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words in the titles of articles is much cheaper and requires less time and less professional input than a system based on classification indexing. If low cost and speed are the prime considerations, then keyword systems such as the one McMullen is using are undeniably excellent. However, if intellectual indexing is used, then the advantages of classifications (particularly in terms of precise indexing of intact concepts, use of obvious generic-specific relations between items of information, and ease of retrieval) should be considered by those who are interested in developing information systems with a higher level of performance than that of keyword systems.

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Particle Accelerator Application

In his article "Relevance of particle accelerators to national goals" (6 Aug., p. 490), Louis Rosen lists ways in which accelerators have been applied to the study of radiation damage processes in fast breeder reactors. We would like to call attention to another recent application of this type.

In fast breeder reactors, a significant reduction in reactor efficiency is caused by the swelling of the stainless steel cladding of fuel elements. This swelling is due to the intense fast-neutron bombardment that produces a high density of small voids inside the steel. In the light of the national objective to construct a demonstration breeder reactor by 1980, it has been necessary to mount a large research effort to study systematically the void-swelling phenomena and to develop low-swelling alloys. This work is being expedited by the use of accelerators to simulate neutron-damage effects by ion bombardment. Because heavy ions have a high cross section for producing atomic displacement, it is possible to build up, relatively quickly, a region of intense radiation damage; the structure of this damage is similar to that observed in reactor irradiations. Further, the examination of samples is facilitated by their lack of residual radioactivity.

At Argonne, if a beam of $2\text{-}\mu\text{A}$ Ni^+ ions from the 4-Mv Dynamitron accelerator is used, a 1-year irradiation in Experimental Breeder Reactor-II

may be simulated in 3 hours. The saving in research dollars and the flexibility afforded by this technique in the development and screening of material for breeder-reactor and fusion-reactor applications are self-evident.

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Labeling of Blood-Typing Serums

I heartily agree with the remarks made by Austern and by Ross (Letters, 9 July, p. 105) about the abuse of eponyms in scientific terminology, and I would like to point out one subtle method of getting workers in a field to use pseudoscientific terminology. The method is to print the terms to be popularized on the labels of scientific products. This method has proved highly successful in the case of the C-D-E coded notations for human Rh-Hr blood types. Blood bankers are constantly being confronted with labels on vials of blood-typing serums which carry these symbols, usually in parentheses after the correct scientific symbol. Because of the attractive simplicity of the C-D-E symbols, the worker often adopts the fallacious C-D-E symbols and ignores the correct Rh-Hr symbols, even though the Rh-Hr symbols are given priority on the label.

Manufacturers were required to place the C-D-E symbols on the labels of their Rh-Hr antisera by the Division of Biologics Standards of the National Institutes of Health after a meeting on Rh-Hr nomenclature held more than 20 years ago. However, in the intervening decades tremendous advances (1) have been made in the knowledge and understanding of the Rh-Hr blood types. The labeling of Rh-Hr antisera should be modernized to take these advances into account. Despite repeated requests to hold a meeting on the labeling of blood-typing serums, so that this matter can be brought up to date, the Division of Biologics Standards continues to adhere to its original regulations.

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Reference

1. A. S. Wiener, Ed., *Advances in Blood Groupings* (Grune & Stratton, New York, 1970), vol. 3, pp. 170-257.

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