ENGINEERING

High Sky Brought in Lab

Two supersonic wind tunnels are being constructed to imitate conditions in the 90-mile mystery belt of the sky. Supersonic speeds will be studied.

➤ A STRIP of the sky from 100 miles overhead will be brought down into the laboratories of the University of California.

Two new supersonic wind tunnels under construction will create conditions in a 90-mile mystery belt of the sky from altitudes of 50,000 feet to 100 miles for studies of high-speed flight.

Jet-powered, the two tunnels are being built with funds provided by the Office of Naval Research. A pilot model will duplicate conditions up to 70,000 feet, while a larger tunnel, three inches square, will test models in conditions up to 50 miles high and at speeds five times as great as the approximately 760-miles-per-hour speed of sound.

Streams of molecules fired at models by a yet-to-be-designed molecular beam apparatus will create conditions found from 50 to 100 miles overhead.

The new tunnels are based on war-developed vacuum and jet propulsion principles. Instead of the conventional blowers of wind tunnels at or near sea level conditions, the high-altitude, supersonic tunnels will be powered by a steam jet vacuum pump, the most suitable device for handling the required large volumes of air at low pressures.

The part of the sky to be studied in the laboratory with the new wind tunnels is the mystery belt of space. Scientists have well-developed physical laws for conditions up to 50,000 feet high, and the influence of temperature and other conditions on atoms and molecules above 100 miles has been determined fairly well.

But the region in between is largely a mystery as far as the principles of fluid flow at supersonic speeds are concerned. This problem of flight at high speeds and high altitude is to be tackled with the new wind tunnels.

Dr. R. G. Folsom and E. D. Kane of the University of California School of Engineering are in charge of the project.

Mr. Kane explained that bringing the sky into the laboratory with the wind tunnels is more effective than firing rockets or other missiles into the upper atmosphere, because the effect of the air at high altitudes on the instruments is not known.

He said the mysteries of the high-altitude regions cannot be solved by wind tunnels which operate at temperatures and air pressures at or near sea level, because there are fundamental differences in the air. One of these is the change in the number of molecules at sea level and high in the atmosphere. Molecules are much less frequent in the air at high altitudes.

First studies of supersonic speeds in the new tunnels will be made at conditions of altitudes below 50 miles. Equipment for higher altitude studies may be constructed later.

Captured German documents have disclosed that the Nazis had a wind tunnel similar to the ones being built in Berkeley. It was for testing flight conditions at speeds less than that of sound.

Science News Letter, March 1, 1947

CHEMISTRY

Lab Duster Helps Insecticide Chemists

➤ A DUSTER which can not be used to help clean the house has been developed for scientists experimenting with insecticides.

Reported to provide control of nearly all variables in dust tests, the new device was developed at the Whitemarsh Research Laboratories of the Pennsylvania Salt Company to study insecticide and fungicide dusts.

A modified laboratory model tower is used in the duster with a new distributor which completely breaks up dust shot into the tower. Exact measurements of the air pressure and amount of air used in shooting the dust into the tower are possible.

From tests in the duster, scientists can determine the type of deposit from a sample, drifting rate of settle, ability of dusts to stick to plants and proper size of particles for insecticidal properties.

Science News Letter, March 1, 1947

TESTING TOWER—Duster, tower, and dust distributor are shown in this photograph from the Pennsylvania Salt Manufacturing Company.

CHEMISTRY

Treated Soybean Oil Rivals Linseed Oil in Paint Field

➤ LINSEED OIL now has a new rival in the paint field. It is a chemically treated soybean oil which has similar drying qualities. Linseed oil, for many years, has been the base for paints and linoleum.

The discovery of this process of treating soybean oil to make it suitable for use in paints will free America from reliance on imports of linseed oil, or the flaxseed from which it is obtained, the American Chemical Society meeting in Pittsburgh was told by Dr. Alexander Schwarcman of Buffalo. The United States, now producing annually over 1,000,000,000 pounds of soybean oil, can produce as much as needed to supply the demands of this new use.

Castor oil also can now be used in paints, he said, as a substitute for tung oil, most of which is imported. It must be first treated, however. The treatment process is a dehydration that causes the castor oil to have fine drying properties.

About a billion pounds of linseed oil are consumed annually in the United States, one-half of which is imported, mostly from Argentina. It is used entirely for paint, varnishes, linoleum, and allied products. Castor oil is used in a great variety of industries, mostly for textiles, wall sprays, lacquers and artificial leathers.

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