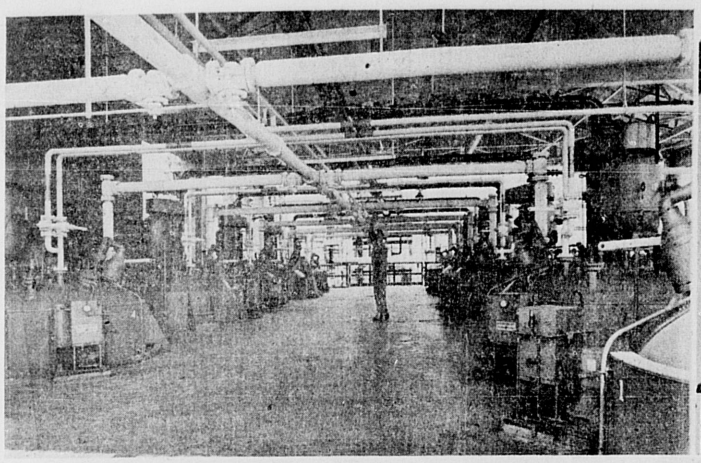
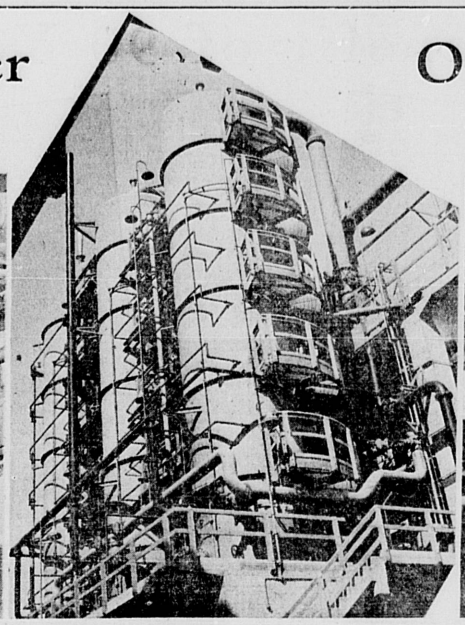
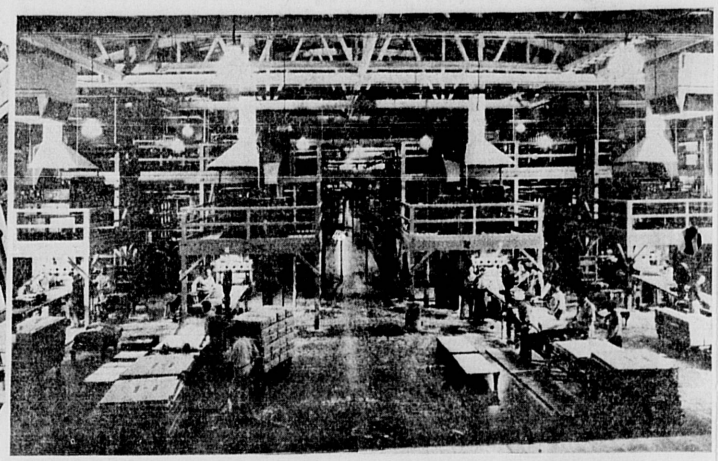
Goodyear and U. S. Rubber Operate Big Torrance Units



REACTOR OPERATING FLOOR . . . showing two lines of reactors used in each of the three co-polymer units at the Goodyear and United States Rubber companies' synthetic rubber plants located at Torrance.



RECOVERY TOWERS . . . where unreacted styrene is recovered and returned to storage. The scene is at one of the three co-polymer units of the California Synthetic Rubber Project at Torrance operated by Goodyear Synthetic Rubber Corporation and the United States Rubber Company. —Photo by Powell Press Service.



BALED RUBBER . . . Showing the finished product of the Goodyear and United States rubber plants at Torrance. View shows four lines of balers and packaging operations, which is duplicated in each of the three co-polymer units.

Engineers Had Worked Years on Polymerization

The three polymerization plants, with a rated capacity of 90,000 long tons of synthetic rubber annually, are operated by the Goodyear Synthetic Rubber Corporation and the United States Rubber Company at Torrance.

While the industrial development of synthetic rubber was accomplished in a short space of time, yet fortunately the chemists and engineers of these two rubber companies for years had conducted research in the material, with the aim of producing commercially successful synthetic rubbers.

As far back as 1932, there was discovered a synthetic rubber-like material, especially resistant to oil and gasoline. At the same time the chemists were seeking an all-purpose substitute for natural rubber. The result is the type known as Buna-S or GR-S.

Suitable Raw Materials

The art of making rubber synthetically consists of choosing suitable raw materials, combining them in proper proportions, and causing the molecules to polymerize or hook-up in the proper pattern with the aid of special chemicals, and by exact control of time, temperature and pressure period. Buna-S uses butadiene and styrene as its basic raw materials.

The liquid styrene and gas butadiene in liquid form under pressure are received from adjacent raw material plants. For controlling the proportion of the basic raw materials and the assisting chemicals, in accordance with the precise chemical formula, there is a central control meter room in the reactor areas. The operators throw levers and pre-determined amounts of the proper materials flow through a main pipe line into the reactors where polymerization takes place. The ingredients include butadiene, styrene, the soap solution, the catalysts and other chemicals in solution and water.

