

Great flares on 23 February 1956, in May 1959, and in July 1959 produced dangerous radiation levels and have been widely studied. The recent solar-flare eruptions in November of 1960 produced exposures, due to protons in the energy range 50 to 500 Mev, of 1 rad/hr in balloon instruments in the atmosphere. The free space radiation probably approached 100 rad/hr. This dosage represents a very large event, but the other strong events mentioned probably produced similar radiation levels. The total number of such events, of all sizes, was more than 35 during the last 3 years. For programs such as the Apollo program and others involving extended trips away from the earth, this radiation is a matter of serious concern and, at solar maximum, is difficult, if not impossible, to deal with.

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Winckler and Ney are quite correct in indicating that the solar-flare radiation is an important aspect of the radiation hazards of space flight. At the time my article was written, nearly a year ago, there had not been enough measurements in space for us to be able to assess the biological hazard, so I discussed the flares as a perturbation on the radiation belts. Now we know, largely through the excellent work of Winckler and Ney, that they constitute an additional hazard which will be very troublesome for some types of space travel. In such an active field, a review article may be out of date by the time it is published.

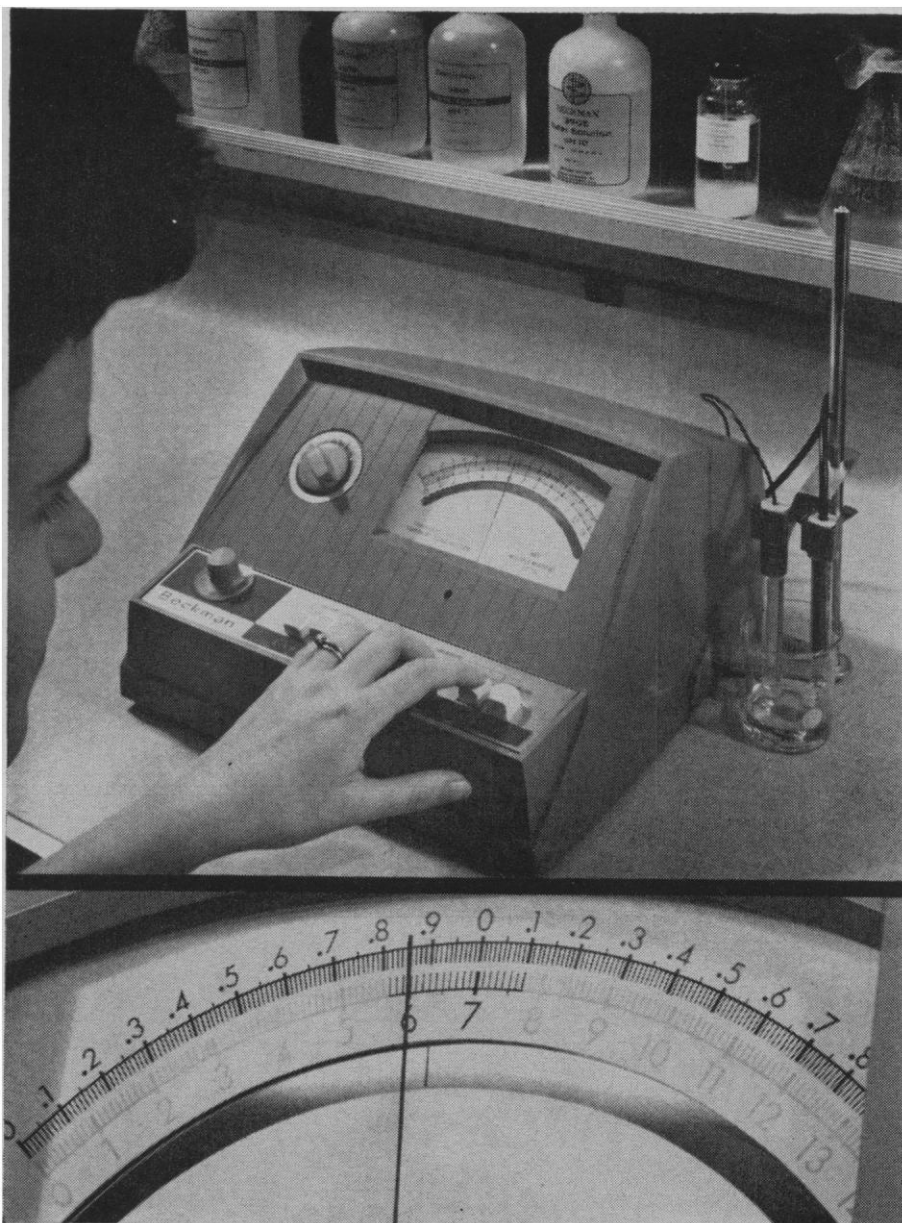
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Meeting of Zoologists

