TECHNOLOGY

Ultra Sound Inspects Recapped Auto Tires

➤ LONGER-LASTING RECAPPED tires will result from an ultrasonic method of tire inspection developed at Akron, Ohio.

The specialized equipment allows spotting of internal defects, not visible to the eye, in all sizes of tires. It is frequently economical for car owners to prolong the life of tires by recapping them, if smooth tread and obvious cuts and breaks are the only defects. Many tires, however, have internal flaws that cannot be detected by ordinary inspection, but make them a loss for recapping.

In the method developed by W. E. Morris, R. B. Stambaugh and S. D. Gehman of the Goodyear Tire & Rubber Company's research laboratories in Akron, the tire is rotated through a tank of liquid, which can be either water or alcohol. The ultrasonic vibrations are transmitted through the tire to a microphone lowered inside the tire and covered by the liquid.

The tread region, where the unspotted flaws occur, is scanned from shoulder to shoulder as the tire revolves. The output of the microphone is read on a meter. When the meter readings drop or when a red light replaces the green "OK" light on a panel light, the tire has flaws that mean it must be discarded, or must be repaired before it is recapped.

The ultrasonic inspection detects separations in the tire structure, internal breaks and porosity or looseness around the cords. Inspection records and the actual mileages obtained after recapping gave good correlation, the scientists report in *Review of Scientific Instruments* (Dec., 1952).

Science News Letter, January 31, 1953

HOME ECONOMICS

Good Light Needed for Sewing

➤ MANY WOMEN do their sewing at night, when artificial light is needed. Even those who can find time for the darning, mending and other sewing jobs during the day will need artificial light on these dark winter days.

For comfort and efficiency and to avoid tired feeling eyes, the right light is important.

Home economists of the U. S. Department of Agriculture recommend good general illumination and also a close lamp that directs bright light on the work for sewing. General illumination of the room prevents the eye-tiring contrast between sharp points of bright light and shadowy areas in the room.

In addition, a bright light beamed on the place where the needle is working is needed. This bright direct light should always come below the eye level.

Especially convenient as a sewing light is an adjustable lamp with a swing arm which allows the light to be moved up or down or sidewise, as needed to bring it close to the work. For hand sewing the specialists suggest clamping a small flood-light in a photographer's swivel to the stem of a 300-watt floor lamp.

Suit the brightness of the direct light to the job, they suggest. Fine stitching on dark fabric calls for the most light.

A portable lamp for sewing is suggested so that it can be used wherever the homemaker chooses to sew. A regional farm-housing study showed that many women would like a separate sewing room. But extension specialists report that at present sewing often is done "all over the house"—in the living room or even the kitchen in winter and in bedrooms in summer. In the South many farm women reported the bedroom as the preferred location for sewing.

Science News Letter, January 31, 1953

TECHNOLOGY

Electric Panels, Glued To Ceilings, Heat Rooms

➤HOMEOWNERS NOW can heat their houses with rubber panels only 1/16th of an inch thick which can be glued right to the ceiling.

The panels consist of a layer of electricity-conducting rubber mounted between insulation paper. Aluminum foil on both outer surfaces protects the rubber inside from moisture.

Developed by the United States Rubber Co., New York, the panels are relatively inexpensive. They are designed to turn electricity into radiant heat for supplementary warmth in hard-to-heat rooms. They can be used exclusively to heat room-additions to houses. Whole houses can be heated economically in locations where electricity is inexpensive.

The panels are rated at 22 watts a square foot and work on either 115 or 230 volts. The surface heats evenly to about 100 degrees Fahrenheit, the company says, and presents no hazards of abnormally high temperatures in concentrated points.

Science News Letter, January 31, 1953

PUBLIC HEALTH

Blame Noxious Fumes For Lung Cancer Increase

➤ NOXIOUS DUSTS, gases, fumes and mists in industrial workrooms have now been blamed as perhaps responsible for the increase in recent years in cases of lung cancer.

The idea appeared in a report by Dr. May R. Mayers of New York at the meeting of the Congress on Industrial Health sponsored by the American Medical Association in Chicago.

