

Using a converted DC-6 as a flying TV station, 'Stratovision' will teach students their lessons in six states at once



Schoolroom in the Sky

2 Taped programs are broadcast as far as 200 miles from "classroom" in plane 23,000 feet up.



1 Lessons are videotaped on ground. They can use materials that students otherwise couldn't see.

By Alfred W. Balk

FROM more than four miles above the earth, a plane will begin broadcasting lessons by TV to pupils in six Midwestern states late this month.

The experiment will inaugurate Stratovision, a radical new system of long-range telecasting. In school and college classrooms equipped to receive the programs, it will bring instruction by talented teachers to learners of all ages. Its 200-mile range could reach more than 5,000,000 students at once in this Midwest area's 13,000 schools and colleges.

The flying classroom, a DC-6 airliner converted into a TV station, enormously increases the distance that television can be transmitted. Because TV signals travel mainly in a straight line, the curvature of the earth dims reception from a ground station beyond about 50 miles. The aerial telecasts, pre-recorded on videotape, range four times as far.

Cruising at about 250 m.p.h., the Stratovision plane will stay centered over its 400-mile-diameter zone of reception by circling within a 10-mile radius of Montpelier, Ind. Even in high winds it's expected to be able to remain on station

3 TV sets adapted for UHF reception serve up programs to six states' schools and colleges.



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For the first time, small schools can offer advanced math,

by tacking back and forth. For a six-hour telecast, its "flight to nowhere" will take it nearly 2,000 miles, including the 150-mile distance to and from its base at Purdue University airport.

It will fly 23,000 feet up—a height ample to give the wanted TV range, and one approaching the altitude at which the modified DC-6 will operate most efficiently, without trespassing into higher levels reserved for jets.

Beaming the lesson. A wagging 24-foot-long antenna mast on the underside of the fuselage will be the most conspicuous outward feature of the four-engine plane's special equipment. Since the antenna focuses signals directionally in a downward cone, it must be mounted in gimbals and kept pointed vertically at the earth, when the plane banks, by a gyro control. A hydraulic system retracts it flush with the plane's belly for landings and takeoffs.

Twin planes with duplicate equipment give Stratovision a standby. If mechanical trouble forces one plane to break off a telecast, the other will roar aloft and continue the program. And bad weather will rarely let out "TV school." Going

by past weather records, a Stratovision plane should be able to fly on all but four or five days of the school year.

The plane will televise two programs at once, on separate UHF channels, four days a week. Its daily four-hour telecasting schedule, during an initial demonstration period of several months, will be increased to six hours with the start of Stratovision's first full academic year next September. By then, current experiments may have multiplied the number of programs that can be transmitted simultaneously.

Typical Stratovision lessons for elementary-school and high-school pupils will run 15 to 20 minutes apiece; for college students, half an hour.

At the receiving end. Schools will provide the needed equipment to pick up the programs. This may consist of a UHF/VHF television receiver for each classroom, with its individual outdoor antenna—the least expensive plan for, say, two rooms. Another plan, more economical for a large installation, uses a single master antenna outdoors and a central UHF-to-VHF converter, linked to VHF receivers in the rooms.



POWER-SUPPLY CABINET, being wired above, feeds two transmitters that simultaneously broadcast different programs from TV plane.



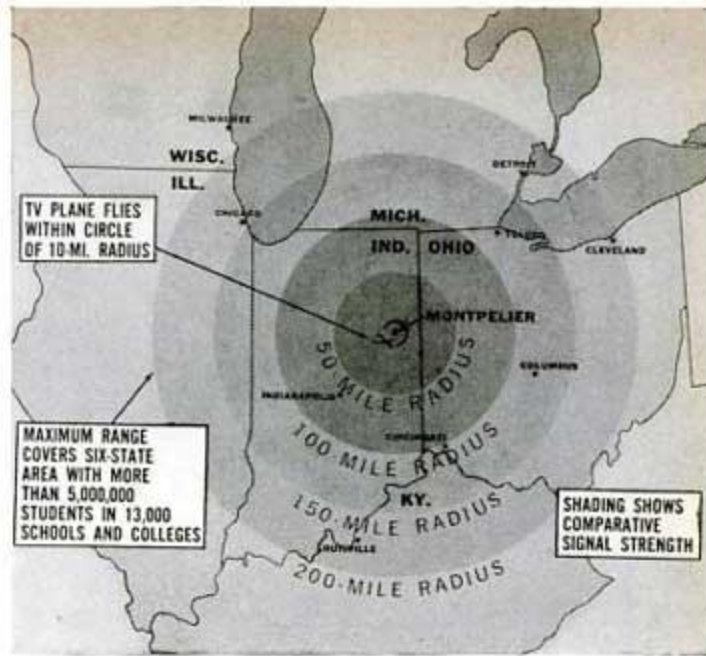
RACKS for five tons of electronic gear are installed in a converted DC-6, one of two which will be used in Stratovision flights.

science, languages



FOUR-ENGINE PLANE to be used in Midwest program will employ 24-foot-long antenna, which retracts for takeoffs and landings.

