

METEOROLOGY

West-East Wind Theory

Dr. Priestley says the momentum near the equator is transferred to the earth in irregular bursts which affect the speed of the westerlies and thus help determine our weather.

► A NEW explanation for one of the major causes of our weather has been advanced by Dr. C. H. B. Priestley, Australian meteorologist, in the British scientific journal, *NATURE* (May 27). If the theory is generally accepted by weathermen it may well affect changes in methods of forecasting tomorrow's and next month's weather, according to scientists at the U. S. Weather Bureau in Washington.

Weathermen have long known that, in the northern temperate zone, weather moves from west to east along with the prevailing westerly winds. They have reasoned that one of the major reasons the winds keep moving from west to east in the temperate zone is the momentum provided by the great west-to-east speed of the earth near the equator.

How this force gets from the surface of the earth near the equator to a position where it can push our temperate zone winds from the west to east across our country has been one of the great unresolved mysteries of the weathermen. Dr. Priestley thinks he has the answer.

Just north of the equator the prevailing winds travel from east to west. If the great momentum provided by the extremely fast movement of the earth from west to east at the equator acted on these tropical east to west trade winds, they would be either slowed down, or stopped, or would travel in the opposite direction.

Since this does not happen and the momentum must go somewhere, scientists have figured that most of it is transferred through the air northward to our temperate zone, where it is a major factor in pushing our prevailing winds from west to east. Along with our winds, comes our weather.

Dr. Priestley argues that some of the momentum goes southward at low levels, but that more travels northward at great altitudes—in the upper troposphere and the lower stratosphere. He also says that most of this northward-traveling push is transferred in the latitudes in which lie our southern states and northern Mexico.

According to Dr. Priestley, it is transferred by the whirling, highly unstable air caused by the high-altitude "jet streams"—narrow bands of extremely high-speed winds which caused our wartime pilots so much trouble in flying to Japan. Because the air is unstable, he argues, the momentum is transferred to the temperate zone prevailing westerlies in irregular bursts.

These bursts of momentum, he says, provide a "dynamic link" between the jet streams and the prevailing westerlies, They

are a major cause of the fluctuation in speed of our prevailing westerlies and this fluctuation in speed is one of the determining factors in the kind of weather we have.

However, Dr. Priestley does not claim that his theory is proven.

"This is a highly interesting theory," according to Philip F. Clapp of the Weather Bureau in Washington, "but it is only the latest of half a dozen theories on what makes our weather move from west to east."

Mr. Clapp said that proof of any one of these theories would have to wait for the amassing of much more data and many more observations of the flow of the air.

"Weathermen just don't know enough about the circulation of the air yet," he said. "If they did, they would know which one of these half dozen theories is correct."

One of the major theories heretofore advanced, according to Mr. Clapp, is that the momentum is transferred from the tropical regions along the horizontal plane of the major high pressure areas. When the axis of a high pressure area tilts toward the

northeast, the momentum moves toward the temperate zone. The theory is that the axis tilts northeast often enough to siphon off enough momentum to give our winds the needed westerly push.

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CHEMICAL ENGINEERING

Emergency Gas Supply From Stored Liquid

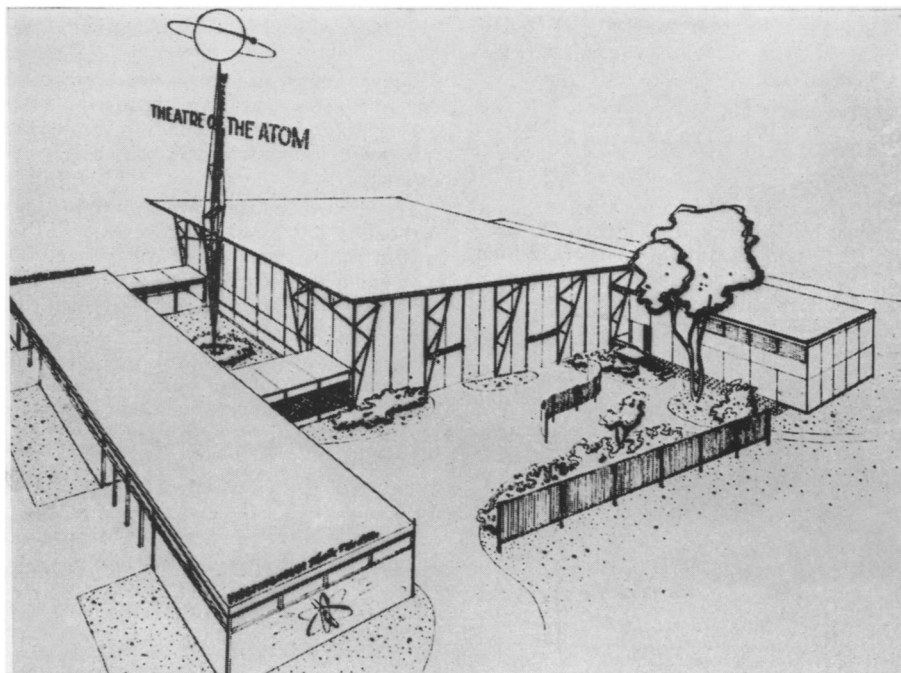
► EMERGENCY gas for heating and domestic fuel can be produced from liquids easily stored ready for instant use.

Designed to meet peak demands upon natural gas systems during the few days of severe winter weather, the emergency gas can be manufactured from air and some volatile petroleum hydrocarbon, as propane. A double overload can thus be met.

Dr. R. M. Deanesly of the Universal Oil Products Co., Chicago, reported to the American Chemical Society meeting in Houston that this autothermic process has been developed on a pilot plant scale and is ready for full scale application.

The air and propane are heated separately to over 1000 degrees Fahrenheit, mixed, and allowed to react for a few hundredths of a second in a brick-lined stove. Some of the propane is burned and the rest is converted into smaller molecules. This gives gas that will mix with natural gas when fed into the system to tide over the emergency.

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THEATER OF THE ATOM—The theater in above sketch is being constructed on Chicago's lakefront for the Chicago Fair of 1950. Features of the theater's show will be a new three-dimensional atom model, a miniature atom-smasher, an electrostatic "atomic" motor and a "mousetrap" bomb.