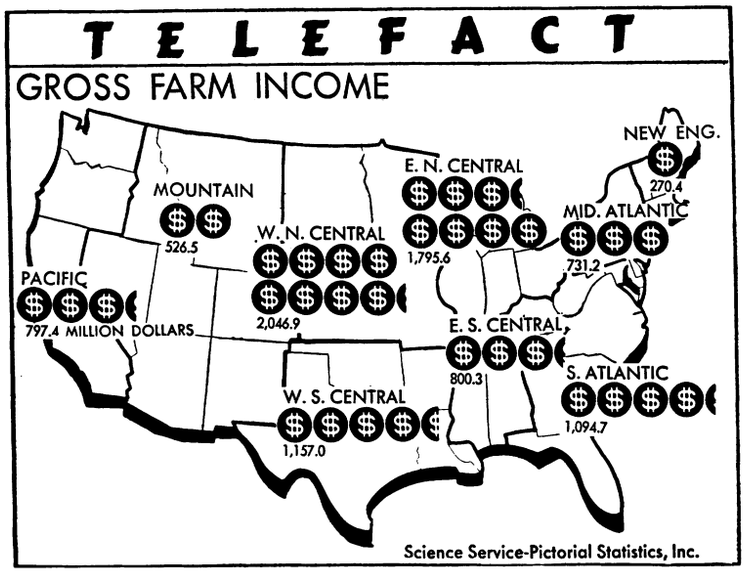


Science News Letter, September 28, 1940

ASTRONOMY

Clouds of Calcium, Sodium Found To Vary in Density

In Our Part of the Universe They Are Thinner Than at Great Distances; Less Dense Than "Vacuum"

IN OUR part of the universe clouds of calcium and sodium between the stars are thinner than in more distant regions, Dr. Theodore Dunham, of the Mt. Wilson Observatory, reported in a paper presented to the American Astronomical Society meeting at Wellesley College. The density of these clouds is different in different directions.

Towards Spica, bright star in Virgo seen in the southwest in summer evenings, the calcium particles which the astronomer can detect are four times as numerous as towards Alkaid, the star at the end of the handle of the Great Dipper. Even this is much less than the concentration found by other astronomers for more distant stars.

"This indicates," states Dr. Dunham, "that there is probably a region of lower than average density close to the sun."

Even in distant regions, the density is lower than a high vacuum on earth. Only the passage of light through great numbers of molecules in enormous distances produces an effect.

Dr. Dunham's measurements were made with the 100-inch telescope at Mt. Wilson, by photographing the stars' spectra with high power. Movement of the stars away from or towards the earth produces a shift in the position of the lines in the spectrum. Since this motion is not shared by the calcium and sodium clouds in between, they produce lines that are not shifted, and can be distinguished from those of the star itself.

Science News Letter, September 28, 1940

Cooperation Urged

PRESERVATION of the framework, at least, for international cooperation among astronomers was urged by Dr. Robert G. Aitken, director emeritus of the Lick Observatory, in his address as retiring president of the Society.

"We must give thought," he said, "to the individual astronomers from war-torn countries who may find their way to this country; but this is part of a far larger problem involving the welfare of all professional men who are driven from home, and must be given over to some general organization like the American Association for the Advancement of Science, so far as scientific men are concerned. The astronomers will want to do their part generously, but particular care must be exercised that we do nothing to place in jeopardy the careers of the young astronomers trained in our own universities and observatories.

Giving full credit to the important work that can be done with telescopes like the 200-inch now being constructed, and even larger ones that may come in the future, Dr. Aitken emphasized that smaller star cameras, such as the Schmidt or Ross type, are needed for the solution of some of the most urgent present-day problems in astronomy, such as "the structure and rotation of the galaxy and the relation of our galaxy to others comprising the greater universe."

Science News Letter, September 28, 1940

Largest Schmidt Camera

AN important step in this direction was announced by Dr. Harlow Shapley, director of the Harvard College Observatory, who told the astronomers that a powerful Schmidt camera, larger than any now in use, is nearing completion at the Oak Ridge, Mass., station of his Observatory. Erected in honor of Prof. and Mrs. James R. Jewett, it is called the Jewett Memorial Telescope. The mounting, designed by Dr. George Z. Dimitroff, superintendent of the Oak Ridge station, was built in the observatory shops at Cambridge, and has now been placed. The glass parts, a concave mirror two feet across, and a correcting lens 33 inches in diameter that will be used in front of it, have been made by the Perkin-Elmer Corporation, and will be installed shortly. This telescope will be working in a month, he said, and will be used for counting stars, and studying galaxies and variable stars.

