etters

ime, the booth keeper should talk to all nterested people. Often more aggressive, nowledgable persons dominate the onversation. Discussion with a single erson should be limited to five minutes o give others an opportunity to ask uestions or discuss other problems.

More effective displays are suggested. n addition to the sign containing the ooth number, title and list of authors, nother should state the purpose of the xperiment or theory and give the prin ipal results. Investigators should em hasize their major points with a large oster. If the displayed material is rea onably complete, booth holders will be ble to use their time for answering uestions. An "out-to-lunch" sign is eeded for each booth announcing the resenter's time of return when visiting ther booths.

One participant recommended that the ervices of a consultant in visual-aid echniques be acquired with the aim of roducing a short pamphlet containing uggestions as to how booths might be ost effectively manned.

The results of our experiment with the ooth sessions at the IX ICPEAC indicate hat they are effective in facilitating in formal but intense discussions between specialists in a particular field.

This type of session is not a substitute or the more conventional short presen tation to a larger audience. Booth ses sions have the most value when scheduled as auxiliary sessions, with contributors signing up for booth space on a voluntary basis. There seems to be no clearcut ad vantage in arranging scores of booths rather than many parallel sessions. (A more complete version of this report may be obtained directly from the author.)

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6/7/76 *Raleigh, N. Carolina*

Re-inventing the fireplace

In "Efficient Use of Energy" (August 1975, page 23) the authors offer sugges tions for improvement of the energy effi ciency of home heating. They point out that "economy involves locating the cru cial stage of energy conservation at the site of its end use." And they suggest that fuel be burned in "room radiators" at low temperature, by use of some type of cat alyst yet to be developed.

It seems that this is a re-invention of the fireplace, but with unnecessarily so phisticated and inefficient modification to low-temperature operation.

The authors themselves concede that high-temperature heat sources offer bet ter second-law efficiency than low-tem perature heat sources. It is far from clear why low-temperature operation is rec ommended.

A further great advantage of high-temperature operation derives from the fact that at high temperatures, one can produce radiant heat with increasing efficiency; and radiant heat offers a double advantage over convective heat from furnace-based systems. Radiant heat can be beamed toward the user[1], and it can be absorbed directly by the user. Convected heat only controls the rate of heat loss by the body, and requires the heating of large masses of air and of structural interiors merely to keep a thin layer of air next to the skin within the zone of comfort.

Reference

1. L. Cranberg, "Slot-Stable Flame with Hohlraum Radiation Pattern," Bulletin, APS, Sept., 1975, p. 1183; "The Physicist's Fire," Time Magazine, Dec. 1975, p. 52.

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More on coal vs. fission

In his letter (June, page 77) on the hazards of air pollution, J. H. Ray compares the radioactive dispersion of fossil-fueled and nuclear-fueled power plants, expressed in quantities proportional to the electric power produced. He concludes that nuclear reactors emit 5×10^{2}–10^{6} times less radioactivity than fossil-fueled power stations. Because it has been illustrated that the most important components of coal pollution, Ra^{226} and its daughters, represent not only a local but also a long-term problem (Zbigniew Jaworowski, Health Phys. **20**, 499, 1971), this letter will illustrate that Ray's argument is based on an irrelevant comparison that is common in the nuclear controversy. In his author's comment, J. Devaney (page 78) extends this reasoning erroneously.

When comparing the radioactive dispersion of pollutants in the atmosphere due to 1000 megawatt years of electricity production by a coal or nuclear power plant, one has to take into account all releases during the whole fuel cycle and not only those during the power-production phase.

According to Jaworowski, the radium activity from coal varies from 0.001 to 1.3 picocuries/gram, depending on the type and origin of coal. From his data, we calculate that a 1000-MWe coal plant should produce yearly a minimum of 4.7 microcuries (for 99.8% dust-filter efficiency and 0.001 pCi/gm coal specific activity) to a maximum of 570 millicuries (75%, 1.3 pCi/gm). The average for European and Asian coals varies between 1.4 and 170 mCi.

Around coal plants the radium activity can be considerable, and a worldwide dispersion is noticed. However, this pollution can easily be reduced by classical control techniques. The efficiency of the dust collector can decrease the radium