

## CHEMISTRY

# Butyl Tires Prove Good

➤ BUTYL RUBBER tires in actual tests on New Jersey highways have shown a life of 20,000 miles if kept below a maximum of 40 miles an hour, J. P. Haworth and F. P. Baldwin of the Esso Laboratories reported before the meeting of the American Chemical Society at Buffalo.

Some plants for the production of this type of rubber are already in production. Others are under construction. By a year from this fall the total production of butyl rubber will reach an annual rate of 130,000 tons.

Possibilities of "tailor-made" rubber for the different parts of a tire were pointed out. In the average light car tire, weighing about 12 pounds, only about four pounds is in the conspicuous part, the tread. Requirements for tread are different from those of side wall, and these in turn differ from those of carcass and inner tube. Synthetic rubbers can be given properties to suit the uses to which they will be put, which is not possible with natural rubber.

Perbunan, a highly specialized kind of synthetic rubber made of butadiene and acrylonitrile, was described by three other Esso Laboratories chemists, R. A. Moll, R. M. Howlett and D. J. Buckley. Acrylonitrile, a derivative of ethylene, comes, like butadiene, from oil and natural gas. One of its ingredients, hydrocyanic acid, can also be manufactured out of natural gas plus nitrogen from the air.

Perbunan's special claim to consideration is its high resistance to oil and gasoline, which makes it well adapted for use in self-sealing tanks for fighter planes, linings for filling-station hose, gaskets for oil pumps, and any other jobs involving exposure to oil.

It is also highly resistant to wear and quite resilient. This would make it an

excellent tire rubber; but it is difficult to handle in manufacturing processes, so that its cost is high—somewhere between two and three times that of natural rubber. It should, however, make excellent tread blocks for tanks, a use that does not involve so much hand work as the preparation of tires.

*Science News Letter, September 26, 1942*

## ETHNOLOGY

## American Indians Need Proof of Native Birth

➤ EVEN AMERICAN Indians must prove they were born here! Qualified Indian workers have sometimes not been able to get war jobs, the Office of Indian Affairs reports, because they cannot produce birth certificates as proof of citizenship. A simplified procedure has now been worked out for granting delayed certificates based on Indian agency records.

*Science News Letter, September 26, 1942*

## TYPOGRAPHY

## New Type Dress And SNL Cover

➤ TO ANSWER the inquiries of those who have noticed the typographical face lifting that these pages have experienced:

The top line of the two-column headings are Airport Semi-Bold with a bank of Futura Medium, while the one column heads are Futura Demi-Bold, types that march along together in harmony. The text type is, as it has been, Granjon, picked for its ease of reading. The little arrow do-dads at the beginnings of articles are more attractive and easier to set than the two-line initial letters used previously. Descriptions of illustrations are in Cloister Bold.

The new cover keeps the general style of the old with more color and more illustration, thanks to the design of J. Benton Webb.

*Science News Letter, September 26, 1942*

## MILITARY SCIENCE

## Show First Breech-Loader At Smithsonian in Capital

➤ THE FIRST breech-loading rifle ever used in battle is in the weapons collection of the Smithsonian Institution in Washington, D. C. It was carried by its inventor, Maj. Patrick Ferguson of the 71st Highlanders, in the Battle of King's Mountain in 1780, where he lost his life. Some 150 or 200 of his men were armed with similar rifles, and since the battle was decisively won by the Southern mountaineers fighting in the Revolutionary cause, most of these were either broken or captured in the action, and have become scattered and lost. Occasionally a Ferguson rifle still turns up in some one's barn or attic.

The breech mechanism is simple and interesting. A quick-acting screw runs vertically through the barrel, attached to the trigger guard as a handle. One full turn opens the breech. Loading is easy, and for the date of the invention, remarkably rapid. Maj. Ferguson fired his rifle six times a minute in a test before British ordnance officers at Woolwich Arsenal in 1779.

The rifle in the Smithsonian collection, Maj. Ferguson's personal weapon, is a beautifully executed specimen of gunsmith's work. Its barrel is 31 inches long. The bore is of .70 caliber, and there are eight grooves.

Maj. Ferguson has been given a bad name by some Revolutionary historians, but this does not seem to have been wholly deserved, according to Gen. Watts de Peyster, American Civil War officer through whom the weapon came to the Smithsonian Institution. Gen. de Peyster found a passage in one of Maj. Ferguson's letters home from the Colonial front, in which it is indicated that the Scottish officer once had an easy shot at Gen. Washington (though he did not know who it was at the time) but would not fire because it seemed a most unchivalrous thing to do.

*Science News Letter, September 26, 1942*

To supply agriculture's nitrogen requirements for fertilizer during the coming year, an estimated 400,000 tons must be made available, less than half of which can be supplied from organic vegetable and animal byproducts.

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