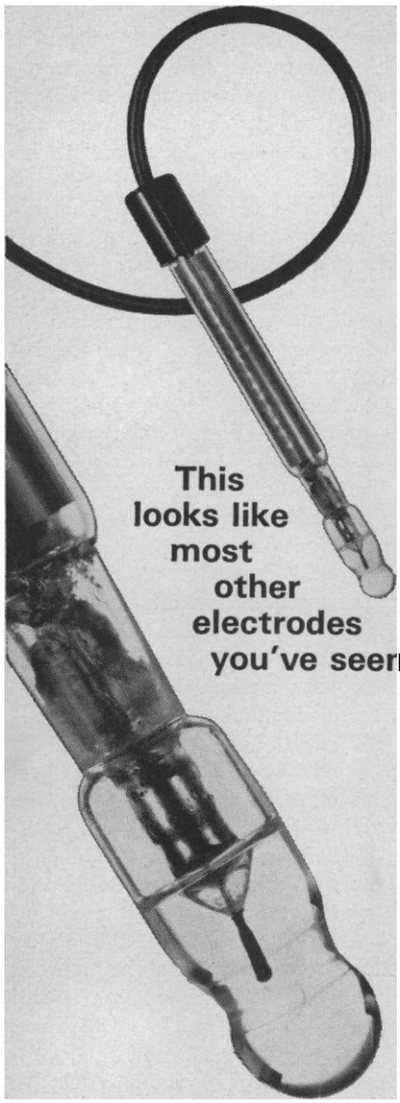

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brushed aside amidst the demands of the mob, the establishment, or the great society, depending upon one's view of things. And what concerns me most of all is that certain federal agencies are now in the business of underwriting the financial success of many educational institutions in this country. This fact, I feel certain, will one day rise to haunt us.

Perhaps it is true, as Greenberg suggests, that Fox's proposals simply did not meet certain standards and that he has only himself to blame, but somewhere, somehow, we must make room for the individual in the research world who wishes to pursue his own quiet ways, even while we are establishing priorities for federal research money. I can only echo Kusch's words that there must be something wrong with the system.

I have been disturbed that the science-underwriting federal agencies seem, much too often, to rely on the same individuals or institutions, time after time, to carry out research projects. I know, for example, that there are agencies which "suggest" to one of their favorites that a certain research project would be favorably viewed within that agency, but to get the personnel of that agency to admit to such a practice in an appropriations hearing is understandably impossible. I have been trying for the past several years in the Appropriations Committee to force the agencies to broaden the distribution of their research funds. Greenberg's article, if widely read, could be of considerable value in this regard.

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A Calculus for Journal Publishers

In a recent editorial, "Basic research journals" (13 Nov., p. 869), Wolfle, describing the difficulties associated with the publication of 500 research journals, argues: "If we assume that no individual subscribes to more than five journals . . . 500 journals provide approximately 2.5×10^{11} different combinations to satisfy the individualistic needs of some 2.5×10^{5} scientists." From this he concludes that fewer journals would suffice and many journals should be merged.

I submit that this is a publisher's view and that many scientists see the problem differently. In the first place, the computation of combinations of 500 things taken 5 at a time is much more sensitive to the 5 than to the 500. Thus, if one assumes that a present subscriber to five journals would continue to receive about 1 percent of the literature as the journals merge, then the combinations available drop very rapidly to 19,900 when the total number of journals reaches 200 and the subscriber takes two.

Quite apart from the combinatorial question, however, is the problem presented to the scientist by the sheer bulk that 1 percent of the journals represents. You may remember Sherlock Holmes's comment that "A man should keep his little brain attic stocked with all the furniture that he is likely to use, and the rest he can put away in the lumber-room of his library, where he can get it if he wants it." It is my own view that most journals should be in libraries and that a scientist needs a much *greater* choice of printed material to stock his "brain attic." The *Physical Review* has recently split into two sections in an effort to meet the needs of its subscribers more effectively. Perhaps much more drastic methods should be considered.

There is much to be said for the view that most scientific journals in their present form should be considered archival and be held as reference material in libraries to which scientists have ready if not constant access. The material subscribed to by scientists for their own direct use could then be (i) one or two journals of broad scope and general impact, such as *Science*, and (ii) expanded abstracts of articles in retrievable form (such as perimeter punched cards) in the research field or fields selected by the subscriber. The scientist could then obtain reprints of the more relevant articles (if, indeed, he did not already have preprints) and could consult others in the library as necessary.

In all of this the principal question remains. Are the added costs (savings) of a proposed system offset by the increases (decreases) in usefulness of the system to the research scientist? This is the kind of criterion that Wolfle should be using.

Finally, let me say that I am aware that 100,000 scientific articles taken 100 at a time yield about 10^{342} combinations. Is it obvious that these are too many?

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