

STELLAFANE.By **RUSSEL W. PORTER,***

When the Springfield Telescope Makers tired of transporting their heavy instruments to the neighboring peaks of the Green Mountains to pass the night through in the open, they acquired a mountain top three miles from the village accessible to cars, and started to build Stellafane. This establishment is now completed, and while it has been given considerable publicity in the press, no adequate description of its equipment has been published.

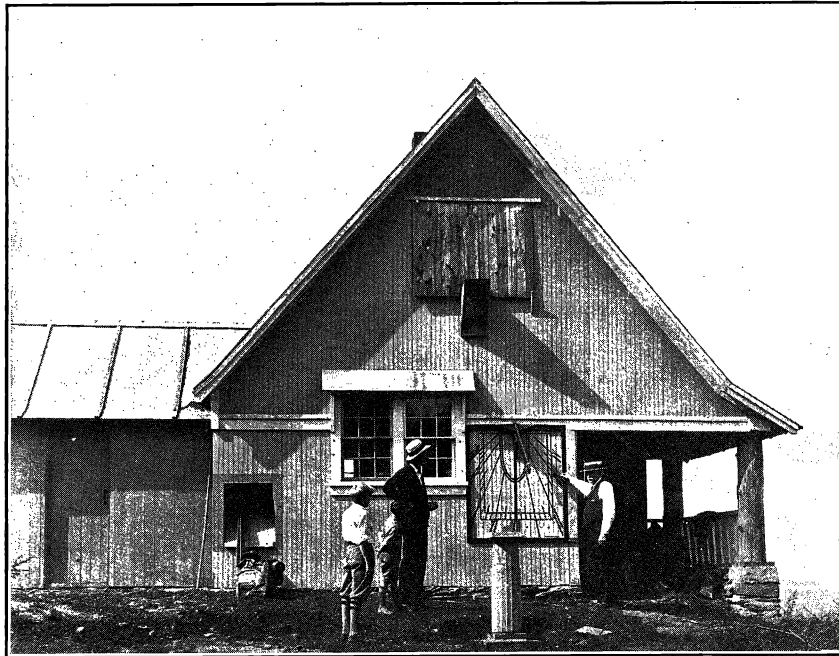


FIGURE 1.

The building, started in the fall of 1923, has grown to meet the expanding needs of our organization. Probably "Astronomical Club House" would describe its function as well as any other expression, for there is a well equipped kitchen at the rear and sleeping accommodations are provided on the second floor. A rather unusual requirement to make a member eligible is that he shall have completed a telescope of his own making. This restriction tends to keep the membership down, though added to steadily from year to year.

*Optical Associate, Jones & Lamson Machine Co.

The living room is comfortably furnished. There is a large fireplace and blackboard, the walls are covered with astronomical photographs and there are alcoves for books. The nucleus of the library contains literature on telescope making and general astronomy, most provided through gifts from the Harvard Observatory, the *Scientific American* and a donation of \$100.00 from an amateur enthusiast from Virginia. The work shop, added last fall, contains everything needed for grinding and polishing mirrors, with tools for making temporary alterations or repairs to the mountings. Here also are stored the telescopes.

The building is of wood frame, built everywhere on the ledge and securely anchored to the rock with steel cables.

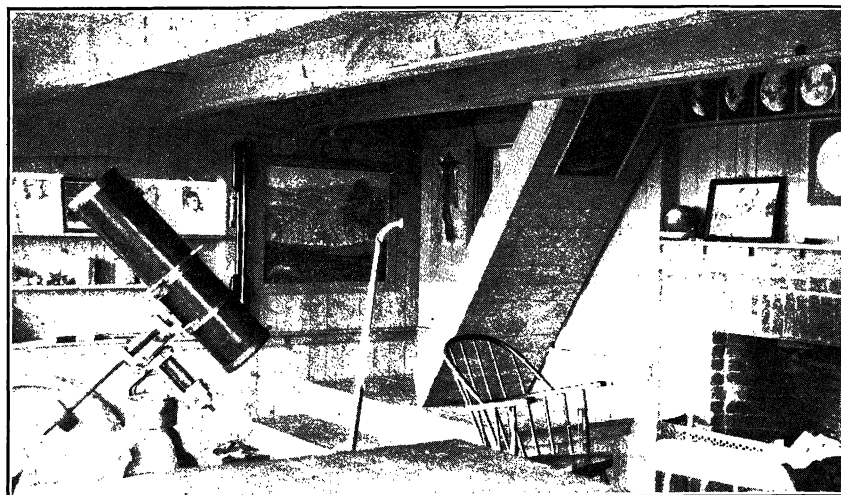


FIGURE 2.