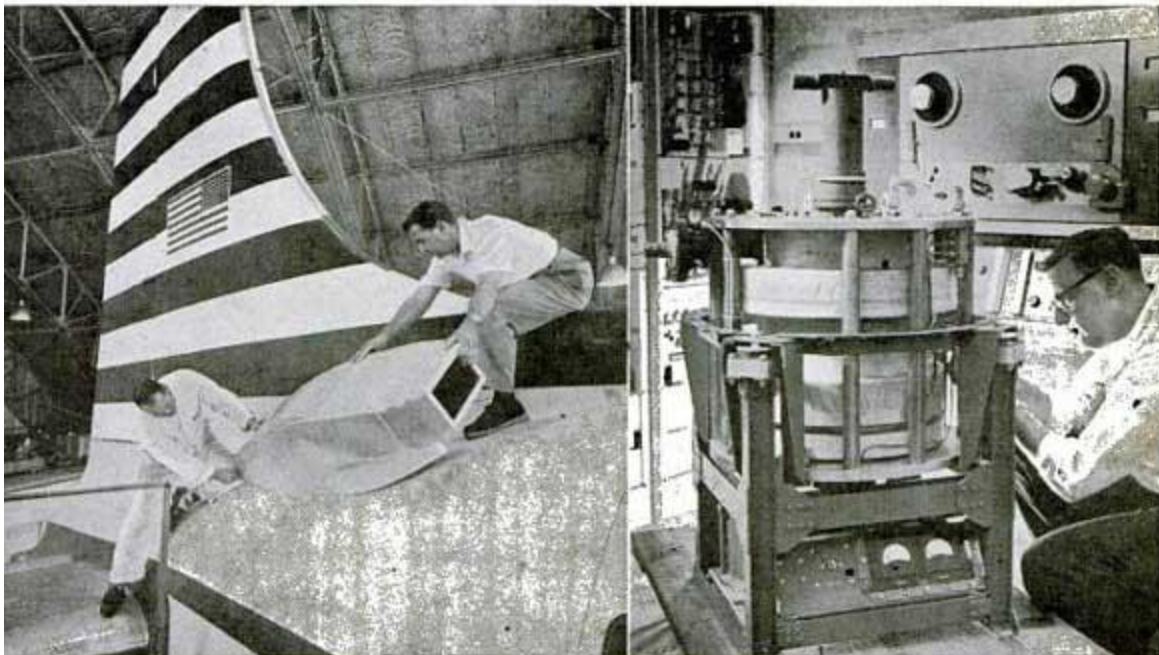
SCHOOLS within a circle 400 miles wide (right) will receive the telecasts from plane flying over Montpelier, Ind.



Through Stratovision, small schools—and one-fourth of the U.S. total are one-teacher schools—will be able for the first time to offer courses in languages, advanced mathematics, science, art. Every student, rural or urban, can have superior teachers. Gifted children, no matter

how overworked their teachers, can take advanced courses by Stratovision.

Doing the same thing with films and projectors would cost three times as much as TV, it's estimated. A closed-circuit television system, with land lines to schools so widely scattered, would be



BIG SCOOP supplies air for combustion to 85-kw. gas-turbine generator, installed in tail of plane to power the aerial telecasting station.

PLANE'S EQUIPMENT includes this big klystron tube. It will amplify sound and picture signals 10,000 times for the broadcasting transmitter.

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VIDEOTAPING AN ART LESSON: Kids won't have to crane over other heads to see this fingerpainting being made.

CLOSE-UPS OF PLANT LIFE are taped. Other scenes show snakes ejecting venom—impossible to stage in a class.

prohibitively costly; and it would take at least 14 TV ground stations to reach Stratovision's area by way of the ether. That's the why of TV from the sky.

Dream to reality. Stratovision was devised by Charles E. Nobles, a Westinghouse engineer—who proved it would

work, 15 years ago, with a surplus B-29 bomber over the Pittsburgh area. He dreamed of bringing TV to the whole nation at once, with 20 planes. Licensing problems pigeonholed the idea until two years ago. Then a fellow engineer, Reuben Lee, suggested that Stratovision be adapted to educational TV. With front-office encouragement, it was.

Initial result is the Midwest's flying schoolroom. To meet the \$7,000,000 cost of launching the project, the Ford Foundation has put up \$4,500,000 and private industry has contributed the rest. Present sponsors expect to be succeeded by a self-financing interstate association that will continue Stratovision permanently.

If the airborne experiment proves successful, its backers point out, it may open the way for similar projects in other U.S. regions. "Eventually," they say, "a relatively small number of aircraft could provide coast-to-coast educational television."

And they have a still bigger dream. In underdeveloped countries, Stratovision's impact would be even more dramatic, for illiteracy would be no barrier. Picture and voice could teach hygiene, language, geography, history, government. A portable generator and TV receivers in each village, plus a handful of airborne TV stations, could make over the most backward regions. It could change the course, some think, of the whole Cold War.



MINIATURE PLANE MOCK-UP helps determine how far transmitting antenna must project down from fuselage, so that the plane's underbody won't reflect and garble signals during turns.