that is, by determining if the mineral deposits are of a quality and extent sufficient to affect the national economy as distinguished from those which are not important nationally, no matter how valuable they may be to the owners.

Is the deposit at Glacier Peak expected to contribute, say 10 percent, to United States copper production or less than, say, 1 percent? If the first is true, then the scenic and other public values should be compromised; if the second is true, then the scenic values should prevail. Opinions, of course, will differ about the potential value that should be accepted as the cutoff, but such a formula enables each of us (with our built-in bias) to arrive at a weighted decision.

Under this approach, if scenic and other public values are to be compromised, it is because the deposit is believed to be extensive and as such can be expected to absorb unusual expense in minimizing damage to the scenery and other land use.

CHAS. B. HUNT
Department of Geography,
Johns Hopkins University,
Baltimore, Maryland 21218

Reprints: The Unfunded Author

Parkes's discussion of his "Reprint philosophy" (Letters, 8 Sept.) demonstrates that the "grant-supported" and the "grantless" scientists are in rather different situations. But are reprints alone affected in an institution which is "small and underfunded"?

Being grantless and in an underfunded institution (the vast majority of European institutions are underfunded!), I know the problems well and my previous experience in very good U.S. institutions provides me with a scale of comparison. My collection of reprints supplements our underfunded library. For that reason, I treasure them more than as a mere personal convenience. Many times, in response to my request for a single reprint, I have received several others which were published in journals not being received in our library. Also, I have established excellent contacts by writing to certain scientists who request reprints. This is not incompatible with providing reprints in reply to all requests, a system which Parkes says he follows, as long as he has a reasonable supply. But writing one or two hundred letters to ascertain if the requests are justified is not only tiring but expensive. There is really no basic disagreement between Parkes's and my viewpoints, but we react in slightly different ways to the same nonideal conditions.

MIGUEL MOTA
Department of Genetics,
Estação Agronómica Nacional,
Oeiras, Portugal

Biological Research on Aging

In regard to the discussion on how to improve the present feeble effort in research on aging (Letters, 15 Dec.), I suggest there is increasing need for research at the molecular level, which should start by enhancing opportunities for researchers on aging to use molecular biology equipment, such as the analytical ultracentrifuge, the electron microscope, and others. This can be achieved by providing space for researchers on aging in laboratories of molecular biology, or by extending the existing institutes of molecular biology, or by extending the existing institutes of molecular biology or institutes of developmental biology to "Molecular Biology Institute(s) of Development and Aging." Such steps would provide an increased opportunity for rigorous testing of the various hypotheses on the origin of aging and would increase exchange of ideas between molecular biologists and researchers on aging. In the past 10 or 12 years excellent studies have been done in several leading laboratories of this country on developmental changes at the molecular level. These represent outstanding contributions to the elucidation of aging processes throughout the life span, even though the expression "aging" rarely appears in any of their publications. However, to a researcher on aging and senescence, it is immediately evident that about 10 percent additional effort, and possibly less, might have increased the value of these studies for the understanding of aging processes by a factor of 10 at least. This relative shortcoming could have been avoided if these researchers in molecular biology of developmental processes had been exposed to concepts on aging processes through contacts and discussions with researchers on aging.

JOSEF P. HRACHOVEC
School of Public Health,
University of California,
Los Angeles 90024

Matthew, Mark, or Luke Effect

Merton's article, "The Matthew effect in science" (5 Jan., p. 56), itself demonstrates the importance of being "first author." The title effect is described in nearly identical words in all three of the synoptic gospels (Matthew 13:12 and 25:29, Mark 4:25, Luke 8:18 and 19:26), and since Mark unquestionably published first, it would be more in accord with scientific practice to have named it the "Mark Effect." Moreover, it is obvious (if you have a red-letter edition, as well as a concordance) that all three gospel writers are really quoting the words of Christ, so that it would be still more logical to call it the Jesus effect. . . .

CHARLES D. GEILKER
Department of Astronomy,
Case Western Reserve University,
East Cleveland, Ohio 44112

Merton quotes and explicates Scripture:

> "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath."
>
> Put in less stately language, the Matthew effect consists in the accruing of greater increments of recognition for particular scientific contributions to scientists of considerable repute and the withholding of such recognition from scientists who have not yet made their mark.

Objective consideration of style preference among a small but carefully selected subset of the literate scientific readership would tend to indicate that the language of the gospels in the King James version demonstrates a comprehensibility and clarity not inconsiderably in excess of that exhibited by the less stately jargon of Professor Merton. I hope he is not planning to translate the rest of the Bible.

KENNETH MANLY
74 Kirkland Street,
Cambridge, Massachusetts 02138

Merton may be interested in still another area where the Matthew effect operates with particular precision.

A study was made of the correlations that may exist between the characteristics of the managers of large research and development projects and the success of the project (*1*). As it turns out, an understanding of the Matthew effect would have eliminated the need for the study.

It was found, of course, that there was no correlation at all between a