tion movement in Arizona," *Science Teacher* **32**, 35 (1965)], as well as a more general analysis written in his capacity as president of the Arizona Academy of Science ["Galileo, Darwin, and Mr. Moore," *Ariz. Acad. Sci.* **3**, 199 (1965)].

Opposition to evolutionary material in the Blue Version of the Biological Sciences Curriculum Study textbook began to be expressed by certain Arizona religious groups in 1960. Attempts begun in 1962 to have certain biology books removed from school library shelves culminated in 1963 in a campaign, led by a Rev. Mr. Moore, to pass as an initiative measure "An act defining atheism as a sectarian doctrine and prohibiting the teaching thereof in the common schools in Arizona." The proposed act defined atheism as the "teaching of any theory that denies the existence of God and the Divine creation of man in God's image" and the teaching "that man evolved from a lower order of animals." Opposed by the Arizona Academy of Science and a few outspoken persons in the state (including some clergymen), the anti-evolution movement failed to obtain the requisite 55,000 valid signatures on initiative petitions, and the campaign collapsed.

Lisonbee's accounts should be known to students of the history of the anti-evolution movement in America. My own reaction to the episode was not so much encouragement at the ultimate defeat of the anti-evolution efforts as discouragement at the absence of any really vigorous opposition from local press and lay leaders to this attempt to censor scientific education in Arizona.

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Radiation Exposure: Personnel Records

Blatz's timely letter (20 Oct., p. 553) concerning the futility of accumulating and tabulating records of individual radiation exposure, however slight, leads me to comment on another useless exercise, the practice of monitoring radiation in industrial situations by means of blood tests of the personnel. Surely what is being attempted thereby is an assessment of the validity of the permissible dose and of methods of control of the radiation environment, with the personnel being used as guinea pigs. Interpretation of results in the range of permissible exposures for industrial situations is a problem for medical research. It is not a matter for inquiry at the applied level. Reliable clinical evidence of disturbance of the blood should indicate a gross and long-standing failure of control and monitoring, which would not occur in properly managed industrial situations. Blood testing should be reserved for those few situations where the radiation environment cannot be anticipated or controlled and the expected dose rate is high enough to produce clinically reliable effects. . . .

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New Sciences: French Indifference

An interesting parallel may be drawn to Victor McElheny's report from Paris concerning the difficulties of the three French 1965 Nobel laureates in gaining recognition and support from their government and educational institutions (19 Nov. 1965, p. 1013). Over 60 years ago, Pierre Curie encountered similar indifference from this "Establishment" consisting of the Ministry of Education and prestige universities. Because he had not attended one of the Paris schools as an undergraduate, Curie lacked the support of the most distinguished or influential professors, who advanced the candidacies of their own students whenever a chair of physics became vacant. Because Curie was shy and modest, and found distasteful the tradition of personal calls upon the members of the Académie des Sciences by the nominees, he failed election to this body.

France, however, finally was forced to recognize merit rather than social poise or connections. Though his early work on piezoelectricity, crystallography, and magnetic properties at different temperatures showed his quality and gave him eponymic fame, it was his research on radioactivity that brought Curie the 1903 Nobel Prize in physics, which he shared with his wife Marie and with Becquerel. Repeated offers from officialdom of decorations consistently were rejected. Pierre wanted a laboratory, not a lapel ribbon. For too long, he and his wife had held poorly paid positions, requiring long hours of teaching, in schools not of the first rank—and all the while pursuing their study of radium in the famous tin shed.

Although Pierre had, in 1900, been appointed to a chair in the University of Paris, it was the inferior one of teaching physics to medical students. Further, no laboratory facilities were provided. At last, in 1904, the Ministry of Education created a professorship for him in the Sorbonne, though a proper laboratory never materialized in his lifetime. Also, by 1905, the Académie des Sciences found it embarrassing not to have his membership—an honor never accorded Marie. But on 19 April 1906, shortly before his 47th birthday, Pierre lost his life beneath the wheels of a wagon. As his daughter wrote, "Death is quicker than public officials to claim great men."

