ENGINEERING

Flying Glass Hazard

Dangerous shattering of windows by bomb explosions is possible even though the panes have been treated with anti-scattering materials.

➤ FLYING GLASS from windows blasted by bomb explosions is still a hazard even when the glass has been given an anti-scattering treatment, declared Frank W. Reinhart of the National Bureau of Standards, speaking at the meeting of the American Society of Mechanical Engineers in New York City.

In the Bureau of Standards investigation a vacuum-concussion chamber was used to test the various anti-scattering treatments. The glass specimen was clamped as a cover over a tank connected to a vacuum reservoir. The opening of a quick release valve reduced the pressure inside the tank suddenly, causing the breaking of the glass by the air pressure on the outside.

Lacquers, tapes and adhesive-fabric materials were used in the tests. They were subjected to accelerated aging to determine how well they retained their anti-scattering properties in service. All three materials were found to have some satisfactory breaking characteristics.

"An adequate film thickness, at least 0.02 inch, must be applied in the case of lacquer and the tape must completely cover the pane in overlapping strips," Mr. Reinhart said. "Individuals should take shelter away from glass-enclosed spaces even though the glass is covered with an anti-scattering material."

Science News Letter, December 11, 1943

Turbosupercharger

➤ "THE LAYMAN looks with amazement when he first sees the turbosupercharger with its turbine glowing brilliantly at 1,700 degrees Fahrenheit, while only inches away its compressor is inhaling the frigid, rarefied air of the substratosphere at 100 degrees below zero," E. E. Stoeckly of the General Electric Company, West Lynn, Mass., said.

These turbosuperchargers have put America's biggest bombers and deadliest fighters on top of the enemy.

"In the thin air at today's fighting altitudes of 25,000 to 35,000 feet, the unsupercharged aircraft engine, developing less than 25% of its sea-level power, is ineffective. This loss in power is restored by supercharging—forcing a normal weight flow of air into the engine," he explained. "Centrifugal-type air compressors are used to supercharge aircraft engines. When the power to drive the compressor is taken from the engine crank shaft, it is termed 'gear supercharging.' When the compressor is driven by an exhaust-gas turbine, it is called 'turbosupercharging.' In the high altitude bombers and top-flight fighters, the two are combined."

"These compactly built fire-eating turbosuperchargers multiply engine power several times at high altitudes. They operate at terrific speeds with all parts stressed to their ultimate limit. Thus, they must not only be carefully designed and built but must be tested with extreme care under all the conditions which are encountered in actual flight."

Science News Letter, December 11, 1943

Yankee Ingenuity Needed

➤ ENGINEERING schools should offer to selected students special opportunities to develop their Yankee ingenuity, Wilbur L. Merrill, director of the General Electric works laboratory, Schenectady, N. Y., told the American Society of Mechanical Engineers.

Y. I. is as important as I. Q. While technical colleges are providing excellent enginering training, they are developing ingenuity only subconsciously, Mr. Merrill said.

"Engineering development and design along established lines will yield a sound product," he said, "but for the new short cuts to save labor and material, for the new stunt which makes the product radically better, for the new scheme which makes possible the heretofore impossible, we must look to Yankee ingenuity."

Science News Letter, December 11, 1943

Human Relations Research

➤ THE STUDY of people by industrial production research departments is as essential as the study of equipment, processes, methods and materials.

This idea was advanced at the meeting by L. C. Morrow, editor of *Factory Management and Maintenance,* in a panel discussion.

"What makes people work well?" he asked. "Is it good health, food, nutrition, music, quiet, good industrial relations, education?"

Such studies of human relations in industry should be classified as production research Mr. Morrow believes.

"We should achieve as nearly as we can the lowest possible costs of production in order to allow sales prices low enough to bring about a distribution of industry's goods and services wider than we have ever experienced," Mr. Morrow said. "That is the only way we shall be able to achieve a high standard of living for everybody. It is the means by which our industries can be given a production demand that will mean a plentitude of jobs."

Science News Letter, December 11, 1943

MEDICINE

Navy Uses Movie Film To Detect TB in Recruits

➤ THE 35 MILLIMETER motion picture film, similar to that which brings you your favorite screen star, has become a major weapon in the U. S. Navy's continuing war against tuberculosis.

The film is part of the photofluorography system for taking X-ray pictures of the chests of all recruits, in order to detect and weed out those with tuberculosis. The films can be made at the average rate of 200 per hour, cost only one cent per person and doctors are able to review the negatives at the rate of 400 per hour. Saving in space of storage for the films is another advantage.

