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to the kind of research that is going on in the university. The type of research the university now undertakes to do cannot even have been imagined before federal support came into existence.

It is generally accepted in the major universities that time devoted to research is academically expended and is vital to world and national, as well as to university, welfare, and may have no immediate or even visibly remote technological application. It is the national welfare which demands the present scale of research operations. The university may reasonably be expected to contribute to a salary of a faculty member in proportion to the time he spends on actual teaching, but beyond that point the amount of investment by the university cannot be expected to be commensurate with the size of the enterprise. The larger the enterprise the lower fractional investment there should be on the part of the university and, in truth and in deference to tradition, it should approach nil.

Congress and the granting agencies should understand that the function of the university is not to support research but to provide the atmosphere in which good research can be conducted. Provision of that atmosphere is the important thing.

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Don't Dam The Grand Canyon!

Luther Carter has presented an admirably dispassionate summary of water politics surrounding the proposed construction of Bridge Canyon and Marble Gorge dams in the Grand Canyon of the Colorado River. (News and Comment, 17 June, p. 1600). We do not feel dispassionate about the imminent loss of the intact Grand Canyon, one of the most wondrous works of nature, utterly unique, priceless, and irreplaceable. This loss is intolerable because it is senseless and unnecessary. Bridge Canyon and Marble Gorge dams will serve only one significant purpose, and that is to generate and sell hydroelectric power in order to help finance the Central Arizona Project. In the face of available coal and nuclear sources of power, only a committed politician could take seriously such a frightful proposal. The Grand

Canyon is an awesomely high price the American people are being asked to pay for the bureaucratic rigidities of their government and their politics. If these dams are built, not only do we pay this terrible price, but our children, and their children, and all future generations also pay it. They won't sing praises to our lack of wisdom and imagination or to our indifference.

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On Scientific Illiterature

Within 4 weeks of each other, a leader in *Science* (Editorial, 18 Feb. p. 783) dealt with the gift of the gab as related to the procurement of grants for scientific research, and one in *Nature* (19 March) with the results of the latter, namely publication. A great deal of printing ink is being poured on the question of what to do about the cataract of information: "explosion" is hardly the word for what is occurring since this term refers to something that is sudden and finite. There is a case to be made for making publication of scientific results harder.

A man may pursue what, on the face of it, is useless research (UR). Again, he may work in a discipline that has high national prestige rating (NPR) or serves to alleviate the physical struggle for life. The example of nuclear studies, that involved a change from UR to NPR in the first half of this century, shows that, in the former case, competition is less severe than in the latter. It is only a surmise, but I hope a permissible one, that such competition contributes to the paper waste that many workers see in their own fields. If, as the article in *Nature* urges, the consumption of literature has to be rendered more effective, what about its production? Why should we be provided with umbrellas when it may be possible to control the cloud burst? Editors should not allow themselves to be blinded by science. Writing can be terse even though decorative, economical without being austere. Articles can be reduced by as much as 33 percent in length without the loss of one iota of information: this is always done easily with writing other

than one's own. Certainly a saving of 10 percent is in most cases too easy for words.

There is, moreover, the question of the selection of material. Rigorous refereeing is not to be equated with censorship. No paper is likely to suffer from the rough or tender attention that a pair of eyes bestows on it before publication. If editors are afraid to sacrifice copy to quality, then they may be justly said to be contributing to the consumer's difficulties.

However, the most far-reaching effect on the damming of the information cataract is one which involves collaboration between the scientific journals themselves. They need to communicate with one another. If each journal were to inform other journals of the receipt of a paper, there would be time for consolidation of the results of two or more studies before publication. The number of scientists at present still manages to exceed that of journals, and contact may be easier to achieve indirectly by this than by any other means. Such inter-journal collaboration might add a little to the delay of publication. At the same time, it would enable editors to form a picture of the relative importance of a contribution irrespective of the referee's comments.

The chance of producing a more accomplished work would increase. The consumer would be rendered an additional service, and the saving of time and effort entailed would more than compensate for its cost. Even if journals were to lose from transferring copy to an earlier recipient, they would gain on quality. Who knows? By reducing duplication and question and answer papers, they might find room for new ventures.

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That Biblical Spider: The End of The Series

Here is the final version, because it is also the original version. The original text in Hebrew (Book of Tehilim 90:9) reads:

כִּי כִלְיָמִינוּ פָּנוּ בְעֵבְרֵתָהּ.
כִּלְיָנוּ שָׁנִינוּ כְּמִוֶהֱבָהּ:

There is no sign of a spider.

SHLOMO SHALIT

*5519 South Blackstone Avenue,
Chicago, Illinois*

2 SEPTEMBER 1966

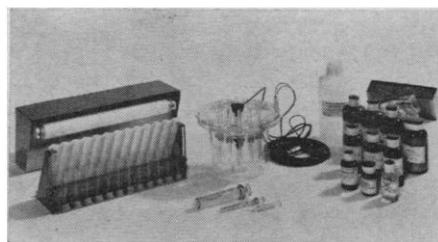
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