

LETTERS

Turkey Anatomy

In his sarcastic letter (24 Sept., p. 1191) concerning the publication by the Atomic Energy Commission of the *Atlas of the Domestic Turkey* (Meleagris gallopavo): *Myology and Osteology* by E. B. Harvey *et al.*, Abrahamson's major complaint appears to be against the utilization of appropriated funds to support a study which, in his opinion, has no place in the work of the AEC. The implication in the letter that the study was underwritten in its entirety by the AEC is highly misleading. In a portion of the preface to the atlas which Abrahamson chose to ignore, the authors clearly indicated that the research was financed by private contributions and by small grants from agencies not affiliated with the AEC, and that only the "final steps necessary to the publication" and the actual costs of publication were absorbed by the AEC.

Perhaps the greater question, however, is the validity of Abrahamson's complaint that poultry anatomy studies do not belong within the AEC's "mission." That irradiation produces pathological effects is axiomatic. Pathological conditions—in any animal—can be recognized only by comparison with the "normal" conditions. The intended function of the atlas was to describe the "normal" condition of the domestic turkey. It is important, for economic reasons, to understand the effects of radiation on domestic and wild animal populations. The first step in any such study is to ascertain the normal condition, including the range of variation and the naturally occurring abnormalities. This information is, in our opinion, not yet available in sufficient detail for any species of domesticated birds to provide the foundation for investigation of radiation effects.

The growth and development of the poultry industry is economically important not only in this country but in developing countries. In one of his quips Abrahamson refers to the "nearly 100 million domestic turkeys" produced annually to provide food for the American consumer. What he does not mention is the economic loss that results because large numbers of these birds never reach the processors owing to pathological conditions about which little is known.

The utilization of domestic fowl in AEC research is not new; the reader

can be referred to the bibliographies given in studies by Quisenberry and Atkinson (1) and Lucas and Denington (2), in which effects of body irradiation on reproductive performance and blood composition in domestic chickens were studied.

Abrahamson's comments constitute a specious review of the atlas. Since the volume has not received regular treatment in the book review section of *Science*, Abrahamson's comments are the only ones on the work which many readers of *Science* will see. It is poor taste to select such a work as a vehicle for a humorous exercise or for the purpose of emphasizing a personal disagreement with the policies of a particular agency. When such disagreement exists, it would seem proper to us that the target for complaint should be the policy and not, as in this instance, the research which was thought to be the result of that policy.

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1. J. H. Quisenberry and R. L. Atkinson, *Poultry Sci.* 35, 1327 (1956).
2. A. M. Lucas and E. M. Denington, *ibid.* 36, 1290 (1957).

Newton, the Politician

In his illuminating article "Reflections on the decline of science in America and on some of its causes" (2 July, p. 27) Arnold Thackray makes a slip when he writes of Isaac Newton's "movement from Cambridge professor . . . to minor state functionary." Presumably he is thinking of Newton's tenure as Warden of the Mint; although not generally realized, this was an instance of a scientist making a political contribution of great importance.

Macaulay deals fully with the matter in chapters 21 and 22 of his *History of England* (1). "The silver coin, which was then the standard coin of the realm, was in a state at which the boldest and most enlightened statesmen stood aghast." Continual clipping of minute pieces of silver from the irregular edges of the hammered coins greatly reduced their weight. "At length in the

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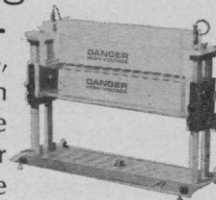


