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LETTERS

Ranking Materials Departments

The article by Deborah Shapley (News and Comment, 9 Jan., p. 53) on the fairness of grant awards to, and ranking of, materials science departments raises some important and interesting issues, but misses certain major nuances in the data. There can be no issue regarding the propriety and value of Kuhlmann-Wilsdorf's inquiry and protest regarding alleged improper management within a section of the National Science Foundation's Division of Materials Research. Surely there are no members of the science community who would suggest that honest disagreements with a bureaucracy not be aired. I believe that Kuhlmann-Wilsdorf has performed a courageous and invaluable service to the materials community by helping to raise fundamental questions. Whether or not her allegations prove to be correct is another matter on which some further light will no doubt be shed. However, given the fact that most of the data on awarding of NSF grants are not released to the public, definite conclusions will elude us.

On the question of departmental rankings, as chairman of the National Academy of Sciences' Committee on the Survey of Materials Science and Engineering Panel on the Universities, I regret Shapley's rather casual treatment of its data. The matter of "ranking" of universities is an extremely subtle matter. The NAS study was a 3-year effort. The analyses were based on 5- and 10-year averages of data collected explicitly for the study by means of extensive questionnaires. Such a published report surely has a standing as a reference work and should be reported on in depth, not as a column in a table.

The Academy study panel utilized the methodology of Elton and Rodgers to obtain its rankings; Shapley's article claims that Stein used the same method. However, since his study is not published, one can only presume he used incomplete or imprecisely defined data, which can only add to confusion.

The Academy's study has to be painstakingly precise in defining what was included as a "materials science department." Moreover, the Academy panel was at some pains not to imply that "quality" of departments could be precisely measured. The term "strength" was used instead of quality. Furthermore, while Shapley showed considerable enterprise in obtaining the list of departments, I believe she went beyond the precision possible with the data. The data could probably be interpreted as ranking the top ten universities into three groups. MIT and Penn State

are far "stronger" than the next set, which would include (in alphabetical order) Case Western Reserve, Illinois, Northwestern, Ohio State, and RPI; they would be marginally ahead of the third set, California (Berkeley), Lehigh, and Stanford.

The quantification of quality is an extremely difficult task at best, worthy of as careful and meticulous a study as the most subtle semiconductor phenomenon. The NAS study is based on good data, careful analysis, and collective judgment, and can serve as a standard to be improved upon, if possible, but not equated to ad hoc comments which sometimes provide ammunition to those forces which resist any attempts at accountability.

RUSTUM ROY

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Job Safety

The labor movement, like other institutions in our society (including science), has been increasingly criticized for failing to solve the urgent problems of our time. Much has been written about the esoteric and narrow nature of science, especially in the area of job safety. Labor unions also have been criticized for not protecting the health and safety of their members; but we, as laymen, find ourselves at a severe disadvantage. We have occasionally contributed to the criticism of science and of some scientists whose denials and distortions have allowed serious health problems to continue on the job (see J. T. Edsall, 16 May 1975, p. 687). But we also realize that such individuals are few (and are, we hope, becoming fewer) and that science and scientists are important allies of working people as they battle against disease and death. We have been keenly aware of this in our trade, faced as we are with toxic chemicals, solvents, chromates, exotic new chemicals and paints, silica and sand blasting, asbestos, vinyl chloride, and so forth.

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13 FEBRUARY 1976

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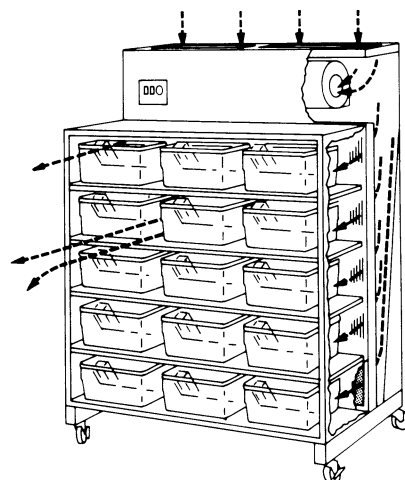


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