

## MEDICINE

## New Blood Test Used In Diagnosis of Cancer

**A** NEW METHOD of detecting cancer in its early stages has been developed by Dr. Hans Jacques Fuchs, member of the physiological institute of the Veterinary University of Berlin. An account of the new method has been given by Dr. Fuchs to a Science Service correspondent at Berlin. Details will be published in a few months in a German scientific journal.

So far, two thousand cases have been successfully diagnosed by the new method, the diagnosis being confirmed by operation or dissection. The method also makes it possible to determine the presence of cancer when an infectious disease occurs at the same time. Further, it is claimed that by this method the success of surgical or radiological treatment of cancer can be controlled.

The new method depends on the digestion of serum from the blood of a suspected cancer patient with fibrin prepared from the blood of a normal person and with fibrin from the blood of a person known to have cancer. The digestion goes on for ten hours at a temperature of 104 degrees Fahrenheit. The protein is then removed from these samples and the amount of non-protein nitrogen present in each is determined. Depending on the amount of non-protein nitrogen present, it is possible to make a diagnosis as to whether the suspected case is one of cancer or not.

The new method is the result of five years of incessant research work during the course of which Dr. Fuchs had to make a number of pieces of special apparatus in order to achieve the necessary exactness in his determinations. The method also marks the first time that a chemical determination of a serological process has been made.

*Science News Letter, December 12, 1931*

## NAVIGATION

## Ships Bounce Noises To Learn Positions

**T**HE OLD-TIME skipper was rather helpless in a fog or other thick weather. If he couldn't look upward and see the sun or a star he couldn't determine his position. But his modern successor just bounces a noise off the bottom of the sea and gets a very good idea of where he is.

How this is done was explained in a radio talk broadcast under the auspices

of Science Service, over the network of the Columbia Broadcasting System by Commander G. T. Rude of the U. S. Coast and Geodetic Survey.

A specially equipped vessel of the Survey, formerly J. Pierpont Morgan's yacht *Corsair II*, but now known as *Oceanographer*, has been making detailed and accurate depth charts of the inshore waters along the Atlantic coast of the United States, working largely with the new sonic depth-finding apparatus. So thoroughly has this work been done over areas traversed by many steamer tracks that now it is possible for commercial vessels to determine their positions at least approximately by starting a sound toward the bottom, and then detecting its echo by means of an electrical ear called the hydrophone. Since the speed of sound in water is known and is fairly constant, the elapsed time can be automatically expressed in terms of depth in fathoms.

Most large steamships have this depth-finding apparatus constantly in operation, so that by checking its reports from time to time against a contour map of the bottom it is possible to form a pretty good idea of the ship's position and course, without a glimpse of the heavenly bodies that are the navigator's usual aids.

*Science News Letter, December 12, 1931*

## PSYCHOLOGY

## Length of Winks Is Measured by Scientists

**I**F A FAINT RAY of sunlight falls on your face in the morning just before the alarm clock sets up its clatter, your response should be very much greater than if the clock did its noisy work alone. This, at least, would seem to be an everyday illustration of the principle of psychology which has just been made clear by experiments reported by Ernest R. Hilgard of Yale University.

Mr. Hilgard's investigation consisted in measuring the length of winking responses to sounds and lights. He found that if a faint light is presented to the human eye, the subject winks slightly, the wink averaging only four millimeters in extent when measured by special photographic apparatus. If a loud sound is the stimulus, the subject winks much harder, in an eyelid response twenty millimeters long. But if the loud sound is preceded within a twentieth of a second by a faint light, the response is greatly exaggerated. The wink then is lengthened to 31 millimeters or more.

*Science News Letter, December 12, 1931*

# IN SCIENCE

## ZOOLOGY

## Chimpanzees in Wild State Not Forced to Use Brains

**L**IFE for the chimpanzee in his native wild state is too easy to make it necessary for him to exercise his rather superior intellectual equipment, Prof. Henry W. Nissen of Yale University declares. He has been making a study of chimpanzees in their natural home in French Guinea.

The apes find food and water in great abundance, Prof. Nissen observed. Their diet agrees with them perfectly, evidently, because these creatures, which like all caged animals, have rather uncertain health in captivity, are practically never ill in the wild state.

Even the play of the wild chimpanzee does not include the ingenious "monkey-shines" so characteristic of the animal in captivity. Dr. Nissen says:

"For the limits of anthropoid intelligence we shall probably have to look to laboratory experiments, where we can make complex behavior the requisite for attainment of a goal. In the bush, on the other hand, we may expect to find the fullest expression of the emotional and social life of these animals."

*Science News Letter, December 12, 1931*

## ENGINEERING

## Coolies Defeat Machines In Excavation Battle

**W**HILE man is fighting man in the Far East, man also fights the machine. He has just won a partial victory over his inanimate foe.

Sixteen steel and concrete factory buildings and a steam power plant were recently completed at Chosen, in northern Korea. Latest American construction methods and equipment were used, except for excavation work, *Civil Engineering* reports in its current issue.

Korean and Chinese laborers, directed by Japanese foremen, developed such efficiency in handling dirt in shoulder baskets that machines beat a hasty retreat. The laborers could do the job two-thirds cheaper.