Inhaling dusts, fumes and gases, she also pointed out, may not necessarily result in damage to the breathing organs but may have harmful effects on other parts of the body.

Science News Letter, January 31, 1953

IN SCIEN

ENGINEERING

Electric Utilities Still Need Readers for Meters

➤ THE MAN from the power company who reads your meter will continue to knock regularly on your door in the future. Remote meter reading seems to be impractical at the present.

New and less expensive telemetering methods will have to be devised before remote meter reading will be economical, J. R. Macintyre of the General Electric Company, and W. C. Israel of the Detroit Edison Co., reported to the American Institute of Electrical Engineers meeting in New York. The men saw no promising new methods in the immediate future.

Telemetering is a system of relaying information automatically from one spot to another. It is used, for instance, in sending weather information to the ground from instruments carried in high-flying balloons.

In a joint study conducted by the two companies, engineers also learned that it is not economical at this time to equip meter readers with portable computers so they can make out bills on the spot.

Science News Letter, January 31, 1953

TECHNOLOGY

Standard Smoothness Saves Machine Cost

➤ MACHINE MANUFACTURERS can slash costs by standardizing the surface finishes of their products.

Reporting to the American Society of Mechanical Engineers meeting in New York, Michael W. Papp, standards engineer of the Warner and Swasey Co., Cleveland, said his company cut painting time more than 50% and at the same time improved the appearance of the product within a year after developing such a scheme.

Machines must be good lookers as well as good workers if they are to be successful on today's competitive market, he said. Color, smoothness and luster of the final product have the greatest effect on buyers.

Although color can be controlled carefully, the smoothness and luster of machines often vary during manufacture. To produce standard finishes, Mr. Papp said his company developed cast-iron samples of the machines with the surfaces finished properly. Machinists use the samples as guides.

Simple drawings of the machines also are supplied to painters and inspectors as references. The drawings show the machine surfaces in different colors. Red, blue and white designate whether the surface is to be super-smooth, satiny or rough.

Science News Letter, January 31, 1953

CE FIELDS

ENGINEERING

Grounding Electric Equipment Is Urged

➤ PROPER GROUNDING of equipment that might come in contact with electric current is one of the best safety measures that industry can take to protect its personnel from electric shock and possible electrocution.

Although presumably safe, ungrounded equipment is hazardous. During 1951 in California alone, 117 injuries, including one death, resulted from electric shock due to ungrounded equipment, L. G. Carpenter of the General Electric Company reported to the American Institute of Electrical Engineers meeting in New York.

Small or portable electrical equipment accounted for 87 of those injuries. The devices operated on low voltages which often are not considered dangerous, but which actually have killed men.

When an object is grounded, it actually is wired to the ground. That can be done by running a wire from the device to metal water pipes buried in the ground, and to special rods driven deep into the earth.

But all such "ground electrodes," he pointed out, should be of a non-corrosive metal, such as copper or copper-bearing steel. Corrosion reduces the effectiveness of the buried metal in draining off electricity that might harm persons touching the equipment.

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TECHNOLOGY

Inhibitor May Solve Acid Pollution From Coal

➤ NATURE IS mixing air and water with pyrite in the shafts of soft coal mines, creating at least a $3,000,000 pollution problem, and is dumping it in America's streams and rivers. But a research team at Johns Hopkins University, Baltimore, may have found an answer to the problem.

The answer is an "inhibitor" that stops the production of sulfuric acid when air, water and pyrite-bearing soft coal are mixed in the laboratory. It is hoped the chemical will work as well in coal mines.

The scientists would not describe the chemical make-up of the inhibitor, nor would they speculate as to its practicality until field tests are run in the next few months.

The Johns Hopkins research team consists of Dr. Charles D. Renn, sanitary engineering expert, Dr. Walter A. Patrick, professor of chemistry, and Floyd W. McCollum, a graduate student in chemistry. The men are working under a fellowship sponsored by the Interstate Commission on the Potomac River Basin, Washington.

The seriousness of the pollution problem is dramatically brought to light by the fact that more sulfuric acid is created in America's coal mines than is manufactured commercially in the entire world. Estimated at 10,000 tons a day, the acid seeps into rivers and kills fish and damages industrial equipment. The damage done by the acid in 1943 was estimated at about $3,000,000.

