

The Army, Navy and Marines, as well as certain industrial companies, are using rubber linings in concrete storage tanks for holding high-octane gasoline. Rubber as a liner in these tanks prevents the destruction of the concrete caused by the sludge inhibitor found in all high-octane gases.

The use of rubber for tank linings was developed by the United States Rubber Company.

Science News Letter, August 12, 1944

AERONAUTICS

Airport That Grows Is Need for Post-War World

► AN AIRPORT that grows up with its town, from a simple grass-plot landing field to a super airport for handling big cargo and transport planes, is described by the Michigan Board of Aeronautics in a new publication.

The planning program for the airport is divided into six stages. The first stage consists of the purchase of a 120-acre plot, which is graded, drained, and seeded to give 1,800 to 2,000 feet of landing area in all directions. Hangars are built as they are needed. This type of airport will meet the needs of the average small community.

Starting with this master plan, additional construction is undertaken as the need for increased facilities becomes apparent.

In Stage Two, pavement is laid on two landing strips, and a taxiway and apron are added.

Two additional landing strips are added in Stage Three, bringing the total to four runways.

An additional 40 acres of land are required for Stage Four, designed to take care of limited airline operations. Also included are a basic administration building, pavement on the runway, and the addition of two diagonal runways.

Enlarging the airport to 200 acres, it is possible to extend the north-south and east-west runways to 3,500 feet, for regular airline operation. Also included in Stage Five are more hangars and facilities for handling passengers and cargo.

The final development of the airport, Stage Six, consists of widening all the runways, paving taxiways, and the addition of more hangars and the final units of the administration.

Science News Letter, August 12, 1944

Licorice growing was introduced into England from Syria about 400 years ago.

MILITARY SCIENCE

Barbs Instead of Bombs

Now being showered on enemy airfields and roads, these pieces of sharpened steel are disabling Axis aircraft and vehicles by gashing their tires.

► SHARP metal barbs are now being showered on enemy airfields and roads by Army Air Forces planes, disabling Axis aircraft and vehicles by gashing the precious surface of their tires.

Three types of metal barbs have been developed at the AAF Tactical Center, Orlando, Fla. The "Christmas tree" type is constructed from two pieces of sheet steel with serrated edges that make it look like a fish-hook. After stamping, each piece is bent and the two are welded together. The whole unit is about 3.5 inches long and resembles the branches of a yuletide tree.

Then there is the single barb, a pointed hollow tube about 3.5 inches long, mounted on a curved base containing a lead deposit. The weighted base makes it bob right back up like children's toy clown dolls. Since it is ef-

fective only on paved surfaces, it is used primarily on highways, and paved landing strips.

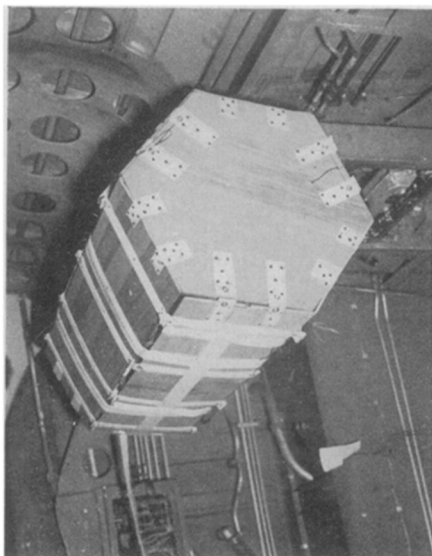
The "Big Boy" really has a murderous effect on tires. It is a four-pronged barb, 4 inches long. It consists of two hollow steel pointed tubes, bent in the middle and welded together at the bend to form the four prongs. Thus, it will always rest on three prongs, leaving one pointed up at a 90-degree angle to the ground.

If you have ever experienced picking up a nail in an automobile tire, you can appreciate the effect thousands of these barbs dropped on an airfield or highway have on the Axis armies.

Here is how they are used. A group of bombers, loaded with hexagonal boxes made from plywood containing the metal barbs, instead of bombs, fly over enemy airfields and roads at low



DEATH FOR AXIS TIRES—When this deadly four inch, four-prong barb comes into contact with an enemy airplane tire, the result is a crack-up. Official Army Air Forces photograph.



