

ime, the booth keeper should talk to all interested people. Often more aggressive, knowledgeable persons dominate the conversation. Discussion with a single person should be limited to five minutes to give others an opportunity to ask questions or discuss other problems.

More effective displays are suggested. In addition to the sign containing the booth number, title and list of authors, another should state the purpose of the experiment or theory and give the principal results. Investigators should emphasize their major points with a large poster. If the displayed material is reasonably complete, booth holders will be able to use their time for answering questions. An "out-to-lunch" sign is needed for each booth announcing the presenter's time of return when visiting other booths.

One participant recommended that the services of a consultant in visual-aid techniques be acquired with the aim of producing a short pamphlet containing suggestions as to how booths might be most effectively manned.

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

This type of session is not a substitute for the more conventional short presentation to a larger audience. Booth sessions 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 advantage 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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5/7/76

Re-inventing the fireplace

In "Efficient Use of Energy" (August 1975, page 23) the authors offer suggestions for improvement of the energy efficiency of home heating. They point out that "economy involves locating the crucial 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 catalyst yet to be developed.

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

The authors themselves concede that high-temperature heat sources offer better second-law efficiency than low-temperature heat sources. It is far from clear why low-temperature operation is recommended.

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 user¹, 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.

LAWRENCE CRANBERG

9/7/76

Austin, Texas

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.

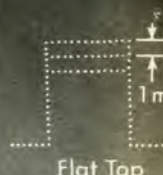
Around coal plants the radium activity can be considerable, and a worldwide dispersion is noticed. However, this pollution can easily be reduced by classical control techniques. The efficiency of the dust collector can decrease the radium

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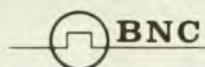


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