Comments and Communications

Addenda to Dissa and Data

THERE is another solecism that needs dissection at the same time that "data" is being given its proper treatment, and that is the wrong use of Latin plurals in hyphenated compounds. The type of this species of error may be taken to be "bacteria-like colonies." No one would write "trees-like plants" or "oysters-like mushrooms"; but when the name of the object to which another is likened happens to be a Latin one, the incongruity of a plural escapes the author and, too often, the editor. It seems clear that in the specimen under consideration "bacteria" is considered a singular noun, as was "curricula" by a writer in one of our literary journals (*1*) who deplored "curriculae" loaded with science courses as productive of graduates unable to use good English.

"Ilk," incorrectly used as though it meant clan or kind, and "internecine," falsely interpreted as though analogous to "intramural" and similar in sense to "fratricidal," are literary vogue-words as impossible for scientists and Fowler's *Modern English Usage* to suppress as is "intrigue," used to mean fascinate. Scientists do, however, work with hypotheses; they may assume a condition or, as a poor second choice, may hypothesize. But the occasional theorist who tries to hypothecate a hypothesis should be put on warning that he is attempting to pledge it as security, and that no pawnbroker is likely to attach much value to it.

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Reference

1. *Sat. Rev. Lit.*, **32**, (49), 20 (1949).

AFTER (not "following") the remarks of Frank C. Calkins (SCIENCE, 116, 486 [1952]) and the letter from S. Reid Warren, Jr., that (not "which") you published before (not "prior to") it (SCIENCE, 115, 633 [1952]), as well as your welcome editorial comments about (not "regarding") the word "data," you may perhaps allow me to add a word on the dilemma of deciding between common usage and etymological probity. For this I take to be the guts of the dispute, if there be one any longer. The dilemma can often be avoided (incidentally, the proper treatment of dilemmas) by refraining from using the word "data" in the wrong sense, as it generally is used.

I think your readers, like many others, may be ignoring a communication by A. V. Hill (*Nature*, 164, 410 [1949]) in which he pointed out that "data" and "results" are not synonymous. Although, as I wrote after Professor Hill's remark, I am prepared to give a little more scope to the word than he is, I am entirely with him in rejecting the use of the term when "results," "figures," or some other word would indicate, as the word "data" does not, that the things in question have been found and not "given." If they had been "given," the experiments producing them would presumably not have been necessary. Use of the right word, instead of "data" in the wrong sense, sidesteps the issue of its grammatical number.

As to that issue itself, no settlement seems likely between those who write "the data is" and even "the strata is" on the analogy of "agenda"—and, I might add, "opera"—and those who cling tenaciously to the old-fashioned view that Latin plurals should remain plural as long as possible. Argument is probably of little avail when, as here, matters of syntax merge into matters of taste, for "*de gustibus. . . .*"

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A Blood Pump for Whole Blood Without Anticoagulants[1]

WE HAVE designed and used for the past year a blood pump that will operate efficiently on whole, nonheparinized blood, without causing clotting.

Many different types of "artificial hearts" have been designed to pump blood. In general these pumps have required the use of an anticoagulant such as heparin, which is often an obvious disadvantage, particularly in surgery. The recently reported use of an "artificial heart" on a human patient (*1*) during cardiac surgery required heparinization. The one reported pump designed to operate on blood without addition of anticoagulants (*2*) required a lining made from a dissected blood vessel, preparation of which is a difficult technical procedure.

To prevent clotting in its mechanism, a blood pump should ideally have a very short circulation time, entirely smooth inner surfaces, no dead or serious eddy space, and should be free of valves. Also, the blood should be in continuous motion at rather high velocity at every point and must never touch anything other than a nonwetting surface.

The DeBakey roller pump (*3*), which squeezes a length of rubber tubing by means of a roller, meets many of these criteria, but a rubber surface in contact with blood initiates clotting. Recent development of nonwetting and nonreactive surfaces has made it possible to handle whole, coagulable blood outside the body in silicone-coated or plastic containers for considerable periods of time before clotting occurs (*4*), but it has been difficult to give rubber a satisfactory coating that will withstand roller action. Roller action has not previously been satisfactory on a plastic tubing, because a roller pump requires a high degree of elastic rebound on the part of the tubing after passage of the roller.

We have modified the DeBakey-type pump to obtain this elastic rebound in polyvinyl tubing by en-

[1] This work was done during the tenure of a research fellowship of the American Heart Association.