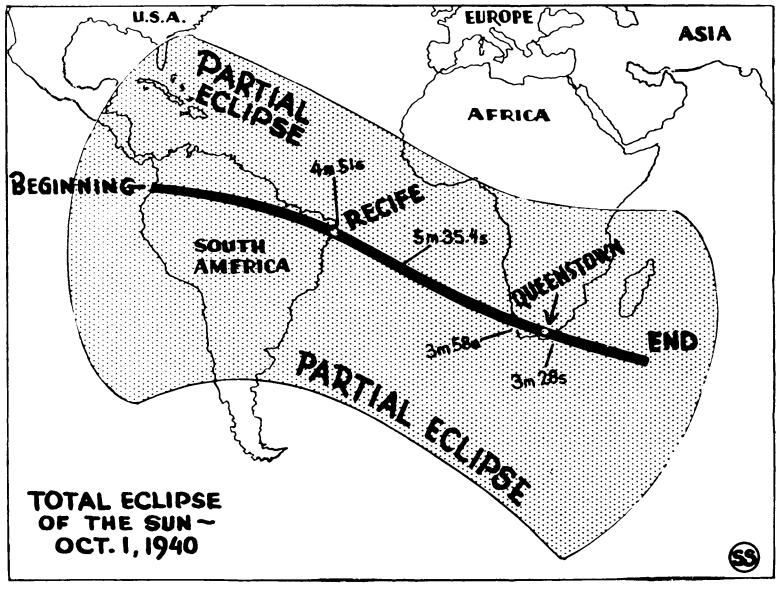
Science News Letter, September 28, 1940

Radio Good Before Spots

SUNSPOTS, magnetic disturbances and northern lights they produce on the earth, have a bad effect on radio after they happen, but the transmission of wireless waves is particularly good for about a week before such outbursts, stated Dr. Harlan T. Stetson, Massachusetts Institute of Technology. Four days before the auroral display it is best.

Bad reception follows the aurora for about a week. It is worst two days after the aurora with broadcast waves, and at the same time for short waves used in transatlantic communication. Dr. Stetson attributed this effect to changes produced by the ultraviolet light of the sun in the ionizing layers which reflect long distance radio waves back to earth again.

Most of Dr. Stet- (*Turn to page 204*)



ECLIPSE PATH

The heavy line shows where the total eclipse will be seen, beginning at sunrise on the coast of Colombia and ending at sunset in the Indian Ocean. A partial eclipse will be visible over the larger shaded area.

a.m., Mercury farthest east of sun. **Thursday, Oct. 24,** 1:04 a.m., Moon in last quarter. **Sunday, Oct. 27,** 10:43 p.m., Moon passes Venus. **Tuesday, Oct. 29,** 11:00 p.m., Moon nearest—222,500 miles away. **Wednesday, Oct. 30,** 5:03 p.m., New moon.

Eastern standard time throughout.

Science News Letter, September 28, 1940

Dive bombers were first developed by the U. S. Navy.

From Page 199

son's studies are made at Needham, Mass., where he records nightly the intensity of signals received from a broadcast station in Chicago. Such a distance is required so that waves will travel up to one of these reflecting layers, a hundred miles above ground, and be sent down again.

During the day, the station cannot be received, but after sunset reception begins, and gradually improves, as the sun descends farther below the horizon.

Domed Telescope Lens

BY adding to the usual lens, consisting of two pieces of glass, a third one in the shape of a glass dome without any magnifying or reducing power, Miss Ann Estelle Glancy, of the American Optical Company, has designed a new lens for astronomical telescopes that will have many advantages over older types. It can be made larger, in proportion to the length of the telescope, which means that it will gather more light. This quality is sought by astronomers, both in visual telescopes and in star cameras.

Miss Glancy described the new design for the first time at the meeting. Even though the dome-shaped lens, which is called a plano-meniscus, does not have any magnifying power, it changes the course of the light rays in such a way as to give the characteristics desired. Probably the same principle can also be used to advantage in lenses for ordinary cameras, microscopes and projectors, she said.

Science News Letter, September 28, 1940

● RADIO

P. C. Sandretto, of United Air Lines, will describe the "Visual Highways of the Air," the visual radio range, as guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, Oct. 3, 4:00 p.m. EST, 3:00 CST, 2:00 MST, 1:00 PST.

Listen in on your local station. Listen in each Thursday.

Hour Glass Star

A STAR that may be shaped like an hour glass, with a tail extending from one bulb, was the strange object pictured for the astronomers by Dr. Gerard P. Kuiper, of the Yerkes Observatory of the University of Chicago. Such a construction, he explained, would account for the mysterious changes seen in the spectrum of the star called Sheliak, or beta Lyrae, in the constellation Lyra, the lyre. This group is now seen high in the west in the evening, and is marked by the bright star Vega.

Beta Lyrae, Dr. Kuiper suggested, is a double star in which the two parts are actually fused together. The larger part, about half again as big as the smaller one, tends to contract, and this sets up a circulation of material into the smaller part. So fast is this, some 200 miles per second, that a portion of the staff is actually ejected, forming the tail. This whips around as the hour glass rotates every thirteen days around its neck. Sometimes we view the rest of the star through the tail, and this causes certain of the changes in the spectrum.

Science News Letter, September 28, 1940