

Nature Note

CAT—Monster in the Sky

Several thousand feet high in the atmosphere lurks an invisible and treacherous force, which scientists have yet to understand. This is CAT, as aviators and meteorologists have nicknamed the menace called Clear Air Turbulence.

CAT can neither be detected nor foreseen by the high-flying jet airplanes it threatens. At altitudes of as high as 40,000 feet in a clear blue sky, a plane will suddenly hit without warning a turmoil of air that puts enormous strain on wings and other structures. Planes have been known to flip over or drop several thousand feet in a few seconds. Seats have been ripped from their moorings, rivets popped from their sockets, and once an engine was twisted off a plane. Pilots have extreme difficulty controlling their craft, and passengers sometimes are severely hurt if they are flung around the cabin. The sudden crash of the Lockheed Electra that killed 63 people near Tell City, Ind., in 1960 has been blamed on CAT. Other unexplained crashes may be attributed

to this mysterious creature of the sky. It has been suggested that CAT could fell any supersonic transport.

Scientists believe that CAT is caused by wind shear, which is a turmoil of winds moving at different speeds or in different directions, clashing and setting up whirls and eddies of air. There may be two energy sources where this takes place: the jet streams, those capricious rivers of air that flow around the earth from west to east in the mid-latitudes at 200 or 300 miles per hour or mountain waves, strong disturbances created by the flow of air up and over the crests of mountain ranges.

Unlike the familiar turbulence associated with thunderstorms which can be spotted on radarscopes and avoided, CAT cannot be detected by radar. Researchers are attempting to track the CAT with instruments recording changes in temperature or pressure, the presence of ozone or static electricity. So far they have not been successful. Nothing seems to indicate the presence of this invisible giant except the sudden bump when a jet hits it.

Letters (continued)

output—not just spelled letters.

Accompanying the main themes of tactile and auditory feedback has been the counterpoint theme of attempts to implant electrodes in or on the visual cortex, or in building devices which produce phosphenes (i.e., flash sensations induced by pressure on the eyeball, by electrical stimulation, or by the influence of a magnetic field change near the head). Electrical or magnetic stimulation does show some promise but, as with auditory and tactile feedback, there is more reason to believe that the hope involved is that of the sighted that they can help the blind, than it is a hope for the blind that they will see (however this is defined). Practical embodiments of the theoretical possibilities for coupling tactually, electrically, or magnetically to the brain often results in device configurations which are a hindrance to the everyday tasks of the blind person. Although the relevant technologies are available to make such systems, the package will clearly have to weigh less than 30 pounds, and it will have to be inconspicuous. The challenge is clear.

Serious investigators are also sensitive to the dangers of arousing expectations which cannot be soon fulfilled. For those interested in the on-going work in this area, my office would be willing to undertake communication links with others working in the field, ensuring the confidentiality of correspondents where this is desired.

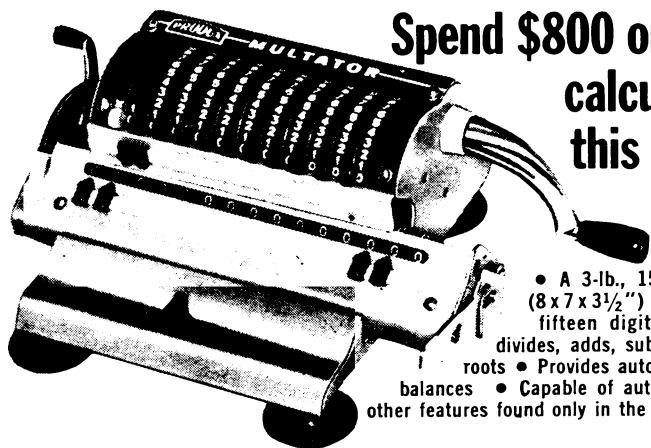
Leslie M. Clark, Director
Information Service
American Foundation for the Blind
New York

Forgiveness Granted

Sir:

Having dragged my attention with difficulty away from the fascinating material on page 349, I read *Thousand Inch 'Scope* (SN: 4/15) and *Exploring The Universe in Infrared* by Ann Ewing (SN: 4/22) with considerable interest. I hope you will forgive me commenting that I found them to be accurate and responsible summaries both of our article in *SCIENCE JOURNAL* and of the Royal Society Conference on Infrared Astronomy. I know that this should go without saying, but unfortunately the general standard of scientific journalism is not such as to make this the case, and the treatment which you gave this material is therefore particularly gratifying to us.

P. B. Fellgett,
Prof., Cybernetics and
Instrument Physics
The University of Reading,
England



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