*Science News Letter, December 12, 1931*

# E FIELDS

## CHEMISTRY

### Oranges Have Vitamin C Despite Early Picking

**T**HE AMOUNT of scurvy-preventing vitamin C contained in oranges and grapefruit is not affected by the season at which these fruits are picked, investigations at the Lister Institute by Mary Forest Bracewell and Dr. Sylvester Solomon Zilva have shown. Oranges and grapefruit are commonly picked while the skin is still green and both fruits are used as sources of vitamin C.

The antiscorbutic activity of the juice of both fruits was found to be the same whether the fruit was picked at the beginning or end of the season. Moreover, there was not much loss of vitamin when the fruit was stored under ordinary conditions for about two months.

Conditions of cultivation, origin of stock, age of tree and type of soil were found to have practically no effect on the vitamin content of the fruit.

*Science News Letter, December 12, 1931*

## FORESTRY

### Forester Says Redwood Trees Are not Fireproof

**C**OMPLACENCE on the part of Californians in the face of forest fires among the redwoods is not justified, in the opinion of Emanuel Fritz, associate professor of forestry at the University of California. Because the thick porous bark of redwoods is highly resistant to fire, many persons in the redwood region believe religiously that "fire can't hurt a redwood"; and they even deliberately set fires in the woods on the theory that they clear away the lesser growth and "give the trees a chance."

But repeated fire can burn thin even the thickest of redwood bark, Prof. Fritz has found in his years of study in the forests, and at last the heat reaches the cambium, or delicate growing tissue that makes new wood. It either kills it outright, or stimulates abnormal growths to meet the abnormal conditions. The final result is either a dead redwood, or one with "goosepen" cavities in its massive trunk, weakening

the tree while it stands, inviting further fire and fungus damage in the cavity, and greatly reducing its value as lumber.

Fire also causes retrogressive changes in the type of forest, Prof. Fritz declares. By thinning out the redwoods it permits trees of lower value to come in, which could not normally get a chance to grow in the deep shade of the forest giants. This not only cuts down the dollar-and-cents value of the timber, but also reduces the attractiveness of the forest to tourists; and, Prof. Fritz believes, the lumber companies "have a stake in tourist travel as much as they have in timber."

Prof. Fritz's discussion is presented in full in the *Journal of Forestry*.

*Science News Letter, December 12, 1931*

## ASTRONOMY

### Big Telescope Mirror Passes Final Tests

**A**FTER PASSING satisfactorily the most exacting tests that leading optical experts were able to devise, the greatest all-American telescope mirror, 69 inches in diameter, is now complete, ready to be brought to Delaware, Ohio, and installed on the world's third largest telescope, Dr. H. T. Stetson, director of the Perkins Observatory of Ohio Wesleyan University, has announced.

It is now in the shops of J. W. Fecker, in Pittsburgh, where the crude disc of glass, made in Washington at the U. S. Bureau of Standards, was figured to the proper curve, correct to less than a millionth of an inch. It will be brought to Delaware within the next few weeks. The telescope mounting has been ready for some months.

The disc of glass was received at the optical shops in September, 1928. Some sixteen thousand hours of work have been spent on it, not including the long and tedious hours of waiting. These were required after it had been warmed by the grinding process, in order that it might be cool for testing. Dr. Stetson was assisted in the final tests of its accuracy by Dr. J. S. Plaskett, Director of the Dominion Astrophysical Observatory, Victoria, B. C., where the second largest telescope was erected under Dr. Plaskett's supervision, and by Dr. I. C. Gardner, Chief of the Optical Section of the Bureau of Standards. Except for the Victoria instrument, the new Perkins Observatory reflector is exceeded only by the 100-inch mirror at the Mt. Wilson Observatory, in California.

*Science News Letter, December 12, 1931*

## PHYSICS

### Bright Lights Have Short Hollywood Life

**B**RIGHT incandescent electric lights that illuminate the sound recording of the thrilling talkie scenes are allowed to burn away less than a third of their useful life before they are discarded.

This Hollywood practice was revealed as a sound economy by a paper presented before the Acoustical Society of America by General Electric Lamp Development Laboratory engineers, C. Severin, E. M. Watson, and H. I. Wood.

Failure of a single lamp while filming a sound movie track may cause the re-taking of the scene at a cost of several thousand dollars. Automatic replacement of a dead lamp, practiced in projectors with success, is too slow and spoils a recording. The engineers therefore make it a rule to replace the recorder lamps when they have burned only 30 per cent. of their average useful life, since experience shows few failures up to that age.

*Science News Letter, December 12, 1931*

## ARCHAEOLOGY

### Oldest Town in U. S. Dates Back 561 Years

**T**O A LITTLE town in northeastern Arizona science would award the honor of being the "oldest continuously inhabited town in the United States."

The town is Oraibi. Its record-breaking antiquity has been determined by means of the tree-ring calendar by which scientists have been able to set specific dates on many prehistoric Pueblo settlements in the Southwest.

Dr. A. E. Douglass, astronomer, of the University of Arizona, and originator of the tree-ring studies, has returned to Tucson from Oraibi bringing the latest specimens of timbers from that place, and he has made final observations in dating the wooden beams of Oraibi.

He has collected about 275 beams which show that Oraibi was inhabited from the year 1370 A. D. until 1770. From 1770 there are written records showing that the town continued to exist. The Indian tribe now living at Oraibi is said to be composed of direct descendants of the town's founders.

Dr. Douglass is convinced that Oraibi is the only settlement in the United States that has proof of such long continuous habitation, and he will urge the government to mark the place properly.

*Science News Letter, December 12, 1931*