# Letters

## Gerontocracy and Youth

In a letter (18 Nov., p. 847) de Garilhe protests the distribution of the Fermi award in 1966 to three nuclear scientists with an "average age" of 79. He feels that this is a pity when "many valuable young scientists await in vain any recognition of their efforts."

Since de Garilhe did not define the term "young," I thought I might be permitted to express the opinion of a young and unrecognized scientist who disagrees with him. To wit, I have still over 25 years before reaching the "average age" and I have not received any monetary award. Moreover, like de Garilhe, I have been an outspoken opponent of what he calls the European gerontocracy, the system of autocratic rule of scientific institutions and departments by the often elderly chairmen. However, I do not believe that the distribution of the Fermi award in 1966, or the recent Nobel awards, is a symbol of such a system. On the contrary, I suggest that no monetary award which carries great prestige should be given to a scientist before he reaches the age of about 65, unless specific circumstances warrant it.

I could document the rather negative influence a large award has had on some young scientists who virtually ceased their scientific efforts and were drawn into social and administrative activities at an age of great potential scientific productivity. I realize that this statement is not backed up by "controls," but it is difficult to deny the effects of the social pressures brought upon the laureates to lecture, wine, and dine all over the world.

There is another point. The recipient of such an award should be a symbol of our scientific community. Would it not be more appropriate to wait with the great award until the work as well as the investigator has stood the test of time? How many laureates could confess to the fact that the citation of the award dealt with an interpretation of their work which later on had to be abandoned? How often is a single and perhaps accidental discovery honored without consideration of the intellectual and spiritual contribution of the man who made the discovery? What type of scientist do we want to represent our scientific communities?

De Garilhe did not question the merit of the three elderly scientists. Why should they or others in their age group be denied a great award which had not reached them before their average age of 79? Perhaps we can give better recognition to the younger and gifted scientists by giving them adequate facilities and freedom of inquiry, greater responsibilities and awards that do not catch the public eye.

Finally, a few words about gerontocracy, an area where I seem to agree with de Garilhe. But I doubt that awarding prizes to younger scientists would remedy the situation. To paraphrase Nestroy, a Viennese satirist: There is only one thing worse than an old autocrat and that is a young autocrat who is an old autocrat. Power in the hands of a young tyrant can be more evil than in the hands of an old one and it seems endless. Human nature, as it is, cannot be cured but perhaps can be prevented. Power should be distributed, counterbalanced, and rotated. With all its failings in its superstructure, democracy can rely on this basic feature of its foundation. The scientific communities in the United States have become increasingly aware of the importance of rotating the departmental chairmen, the institute directors, and the powerful committee members of granting agencies. It is rewarding to see that this system is beginning to be adopted even among some institutions of the "old European civilization."

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## Chinese Astronomy Translation

K. S. Yang, in a note to his useful translation of "Ancient oriental records of novae and supernovae" (4 Nov., p. 597) remarked that Table 1 in the Chinese original included much more relevant information which was omitted because of difficulties with space and with readable translation of technicalities, and he recommended interested readers to refer to the original. However, he omitted to include a reference to the original publication. This appeared (in revised form) in *Acta Astronomica Sinica* **13**, 1–21 (1965). Since that article might not be readily accessible to American readers, it is worth noting that a complete translation was published in January 1966 by the National Aeronautics and Space Administration as NASA TT F–388 (*1*). This NASA version has some oddities in its translation (for example, Ipaku for Hipparchus, sec for parsec, and others), but its Table 1 of supernovae and novae does translate the extensive quotations from original sources that Yang had to omit from his version.

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### Reference

1. Available from the Clearinghouse for Federal Scientific and Technical Information, 5285 Port Royal Road, Springfield, Virginia 22151, $3.

## Nuclear Reactors: Hazards and Health

Novick (Letters, 9 Sept.) reports the often-heard comment that we are exchanging a known and preventable source of pollution from fossil fuels for the comparatively unknown problem of radioactive contaminants, and he cites a 9-year-old analysis of hypothetical nuclear reactor accidents. If he had examined the analysis of reactor accidents as currently set forth in applications for permission to construct these plants, he would have learned that, although undesirable, a number of "major reactor accidents" could occur without causing significant physiological damage, genetic or otherwise, to the population in the neighborhood.

The author implies that, as reactors are multiplied in size, the danger of accidents will multiply and seriously increase air and water contamination. He

should be aware that operating power reactors have utilized less than 1 percent of their permissible discharge rates which are, in themselves, harmless to the general population. This experience can be compared to present emissions from fossil fuel plants which present an identified health hazard to the public in the form of sulphur oxides and other contaminants. The National Academy of Sciences has stated that more is known about the effects of radiation and radioactive materials than of any other toxic materials. This would appear to refute the statement that the effects of radioactive contaminants are comparatively unknown. Similarly, Novick's comment with respect to the "enormous expense of reactor development" is refuted by the rapid rate at which utility organizations are hastening to purchase this replacement for oil- or coal-fired boilers. At the recent National Conference on Air Pollution, both industrial and governmental representatives affirmed the fact that man's environment is improved by replacing fossil-fueled power plants with those powered by the atom.

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## A Larger Scope for AEC Laboratories

Recently in remarks delivered to the Southern Governors' Conference on 19 September, Representative Chet Holifield, chairman of the Joint Committee on Atomic Energy, proposed that the national laboratories undertake research bearing on urban technology and pollution control.

Many of my colleagues at Argonne National Laboratory, who would be most affected by such a proposal, strongly favor it. We believe if this fact were publicized, swifter action would follow. To this end, I have prepared a declaration, the text of which follows.

As scientists and engineers in the national laboratories of the Atomic Energy Commission, we have a responsibility for assuring that the fruits of science and technology be made available to the public because (i) we are supported by public funds; (ii) our facilities are both expensive and extensive; (iii) professionally we represent unusual diversity; and (iv) under the Atomic Energy Acts our research should strive toward the maximum public benefit.

We take this responsibility seriously. Many of us sought employment in these laboratories because they offered a combination of scientific integrity and work of social importance and impact. Further, we take pride in the achievements of the past 20 years which we believe are significant, both scientifically and socially. However, among the new world problems and emergencies that have developed are pollution, food and water shortages, urban overcrowding, and education in a complex society. Our laboratories have the equipment, personnel, and organization to perform significant researches and develop significant systems in response to these universal needs. Much time and effort would be wasted in forming similar new laboratories to cope with these needs, one specialty at a time. But the current administration of the franchise of the Atomic Energy Commission has not encouraged the expansion or diversion of our programs into such problem areas. We therefore urge the President, Congress, Atomic Energy Commission, and other government agencies to take the appropriate steps to permit us to work to our full capacity on the vital problems of society.

This declaration might form the basis of a petition.

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## Project Foresight

The report on Project Hindsight (News and Comment, 18 Nov., p. 872) has prompted me to make a similar study which I call Project Foresight for obvious reasons. Project Hindsight studied the contribution made to the national defense by post-1945 science and technology. It was found that, while basic research dating back over 30 years (such as the nuclear physics of the thirties) has had a revolutionary impact on military arms and strategy, the basic research of recent years has made only a small contribution to weaponry.

Project Foresight studied the contribution that has been made to the national defense by various age groups in the population. It was found that while those male citizens born between 18 and 30 years ago have made a very large contribution, children born in recent years have made essentially none. However, unlike Project Hindsight, Project Foresight takes due note of the time scale involved in this problem. Consequently, no recommendation is made to reduce the number of new children being produced.

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