in this era when scientists must take a greater part in world affairs.

(3) The student is released from the wasteful procedure of cramming for two language exams which he has come to look upon as mere formalities.

Assuming that one language would be acceptable for the Ph.D. requirement, it is, of course, a problem to make a selection. One may attempt to determine the most useful language, from a technical standpoint, by statistical means, but it must not be assumed that every student should be required to study the most widely used language. A balance must be maintained so that all the useful languages are reasonably well represented in any department at any one time. On the other hand, a student should not be required to take a minor language just to maintain some kind of a percentage balance.

It seems that the bases upon which to select languages should be somewhat as follows:

(1) What language will be of most use to the student in his field?

(2) In what language is the student particularly interested?

(3) Which languages does the student already know?

The first of these questions can be partially answered by making a survey of the frequency of references to articles in foreign languages appearing in abstract journals. As an illustration, the references to technical articles for one year, 1940, in the *Wireless Engineer* have been checked in the fields of wave propagation, circuit theory, electronics, and transmission with the following result: German, 100 references; Russian, 57; French, 48; Italian, 23.

In any particular case, with information such as this for the field under consideration, the adviser may come to a satisfactory agreement with the student concerning his language requirement. The question is of such importance that every effort should be made to readjust the treatment of the language requirement not only for the Ph.D. degree but for science students in general. (L. A. WARE, *State University of Iowa*.)

In a report entitled "Calcium and Growth in Aging and Cancer" (Albert I. Lansing, *Science*, August 29, p. 187) data are given regarding the calcium content of cells. These data clarify some aspects of aging and, at the same time, explain the reason for the low calcium content of cancer cells. However, the clarification introduces new difficulties. The paradox is revealed that cancer, an actively growing young tissue low in calcium, occurs spontaneously most frequently in an old tissue high in calcium and which is no longer actively growing. More than this, in young organisms, relatively low in calcium, cancer occurs with far less frequency. It does not help to say that locally rejuvenated old tissue growing in an old organism might be expected to create havoc, for it has been demonstrated time and again that embryonic tissue transplanted in older tissue does not behave at all like cancer, even though embryonic tissue has a low calcium content. Nor can a lack of cell adhesiveness be incriminated to explain malignancy. The reduction of adhesiveness of fibrous tissue cells does not render them malignant. Malignancy, characterized by a direct destructive action by cancer cells upon somatic cells, is not duplicated by wandering, actively growing somatic cells. Therefore, although the decreased adhesiveness of cancer cells can be correlated with their markedly low calcium content, their *destructive* invasiveness cannot be thus explained.

Malignancy is an inherent property of cancer cells independent of their calcium content. On the other hand, increase of the calcium environment of cancer cells may increase their adhesiveness and consequently possibly decrease their invasiveness and thus limit their malignancy by limiting their movement. This might constitute a rational basis for the use of calcium in cancer therapy, as is occasionally recommended.

The reduction of calcium in methylnanthrene-induced epidermal hyperplasia does not represent a necessary herald of the onset of cancer, for hyperplastic tissue is young tissue, and its calcium content is relatively low.

The low calcium content of cancer tissue simply accompanies its youth and does not explain its malignancy. It is therefore not logical to imply a lineage between cancer cells and somatic cells on the basis of a decreasing content in cell calcium. The behavior of cancer cells negates the proposition that they repre-

sent an extrapolation of somatic cells unless a marked saltatory change is assumed. But this assumption requires the additional postulate that a young, aggressive, low-calcium cell can result from a qualitative transformation of an old, passive, high-calcium cell and that this singular process takes place with astonishing regularity and with far greater ease than a similar transformation into a cancer cell of a young, actively growing somatic cell likewise low in calcium.

The fundamental behavior and properties of cancer cells are more fruitfully compared with another primitive tissue—the mammalian trophoblast or, more generally speaking, the asexual generation of the vertebrate life cycle. In making this comparison it is not necessary to resort to postulates not already well established. (CHARLES GURCHOT, *The John Beard Memorial Foundation, 1095 Market Street, San Francisco.*)

The recent paper by Blackwelder, Knight, and Sabrosky (*Science*, October 3, pp. 315–316) concerning proposals for clarifying Article 19 of the International Rules of Zoological Nomenclature deserves high merit, and it is to be hoped that the International Congress of Zoology—the only body with power to amend the Code—will pass favorably upon it when the group meets in Paris during July 1948. By way of introduction, the authors of the proposal write, “Obviously, each genus or species of animal can have only one valid name spelled in only one way . . . great confusion can result if each author is free to spell any name in the way that pleases him most.”

