

INTRODUCTION.

AN observing list for the determination of latitude by Talcott's method, when confined to one catalogue, will give long intervals between pairs in the latitudes covered by Dominion Land Surveys, and one night's observing is not likely to give the surveyor many pairs of stars for his determination. The preparation of a list where a number of catalogues has to be consulted is a laborious task, and one which requires a considerable amount of time. Surveyors on base lines and meridians have not much time to spare, nor are they in a position to know for more than two or three days ahead at the extreme, just where an observation will be taken. Again, in the country where these surveys are now being projected, every additional pound of outfit required is a matter for consideration, and the surveyor resents the extra weight necessitated by the carrying of a number of star catalogues. It was for these reasons that, in 1910, star charts were published for facilitating the selection of stars. These charts contained all stars up to the seventh magnitude from 5° south declination to 90° north given in the Berliner Jahrbuch, British Nautical Almanac, Star List of the American Ephemeris, and *Connaissance des Temps* for 1910, Greenwich Second Nine-Year Catalogue for 1900, Greenwich Second Ten-Year Catalogue for 1890 and Ambronn's *Sternverzeichniss* for 1900. The positions were reduced to a common epoch of 1910.0.

So far as the observing list was concerned, the charts dispensed with the need of the catalogues, and, moreover, while a list for a whole night's observing when prepared from the several star catalogues mentioned was a task of three or four hours' duration, the same list could be prepared from the charts in half an hour's time. But if the surveyor was later to compute the results of his observations the necessity for his taking along the star catalogues still remained. This was recognized at the time the charts were published, and the preparation of a catalogue of stars giving the mean places, annual variation, etc., for 1910.0 of all stars plotted on the charts was put in hand. Owing to the small staff of the division and the press of other work, the compilation passed through a number of hands and finally had to be dropped altogether. It was not until the end of 1912, that the work was finally completed.

Just at this time a copy of Boss' Star Catalogue for 1900.0 was received. Now the results of large numbers of pairs of stars in zenith telescope observations had previously shown that those pairs of stars which had the largest residuals from the resulting mean latitudes were almost invariably pairs composed of either two Ambronn stars or one Ambronn and another star. For this reason the same confidence was not placed on Ambronn stars as on the stars of the other catalogues. When the positions of such stars as were given in both Ambronn and Boss were computed from both catalogues it was found that there were many stars which showed differences in declination as high as $5''$ and some even as much as $8''$ and over. It was decided therefore to revise the catalogue by giving the positions of such Ambronn stars as were in the Boss Catalogue from the latter catalogue. Mr. Waugh took this in hand, but was obliged to leave for the field before the revision was completed. The work was then carried on by Messrs. W. H. Herbert, B.Sc., and H. S. Van Patter, M.A.

The substitution of Boss for Ambronn stars had also shown that Boss' Catalogue contained a large number of stars available for our catalogue not given in the other catalogues. At the time that Mr. Herbert along with Mr. Van Patter took