The oily butadiene and styrene are emulsified in the soap solution by whipping them into small droplets, like the droplets of oil in a salad dressing.

The actual polymerization may now begin. The temperature of the batch is raised and controlled by water jackets from the reactor.

As the polymerization proceeds, the droplets become more viscous, or thicker, and more rubber-like. Emulsion is now no longer of an oil in liquid, but an emulsion or a soft solid in a liquid. This is now a synthetic rubber latex.

The progress of the reaction is carefully checked and when polymerization has reached the proper point, a chemical is added to arrest further polymerization. The batch is then run off to the blow-down tanks.

Separation Process

In the blow-down tanks the synthetic rubber latex is tested. The hydro-carbons which have not combined are then recovered. The volatile butadiene is separated from the mixture by letting it boil off as a gas, and it is recovered by compressing it again. The styrene must be recovered by distilling under reduced pressures at higher temperatures.

The batch of latex, containing 25 percent synthetic rubber, is treated with an anti-oxidant which prevents deterioration. Many batches of latex are bulked and blended for uniformity of product, in 30,000 gallon tile-lined, concrete, storage vats.

The synthetic rubber latex is then coagulated by salt and acid, and the small particles coalesce as larger flocs, or crumbs. In coagulation, 70 tons of rock salt, which is brought from California's desert area, will be consumed daily.

After coagulation, the rubber crumb is filtered, washed and then pressed to remove the excess water, the rubber is dried by passing back and forth three times in large continuous driers. The 12 driers of the plants will evaporate 160 tons of water per day.

9,000 Bales Daily

The dried rubber is then weighed on automatic scales, which feed 75 pounds to the automatic balers where it is pressed into loaves 14 by 28 by 7 inches. Nine thousand such loaves will be produced every day at full operation.

For process control and to insure a uniform product, 1800 samples of various kinds are taken and tested daily in the chemical and physical laboratories serving these plants. The bales of GR-S rubber are shipped to the rubber manufacturers for processing into finished articles on the same machinery as is employed for natural rubber.

Old Destroyer Boilers Doing New War Duties

Boilers from some of the old World War I destroyers are still doing war duty—in Torrance, where they were brought in the emergency to go into the steam plant at one of the synthetic rubber production units. Some of them came from San Diego, some from Mare Island, some from the Philadelphia Navy Yard.

In the case of the latter, some of the railroad tunnels across the Rockies and the Sierras made it necessary to unload the boilers, truck them around the tunnels and reload them on flat cars. In spite of this handicap, they were in operation in Torrance three weeks after leaving Philadelphia.

COVER 250 ACRES

Operational plants in the California Project under the synthetic rubber program cover approximately 250 acres of land.

Huge Post-War Highway Plans Tie In With Torrance Projects

A backlog of close to $50,000,000 worth of public works in the Harbor area has accumulated since the start of the war, the Wilmington Chamber of Commerce, says.

The figures are arrived at as a result of consultation with the Wilmington Chamber of Commerce and assertions by Mayor Fletcher Bowron of Los Angeles at a post-war planning meeting at Wilmington that a great deal of the city's post-war plans have to do with improvements in the Harbor district.

A $46,302,376 program stretching over six years, calling for improvements to streets, highways, storm drainage, libraries, parks and playgrounds is scheduled by the city if financing can be accomplished, Councilman George H. Moore, secretary of the Wilmington Chamber of Commerce, says.

A principal item on the program is the proposed Harbor Parkway which would be a freeway between San Pedro and Wilmington, ultimately leading to connect with the county-wide freeway system.

Close to $1,000,000 should be spent shortly after the end of the war within each of the Harbor City and Shoestring districts, the councilman said, listing among the proposed projects a number of storm drains, grade crossings, parks and street and highway projects, including the widening of Lomita blvd., Western ave., Sepulveda blvd. and a number of other thoroughfares in these areas.

The Shoestring area projects tie in closely with several planned by the cities of Torrance and Gardena.

CALIFORNIA SPEAKS!

Significant Statements by Interesting Californians

SIGMUND SPAETH, "tune detective," S. F.—"The trouble with most musical audiences is that they go to big-league performances without the sandlot background. Half the time they don't understand what's going on."

COL. ALEXANDER R. HERON, chief, reemployment committee—"A man cannot enjoy life, liberty or the pursuit of happiness unless he has a way of making a living."

PAUL SCHARRENBERG, State Indust. Relations Director—"The illegal use of butane for gasoline is highly dangerous. The butane containers are likely to blow up at any time, causing serious damage and loss of life."

FLIGHT OFFICER JACKIE COOGAN, who landed glider behind Jap lines in Burma—"I you think the natives were surprised when our gliders landed you should have seen them when we opened up the mouth of one and drove out a jeep."

TORPEDO OUTPUT

How the home front is fighting was reflected this week by Navy Department figures which revealed that the monthly production of naval torpedoes is now greater than the entire World War I output.