With this in mind, I am prompted to write, because in the same issue of *Science* (p. 327) Seaman, in violation of the rules, refers to a species of *Paramecium* which he italicized as *Paramecium nucleatum* and which is presumably meant to be *Paramecium multimicronucleatum*.

The first to use the name *P. nucleatum* for this well-known, well-defined species was Mast (*Biol. Bull.*, 1947, 92, 31–72), who stated in a footnote, “The name ‘*multimicronucleatum*’ is so long and unwieldy that the abbreviation, *nucleatum*, will hereafter be used in place of it” (italics his). *Paramecium nucleatum* is thereby used, in italics as a species name, in the remainder of his paper.

In view of the large amount of research that is being done now and that has been done in the past upon cultivation, cytol-

ogy, serology, mating types, and conjugation, confusion is bound to be the result if two names are used for this well-defined species. It is to be hoped that its valid name, *Paramecium multimicronucleatum*, be retained and used in future publications. (RALPH WICHTERMAN, *Biology Department, Temple University, Philadelphia.*)

R. W. Gerard's communication on the subject of the editing of scientific papers (*Science*, September 26, p. 289) reopens a perennial question which must be of interest to most readers of *Science*.

The problem rests, clearly, on the respective rights of editor and author. It can be solved very easily and correctly, I believe, by examining a little more closely than Prof. Gerard does the common basic assumptions regarding these respective rights. (What I have to say here concerns journal editing only; the editing of symposia and other collaborative works obviously involves a rather different set of problems.)

Editors, or their equivalents, are necessary evils, it must readily be granted by even the most disaffected. There must be liaison among a journal's publisher, authors, printer, and consumers; there are decisions regarding content and make-up that require an over-all control. But it is after this that, in my opinion and in Prof. Gerard's words, “the pendulum swings over.”

Why should an editor be entitled to insist on a certain spelling, on particular abbreviations, and on a set form of literature-citation? Except for the last (where standardization, if it could be achieved, would benefit the indexers), I don't know. Do you?

Why should you, as author, and I, as editor, waste time haggling over what I conceive to be your errors of spelling, punctuation, and grammar? I don't know. Do you? Is it to mislead posterity, and your contemporaries who don't know you, into believing that you are more literate than you are? (Because it is your name only that they will connect with the paper.) Or is it to feed my ego by making you over as closely as possible into my literary image and likeness?

Why, if you are more literate than I and object to my attempt to bring you into line, should you be forced to submit your paper elsewhere when my journal is the

one in which it properly belongs; when there is no other equally appropriate journal; or when, if there is, its editor is as autocratic as I am? I don't know. Do you?

It is the editor's right and responsibility, agreed, to say what papers and other material shall appear in his journal, to plan its make-up, and to facilitate its orderly production. Beyond that, four courses are open to him: (1) he may stop there; (2) he may insist upon certain literary uniformities; (3) he may insist only upon accuracy of statement and citation; (4) he may go whole hog and “vet” the manuscript.

Now, there are moral and historical aspects of this problem which might be thought to condition the editor's choice of these courses.

Anything printed becomes at once a potentially active contemporary force and a part of the historical record of the time. That being the case, the editor of a scientific journal would seem to have a strict responsibility (1) to serve the present by not publishing anything contrary to established fact; (2) to serve the present and posterity by presenting our authors faithfully in whatever state of literary grace each may have reached.

His selection of papers, the knowledge that they are factually reliable, his judgment in the matter of accessory material, his taste in the make-up of the journal, should obtain for the editor all the recognition he properly should seek. He is not, or should not be, a schoolmaster. A man old enough to write a scientific paper acceptable for publication on its scientific merits is a man old enough, one would think, to be permitted to express himself in his own way (or his secretary's), within the limits of space deemed suitable by the editor. If his way be literarily inept; if he have no literary conscience at all—so much the worse for him. Let him appear to his fellows and to posterity as he is. The ends of truth and progress are in no way furthered by “editing” him.

In short, I beg to suggest that, if editors were to drop the pedagogic mantle and confine their editing of typescripts to the correction of factual inaccuracies, the ends of science, progress, and history would be better served; and, as a little extra dividend, editors and authors might well become, as if by magic, the best of friends. (W. B. McDANIEL, II, *librarian and editor, College of Physicians of Philadelphia.*)