

WAITING FOR EARTHQUAKES

SEISMOLOGY

Seismographs Set for Spot Records of Coming Quakes

Automatic Instruments in Vital Locations Expected to Bring Valuable Records Through Next Great Disturbance

THE NEXT great earthquake to visit the United States will very likely write its own record of destruction and leave this story intact so that engineers may study it and learn how to build better shock-resistant structures.

For the U. S. Coast and Geodetic Survey is installing in regions where strong earthquakes have occurred, automatic seismographs which are designed to "sleep" until a severe quake comes, for years if necessary; but which, when aroused by impending disaster, will spring to life by recording the shock and by ringing a bell to give notice of their action.

The installation of this equipment was announced by Director R. S. Patton of the Coast and Geodetic Survey. Some of the instruments are being set up in those parts of California where severe earthquakes have been felt during the past 75 years.

Permanent Instruments Damaged

Architects, builders and seismologists hope to get exact measurements of earth movement which cause material destruction. There is very little information of this kind in existence now for, when shocks become violent, seismographs at permanent observatories in the earthquake area are rendered inoperative and sometimes badly damaged. But the new apparatus is rugged and, not being very sensitive, will not begin to operate until those in larger observa-

tories are helpless. Even though some of the instruments be destroyed by a big shock, enough should survive to give valuable records. They are being set up in basements of buildings, on bridge piers and in other vital locations.

The automatic features of the instruments which permit them to remain at

ETHNOLOGY

Black Magic of Witchcraft Reappears in England

By E. N. FALLAIZE

BLACK magic is increasingly apparent in certain sections of European society.

A remarkable fortune-telling case has been tried in one of the courts of law in Yorkshire, England; and a woman fortune-teller has been convicted and condemned to eighteen months imprisonment for defrauding two spinster sisters of \$1500 by promising to bring before them their future husbands and hold the men until they married the two sisters.

The methods employed were unusual in modern fortune-telling and in many respects are more like a survival of the

rest and instantly spring into full action when necessary are of great interest to scientists, Capt. N. H. Heck, who is in charge of the Coast and Geodetic Survey's seismological work, explained. He said that seismologists have attempted to accomplish this from the earliest days of scientific interest in earthquakes but the present apparatus is the first in which it has been successfully done.

Three Kinds

Three kinds of instruments are being used. That which will yield the most important information is the accelerometer, recorder of the violence of an earthquake. It was designed by Dr. Frank S. Wenner of the U. S. Bureau of Standards. The actual distance through which the earth sways and the speed of the sway will be measured by a displacement meter which, together with special recording apparatus, was designed by scientists of the Coast and Geodetic Survey.

A third instrument, that gives less complete information but weighs only 15 pounds and need not be kept in the dark as is necessary with the others, is the Weed strong motion seismograph developed by Arthur J. Weed of the University of Virginia. It is comparatively inexpensive.

M. W. Braunlich of Massachusetts Institute of Technology made the starting devices for the three types of apparatus.

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methods of the ancient soothsayer or the mediaeval witch. They remind us of the witches of Macbeth with their smoking magic cauldrons. For among the devices of this fortune-teller were the magic ointment with which the witch anointed herself and others, the love charm which bound the lover, and the smoke serving as the magic mirror in which were to appear the visions of persons and events belonging to the future.

The principal ingredient in this case was a magical preparation called "zep" for which the sisters were induced to pay out large sums of money. Ancient witches made their ointment chiefly with the fat of young dead babies whose bodies they had dug up. "Zep," however,

was said to be made in Germany from the body of some mysterious animal from the East. It cost nearly \$400 a bottle. To be effective its use had to be prolonged over a course of two years.

The method of using the preparation involved another very primitive magical idea. Just as the savage believes that anything which has been in contact with the human body may be effective in working magic for or against that person, so these sisters were told that they were to wear a piece of cloth next their bodies for 24 hours. This was then to be burnt in the flame of a lamp by the fortune-teller and each would see her future husband in the smoke. This vision of the future husband on certain occasions such as St. John's Eve (June 23) or New Year's Eve is a common belief in peasant folklore everywhere; but in this case the smoke evidently takes the place of the crystal ball more commonly used by the fortune-teller, or the pool of ink in the palm of the Arab boy employed in Egypt, or of a pure youth as in Persia, where future events are to be foretold.

