ENGINEERING

Dynamite Bonfire

The way to dispose of damaged or useless dynamite is to burn it—but cautiously! Explosives engineers tell what precautions to take.

➤ BURN DYNAMITE that has been wet, or has been damaged in storage or handling, or is left over after a job and cannot well be carried to the site of a new one, is the recommendation of a group of explosives engineers, presented to the Institute of Makers of Explosives (*Explosives Engineer,* July-Aug.). This advice is less perilous than it may sound, for dynamite and other high explosives will as a rule simply burn rather fiercely if ignited with a flame, but will not explode unless the proper detonating cap is used.

However, the engineers caution, it isn't safe to assume that your dynamite will burn up thus harmlessly. Always set your dynamite bonfire as if you expected it to blow up, and keep well away from it until it has burned itself out.

Dynamite should never be burned in cases or deep piles, the recommendations state. The cases should be opened with wooden mallets and wedges, using special care if there are any signs of leakiness. The cartridges should be removed, slit, and spread over the ground, preferably with a mat of loose paper or excelsior underneath them. In no case should the layer of dynamite be more than two or three inches thick. Before lighting the fire, it is important to search through the loose explosive carefully, to make sure that there are no stray detonators lost in it.

Some dynamites are difficult to ignite, hence it is necessary to have fuel beneath the cartridges. If the dynamite is wet and does not burn readily, it may be necessary to pour a little kerosene over it. The fire should be lighted in such a way that it will be a little while in reaching the dynamite—long enough for the man who lights it to get away to a safe shelter.

A second dynamite bonfire should not be started on the ashes of the first. Heat remaining in the soil makes this procedure dangerous. As soon as all the dynamite has been burned the soil should be plowed. The residue from burned dynamite contains mineral salts which cattle may eat—with serious results to themselves.

Leaky dynamite sometimes leaves wet spots of nitroglycerin on magazine floors. The engineers recommend that such floors be scrubbed with a mixture of water, denatured alcohol, acetone and sodium sulfide. This decomposes the nitroglycerine and renders it harmless.

Science News Letter, August 21, 1943

STATISTICS

May Is Month of Disaster Red Cross Study Reveals

➤ MAY is the month of disaster. It tops all other periods for havoc of storm, fire and flood in a twenty-year study just compiled by the American Red Cross.

Early spring months, March through June, captured the dubious honor of bringing most disaster to the nation on the average. Tornadoes stood far above other causes, with 617 recorded during the period 1920 to 1940. Thirty-seven states were hit but Texas bore the brunt of the destructive whirlwinds with a total of 79.

Fires of all types ranked second as a source of disaster, with floods following close behind.

For relief work during the two decades Red Cross announced that it had spent $96,616,961.

During the year ending June 30, 1942, a total of 171 disasters are recorded, with tornadoes again topping the list.

Science News Letter, August 21, 1943

PHYSICS

Electronic "Chemist" Aids Synthetic Rubber Making

➤ IMPROVED synthetic rubber production will result from use of an electronic "chemist" to analyze the complicated gases formed in making butadiene. Dr. John A. Hipple, physicist at the Westinghouse Research Laboratories, in cooperation with technical men from the industries involved, adapted the instrument, called a mass spectrometer, for its new war job.

"In 15 minutes," Dr. Hipple explained, "this spectrometer will dissect a complicated gas molecule a twenty-five-millionth of an inch long, and can be arranged to produce automatically an autograph that tells the chemist the composition of the gas.

"At present certain analyses require from 15 hours to three days of pains-taking laboratory work by five to 10 skilled chemists—others cannot be done at all even by other processes. Results attained by these tedious methods are much less accurate than the molecular 'portrait' that comes out of the spectrometer."

As butadiene molecules are built up in the chemical plant, their composition must be checked at intervals to make sure the correct structure is being obtained. An error in molecular design would result in poor quality synthetic rubber.

Present methods are sometimes so slow that the batch of butadiene has gone through the various steps of processing before the check analysis is completed, Dr. Hipple pointed out. Thus, under the old method, a batch of butadiene may have to be reprocessed, causing lost production time.

Science News Letter, August 21, 1943

MOLECULE SORTING — Production of synthetic rubber is speeded with this new instrument, a speedy and practical mass spectrometer. Dr. John A. Hipple, Westinghouse Research Laboratories physicist, who developed the instrument, is holding the key part of it—a curved glass tube fixed between the two poles of an electromagnet. The magnet pulls on electrified molecules going down the tube so that only those having a certain mass can go around the curve to reach a target where they are counted. This gives a quick check on the composition of the mixture.