The outlook, north, is superb. The main range of the Green Mountains forms the western horizon. New Hampshire hills bound the east and Ascutney, a peak over 3000 feet high, stands alone directly north. The coördinates of Stellafane, as determined by the Geological Survey which has incorporated the station into its secondary triangulation system, are

Lat.	43° 16' 41"30 N
Long.	72 31 10.11 W
Elevation above mean sea level, 1290 feet.	

Electric lights were installed this year.

For equipment we have a 16-inch mirror of 75 feet focal length on a pier 70 feet south of the building. Another 16-inch flat mirror placed on the south wall at a second story window sill delivers the sun rays to the paraboloid 70 feet away which in turn converges them into an upper room where the sun's image is thrown on a screen and where it may be studied by a crowd directly.

Just outside the west wall of the living room is a pier supporting the transit instrument. This consists of a revolving horizontal telescope with a 3-inch prism outside its objective with its eyepiece inside the living room. All optical parts are by Brashear.

There is evidently a spirit among our members to get away from hide-bound precedent and try out any old mounting once. One of these attempts at originality is seen protruding from the south wall west of the kitchen window. It is what might be called a polar Cassegrain, comprising a perforated 12-inch mirror of 4 feet focal length mounted in a polar axis of the instrument and a 16-inch flat capable of movement about a declination axis. (It will of course take only stars south of the Zenith.) The optical train is as follows:

The large flat delivers the light to the 12-inch paraboloid. This mirror converges the rays upon a 3-inch hyperboloid which in turn delivers the image to a fixed eyepiece in the room. Settings in declination and right ascension are controlled at the eyepiece, very much like the Gerrish polar telescope at Harvard Observatory. The instrument is nearly completed, all optical parts having been made.

We are also at work on a spectroheliometer from designs by Dr. George E. Hale. Some of the optical parts and the coelostat are finished and we are only awaiting the necessary grating before carrying the instrument to completion.

Of the many forms of equatorial mountings made by the members, the one in most use at Stellafane is that known as the Springfield type since this particular form was developed here. There are several of these telescopes permanently located on the lawns of members in the village, and many more have been built by amateurs elsewhere. Its distinctive feature lies in its having a fixed eyepiece and being capable of reaching all parts of the heavens. The mounting has been designed with special reference to the limited machining facilities of the average amateur and that will provide him with a rugged, serviceable mounting with both slow and fast motions.

It is timely here to speak of the campaign undertaken by the *Scientific American* to popularize astronomy through providing the tyro with the necessary literature whereby one may make his own instrument at moderate cost and provide him with the sources where the glass abrasives, rouge, pitch, etc., may be obtained. This is the first time in this country that the needed information has been made available. Their little book, "Amateur Telescope Making," is now going into a second and larger edition.

Chiefly through the publicity thus obtained, young America has taken up telescope making with a vengeance. One club in Pasadena, California, has outgrown the parent body here, having a membership of sixty or more members. Other large clubs have sprung up in different parts of the country, notably at Riverside, California, Denver, Colorado, and Detroit, Michigan.