New coal mines increase the seriousness of the problem. As they are opened, or as new shafts are sunk in old mines, more sulfuric acid is made by nature. Old coal mines continue producing the acid at a steady rate.

Pyrite, commonly called fool's gold, is a disulfide of iron. A special form of it that occurs in most soft coal fields is called "sulfur balls."

When sulfur balls are exposed to the elements in the presence of a common chemical, the reaction produces sulfuric acid and ferric hydroxide. The ferric hydroxide drops out when it reaches the stream, leaving the acid.

In the United States, the pollution problem is concentrated along the Appalachian mountain chain.

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ENGINEERING

Lightning in Andes Shows Freakish Nature

➤ FREAKISH LIGHTNING behavior has been found nearly three miles high in Peru's Andes. Lightning bolts there are three times more severe than at normal altitudes, and electrical storms occur when the temperature hovers around freezing.

That is not in accord with lightning behavior in Colorado's mountains. From studies conducted there, engineers noticed that lightning strokes were weaker higher in the mountains than they were at lower altitudes. The engineers decided lightning should be non-existent at 18,000 feet.

Yet 14,650 feet high in the Peruvian Andes, lightning intensity ranged from 7,100 to 119,300 amperes—three times more current than had been found in bolts at normal altitudes.

The freakish nature of Peruvian lightning was revealed in a five-year study conducted by the Cerro de Pasco Corp., La Oroya, Peru.

The observations were made at Cielo Punta Peak, about 150 miles northeast of Lima. The peak is the highest point on a double-circuit transmission line between Cerro de Pasco and Oroya. It lies in the heart of Peru's rich copper, lead, silver, gold and zinc fields.

Details of the study were reported to the American Institute of Electrical Engineers meeting in New York by B. C. Maine and C. Lee, both of the Peru power company, and C. M. Foust of the General Electric Co., Schenectady, N. Y.

Science News Letter, January 31, 1953

SURGERY

Lobotomy Operation Aids Mental Patients

➤ THE BRAIN cutting operation known as prefrontal lobotomy can bring "striking" improvement to chronically sick mental patients when their condition is compared to what it was before the operation.

The improvement is generally kept over a five-year period after the operation.

But in most patients the improvement does not bring them to the level of adaptation they made before they got sick.

These are the conclusions of a five-year follow-up study of 100 patients reported by Drs. Milton Greenblatt and Harry C. Solomon and Miss E. Emily Robertson of Harvard Medical School and Boston Psychopathic Hospital in the *Journal of the American Medical Association* (Jan. 17).

Of the 100 patients, 40 were living in the community, 45 were still in hospitals, 12 had died and three could not be traced. Only two of the 12 deaths could be directly attributed to the operation.

Of those on whom information was available, 29% were making a "good" work adjustment five years after the operation. Before the operation only two percent were making a good work adjustment and 66% had a good work adjustment before their mental illness began. By a "good" work adjustment, the doctors mean full time and productive employment, either at home in the case of housewives or in industry earning a regular salary. In some cases a good rating was given to patients who were working steadily and full time in the hospital on some industrial project.

Science News Letter, January 31, 1953

ENTOMOLOGY

Oriental Scale Attacks Austrian Pines in U. S.

➤ AN ORIENTAL scale insect that attacks conifer trees has been discovered infecting Austrian pines near Baltimore.

This is the first record of this exotic insect pest in the United States, said Dr. William W. Cantelo, entomologist with the Bartlett Tree Research Laboratories, Stamford, Conn., who reported it.

The insect, *Poliaspis pini,* is common in Japan and China, but it is not especially injurious to the conifers there. Dr. Herbert Morrison of the U. S. Bureau of Entomology said the scale insect had been intercepted several times on shipments coming from the Far East to the U. S., but was not known to have become established here.

Only time will tell what effect the insect invader may have on American trees, Dr. Morrison said.

"Economic entomologists always prepare for the worst when a new insect pest turns up in America, but they are often pleasantly disappointed when nothing dire occurs," Dr. Morrison said.

Science News Letter, January 31, 1953