Science News Letter, December 11, 1943

VOLCANO OBSERVATORY — New hut used by Dr. Ordonez in observing Paricutin and Zapicho.

ZAPICHO—This baby companion to Paricutin, Mexican volcano, is throwing stones in the air. This photograph taken by Dr. Ordonez on Nov. 18 shows at the right the slope of the major cone of the big volcano. The cover photograph is a view from another angle.

GEOLOGY

Baby Volcano Crater

At the northwestern edge of Paricutin, Mexico's new volcano, is a crater 100 feet high that has produced lava outburst larger than nine previous flows.

See Front Cover

➤ A LITTLE volcano cone a hundred feet high is now erupting at the northwestern edge of the main cone of Paricutin, Mexico's active volcano. It is the only survivor of five lava blisters that rose in the Mexican volcano's basin on Oct. 16.

The new cone has been christened "Zapicho" by Dr. Ezequiel Ordonez, leading geological watcher of Paricutin, who recently revisited Paricutin before he left for a lecture trip to southwestern United States, as guest of the American Association of Petrolcum Geologists. Zapicho means "small" in Tarascan, the native Indian language spoken in Michoacan, the state in which the volcano is located, some 200 miles west of Mexico City.

Zapicho is behaving like a small-scale replica of Paricutin, throwing out liquid lava, vapors and stones. Located so close to the main crater, it is considered another vent from the same volcanic source, but it is nevertheless worthy of a name of its own.

Zapicho has produced an outpouring of lava larger than the nine previous liquid lava flows. It is a mass about a mile long and 1,200 feet wide.

The observatory used by Dr. Ordonez, in watching Paricutin frequently since its birth in February, was threatened by the moving lava and the light wooden hut had to be moved hurriedly to a safer spot. Near the earlier observatory hut there was a bomb-crater of ancient volcanic origin, and this hole, 100 feet deep and 600 feet in diameter, was completely filled with the flowing incandescent lava, which overflowed toward the observing post of Dr. Ordonez.

Blue vapors, yellowish gases, and liquid lava were being thrown 360 feet into the air. Frequently there were outbursts of ashes. The smell of sulfur was reported wide-spread.

Some lava emitted by the volcano is so light that it seems to be floating in the air and fragments are blown farther than 3,000 feet. Many of the pieces are fibrous and look like coarse blond hairs quite similar to Pele's hair of Hawaiian volcanic action.

Heavy ash is thrown out by the volcano and this has laid down a yellow mantle over the nearby countryside.

Dr. Ordonez found Paricutin more beautiful than ever, but the destructive effect of its sand and dust has increased as the months have passed. In the nearest city, Uruapan, 20 miles from the volcano, all vegetation is covered by a thick film of dust and orchards and gardens are producing practically no crops as a result.

The nearest sizable village to the volcano, San Juan Parangaricutiro, is practically ruined. The Tarascan Indian inhabitants are poverty-stricken, agricultural production has stopped, and soon the village will have to be abandoned.

Those who live near the volcano are now calling Paricutin "she" referring to "la volcana," although when the eruption first occurred, it was called as the dictionaries have it, "el volcan," which is masculine.

Science News Letter, December 11, 1943

INVENTION

New Whey-Drying Process Invented by Two Germans

➤ AN INVENTION of potential value to the milk-using industries is a more economical process for drying whey, the watery liquid left after milk solids have been converted into cheese or industrial casein.

Water in whey has long been one of the most troublesome of dairy-industrial problems. There are valuable sugars, acids and proteins in whey, but the cost of evaporating or otherwise getting rid of the water has made them prohibitively expensive.

In the present invention, on which patent No. 2,335,380 has been issued, the cost is reduced by whipping air through the whey in its last stage of processing, after it has already been thickened by evaporation in a more or less conventional vaporizer. Forcing the air into the thickened whey also cools it off, and leaves an end-product that is porous but not frothy, easily handled and with good keeping qualities.

Any American dairyman or industrialist can have the use of this patent practically without cost to himself, for the inventors are subjects of an enemy alien power, and their patent has accordingly been vested in the Alien Property Custodian, to whom inquiries about its use should be directed. The inventors are Kurt Bertram of Berlin and Erich Lemmerich of Mulheim-Ruhr—or perhaps one should say nowadays, formerly of these cities.

Science News Letter, December 11, 1943