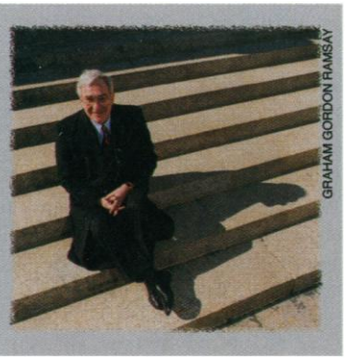
LETTERS

Higher authority

Stimulated by the work of Harvard researcher Herbert Benson (right), readers offer "statistical," experimental, and "evolutionary" perspectives on an unusual topic for *Science*—the power of prayer "in health and healing." A seminar on tenure recommended that "review mechanisms and practices should be used more, not just for narrow purposes, but to guide each faculty members' development." And "the scientific wealth of nations" is recounted.


GRAHAM GORDON RAMSAY

Testing the Power of Belief

The profile of cardiologist Herbert Benson by Wade Roush (Research News, 18 Apr., p. 357) and the review by Irwin and Jack Tessman of his book *Timeless Healing* in the same issue (p. 369) devote extensive discussion to Benson's intentions to demonstrate the power of belief in health and healing. One might also consider the pioneering work in this field more than a century ago by the biometrician Sir Francis Galton (*1*). Although his proposals were refused to directly test the efficacy of prayer for patients in one wing of a hospital as compared with those not prayed for in another wing, Galton performed a statistical analysis of the question from existing data by considering the effect of collective prayer on the life expectancy of different classes of English society. As summarized by Haldane (*2*)

> He considered that of all classes of society in England those most prayed for were the sovereigns and the children of the clergy. If prayer is effective they should live appreciably longer than other persons exposed to similar risks of death. So kings were compared with lords, and the children of the clergy with those of other professional men. The conclusion to which his numbers led was that these much-prayed-for persons had slightly shorter lives than those with whom he compared them.

Galton also determined the frequency with which ships carrying missionaries experienced disaster at sea and compared this with the frequency of disaster experienced by other ships. He found that missionary ships sank with a frequency and loss of life only slightly greater than that of less-blessed ships. The important conclusion reached by Haldane, and one perhaps important to gain also from Benson's work, is that in neither analysis were the differences great enough to make it probable that prayers have any harmful effect.

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References

1. F. Galton, *Fortnight Rev.* **12**, 125 (1872).
2. J.B.S. Haldane, in *Possible Worlds and Other Papers* (Chatto and Windus, London, 1928), pp. 237–252.

Benson needs to include a group of coronary bypass patients who know they are not being prayed for, along with the group who think they might be being prayed for and those who know they are being prayed for. The controls could then be coronary bypass atheists who adamantly doubt the efficacy of prayer, even after a good outcome. The controls required of this study would thus never benefit, and the others always would. By Benson's protocol, prayer always works, it's probably working right now, and that's why we're all not a whole lot sicker.

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Debating whether humans are "hardwired for prayer" misses the point. Whether an individual copes with the dilemma of mortality by using prayer, exercise, a walk in the countryside, or the enjoyment of higher math and astrophysics, the end result can be the same. From an evolutionary perspective, individuals who do not give up hope would be expected to be more fecund.

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Tenure Study

In Constance Holden's article "Tenure turmoil sparks reforms" (News & Comment, Apr. 4, p. 24), Lawrence Poston is described as an English professor at the University of Illinois's Urbana-Champaign campus "who headed a Chicago panel." Poston is a professor and an associate dean at the University of Illinois at Chicago. He headed a panel comprising faculty from the University of Illinois campuses at both Urbana-Champaign and Chicago.

The article quotes the University of Illinois Seminar on Tenure (the same entity as the "panel" above) as saying post-tenure review would be "enormously wasteful of faculty time and effort." Our report said "a blanket 'post-tenure' review . . . across all faculty ranks every three to five years" would be wasteful. The quoted recommendation also says that review mechanisms and practices should be used more, not just for narrow purposes, but to guide each faculty member's development. It adds that where existing procedures suggest a substandard performance, a more focused appraisal should be engaged. Our faculty senates are discussing how to implement this recommendation.

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I am writing to correct a statement about American University that appears in the article about tenure of 4 April. The article quotes Judith Gappa (of Purdue University), who visited our campus in 1995, as saying that we are "making greater use of full-time nontenured appointments with titles such as 'senior distinguished lecturer.'" I believe that Gappa was referring to a very small group of colleagues in our School of Public Affairs who hold the title "Distinguished Adjunct Professor." Until recently, there were five such appointments, and this year there are four.

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Science by the Country

In a recent Policy Forum, "The scientific wealth of nations" (7 Feb., p. 793), Robert M. May compares the scientific output of several countries based on data from the Science Citation Index (SCI) established by the Institute for Scientific Information (ISI). Some interesting patterns arose when output was standardized by the country population size or investment in research and development (R&D). The analysis focused on the top 15 countries ranked by total number of papers produced in the last 14 years. When the percentage of citations was taken into account, the rankings were similar except for India and China. Two possible reasons come to my mind to explain this result: (i) papers produced in those countries are of lower quality than the others, or (ii) discrimination occurs against papers from Third World countries, a possibility that has been invoked elsewhere (*1*).

It is difficult to demonstrate that such discrimination is (or is not) actually occurring, but it would be worth investigating. One could begin by comparing the mean number of citations of papers published in journals such as *Science* and *Nature*. If one finds significant differences between the mean number of citations of papers pub-