

ON SONIC BOOMS: PEOPLE VS PLANES

Time saved versus damage made

The "unrealistic" society in opposition to the supersonic transport referred to by Harvey H. Hubbard (PHYSICS TODAY, February, page 31) is the Citizen's League against the Sonic Boom. The address is 19 Appleton St., Cambridge, Mass. 02138. Hubbard's article will surely result in a flood of contributions being sent in.

"Superficial damage has been initiated in controlled tests only after repeated overpressures of about 5 grams/cm²." If a typical boom is 1.5 grams/cm², an extrapolation of the probability curves in figure 8 shows that there is a 10⁻⁴ probability of exceeding this at a given ground station. In a city with a million housing units there will therefore be a hundred of them damaged—approximately one for every passenger on the plane, who will save less time than it takes to repair the damage produced. This is in addition to the discomfort, the disturbance of normal activity and the interruption of conversation or of thought of hundreds of thousands of individuals. What kind of systems analysis lends support to supersonic flight in anything but extreme national emergency?

CYRIL STANLEY SMITH
Cambridge, Mass.

The SST and its sonic boom

Here are some comments that are stimulated by your February story "Sonic Booms." Many physicists realize that the sonic boom produced by a supersonic transport plane accompanies the plane throughout its supersonic flight path, and that a single flight of an SST across the US would boom 10 to 40 million people. And they realize that generation of a boom is unavoidable for any heavy object traveling in air at a speed exceeding the speed of sound.

What is often overlooked, however, is that most of the tests of acceptability of the boom have been carried out by engineers rather than by psychologists, psychiatrists, medical doctors, et al. If these latter had been in charge of

the 1961 sonic-boom tests at St. Louis, the 1964 Oklahoma City tests, the 1965 Chicago tests or the 1966 Edwards Air Force Base tests, they would presumably have explored the most crucial circumstances, not the least crucial one. They would have chosen, as human subjects, not just young, healthy, wide-awake persons but also infants, aged persons, highly nervous people, people with heart conditions. They would have produced the booms at unexpected times, to get some idea of the startle effect on persons concentrating on delicate tasks and those completely relaxed and expecting no sudden bang. They would have produced some series of booms at night to find whether sleeping persons would be awakened again and again and whether this is acceptable to them.

They would have used extra-severe booms because it is well known that temperature and wind-speed variations in the atmosphere produce focusing effects so that about 1% of all booms

this: Would the more intense booms be acceptable to the more vulnerable people?

WILLIAM A. SHURCLIFF
Director, Citizens League
against the Sonic Boom

Making fun of real fears

What NASA writer Harvey H. Hubbard appears to say is that if we were not incompetent carpenters less meek than deer, then the sonic boom would not bother us. His article provided useful and enlightening technical information on the sonic boom. But what better way is there to arouse the suspicion of the populace as to the worth of science than to make callous fun of the real fears many people, physicists among them, hold for the future of our environment?

SST research and the sonic boom are good examples of the way in which science, technology and human values are inextricably linked. Fluid and structural mechanics and the psychology of perception are scientific disciplines. However, the social and economic decisions that must be made before the future of the SST is decided fall into the domain of human values and politics. Insofar as Hubbard stuck to the scientific, there can be little controversy. But since he transgressed into the field of human values, I believe that the "other side" should be given equal space to reply.

ROSS HOLMSTROM
Waltham, Mass.

Sonic damage claims

Your article called "Sonic Booms" is highly inaccurate. On page 37 is a statement, "Well constructed buildings in good condition would not experience serious damage . . ." The writer ignores the facts.

On 17 Feb. 1967 a jury in federal court in Oklahoma City awarded me \$10 000 for damages to my home during the 1964 sonic-boom tests in Oklahoma. This case was not appealed by the government. It was paid in full.

An additional eight of 105 cases

PHYSICS TODAY



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have twice the average intensity. (If a fleet of 150 SST's operated over the US daily, they would produce of the order of 5×10^9 man-booms per day; 1% of this number, or 5×10^7 , is the estimated number of man-superbooms per day.)

The crucial question, in short, is