Wade alludes to the role of Seventh-Day Adventists. He notes that one of the conservative members of the state board of education pushing the creationists' position is John R. Ford, identified as a Seventh-Day Adventist. Also, a consultant at the California Department of Education is quoted as stating that "it seems evident the Seventh-Day Adventists . . . have embarked upon a plan to exert considerable pressure" on the creationist side.

These statements standing alone may create the illusion that Seventh-Day Adventists in general support attempts to impose sectarian philosophical positions in science materials. While it is true that, traditionally and historically, the Seventh-Day Adventist Church has supported creationistic views, many younger, professionally trained members of the church are increasingly attempting to move their church's views from a fundamentalistic ethos to what they consider a more mature position.

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Joint Effort

An account is given by William D. Metz (Research News, 10 Nov. 1972, p. 600) of new data on the expansion rate of the universe, the distances to galaxies, and the time scale of creation. The work is attributed to me, but has, in fact, been the result of a long and close collaboration with Gustav A. Tammann over the past 10 years. Tammann's immense contribution was fundamental in devising methods by which to measure the distances from nearby galaxies to more remote parts of the expanding universe, where the expansion rate must be calibrated. The results are to be published jointly.

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DDT in British Rain

The widely publicized figure of "73 to 210 ppm" of DDT in British rain (10 Dec. 1971, p. 1101) has now been reduced to one one-millionth of that amount by Woodwell *et al.* (Letters, 3 Nov. 1972, p. 450). In support of those figures, Woodwell cites in his reference 45 two articles, one by Tarrant and Tatton (*1*) and another by Wheatley and Hardman (*2*). Each sample of rainwater analyzed by Tarrant and Tatton consisted of a total 3-month sample from a collecting station. They did not say how the water was collected, but one sample "contained two insects," indicating a possible source of contamination. In their samples, the highest DDT residue was 190 parts per *trillion* (ppt), and the mean for the year at that station was 66 ppt in the 3-month samples. At their other six stations the means were only 53, 30, 46, 61, 49, and 18 ppt, respectively. The analyses reported by Wheatley and Hardman were even lower, the amounts of DDT averaging 3 ppt over areas of agricultural England. These two references were cited by Woodwell *et al.* to confirm high levels of DDT in England's rain and "similar concentrations" in rainfall in the United States. The references, however, did *not* indicate the high residues alleged by Woodwell *et al.* and did not even contain any data for the United States.

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1. K. R. Tarrant and J. O'G. Tatton, *Nature* **219**, 725 (1968).
2. G. A. Wheatley and J. A. Hardman, *ibid.* **207**, 486 (1965).

The context of our original article made the use of "ppm" in association with the DDT content of rain in Britain an obvious typographical error. In the sentence following the error there was a reference to 40 parts of DDT residues per trillion parts of water in the meltwaters of Antarctic snows. In the next paragraph we assumed 60 ppt for use in our model. A perceptive reader would have difficulty being misled for long. Our earlier letter corrected the typographical error to parts per trillion, which we stated explicitly to mean parts per 10^{12}. Edwards' purpose leaves us puzzled.

The concentrations we cited are from Tarrant and Tatton (*1*). The earlier data of Wheatley and Hardman (*2*) showed that residues could be detected in rainwater and provided the basis for Tarrant and Tatton's more comprehensive study. We used total residues, as is commonly done, not simply the data on *p,p'*-DDT cited by Edwards. The 73 ppt we used is the mean of four 3-

month samples spanning a year at Lerwick, Shetland Islands, the northernmost and most remote sampling station. We used that station because it was remote and seemed to offer the best possibility of representing precipitation over a large area. The decision is certainly open to further interpretation.

The 210 ppt we cited is the highest 3-month sample. It occurred in Camborne, Cornwall, in the period November–January, not a period when large quantities of DDT would normally be used locally. Edwards' assertion that the highest DDT residues reported totaled 190 ppt is wrong.

The literature citation with which Edwards takes issue was originally in mid-sentence and applied only to the British data. It was moved in editing to the end, where it appeared to apply as well to the U.S. data we mentioned. The U.S. data are summarized in reference 13 of our original paper (*3*). Mean DDT concentrations at three sites in Ohio were 75, 180, and 360 ppt (*4*). We considered this range sufficiently coincident with the British data to write "similar concentrations have been reported in the United States." The maximum concentrations reported in the U.S. study were considerably higher than those observed in Britain; the maximum at one sampling point was in excess of 1300 ppt. The British study was more comprehensive, and we considered it a better sampling for our purposes.

DDT use in the United States has been reduced more rapidly than we had guessed possible. The abrupt cessation of use makes this an unusually good time to examine the behavior of a worldwide pollutant. We hope that a sufficiently comprehensive program will be initiated to resolve the questions of world circulation, which attempts at modeling such as ours set forth so sharply.

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1. K. R. Tarrant and J. O'G. Tatton, *Nature* **219**, 725 (1968).
2. G. A. Wheatley and J. A. Hardman, *ibid.* **207**, 486 (1965).
3. J. Frost, *Environment* **11**, 14 (1969).
4. J. M. Cohen and C. Pinkerton, *Advan. Chem. Ser.* **60**, 163 (1966).