

Units and Symbols

THIS letter is intended to be provocative. A volt (or ampere) is denoted V (or A): a millivolt (or milliampere) mV (or mA): a microvolt (or microampere) μ V (or μ A). A farad is known as F, a microfarad as μ F (though misguided people write it mfd. or mF., which, if anything, should mean millifarad): a micromicrofarad (10^{-12} farad) is $\mu\mu$ F. A millihenry is mH, a microhenry μ H. A gram is g., a milligram is mg., but some (and not the least worthy) biochemists use a symbol which few others understand, and call a microgram not μ g. but γ . A second (of time) has the symbol sec. (not "): a millisecond is msec.: a microsecond is μ sec. Why do physiologists (and they alone) persist in using the symbol σ to represent, not—as it might less unsuitably do in view of μ and γ —a microsecond, but a millisecond? And why are they permitted, instead of writing 7 msec. (which others could understand) to use 7σ , or 7 sigmas (in America) or 7 sigmata (in Oxford)?

A metre (not meter) is m. (m means milli): a millimetre is mm.: a micrometre (not micrometer!) is μ m., a micron or by courtesy μ . A millimicron therefore is $m\mu$, a micromicron is $\mu\mu$. It is all quite simple, yet otherwise law-abiding people (physicists this time, who ought to know better, not physiologists or biochemists) call a millimicron a $\mu\mu$ (see E. N. da C. A., "Encyclopaedia Britannica", 14th edition, Vol. 18, p. 874) or apply the same symbol to the same thing, now called a "micromillimetre" (Vol. 17, p. 877) which, with this name, is clearly not $\mu\mu$ but μ mm. Fortunately milli- and microwatts mean what they say: but 1,000 millibars amount (nearly) to atmospheric pressure, which some people (chemists this time!) insist on calling a 'megabar' (compare megohm, megacycle) because they say that a bar is 1 dyne per sq. cm. Calories (at the beginning of a sentence, or in books on nutrition) may mean either Calories (10^3 cal.) or calories (cal.): it would be just as simple to refer to kilocalories (kcal.) as it is to kilograms (kg.) or kilocycles.

The moral is clear. Let us use our symbols logically and consistently and not make other people's tasks more difficult by inventing pet-names of our own. How can nations be expected to settle their differences, even as to the dates of Summer Time, when we men of science cannot agree on $\mu\mu$, or bar, or μ F, and insist on hiding our meaning by σ 's and γ 's which are unintelligible to the majority?

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[Should Scientific Publication be Controlled?]

AFTER a delay of many years, the great work (576 pages, 67 plates) on the Caddis flies, by Cornelius Betten, has at last been published by the New York State Museum at Albany. It is reviewed by Dr. C. H. Kennedy in *Annals of the Entomological Society of America*, June 1935. The reviewer remarks: "This much needed volume has finally appeared. The reviewer saw the 'revised' manuscript at Cornell in 1915. It had been practically completed nine years before. Projects of more immediate use to the tax-payer used the Museum funds that had been planned for its publication. One new species after another was scooped by various casual students of

the order. The last scoop was accomplished by one who had had the privilege of studying the manuscript and who rushed two papers through by publishing privately after the present volume was on the press."

Deplorable as was the delay, it must be admitted that the so-called casual students of the order were perfectly justified in publishing their work; that it is wholly unreasonable to expect publication on a group of insects to be halted for a quarter of a century because an important monograph has been prepared but cannot be published. When it became obvious that the publication would be indefinitely postponed, the new species should have been published separately. But what is described as the "last scoop" is in a different case. I do not know what it antedates in Betten's work, but I have seen a copy, and it is a much abbreviated summary, just sufficient to validate a number of specific names. It is printed by one of those duplicating machines, now so widely used for class work in colleges. I do not think it can be considered to be merely mimeographed; it seems to represent what must be considered printing in the sense of the rules. It is published privately, but is offered for sale, and the copy I saw, in the library of the California Academy, had been purchased.

A good many years ago, a certain entomologist, a student of parasitic Hymenoptera, printed privately a series of small papers containing descriptions of new species. These he advertised for sale in one of the scientific magazines. I bought a set, which I later divided between the U.S. National Museum and the British Museum. Apparently I was the only purchaser, and the author himself, who had in the meanwhile gone to Australia, lost his own copies, and wrote begging me to return those I had.

All zoologists and botanists are aware of the trouble caused by irregular publications, and of the controversies which have arisen as to what constitutes a publication. The rule requiring that a work must be placed on sale is ambiguous, and not always observed. Thus the splendid memoirs of the U.S. National Academy are not for sale, until they come on the second-hand market. With the newer methods of duplication, as indicated above, anyone can get out a small publication and offer it for sale, though it may not be obtainable through the usual channels, and may be almost unknown.

I have lived to see many taxonomic proposals, at first derided, eventually gain acceptance and become commonplace. I should consider it a great evil if all publication were controlled by the older men, or indeed by any particular group. But it does not seem unreasonable to suggest that certain definite channels for the publication of new taxonomic proposals should be established, and that there should be some control over the manner of these proposals, so that, sound or not, they should be intelligible. It might not be unreasonable to require that a type specimen should be deposited in some museum, where it could be examined. In short, some regulation is evidently needed, and we ought not to be so afraid of unjustifiable interference that we will not do anything. Whatever is done, should have the support of 'common sense', and not merely arbitrary rules. In addition to the matter of publication, we would commend to the International Commission another growing evil, the publication of erratic names. Great liberties have been allowed,