The foregoing is the story presented in such accounts as Marie Curie's biography of her husband (1923) and Eve Curie's biography of her mother (1937). While it is essentially correct, one may point to various honors Pierre did receive, the fact that his *graduate* work was done at the Sorbonne, and question whether his contemporaries had it any easier. The significant comparison with the 1965 Nobel laureates, therefore, is not the personal difficulties in a man's life, for which there may be unique causes, but the apparent circumstance that France has not profited from the past and has remained consistently unsympathetic to new lines of research.

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A Truly Remarkable Fly

Coincidences associated with so rare a phenomenon as ball lightning tend to be interesting but not significant. A case which has recently come to my attention would seem to follow this rule.

On 25 August 1965, I was editing an article entitled "Soviet research on ball lightning" prepared by Arsen Iwanovsky of this division for publication in the September issue of the *Foreign Science Bulletin*. We discussed at some length the unusual behavior of ball lightning and the fact that the very few eyewitness reports available contained conflicting statements.

On the same day my uncle and aunt,

Mr. and Mrs. Robert B. Greenlee, were relaxing on their fiberglass-screened, roofed patio in Dunnellon, Florida. The temperature was in the 90's, the sky was overcast, and there was a slight drizzle; the Greenlees had heard thunder some distance to the west of their immediate vicinity. Mrs. Greenlee and a neighbor, Mrs. Riggs, were seated a few feet apart in aluminum chairs, and Mr. Greenlee was standing about three feet from Mrs. Greenlee. Mrs. Greenlee had just swatted a fly when a ball of lightning the size of a basketball appeared immediately in front of her. The ball was later described as being of a color and brightness comparable to the flash seen in arc welding, with a fuzzy appearance around the edges. Mrs. Riggs did not see the ball itself, but saw the flyswatter "edged in fire" dropping on the floor. The movement of the ball to the floor was accompanied by a report "like a shotgun blast." The entire incident was over in seconds.

None of the witnesses felt any heat from the ball, and Mrs. Greenlee showed no signs of external injuries, although she complained of pain in the back of her neck and has had occasional headaches since. The explosion was heard by a neighbor about 150 feet away, and it was subsequently learned that another neighbor's electric range had been shorted out at the same time. There was no damage of any sort at the Greenlees, nor were there any marks on the patio floor where the flyswatter had fallen.

With regard to the fly, Mrs. Riggs commented, "You sure got him that time."

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Animal-Care Legislation: Why Scientists Do Object

Morris Goldman's letter (17 Dec. 1965, p. 1536) urging passage of federal legislation controlling the procurement, care, and use of laboratory animals makes nonspecific and unsupported charges of "frivolous and cruel usage" of animals and sets up straw men to destroy. Responsible scientists do not ask, as Goldman suggests that they do, "Why should [I] be penalized" for occasional errors of others?

The persons in the scientific community who are opposing regulatory legislation at the federal level do so primarily on the grounds that such legislation would be contrary to the public interest. I testified for the National Society for Medical Research on 30 September 1965 before the Subcommittee on Health and Welfare of the House Committee on Interstate and Foreign Commerce. The transcript of the hearing will show that I concluded one portion of my testimony by saying "Let me assure you of one thing. It is not scientists as persons who would be hurt by passing bills like H.R. 10049. It is the public which would be hurt." Scientists who oppose legislation that would multiply the bureaucratic red tape involved in research and teaching in which animals are used do so not because it would complicate their lives, but because it would delay or prevent scientific discovery, cause deterioration in medical and other biological education, and increase the cost of the biological science enterprise out of proportion to any probable benefit to animal welfare.

Goldman depreciates the importance of self-regulation in maintenance of standards of ethical concern for animal welfare. It would be interesting to know whether he has any proof that laboratory animals are in general better treated in Great Britain where there is national regulation than they are in the United States where there is not. I have worked in both countries and it is my impression that in the institutions in which I have worked, the self-regulation in the United States has resulted in conditions as good as, and in many instances much better than, those in the nationally regulated laboratories in Britain. Furthermore, the British system has not been compatible with effective work on many problems in relation to which American scientists have made great progress, as in open-heart and other surgery, the management of burns and traumatic shock, and in other important human problems.

If any scientists are opposing federal regulation of animal experimentation simply because it would be troublesome to them, they should cease and desist. The pertinent and valid objection to such regulatory legislation resides in the damage it would do to the public welfare.

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