CHEMISTRY

Research Stretches Rubber To New Uses as Textile

MEN'S SHIRTS that never lack their buttons because they have none, feminine corsets of different varieties and names that elastically fit the figure, varied colored "glasses" that bounce instead of breaking these are some of the new products that are about to come upon the market from American rubber factories that heretofore have specialized in auto tires, toy balloons and other familiar rubber articles.

Rubber is making a bid as a textile. In combination with cotton, rayon, etc., it is being used to make a stretchy new yarn. For garters and girdles it seems to be an ideal material. For shirts and shorts it is replacing buttons that give trouble on the person and in the laundry. Men may soon expect to be able to have shirts with elastic cuffs and a stretchy insert lengthwise so that they can get into them without buttons to fumble. "Lastex" is one trade name of one rubber-textile combination, elisions of "elastic" and "latex," the form in which rubber comes from the rubber tree.

Once hard rubber, "vulcanite" or "ebonite," made by mixing rubber with a little more sulfur than is used in the pliable sort of vulcanized rubber of tires, etc., was the principal synthetic material for combs, fountain pens, hairpins (when they wore them). Synthetic resins of the bakelite type usurped much of the hard rubber field and then they marched on to compete with glass and china ware.

Rubber is now invading this application also. A new plastic compound of rubber, tasteless and odorless, resistant to heat and scratching, classed as unbreakable, with lower costs claimed, is being offered. It will be made into dishes, household appliances and containers.

Science News Letter, February 11, 1933

ASTRONOMY-PHYSICS

Sensitive Instruments Extend Study of Distant Stars

ASTRONOMERS are enlarging their studies of the universe as the result of the more accurate and sensitive measuring of light from distant stars by two new methods.

One of these developments overcomes the limit set by the minute electric currents that flow through a wire even when no voltage is applied. These so-called Brownian fluctuations are very minute, but are nevertheless a nuisance in delicate electrical measurements. It was supposed that they set a limit beyond which no measurements could be pushed.

Nevertheless, Dr. Sinclair Smith of the Mt. Wilson Observatory, Pasadena, Calif., has devised a galvanometer for measuring currents a million times as small as the fluctuations. With the help of the photoelectric cell such an instrument can be used to measure the light that comes from stars thousands of times too faint to be seen with the unaided eye.

A fourteenth magnitude star, such as Dr. Smith measures in routine work, is so faint that the number of light quanta that arrive per second from it fluctuates in a random manner. This provides a limit to the sensitivity of any photoelectric device. To pass this limit one must work very slowly and take long time averages.

"Radio on Telescope"

What he describes as "a radio set on the end of a telescope" is now being used by Dr. Albert E. Whitford, at the Washburn Observatory of the University of Wisconsin, at Madison, to measure the brightness of stars. With a star of the ninth magnitude, considerably too faint to be seen with the naked eye, a variation in brightness of less than three hundredths of a magnitude can be detected, he says, in a report to the *Astrophysical Journal.*

This is much less variation than can be detected by the methods previously used, in which the minute current from a photoelectric cell, set up by the starlight falling on the cell, is detected by an electrometer. With this instrument, the speed of motion of a thin thread, as seen in a magnifying glass, is measured with a watch, and it is rather difficult to use. By amplifying the current from the photocell with radio vacuum tubes, the current can be measured directly on the scale of a galvanometer. The cell, as well as the vacuum tube, is enclosed within a vacuum, which, Dr. Whitford has found, makes the apparatus much more stable.

Science News Letter, February 11, 1933

ARCHAEOLOGY

China's Civilization Said To Be Only 4,000 Years Old

CHINA, the "mysteriously old," is not so very ancient in its civilization, after all, researches indicate.

China entered the Age of Bronze about 2000 B.C., is the conclusion of C. W. Bishop, archaeologist of the Freer Gallery of the Smithsonian Institution, Washington. Bronze Age China was, therefore, a contemporary with the Bronze Age of northern Europe, and younger than the earliest civilizations of Egypt and Mesopotamia.

Mr. Bishop arrived at his dating of Chinese civilization by calculating the lengths of the reigns of China's early rulers. The historical period in China goes back no farther than the ninth century B.C. But before that the Chinese people had kept careful account of their royal families' pedigrees. Century after century, they could trace the line of the ruling princes.

To set approximate dates beside the list of early Chinese rulers, Mr. Bishop estimated the average length of a reign. The reign of a feudal prince in Europe was about 21 years, and this served as a guide, with some necessary modifications for Chinese dynasties that handed a throne on to the ruler's brother rather than his son. The yardstick of time that Mr. Bishop worked out, fitted very well with legendary dates, and also with what archaeology and climatology have indicated.

The computation of dates carries the Hsia dynasty, the first of "civilized China," back to about 1800 B.C.

Science News Letter, February 11, 1933