

like those of natural or synthetic rubber.

In the manufacture of this new plastic, which may become a successful rubber substitute in tires, the polymer is mixed with a plasticizing agent in the usual

way, but with a curing agent added which makes vulcanizing possible. It then has twice the tensile strength of the uncured product.

*Science News Letter, February 12, 1944*

## PHYSICS

## Pitch Radioed at Night

Pure A above middle C may now be checked in evening with the 2,500 kilocycles per second frequency broadcast service of the National Bureau of Standards.

► MUSICIANS and manufacturers who want to check pitch can now tune in during the night with their shortwave sets to 2,500 kilocycles and get a musical sound guaranteed by the National Bureau of Standards to be pure 440 cycles per second, which is A above middle C in the musical scale. This radio frequency, 2,500 kilocycles per second, at night, is an addition, effective since Feb. 1, to the standard frequency broadcast service of the Bureau.

Since the same date, the pulse on the 59th second of every minute has been omitted. This government service, continuous day and night, broadcasts standard frequencies and standard time intervals from the Bureau's radio station near Washington, WWV. It makes the national standard of frequency widely available. This is of value in scientific and other measurements requiring an accurate frequency.

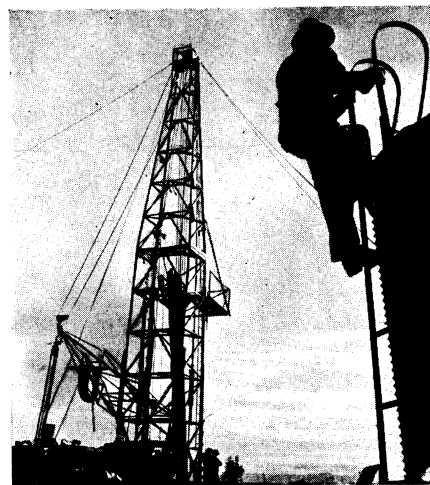
The Bureau's standard frequency broadcast service includes standard radio frequencies, standard time intervals ac-

curately synchronized with basic time signals, standard audio frequencies and standard musical pitch.

At least three radio carrier frequencies will now be on the air at all times to insure reliable coverage of the United States and other parts of the world. Two frequencies, 5,000 and 10,000 kilocycles per second, are on continuously day and night. A 15,000 kilocycles-per-second frequency is on the air from 7:00 a.m. to 7:00 p.m., with the additional frequency to be used, 2,500 kilocycles per second, from 7:00 p.m. to 9:00 a.m.

Two standard audio frequencies, 440 cycles per second and 4,000 cycles per second, are broadcast on the radio frequencies of 5,000, 10,000 and 15,000 kilocycles. The audio frequency 440 cycles only is broadcast on the 2,500 kilocycles. The 440 cycles per second is the standard musical pitch; the 4,000 cycles per second is a useful standard audio frequency for laboratory measurements.

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**ARCTIC OIL**—To help supply oil and gasoline for the U. S. and Canadian armed forces in the Alaskan zone, oil wells such as the one shown above, are being tapped at Fort Norman, 125 miles south of the Arctic Circle on the Mackenzie River. The joint U. S. and Canadian government development is known as the Canol project, Canol standing for Canadian Oil.

siopeiae, Dr. Struve states. (*Astrophysical Journal*, January)

A powerful stream of cool but rapidly moving gas flows out from the G star toward its companion. One part of the stream, presumably composed of the more distant or more rapid strata, expands outward and leaves the system. The other part flows around the A star, and having become hotter, but traveling more slowly, ultimately returns to the G-type star, Dr. Struve believes. It is not possible to see this streaming action, but spectroscopic studies make this the most plausible picture.

The stream of ionized metals such as calcium and iron flows at a height above the surface of the A star about equal to the star's diameter.

"The most interesting feature of SX Cassiopeiae is the observation of an approaching shell at and near secondary eclipse," the Yerkes director states. "These motions are plausibly attributed to the turning over of the stream due to conservation of angular motion. Only a part of the stream is retained by the system and completes the entire circuit around the A star."

The spectrum of this eclipsing double star is a blend of a true star of the G type, to which class the sun belongs, and lines of another origin which re-

## ASTRONOMY

## Star "Playing Catch"

Appears to be tossing part of its own atmosphere far out into space, clear around its companion, and recovering some of the flaming gases on its return trip.

► A STAR that appears to be "playing catch" with itself, tossing a part of its own flaming atmosphere far out into space, clear around its companion in a double-star team and recovering part of it on its return trip, is described by Dr. Otto Struve of the Yerkes Observatory.

The star is a rather faint double one, designated by astronomers as SX Cassiopeiae. Cassiopeia is the constellation landmarked by the great W-shaped group of stars on the opposite side of

the Pole Star from the Great Dipper.

As Dr. Struve pictures the phenomenon, a stream of gas issues from one member of the double-star team and divides on the far side of the second member. Part of the stream flows off into space, while part circles around the second star and returns to rejoin the atmosphere of its parent star. Some tenuous, absorbing cloud of gases acting in this manner would explain the peculiar variations observed in the case of SX Cas-