

## Township 21 South, Range 8 West.

## CHAINS

These surveys in township 21 south, range 8 west, were executed with a solar compass made by Young and Sons, Serial No. 8461, constructed in accordance with the standard specifications of the General Land Office. The horizontal circle has a diameter of  $5\frac{1}{2}$  ins., with two double opposite verniers reading to single minutes; the sight vanes are  $7\frac{1}{2}$  ins. long and are spaced  $13\frac{1}{2}$  ins. apart. The instrument is equipped with a Burt solar attachment, radius of latitude arc  $5\frac{3}{4}$  ins., and of declination arc  $4\frac{3}{4}$  ins., each with verniers reading to single minutes. A solar compass made by W. and L. E. Gurley, Serial No. 101114 was also used on this survey and constructed in accordance with the standard specifications of the General Land Office. The horizontal circle has a diameter of  $5\frac{1}{2}$  ins., with two double opposite verniers reading to single minutes; the sight vales are 8 ins. long and are spaced 14 ins. apart. The instrument is equipped with a Burt solar attachment, radius of latitude arc  $5\frac{1}{2}$  ins. with a vernier reading to single minutes, radius of declination arc  $4\frac{1}{2}$  ins., with a vernier reading to 30 seconds.

Observations in camp for determination of reference meridian, latitude and time, were made with a light mountain solar transit made by Buff and Buff, Serial No. 17998, constructed in accordance with the standard specifications of the General Land Office. The horizontal circle has a diameter of  $4\frac{1}{2}$  ins., with two double opposite verniers reading to single minutes; the vertical circle has a diameter of 4 ins., with one double vernier reading to single minutes; the telescope has fixed stadia wires, ratio 1:132, with a focal constant of 1.2 lks. The instrument is equipped with the improved Smith solar attachment; radius of latitude arc  $2\frac{1}{2}$  ins. and of declination arc  $3\frac{1}{2}$  ins., each with verniers reading to single minutes.

The instruments were in good condition and having been placed in satisfactory adjustment, prior to beginning the survey, and tested and found free from appreciable error, were approved by the district cadastral engineer on April 13, 1945. We examined all the instrumental adjustments before making the field tests hereinafter recorded.

The directions of the lines of these surveys were determined by solar compass method. The measurements were made with Lallie steel tapes, 2 chs. in length, graduated every link; and with Lallie steel tapes, 5 chs. in length, graduated every link for the first 100 lks. and the balance at intervals of 10 lks. The tapes were tested by comparison with a Lufkin standard and found correct. The measurements were made on the slope, and the vertical angle of each interval was ascertained by clinometers in good adjustment; the horizontal equivalents are entered in the field note record.

The data furnished with the special instructions give the geographic position of the SE. cor. of sec. 33, T. 21 S., R. 8 W. as follows: latitude  $43^{\circ} 41\frac{1}{2}'$  N., and longitude  $123^{\circ} 38\frac{1}{2}'$  W.

May 1, 1945, in camp in the NE.  $\frac{1}{4}$  of sec. 24, T. 21 S., R. 9 W., in lat.  $43^{\circ} 43' 57''$  N., and longitude  $123^{\circ} 42' 35''$  W., at 8 a.m., app. t., I make proper settings on the arcs of the solar transit and orient the instrument with the solar. I now establish a reference line by setting a flag S.  $0^{\circ} 58'$  E. from my station 20 chs. dist. In order to verify the bearing of my reference line, I make a series of four altitude observations on the sun for azimuth, each with the telescope in direct and reversed positions, observing opposite limbs of the sun; the horizontal angles are measured from the flag on the reference line. The approximate elevation above sea level of my station is 950 ft. The temperature at time of observation is  $72^{\circ}$  Fahr.