In addition, the "zep" was to serve the purpose of a binding charm, for it was to hold the lover. But as time went on and nothing happened, it became evident that it would not be efficacious unless used in a more materialistic fashion. One of the sisters was told that she must induce a man to come to the room and the fortune-teller would then sprinkle "zep" over him, so that he could never get away.

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PALEOBOTANY

Gall Swellings Found On Fossil Oak Leaf

GALL-FLIES flew in the Miocene, back in the times when wild camels and three-toed horses scampered in the country that is now Oregon. This is indicated by an interesting fossil oak leaf that has been studied by Arnold D. Hoffman of the University of Chicago.

Split out from between layers of shale, the leaf impression shows 25 flattened-down swellings closely resembling the hypertrophied growths caused on leaves and stems of present-day plants by the little wasps called gall-flies, that lay their eggs in plant tissues to give their young an abundant food supply.

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CHEMISTRY

Real "Artificial Silk" Is Promising Possibility

Silkworm's Cocoon Would Be Chemically Made Over To Produce Fiber Closely Resembling That of Nature

WHEN SCIENTISTS learned how to make a silk-like thread from the cellulose of cotton or wood, they dethroned the silkworm as the premier producer of material for stockings, dresses, and other intimate and public apparel for both sexes. Rayon or "artificial silk" is one of the new materials that the industrial revolution has made available generally since the World War.

Science now promises to invade the domain of the silkworm again. The production of real "artificial silk" is promised. The term real artificial silk may sound like a bull, but the new process justifies it.

The real artificial silk is a regenerated silk. The silkworm is a necessary actor in its making. Unlike rayon, which is not silk at all, the new fiber is real silk. It is artificial, however, because it is formed into fiber in much the same way as rayon.

In making regenerated silk, the silkworm's cocoon is converted into a sericin-fibroin solution of liquid consistency just about that which occurs

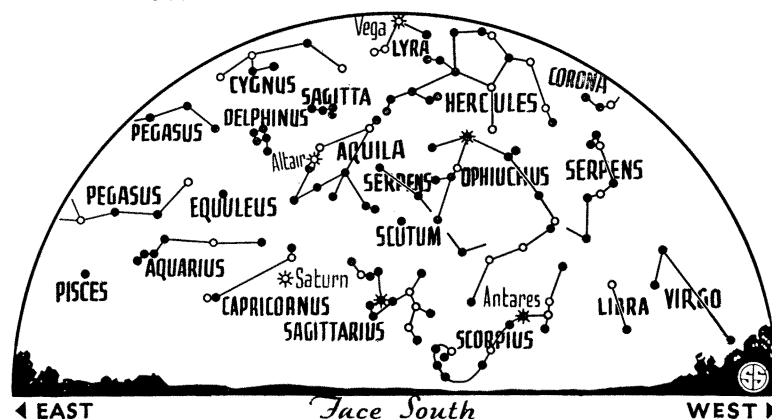
within the body of the silkworm before it spins its silk filament. It is a solution of real silk. From this point on, the process uses the experience of rayon manufacture. The silkworm solution is made into yarn as though it were cellulose solution destined to be rayon. It is squirted out of very fine holes into filaments that are twisted by a spinning machine into yarn.

Protein Rayon

The *American Silk Journal* believes that this real artificial silk will soon become an accomplished industrial fact. Perhaps it will be called a protein rayon instead of a cellulose rayon since the silk solution is a protein manufactured by the silkworm. It is said that the new product will approach real silk much more closely in its physical and chemical properties than any of the existing synthetic fibers.

The regeneration process has been perfected by the Japanese but the story is that the Japanese government will not permit its commercial utilization because it would seriously affect the estab-

* * ○ ● SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



THREE BRILLIANT STARS AND A PLANET

These are attractions of the southern skies during August. The three stars are of the first magnitude—Vega, Altair and Antares—and the planet is Saturn, the heavenly object girded by peculiar rings. The other two first magnitude stars visible are Arcturus and Deneb in the northern skies.