A most unfortunate impression of the recent annual meeting of the American Society of Zoologists is created by your story [*Science* 133, 89 (13 Jan. 1961)]. Although few in number, those present did devote much of the meeting to matters of professional concern to the members of the society, and it was only when adjournment appeared imminent that there was introduced the statement featured in your story. The subsequent discussion was hurried, and the action of the society on the many amendments and modifications of the statement you quote [recommending government implementation of programs for research and training in the

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field of birth control] was extremely confused. My own recollection of our last action on this matter before the conclusion of the meeting leads me to consider your story seriously inaccurate.

In the course of the discussion there was raised a question of the ability of this small group to consider this matter within the limitations imposed by the new constitution of the society. Without a formal ruling on this question, the matter was put to a vote. Of approximately 60 members present, two or three more than 30 favored the proposal, and two or three less than 30 opposed. Regret at the narrow margin

of voting was expressed by several speakers, including, I think, those who had introduced and seconded the original proposal. A number of modifications and amendments were then introduced and discussed. Finally, it was moved and seconded that the proposal should be submitted for rewriting to a committee to be appointed by the president of the society. This motion was passed by a clear vote, and the meeting was adjourned. It appeared to me, at that time, that such action required the submission of the rewritten proposal to a subsequent meeting, after proper consideration of the possible constitutional requirement for the submission of

the question to the written vote of the entire membership.

In contrast, the action on Prosser's resolution of opposition to Senate Bill 3570 [on regulating the use of laboratory animals] was definite and strong. It was apparent to all that such legislation would present a serious threat to the professional activities of the members of the society, and that such a direct attack upon the chief concern of the society, the advancement of biological research, required the strongest action and fullest energies of the society. Such concerted action was inhibited by the second resolution, as was apparent to nearly half of those present. That this expectation has been fulfilled could scarcely have been demonstrated more effectively than it was by your story. Beyond the short introductory paragraph, you devote 36 lines to the proposal of divided interest and only 19 lines to opposition to a major threat to biology—a ratio of nearly 2 to 1 in the wrong direction.

I hope that those concerned about Senate Bill 3570 are exaggerating the danger. But discussions among people not concerned with biological research do not support that hope. Indeed, such conversations suggest that even Prosser and Wilbur, who have been particularly active in this campaign, may be underestimating the public support for this pernicious proposal. If such be the case, it appears particularly unfortunate that we should divide whatever slight influence may be exerted by the society and by the AAAS.

It is hoped that your future treatment of the actions of associated societies may reflect more accurately the intensity of the concern of the membership for proposals before the legislatures. Surely, no member of Senate or House could be blamed for concluding, after reading your report, that the American Society of Zoologists is only mildly interested in Senate Bill 3570. To me, at least, this did not appear to be the sense of the meeting.