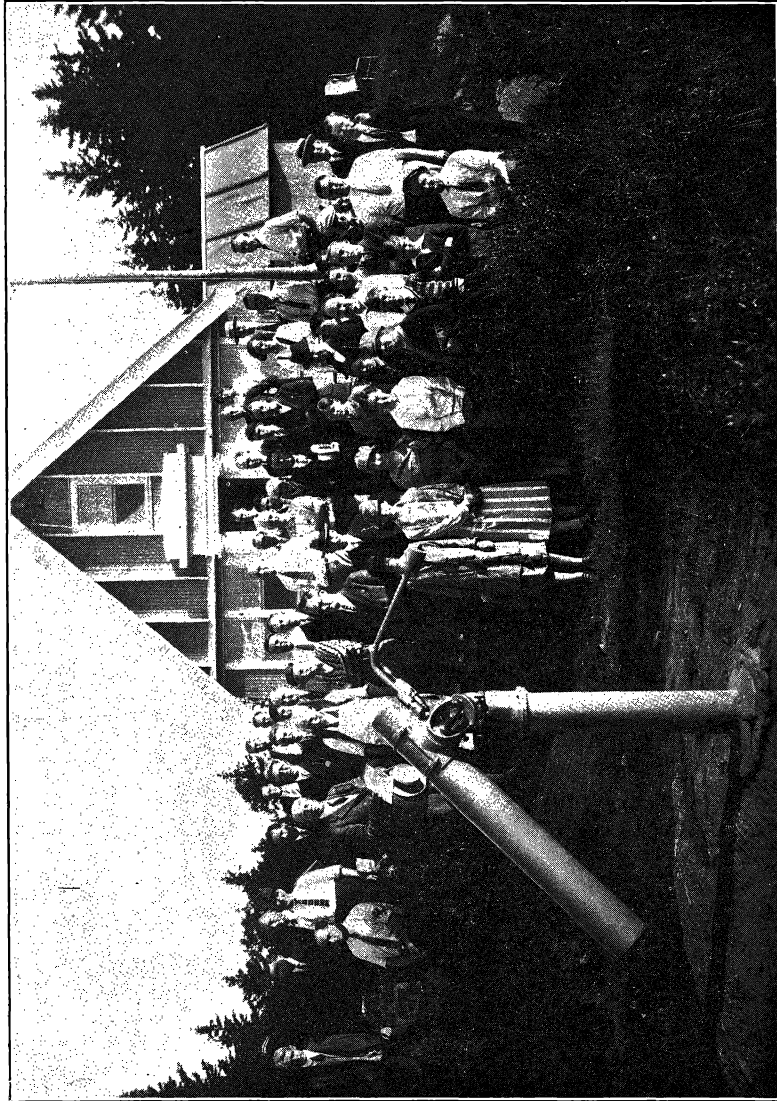


FIGURE 3.

Stellafane has already had two conventions, where enthusiasts (mostly from New England) foregather to compare notes and to find out what each has been doing. It was at one of these meetings, last July, that Mr. Everest described his new method of polishing mirrors on comb foundation instead of upon pitch. In fact our conventions act very much like a clearing house for ideas relating to reflecting telescopes.

Of the photographs accompanying this article, Figure 1 shows the south elevation of Stellafane. The wing at the left is for glass working. At the left center is the polar Cassegrain. Above in the gable is the bracket for supporting a coelstat for the sun telescope. Right of center is a wall sun dial and the wood shed; Figure 2 is the interior of living room at Stellafane. The stairs swing up out of the way when not in use. The walls are covered with sketches of the members, photographs of the moon, notable astronomers and glass workers, etc.; Figure 3 is of the front of the building, showing a group of mirror makers, taken at the second annual convention of the Springfield Telescope Makers at Stellafane, Springfield, Vermont, July 9-10, 1927. These enthusiasts came from states as remote as Michigan and Virginia. One of the Springfield mountings is shown in the foreground. The inscription on the barge board of the gable is the familiar quotation from Psalms referring to "the glory of the heavens."

THE PHOTOGRAPHIC STUDY OF LONG PERIOD VARIABLE STARS.*

By **HARLOW SHAPLEY** and **W. F. H. WATERFIELD.**

Although the Harvard collection of photographs has never been used systematically for the study of long period variable stars, its rich possibilities have been mentioned at earlier meetings of the Association. In the present note we desire to call direct attention to the potential usefulness of the photographic material that has been accumulating at Harvard for the last forty years.

About two hundred thousand plates, distributed through eight or ten series, are available for the study of long period variables. Each series represents the work of a single photographic telescope. Probably the most useful plates are those of the sky patrol, made with telescopes of approximately twelve inches focal length, which has been maintained for about thirty years, so that the sky has been covered several hundred times. The great advantage of the patrol plates is their frequency, and their chief limitation is the magnitude limit. Photographic magnitudes fainter than twelve are, in general, unattainable on the patrol photo-

*Presented at the New Haven meeting of the A.A.V.S.O., May 21, 1927.