METEOROLOGY

Fallout Patterns

➤ KNOWING which way the wind blows is not always helpful. At least not where deadly radioactive fallout is a factor, the Federal Civil Defense Administration warns.

Cautioning the public and civil defense personnel alike, the Administration reported that it is high altitude winds, up to 80,000 feet, that have the greatest effect on the direction of fallout. Surface winds, FCDA scientists point out, are no indication of the course radioactive fallout takes after an atomic or hydrogen bomb attack.

The government agency also warned that the "flat assumption that the fallout pattern is invariably in a west-to-east elliptical pattern" is wrong.

The "typical" west-to-east cigar-shaped pattern can easily be reshaped into a spilled-ink-like mass and blown in any direction, tests have shown. Although prevailing winds in the nation are west-to-east, they can blow the other way, particularly in the summer.

In issuing the warning, the FCDA reports that rain and snowfall would reduce the area of fallout, but at the same time, increase the concentration of radioactive particles in some areas.

At present, the U. S. Weather Bureau is issuing twice daily forecasts for all critical target areas on fallout direction and arrival time.

The civil defense officials included their warnings in a technical bulletin, "Fallout and Winds." In the bulletin, they list five rules-of-thumb about the subject:

1. Up to 40,000 feet, the prevailing winds are out of the west, particularly in the spring, fall and winter.
2. Strongest winds are usually found at 30,000 to 40,000 feet and these would determine the general direction and length of the pattern.
3. "Typical" wind direction varies more in the summer, especially in southeastern United States.
4. Above 60,000 feet, winds from the east occur frequently in all seasons.
5. Winds blow less constantly from the west along the Pacific Coast.

Science News Letter, January 21, 1956

PSYCHOLOGY

Young Scientists Studied

➤ THE talented young scientists of America are characterized by capacity, interest and freedom.

This is indicated by a survey of 600 who have won recent honors in the National Science Talent Search, conducted by Dr. Robert D. MacCurdy of the University of Florida, and reported to the American Association for the Advancement of Science in Atlanta.

In personality the outstanding young scientists show leadership, self-control, self-discipline, curiosity, persistence, and complexity of outlook, Dr. MacCurdy's study, done at Boston University, showed.

He found that they recognized the interdependence of science and society. They made their decisions to be scientists very early when they were in elementary school and they show their love of humanity through their participation in science.

Dr. MacCurdy's results were based on inquiries to two years of National Science Talent Search honor winners totaling 600. Based on the experience of earlier Science Talent Search winners over 15 years, 93% of them will become scientists and engineers.

"Scientific manpower is the product of a long process of educational experience," Dr. MacCurdy said. "Career choices are made at a very early age and the peak of productive efficiency is under 35 years of age. Scientists must be identified when very young and provided with an environment that will encourage science development in a few years."

Youngsters who seem to have promise as scientists-to-be show high drive and a tendency to introversion, Paul Brandwein of Forest Hills High School, N. Y., told the scientists. There are discernible periods of incubation and illumination which seem to be characteristic of the way these young people work.

The teacher who is successful in working with young scientists, aside from his superior training and wide interests, also serves as a father or mother image, he has found.

Science News Letter, January 21, 1956

PHYSICS

Slimmer Particle Tracks In Cloud Chambers

➤ RELIABLE MEASUREMENTS can be made of both the mass and energy of cosmic ray particles slicing through a cloud chamber for the first time by means of a method developed by Drs. William B. Fretter and E. W. Friesen, University of California physicists.

High-energy charged particles passing through cloud chambers leave tracks formed from droplets of condensed air.

Scientists count the droplets to determine the velocity, or energy, of the particles, using a magnetic field to separate the positive from negatively charged droplets. The track's curvature caused by the magnetic field indicates the particle's mass.

Measurement of both energy and mass simultaneously has been virtually impossible because the curved track becomes distorted.

The Berkeley scientists modified the cloud chamber to use helium instead of air. Since helium atoms each have only two electrons to be knocked off by cosmic ray particles, the track of droplets is thinner. No electrical field is needed to separate negatively from positively charged droplets, and the track's distortion is eliminated.

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