

TECHNOLOGY

**"Caruso Principle" Tests Metal Pipe Durability**

HOW MANY YEARS of service a metal pipe will give is now being determined by the "Caruso principle"—a quick, resonance bending test. The pipe is forced to shake itself until it literally "cracks up" in just a few minutes.

A ten-foot length of welding fittings or other pipe components is suspended by two cords and is filled with about 10 pounds of air pressure per square inch. An arrangement of weights, attached to the pipe and to an electric motor, induces a sympathetic vibration of the pipe at its natural resonance frequency. The pipe bends itself back and forth several thousand times a minute until it develops fatigue failure and a tiny crack appears.

Sympathetic vibration and fatigue-failure cracking are the same principles by which famed tenor Enrico Caruso, according to legend, shattered glasses by singing at them. According to the stories, Caruso could produce such a pure tone and could sustain it so long that a crystal goblet would vibrate sympathetically and finally crack or shatter.

In the case of the pipe tests, the crack allows the pressure to leak out and the pipe becomes akin to a flat tire. When the pressure drops, all the machinery stops and the timer shows how long it took to wear out the pipe section.

The tests were performed at the Chemtron Corporation, Louisville, Ky., and are believed the first of their kind in the United States. Pipes can now be tested in a few minutes, five or six times faster than by previous methods.

The new technique is "more economical from the standpoint of power requirements, manpower, equipment investment and maintenance." In the future it may be used for rapid testing of new metals and alloys as they are developed for nuclear and space travel piping requirements.

Science News Letter, May 21, 1960

HORTICULTURE

**U.S. Participates In 1960 Floriade**

THE UNITED STATES exhibition at the 1960 Floriade in the Netherlands represents the first participation by this country in a horticultural exposition abroad.

The Floriade, international gardening event of the year and often referred to as the Olympics of horticulture, opened March 25 in Rotterdam and will run through Sept. 25. Five million visitors are expected to attend the six-month show, in which nine nations will participate.

The history-making American exhibit is a product of joint cooperation between Government and private citizens. It is co-sponsored by the Foreign Agricultural Service of the U. S. Department of Agriculture and the American Horticultural Council.

The theme of America's three-and-a-half-acre display is how Americans really live, what kind of homes they have and what

kind of gardens they have. Emphasis is on middle-income living.

One of the most unusual displays is by the Atomic Energy Commission, demonstrating how peaceful atomic research contributes to knowledge of plant functions.

The United States Exhibit, which features redwood throughout, also includes a 5,000-square-foot fragrant garden of American-bred roses and a sizable display of ornamental plants by Harvard University's Arnold Arboretum. Educational and institutional displays by governmental and horticultural organizations are featured in a special pavilion.

Science News Letter, May 21, 1960

METEOROLOGY

**Iowa Most Frequently Hit By Tornadoes Since 1916**

IOWA was the state most frequently hit by tornadoes from 1916 to 1950, a U. S. Weather Bureau climatologist reported.

Lothar A. Joos of Champaign, Ill., said that current averages, however, placed Iowa behind Illinois, Missouri and Nebraska in tornado occurrence. He told the American Meteorological Society meeting in St. Louis that the recent sharp increase in tornado frequency resulted from better reporting of the occurrence of these severe local storms, not from a detectable increase in actual frequency.

Science News Letter, May 21, 1960

METEOROLOGY

**Improved Predictions By Weather Moon System**

SIX TO EIGHT weather satellites, all in orbit at the same time, would greatly improve the U.S. Weather Bureau's predictions, the Bureau's chief, Dr. Francis W. Reichelderfer, believes.

Dr. Reichelderfer reported that such a system of satellites could monitor remote polar areas and ocean areas from which storms may come. The satellite system would permit drawing more accurate world-wide weather maps. Dr. Reichelderfer said that meteorologists would relate satellite data with weather observed on the ground. Then they could predict the effect on the U.S. of a cloud formation over the ocean.

Dr. Harry Wexler, director of meteorological research at the Bureau, envisions five or six satellites on polar or near-polar orbits.

"One might be a noon satellite, one might be a 4 p.m. satellite, one might be an 8 p.m. satellite and so on," Dr. Wexler said. He also wants a satellite traveling west to east about the equator for detecting hurricanes.

This system of satellites, Dr. Wexler said, would keep track of each important storm around the world. Meteorologists would then know when these storms are about to strike.

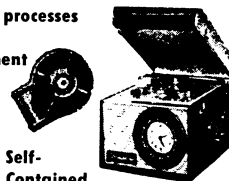
Forecasts made in this manner would probably be made available to other nations through the World Meteorological Organization.

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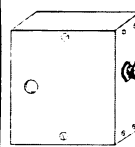


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