LETTERS

Least Publishable Unit

Recent comments on the Least Publishable Unit (News and Comment, 13 Mar., p. 1137) in biomedical research were appropriate but I feel the phenomenon is much more widespread and has both effects and causes not touched upon in the original article.

The increase in gratuitous multiple authorship has tended to discredit genuine collaboration. I have served on several academic personnel committees where it has been seriously argued that coauthored papers should be devalued or disregarded in evaluating a candidate's suitability for hiring or promotion. Science by committee is often pedestrian and opportunistic bibliography trading is reprehensible, but research needs more rather than less of the synergism that arises from genuine peer collaboration. A publication ethic that provides further disincentives for such work is dangerous to the health and integrity of scientific research.

Journals with lenient review and editorial policies offer rapid and convenient publication and thus attract so many papers at all levels of quality that the journals themselves are not indicators of research quality. The more demanding, high-quality journals cease to be a forum for discussion of rapidly developing fields.

There are several reasons for the Least Publishable Unit phenomenon in addition to those mentioned in the article. Among them are

1) *"Micromanagement" techniques.* Agencies that fund applied research have increasingly dictated not only the problem to be solved but also the nature and detailed time schedule of the solution. There is a strong incentive to get publication mileage out of both interim and final reports with a minimum of rewriting or interpretation.

2) *Reader accessibility.* As papers and journals proliferate, researchers are able to read a smaller fraction of the total and tend to concentrate on those dealing with their primary disciplines or specialties.

3) *The sociopolitics of funding.* National Science Foundation reviewers are specifically asked to comment on the research record of the principal investigator and on institutional capabilities. An obvious form of insurance is to have as many relevant titles as possible in the investigator's bibliography and as many of the references as possible from the same group, institution, or interinstitutional research clique.

I agree that one of the best ways to deal with the problem is to pay more careful attention to the review process, but preparing a good review is a demanding and time-consuming process and is often more difficult for a short, fragmented paper than for a complete and integrated account. Perhaps the most readily implemented suggestion would be to abandon the total bibliography as an evaluation tool and require applicants to list some specific number of their most significant publications and provide a brief narrative outlining the importance of the work and the nature of the applicant's contribution. This approach would emphasize quality rather than quantity.

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It is surprising if *Science* (and the *New England Journal of Medicine*) place the blame for multiple short papers on the authors. Both journals typically impose very harsh space limitations as a condition for publication, which is often independent of the true size of the scholarly work. Journal editors demand that we cut the baby in half and then lament the fragments that are produced!

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Startling !Punctuation

Gina Bari Kolata (Research News, 6 Feb., p. 562) writes of the anthropologists' quandary over whether or not to protect the !Kung Bushmen of the Kalahari Desert in southern Africa. From the title on ("!Kung Bushmen join South African Army"), the article is peppered with startling punctuation: "Botswana !Kung," "Namibian !Kung," "!Kung" or "!Kung's" about 30 times, "Chum !Kwe," a place name, six times. Plainly, the ! is no misprint.

The nonanthropologist reader, wishing to understand, asks, what does ! mean? Why not write "!Masai" or "!Kikuyu"? Is the ! equivalent to the ! of English? Are we English speakers missing a chance to express partisanship, enmity, favor, disapproval, love, or hate when we fail to use our ! in analogous ways, as in "!Republican," "Philadelphia !Phillies," "Des!Moines," "Dayton !Ohio," "!bacteriophage," or "nonpuerperal !galactorrhea"?

In order to communicate scientific !information clearly (*1*), could the editor persuade the author to tell what ! means so those not schooled in exotic!languages may see the light?!

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The exclamation points refer to alveolar-palatal clicks, which are characteristic of the !Kung language. Such a click is made by pressing the tip of the tongue against the roof of the mouth and then drawing it sharply away, producing a hollow, popping sound.

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Guinea Worm Disease

As the International Drinking Water Supply and Sanitation Decade begins, estimated expenditures of $20 billion to $30 billion per year will be necessary to achieve the target of providing clean water for all by 1990 (*1*). It is therefore important to seize every opportunity to maximize the benefits of that effort. By giving priority to areas where guinea worm disease is endemic for development of a fraction of the new, safe water supplies needed during the Decade, substantial additional benefits could be achieved at virtually no additional cost.

Guinea worm disease (dracunculiasis) is still a serious impediment to development in some rural areas of Africa, India, and the Middle East (*2*). Sporadic in distribution, it is transmitted by drinking water contaminated with a small crustacean (*Cyclops*) which serves as intermediate host for the parasite *Dracunculus medinensis*. Emergence of the worm through the skin (usually on the lower leg) after a 1-year incubation period causes severe local pain, and sometimes arthritis. This disease has been shown to incapacitate from 30 to 40 percent or more of farmers and other villagers for periods averaging from 1 to 3 months during the annual planting or harvest season (*3*). About 0.5 percent of infected persons are permanently disabled. In Upper Volta, one study found that almost 7 percent of villagers with guinea worm disease died of secondary tetanus (*4*). An estimated 10 million to 48 million persons are affected annually (*5*).

Guinea worm is the only disease which is entirely eliminated by substitution of safe drinking water for bad (*6*), since no other mode of transmission exists. Within a year after introduction of safe drinking water, recurrent seasonal infections disappear (*7*). Other strategies for preventing or treating guinea worm disease are unsuitable for mass application (*2*).

If the Decade succeeds in extending drinking water supplies to all who now lack them by 1990, guinea worm disease will disappear by then. Even so, relieving villages of the burden of guinea worm disease early in the Decade could provide a visible, measurable "health benefit" as an early indicator of progress of the Decade. In addition to eliminating a crippling disease, improving agricultural output in formerly affected areas, and possibly improving nutrition of young children in these poor, rural areas, prevention of guinea worm disease would be a tangible stimulus for villagers to help build and maintain safe water sources.

Since the rural population still unserved by safe drinking water in the relevant World Health Organization regions of Africa, Eastern Mediterranean countries, and Southeast Asia is about 786 million (*7*), only about 1.3 to 6.2 percent of the unserved rural populations of those regions need to be reached with safe drinking water in order to eliminate guinea worm disease.

To implement the strategy proposed here, countries need to determine which villages are now affected by guinea worm disease (surveillance of this problem is easier than for many other diseases), and those areas affected by guinea worm disease need to be given priority for provision of safe water. At a minimum, guinea worm disease should be an obligatory consideration for funding of water development projects and for evaluating the success of the Decade. "Health for All" cannot be said to exist so long as this eminently preventable scourge persists.

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