technology notes

ACOUSTIC TESTING

High Heels Hard to Simulate

Noises from people walking in the apartment above may be noisier than necessary because floor materials aren't measured properly for noise suppression, according to two acoustical engineers from the Armstrong Cork Co.

Standard measuring equipment for impact noise doesn't duplicate the sound of real people walking on the floor.

They tested some 200 floors with the standard hammer machine and with "female walkers wearing hard high heels and prejudged to be consistent vigorous walkers."

Many floors which appeared quiet under machine test —and which would have passed minimum requirements of some building codes—were actually loud when subjected to tests involving humans, the engineers report.

ULTRASONICS

Color Television Display

Color television makes a good display system for ultrasonic detectors in medicine, according to work reported by a pioneer in the field, Dr. John E. Jacobs of Northwestern University.

Ultrasonic imaging depends on the varying rates at which sound passes through different materials. If a hand is immersed in water in the path of ultrasonic waves, for instance, different tissues impede the passage of the sound by different amounts.

Dr. Jacobs, director of Northwestern's Biomedical Engineering Technology Institute, converted the varying speeds into different colors on a TV screen.

Reporting to the Acoustical Society, he said the color system is 20 to 40 times more sensitive to tissue changes than existing black and white TV displays.

The greatest difficulty with the system at present is that the object being examined must be immersed in a liquid, says Dr. Jacobs.

The ultrasonic imager is also useful in identifying defective welds, which show up in wildly varying colors on the screen. A good weld displays a uniform color.

TELEMETRY

Bottles Cry 'Tilt'

A tiny transmitter on every bottle keeps tabs on San Diego (Calif.) bartenders.

The device, called Electrobar by its developer, Cubic Corp., fits on a special locked-on pouring spout and signals when the bottle is tilted. A receiver in the manager's office keeps track of the number of drinks.

A separate frequency is transmitted for each price category, allowing automatic accounting.

BUOYS

Power from Waves

Harbor buoys which utilize the motion of waves to generate electricity for their lights and fog horns have been developed and tested in Japan.

The buoys reportedly are less expensive to operate and less troublesome to service than buoys using standard or solar batteries.

According to Nichiro Kogyo Corp., which builds them, the buoys require a battery check only once or twice a year and general repair every two years.

The buoys work on two principles. A turbine-type buoy generates electricity through the vertical movement caused by waves acting on a long stem attached to its bottom. A pendulum-type converts the rocking motion of the buoy into a horizontal force that generates electricity.

MATERIALS

Colored, High Strength Rubber Developed

Chemists at the Department of Agriculture Northern Regional Research Laboratory, Peoria, Ill., have produced rubber that is white, colored or transparent using corn starch as a reinforcing agent. Their rubber is comparable in strength to that reinforced with carbon black.

High strength rubber, as in automobile tires, takes its color from the carbon black used in its manufacture. (White wall tires are either painted over or covered with a veneer.) Non-black fillers are now used only where strength is not essential.

The laboratory's work with rubber is the outgrowth of a project initiated four years ago using cereal xanthate as a paper additive. The xanthate was produced in the laboratory by the continuous mixing of sodium hydroxide, carbon disulfide and starch. When used in paper manufacture, the wet and dry strengths of the resulting product were both increased.

The experiments in rubber processing were conducted by Dr. C. R. Russell, and four other Agriculture chemists.

ACOUSTICS

Predicting Duct Failure

Various kinds of vertical-takeoff aircraft and air-cushion vehicles use ducts around their propellers or fans to increase lift.

The restriction of the ducts creates an intense sound pattern from the pumping action of the propeller. At certain frequencies this sound field may reach values that cause acoustical fatigue of the duct structure, leading to breakdown.

A method of analyzing the rotational sound in such ducts was reported at the Acoustical Society meeting in Miami Beach by Werner Fricke and John R. Bissell of Bell Aerosystems Co.

The model presented by the Bell engineers predicts the sound pressure distribution along the inner duct wall as a function of horsepower, thrust and rotational speed of the propeller.