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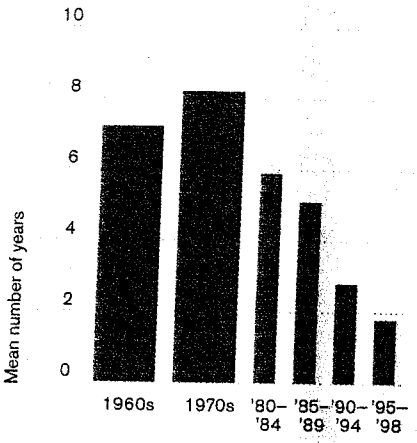
DEVELOPMENT

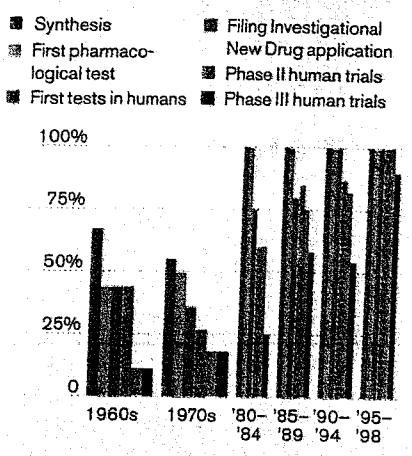
First-in-Class Ain't What It Used to Be

In the pharmaceutical sector, the amount of time in which a new product has a market all to itself has diminished considerably over the past several decades. By the late 1990s, it wasn't uncommon for a first-in-class drug (the first drug to use a particular molecular mechanism to treat a condition) to have several competitors in various stages of clinical development—even before it was approved. A few decades ago, a new drug would have a corner on the market for about eight years. Now, that figure is closer to two years.

Time from first-in-class drug's approval to first competitor's approval



Percentage of newly approved first-in-class drugs with at least one competitor in an earlier stage of development

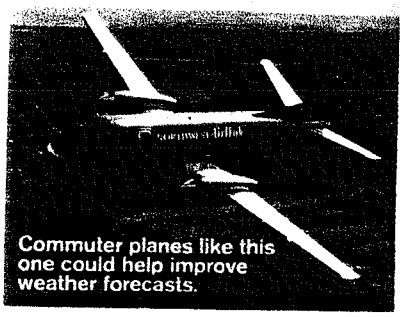


SOURCE: *PHARMACOECONOMICS* TUFTS CENTER FOR THE STUDY OF DRUG DEVELOPMENT

WEATHER

Proclaiming Rain Falls Mainly to a Plane

SINCE JANUARY, newly developed sensors affixed to 64 commuter planes owned by Eagan, MN–based Mesaba Airlines (a Northwest Airlink affiliate) have been sending real-time data on humidity, temperature, wind speed, turbulence, atmospheric pressure, and location to a central station on the ground. In early findings, data from the planes is allowing forecasters to predict with far greater precision the arrival time of precipitation and freezing temperatures and the likelihood of severe thunderstorms or fog.


Commuter planes like this one could help improve weather forecasts.

Readings from the sensors fill a huge gap in the data meteorologists collect. The lower ranges of the atmosphere, below 6,000 meters, are where weather forms. But currently, in the entire United States, 69 weather balloons take just two daily "soundings" in the lower atmosphere. In the new project, each commuter plane takes measurements every time it takes off and lands—which adds up to 600 to 800 total soundings daily. The planes also send regular dispatches from cruising altitudes.

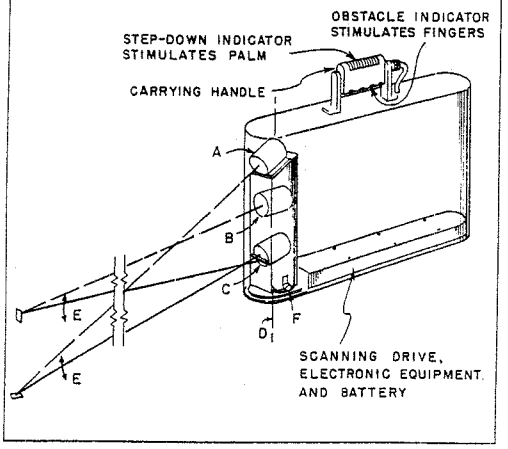
"The amount of data we're getting is just incredible," says Jeff Last, a Green Bay, WI, meteorologist with the National Weather Service, one of the agencies involved in the project. In one test this winter, a forecast using data from the sensors accurately predicted a snowstorm's arrival, while a traditional forecast was off by three hours.

In addition to the National Weather Service, the project involves other government agencies, including NASA, and several universities and private companies. AirDat of Morrisville, NC, the company that processes the sensor data, hopes to eventually sell climate information to airlines, agricultural businesses, and others interested in a sharper weather picture. **David Talbot**

50 years ago in *Technology Review*

From "Visual Aids" (July 1955, p. 468)

A STEP-DOWN DETECTOR WITH PbS PHOTOCELL AT FOCUS OF PARABOLIC MIRROR
B OBSTACLE DETECTOR WITH PHOTOCELL AND OPTICAL SYSTEM SAME AS FOR UNIT ABOVE.
C OSCILLATING LIGHT SOURCE WITH SCHMIDT PROJECTOR SYSTEM.
D ENTIRE OPTICAL SYSTEM PIVOTED ON VERTICAL AXIS.
E LIGHT BEAMS SCANNING IN VERTICAL PLANE 160~/SEC
F AZIMUTH COMMUTATOR.



Functional diagram showing the operating elements of electro-mechanical device for assuring safe mobility of foot travel for the blind.