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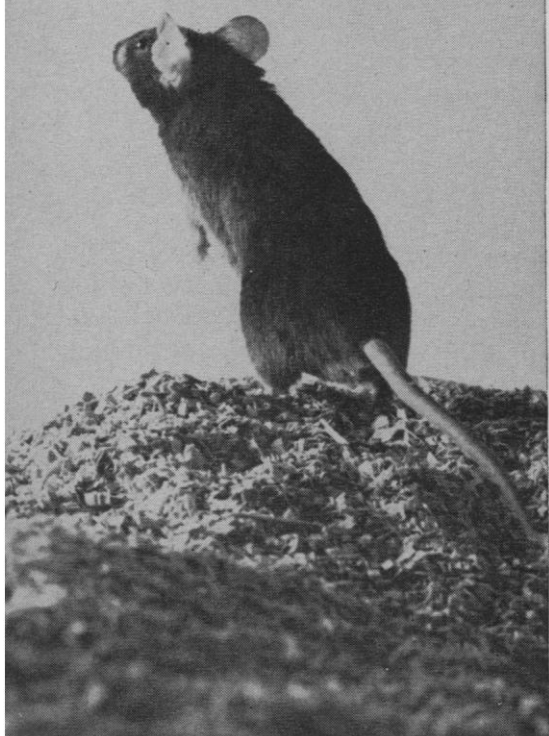


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autumn of 1695 it could hardly be said that the country possessed, for practical purposes, any measure of the value of commodities. . . . On a market day, the clamours, the reproaches, the taunts, the curses, were incessant. . . . Never had there been an occasion which more urgently required both practical and speculative abilities." These abilities were displayed in the plans to overcome the crisis that were formulated by the politicians Somers and Montague and the philosophers Locke and Newton.

The old currency was recalled and replaced with new currency; the then novel process of milling the coins' edges was used. Until the new coins were issued, commerce was forced to creep along largely by credit and barter. At that juncture, Montague appointed Newton to be Warden of the Mint, an office that had previously been a sinecure. Under Newton's vigorous leadership, coin production leaped to almost ten times what the old officers of the Mint had considered an excellent level. During this time, Newton wrote that he did not love to be "teased by foreigners about mathematical things, or to be thought by our own people to be trifling away my time about them, when I am about the King's business."

Perhaps there is a lesson for our times in this cooperation between politicians and intellectuals to solve a pressing social problem.

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Reference

1. T. B. Macaulay, *History of England* (Dent, London, 1966).

Information Systems

Although John H. Schneider (23 July, p. 300) makes some valid points in his article on selective dissemination of information (SDI) systems, particularly when he points out that scientists should be encouraged to use the process more, I feel that he has unfairly downgraded the usefulness of keyboard searching.

I am a subscriber to an SDI system that matches titles of journal articles against a keyword profile. When I took the output of the last year and subjected it to the sort of analysis that Schneider used, I received 1314 references on information science (at least as broad

a topic as cancer research), of which 54 percent would fall into his "very useful" or "definite" use categories. Therefore, in the same amount of time (12 months) I received approximately the same number of references (1314) as his subjects (1386), with exactly the same percentage of usefulness, using a keyword search of titles of articles. Schneider's conclusion, that classification indexing is (in some way) better than keyword indexing, is thus open to question.

The cost involved, the time needed, and the professional expertise required both to create the hierarchical classifications and to index articles make the system proposed by Schneider impractical, except perhaps for narrow disciplines. The adoption of this system on a large scale would result in a sizable delay in the appearance of articles on the SDI tape services and an increase in the cost of such services, perhaps greater than the \$200 per year target figure Schneider suggests.

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McMullen's position as chief of Communications Data and Library Services probably requires that he maintain a broad overview of the entire information field. This may explain why he found 709 out of 1314 references on information science to be either "very useful" or of "definite" use. I regret that my study did not include such omnivorous users of information. Instead, the participants in my test situation were the principal investigators of research grants who were working on very narrow, specific fields of research. The purpose of my experiment was to exactly identify these research areas as categories in a classification so that each scientist could be matched precisely with documents useful to his specific research effort. Under these circumstances, I believe the criteria for ranking "usefulness" by the participants in my study were much more selective than those used by McMullen, and a comparison of his personal experience with the results I presented has little validity.

At no point in my article did I make a blanket statement that "classification indexing is better than keyword indexing." Instead, I tried to present the advantages and disadvantages of both types of systems. Clearly an SDI system based on automated indexing of key-