

ASTRONOMY

Edge of Visible Universe

The 200-inch telescope can look three times farther into space than was thought possible when it was built, another revision of the distance scale shows.

► THE OUTERMOST edge of the visible universe seen through the giant 200-inch telescope atop Mount Palomar is probably three times farther away than was thought only a few years ago.

The astronomical age of the universe, that time in the past when all matter was at one place in space, may be closer to 6,000,000,000 years than the 2,000,000,000 years so recently believed.

The universe is apparently expanding at an even slower rate than has previously been thought. Its expansion, however, is the same in all directions.

Only two years ago, astronomers cut the astronomical yardstick for measuring the universe in half. (See SNL, Jan. 10, 1953, p. 19.) That change still holds for relatively close objects, such as star clusters within our Milky Way galaxy, or the distance to the Andromeda Nebula, a giant starry pinwheel believed to resemble the Milky Way.

For very distant objects, however, a further correction is required, Dr. Allan R. Sandage of Mt. Wilson and Palomar Observatories has suggested.

He told a joint meeting of the Astronomical Society of the Pacific and the astronomy section of the American Association for the Advancement of Science that recent photometric work at Mt. Wilson and Palomar Observatories and Lick Observatory suggested a change of three, not two, for far-away galaxies.

The same studies also suggested the change in the apparent universe expansion rate. It is now thought to be, Dr. Sandage said, about 108 miles per second per million parsecs, compared to 318 miles per second per million parsecs, the value adopted by the late Dr. Edwin Hubble in 1936.

A parsec is the distance that a beam of light, moving at light's speed of 186,000 miles per second, will cover in 3.26 years.

As far as is now known, Dr. Sandage pointed out, "all external galaxies in all directions of space are apparently receding from each other with speeds directly proportional to their distances."

An indicator of the distance to far-away galaxies and clusters of galaxies is the observed brightness of the objects. The more remote these "island universes," each composed of millions of stars and nebulae, the fainter they appear.

Recent measurements have shown that what were thought to be stars in some of these more distant galaxies are actually clouds of glowing hydrogen gas. They have also shown that the apparent magni-

tude scale is out of line when applied to very faint objects.

When measurements of the brightness of galaxies are combined with measurements of the puzzling "red-shifts" of these objects, astronomers have observations on which to test the expanding universe theory.

The "red-shift" is a displacement toward the red, or longer wave-length, end of the spectrum found in lines from the rainbow-like spectrum of light from distant heavenly objects.

Dr. Sandage reported that Dr. M. L. Humason, also of Mt. Wilson and Palomar Observatories, and Dr. N. U. Mayall of Lick Observatory, Mt. Hamilton, Calif., recently completed 20 years of research charting the "red-shifts" of nearly 800 galaxies beyond our own Milky Way.

The range of measurements now available, Dr. Sandage told the astronomers, covers nearby systems with nearly zero recessional speed to the extremely distant Hydra cluster with an apparent recessional speed of 36,000 miles a second, about one-fifth the speed of light.

The apparent brightness studies were made by Dr. Edison Pettit, another astronomer of Mt. Wilson and Palomar Observatories. This catalogue, combined with the red-shift measurements, for the first time, Dr. Sandage said, provides a basis for testing the expanding universe theory, first proposed by Dr. Hubble in 1929.

The question of the reality of this red-shift, Dr. Sandage said, is still to be solved. It could mean an actual receding velocity. On the other hand, it could mean that, because of some law of nature that is not now known, light loses energy, and thus becomes redder as it travels through space in the course of time.