PAUL FOLEY NACE

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As retiring secretary of the American Society of Zoologists, I wish to comment briefly on Nace's assertion that the society acted hastily, confusedly, and probably illegally in passing a resolution urging governmental support of research and the training of medical personnel in the field of birth control while acting at the same time in a strong, definite, and admirable manner in passing a resolution against Senate Bill 3570, the so-called Cooper bill to regulate the use of laboratory animals. I would also like to comment on the charges that *Science* was "seri-



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ously inaccurate" in reporting the annual meeting at which these resolutions were passed, and that it showed gross bias in devoting 36 lines to birth control and only 19 to animals for research.

As to the facts of the reporting, there hardly is any room for inaccuracy in the *Science* account since it consists merely of a very short paragraph stating that the two resolutions were passed and then quotes each of the resolutions. The reason why 36 lines are devoted to birth control and 19 to animals for research is very simple: the birth control resolution required 36 lines to print, the animals for research resolution, 19 lines. Everyone admits that both resolutions passed and that well over a quorum was present, even under the new constitution, which more than doubled the number required.

I have reread both the new and the old constitution and can find no suggestion, much less requirement, that motions passed by the members at the annual meeting should be sent to absent members for a mail vote.

How much confusion there really was is a debatable point. A motion was offered favoring governmental support for research and medical training in the field of birth control. Only two or three people spoke against it. I myself, perhaps unfortunately, then urged an amendment, but the majority felt it weakened the resolution, which passed in its original form, 39 to 25. Thus 61 percent favored the resolution in its "strong" form. Presidents of great nations more than once have been carried into office on far slimmer margins. Nevertheless, the matter was still further discussed, and it was finally agreed, almost, but not quite, unanimously to accept the motion but with the provision that it should be reworded by a committee before publication. This was done. I was appointed to the committee myself.

Of course it is possible to argue that the customarily small number of people who show up at annual business meetings is not a representative sample. However, there are good reasons, based on past experience, for believing that, at least in the American Society of Zoologists, the members who attend are, in fact, reasonably representative.

It is also possible to argue that to advocate research and free access to scientific knowledge in the field of birth control is wrong because a scientific organization should remain morally uncommitted. This is clearly not Nace's view, because he strongly favors society action against Senate Bill 3570.

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Institutions and Scholars

The article "Personality and scholarship" [*Science* 133, 362 (10 Feb. 1961)] by Paul Heist, T. R. McConnell, Frank Matsler, and Phoebe Williams, of the staff of the Center for the Study of Higher Education, University of California, Berkeley (except for Matsler, who is at Humboldt State College), contains the following incorrect statement (p. 363, col. 2): "The institutions are listed in the order of the Knapp and Greenbaum indices of productivity. It may be noted that about 70 percent of the 216 male students attended the ten most productive institutions." [As stated by the authors, the Knapp and Greenbaum index of productivity was the "number of students per thousand graduates from 1946 to 1951 who later received either (i) Ph.D. degrees, (ii) university fellowships, (iii) government fellowships, or (iv) private foundation fellowships exceeding \$400 per year."] Table 1 in the article is not arranged in the "order of the Knapp and Greenbaum indices of productivity," as stated. It is arranged according to the ratio of

Table 1. Institutions listed according to production of scholars, as described in the definition of the Knapp and Greenbaum indices of productivity.

School	Scholars per 1000 graduates (N)
<i>Males</i>	
Swarthmore	61
Reed	53
University of Chicago	48
Oberlin	40
Haverford	40
California Institute of Technology	38
Carleton	35
Princeton	32
Antioch	32
Harvard	27
Yale	27
Queens	26
Grinnell	24
Wesleyan	22
Kenyon	22
Johns Hopkins	21
Massachusetts Institute of Technology	21
University of the South	20
Knox College	20
Cornell	20
Cooper Union	18
Beloit	18
Columbia	18
Pomona	17
Wooster	17
Augustana	17
DePauw	17
<i>Females</i>	
Bryn Mawr	40
Barnard	26
Radcliffe	20
Vassar	17
Cornell	16
University of Pennsylvania	16
McMurray	12
Mt. Holyoke	12
Smith	11
Sienna Heights	11
University of Chicago	11