these—Eros (No. 433)—is particularly interesting, since it is nearer to the Sun than is Mars, and gives a splendid opportunity for fixing with increased accuracy the Sun’s distance from the Earth. Two new satellites to Saturn and two to Jupiter have been discovered by photography (besides one to Jupiter in 1892 by the visual telescope of the Lick Observatory). One of the new satellites of Saturn goes ‘round that planet the wrong way,’ thus calling for a fundamental revision of our ideas of the origin of the solar system. The introduction of photography has made an immense difference in spectroscopic work. The spectra of stars have been readily mapped out and classified, and now the motions in the line of sight of faint stars can be determined. This “motion in the line of sight,” which was discernible but scarcely measurable with accuracy before, now provides one of the most refined methods in astronomy for ascertaining the dimensions and motions of the universe. It gives us velocities in miles per second instead of in an angular unit to be interpreted by a very imperfect knowledge of the star’s distance. The method was in 1881 a mere curiosity, which Huggins was almost alone in having examined, though visual measures had been begun at Greenwich in 1875, and were continued for many years, only to be ultimately found to be affected by systematic error. The photographic method started by Vogel in 1887 really has made all the difference, and this work is now a vast department of astronomical industry. Among other by-products of the method are the “spectroscopic doubles,” stars which we know to be double, and of which we can determine the period of revolution, though we can not separate them visually by the greatest telescope. Work on the Sun has been entirely revolutionized by the use of photography. The last decade has seen the invention of the spectroheliograph—which simply means that astronomers can now study in detail portions of the Sun of which they could previously only get a bare indication.

PHOTO-BEACON, October, 1906.

A Road to Mt. Wilson. On the occasion of President Woodward’s recent visit to the Solar Observatory, it was decided to widen the “New Trail,” which ascends from the foot of Eaton Cañon, into a road suitable for the transportation of the heavy castings of the five-foot reflector mounting. President Woodward recommended that Mr. Godfrey Sykes, Superintendent of construction at the Desert Botanical Laboratory of the Carnegie Institution, be placed in immediate charge of the work, on account of his skill as an engineer and his experience in the building of trails in Arizona. This was rendered possible through the courtesy of Director MacDougal, of the Botanical Laboratory, who arranged to give Mr. Sykes a leave of absence. Work has been commenced, and will be pushed forward as rapidly as possible, in the hope that the structural steel for the building which is to contain the five-foot reflector may be sent up the mountain in May, 1907.

The width of the road, which is determined by the size of the large castings to be transported, will average about eight feet, widening to ten feet or more on the turns. The automobile truck, on which the materials for the building and telescope will be carried, has been ordered from the Couple-Gear Freight-Wheel Company, of Grand Rapids. It has been specially designed for the purpose, as the ten-foot worm-gear and other large and cumbersome parts of the mounting (some of them weighing five tons each) could not be carried on the standard truck. The motive power will be a gasolene engine of about forty horse-power, driving a large direct-current dynamo. The dynamo will supply current to four motors mounted with the four wheels of the truck. This truck, which is capable of turning within a very small circle, has been tested by Professor Ritchey and