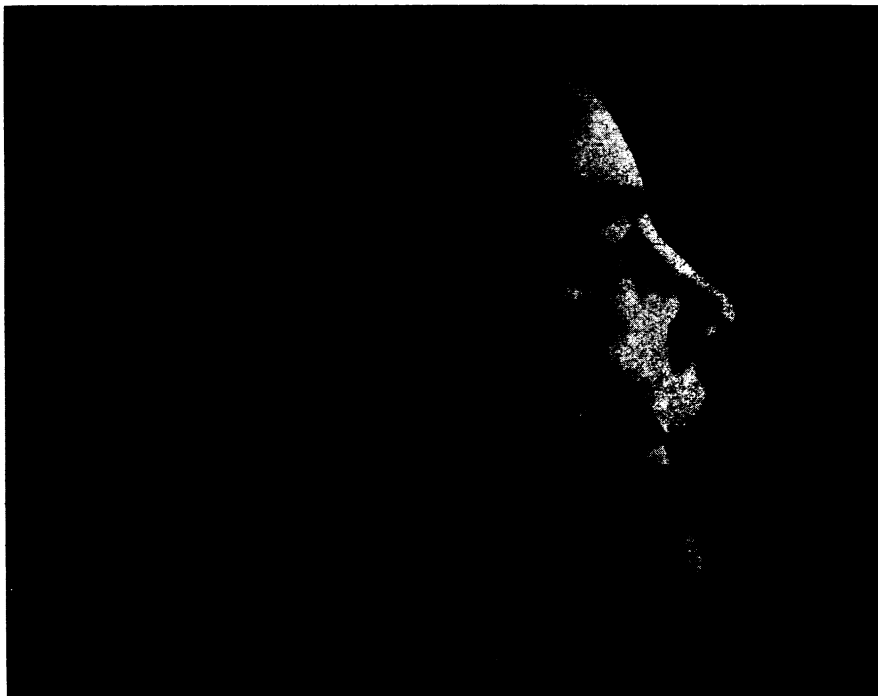
Science News Letter, January 1, 1955

CHEMISTRY

Gasoline "Sweetening" Speeded by New Process

► FASTER "SWEETENING" of gasoline and cleaner auto engines may result from a new process reported by Drs. L. D. Rampino and M. J. Gorham at the meeting of the American Association for the Advancement of Science in Berkeley, Calif.

When gasoline is separated from petroleum, there are often offensive odors in the solution caused by sulfur compounds called



PHOTOGRAPHY OF SPEECH—This picture, combining X-ray and conventional photography on a single negative, is the result of a new motion-picture technique developed at the University of Rochester. It is used in clinical studies of the mechanism of speech.

mercaptans. They are among the vilest smelling substances known.

A common procedure to rid gasoline of these chemicals is to add an inhibitor and caustic, and then age the mixture before the gas is sold.

The scientists studied the sweetening process for the Tide Water Associated Oil Co. at Associated, Calif., and came up with a new process. They propose adding a small amount of a sodium and lead oxide compound, called doctor solution, to the gasoline-caustic solution and injecting air to the mixture.

This, they said, would not only speed the reaction that destroys the mercaptans, but it would also reduce the amount of peroxides formed. Peroxides, they found, produce a substance in gasoline that dirties engines.

Science News Letter, January 1, 1955

PSYCHOLOGY

Girls as Bright as Men On Mechanical Problems

► WOMEN ARE just as clever as men in solving a mechanical problem such as locating a defect in a gear train, a report to the American Association for the Advancement of Science meeting in Berkeley, Calif., indicated.

However, worry in either a man or a woman does make a difference in solving the problem, Dr. Edmund V. Mech of the University of Oklahoma, and Drs. Nicholas A. Fattu and Ervin Kapos of Indiana University, have found.

Individuals who are less anxious, they found, are the ones who have the advantage in finding correct solutions to the gear train problem.

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PSYCHOLOGY

Teen-Age Sex Hysteria

► TEEN-AGE TROUBLES, ranging from increased numbers of illegitimate babies to attempted suicides by girls unhappy over the size and shape of their bosoms, was blamed on sex hysteria "which is a calculated instrument of modern journalism and so-called entertainment trends."

The charge came from Dr. Goodrich C. Schaffler of Portland, Ore. Speaking at the Sixth American Congress on Obstetrics and Gynecology in Chicago, he also blamed the teen-agers' difficulties on "increasingly loose practices, bad examples and lack of supervision in parental and home influences; liquor, narcotics, automobiles, auto courts; and finally the gang influences which combine these elements and tend, in certain groups, almost to enforce premarital sex practices."

He reported that anomalies of the breast in childhood and adolescence are seen often.

"These call for more attention from the physician in the present age because of ac-

GENERAL SCIENCE

Interlingua Written

► DOZENS OF people in many different countries have learned to write Interlingua, the world language, even though no classes in this language have yet been offered in any school.

A survey of correspondence at the offices of the Interlingua Division of Science Service in New York shows that in the last 18 months letters written in Interlingua have been received from 64 persons in 15 countries.

Dr. Alexander Gode and Hugh E. Blair, who are introducing Interlingua into worldwide use, explain that many of these writers of Interlingua attained their proficiency without use of textbooks.

A free information kit is sent out by the Interlingua Division, 80 E. 11th St., New York, upon request. It contains specimens of the language and grammatical rules that allow a person to write the language, which is based on existing languages of the western world.

A newspaper man who had received a copy of "Interlingua a Prime Vista," the book that gives a picture introduction to Interlingua, wrote a review of the book in excellent Interlingua. An editor in Venezuela who had received the information kit wrote an article on Interlingua for a newspaper in Caracas. The article included a long passage in Interlingua which he wrote himself. As a result many people in Venezuela became interested in the language.

A physicist in Chicago has taught himself Interlingua and uses it to publish an internationally circulated technical bulletin on his specialty, molecular spectroscopy. Bulle-

tins are also published in France and Denmark by people who have taught themselves Interlingua.

Though comparatively few have tried their hand at writing Interlingua, thousands have found that they read it with ease. Millions who have not yet tried it have linguistic backgrounds that enable them to understand it the first time they see it.

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