NOT A BOMB—Containing tire-ripping barbs, the collapsible plywood box shown in this official Army Air Forces photograph, is as deadly as though it were filled with explosive. Once over an enemy airstrip, the pilot pulls the static line attached to the box, it collapses and the barbs are dispersed over a wide area, disabling aircraft and causing general confusion.

altitude. When they spot a target, such as enemy planes taking off, or motorized troops on the march or supply trucks, each plane showers the earth with barbed hail in an area 100 yards in diameter.

The resulting confusion means real chaos to the enemy. In the case of vehicles, the trucks pile up and much time must be consumed in making repairs and clearing the road of barbs before advance can be made. In the case of airfields, planes taking off or landing at high speed swerve violently and crack up into funeral pyres of flaming wreckage.

As many as ten Axis bombers have been destroyed at one time by the over-size carpet tacks, the cost to us being only a few pieces of sharpened steel. Not a round of ammunition is fired.

Science News Letter, August 12, 1944

ENGINEERING

Y-Gun Loading Mechanism For Submarine Pursuers

➤ A MECHANISM for loading the heavy Y-guns carried by submarine-pursuing craft is covered by patent 2,350,493, granted to Cecil P. Caulkins of New

London, Conn. A Y-gun is the device developed during World War I for the simultaneous launching of depth charges in opposite directions, while a third "ash can" is rolled down a rack on the stern of the vessel.

Mr. Caulkins' device is essentially an

inclined frame with a sliding carriage on which the heavy depth charge rests. This is raised from deck to muzzle level by winding up a cable with a crank. The inventor states that it is possible to complete the loading operation in 45 seconds with his mechanism.

Science News Letter, August 12, 1944

RADIO

Airwaves "Sleuths"

Axis spies and illegal radio station operators can no longer tamper with our broadcasting system, thanks to the Radio Intelligence Division.

➤ THE AIRWAVES of the United States are no longer a playground for Axis spies and illegal radio station operators, thanks to the vigilant ears and instruments of the Federal Communications Commission's sleuths of the airwaves, the Radio Intelligence Division. Two new scientific instruments, nicknamed "snifter" and "watchdog," revealed by Stacy W. Norman, acting chief of RID, help the FCC cope with the many tricks employed by radio outlaws.

The "snifter," announced Mr. Norman, is a portable, one-man direction finder that "smells out" by radio the very room in which an illegal radio transmitter is hidden. After the general location of any clandestine radio station which may dare to go on the air has been established, RID men sometimes find that it is situated in a warehouse, office building, or apartment house. The "snifter" is then brought into use for close-in searching. Carrying the inconspicuous instrument, the RID man walks up and down the corridors of the building. When the radio detective reaches the room where the transmitter is located, the dial on the "snifter" quickly points it out. The snifter works like a portable radio receiver: the closer you get to the transmitter, the louder the signal comes in.

"The watchdog," Mr. Norman stated, "consists of a monitor and recorder that scans the entire radio spectrum, many thousand times the portion of the spectrum covered by the dial on the standard broadcast receiver. The instrument automatically records for immediate or future reference the beginning of any broadcast transmission in any area. Like a guard at a military post it stops and examines all stations that are broadcasting, passing by legitimate stations, pointing out illegal stations."

Prime weapon of the air-wave detectives is the Adcock Long Range Direction Finder, adapted and perfected for use of the RID by George E. Sterling, chief of the RID, and his associates. The unit consists of long H-shaped antennae that can be turned in any direction. This antennae is mounted on a 40-foot tower.

Like powerful ears, the antennae pick up signals of radio stations, often thousands of miles away. It can determine the approximate point of origin by balancing the signal. As in the case of a man who turns his head until he can hear the same sound in both ears, thus determining the direction of the sound, the long range direction finder locates the origin of the radio signal.

There are some 30 of these Adcock stations operating 24 hours a day in the United States, Puerto Rico, Hawaii and Alaska. Once a clandestine transmitter is picked up by one direction-finder, a message is sent by teletype to several other Adcock stations, which focus their attention on the transmitter. Each Adcock station promptly transmits the direction from which it is receiving the strongest signal to one of two RID Intelligence Centers, one located on the East Coast, the other on the West Coast. The reports on the clandestine transmitter are correlated and the bearings are projected, like the spokes of a wheel, centering on the hub which marks the exact location of the station.

Local RID representatives then take over, and with direction-finding equipment installed in automobiles and sniffers, they ferret out the exact spot where the transmitter is located. Since it is a Federal offense to operate an illegal or subversive radio station, arrests and prosecutions in court are handled by the Department of Justice.

Science News Letter, August 12, 1944