

Aruvankadu
29th April 1949

4/5

From A. T. Thomas
Florendel Estate
Aruvankadu

To Dr K. S. Krishnan. F.R.S.
National Physical Laboratory
New Delhi.

Sir,

I am herewith submitting unofficially a copy of a solar compass chart by means of which the compass directions (north, south etc) can be determined with fair accuracy and ease without the aid of a magnet. After a due consideration and scrutiny I request you will be kind enough to forward to me an assessment of its scientific value from the theoretic and practical viewpoints with such appropriate criticism or comment for its greater effectiveness. Many authorities whom I approached were not in a position to help me in the matter. Hence this letter which please excuse.

Description of the chart. The chart is somewhat roughly drawn for use in Delhi, one for the afternoon and on the other side for before noon. The shadow of the sun of the top point of a fixed vertical style traces a certain curve on the horizontal plane as the sun moves from E to W. This curve is

is known to be a conic section, in fact a hyperbola. Since the sun's declination is varying from day to day there will be 365 different curves for ~~the~~ all the days of the year. I have drawn on the chart only a few at 5° intervals in the sun's declination, and for a 4 inch high style placed vertically at the point indicated just to give an idea of the nature of the curves.

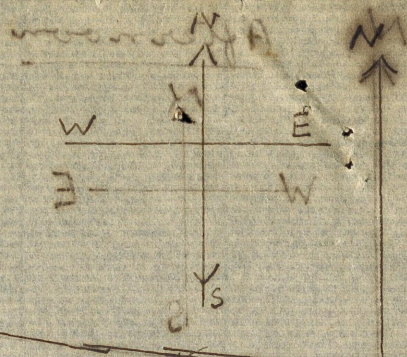
The method of finding the north direction: -

Find out from some almanac the sun's declination for the particular date of your observation. Let it be $12^\circ N$. Place the chart on a horizontal plane surface and a vertical style 4 inch high at the point marked \oplus . Watch the shadow of the top point of the style cast by the sun. Adjust the position of the chart so that the shadow of the top point of the style falls on the curve corresponding the particular sun's declination (say $12^\circ N$). The chart must all along remain in the horizontal plane, then the line NS will indicate the north south direction.

Different localities must of course have different charts.

I am not requesting you for a practical verification of the chart, but only soliciting the favour of your comments (not in your official capacity but only in your personal capacity) on the theoretical principles underlying it.

Before Noon
(Delhi)



Sun's declination is $23\frac{1}{2}^{\circ}$ S

2° S 20° S

7° S 15° S

12° S 10° S

17° S 5° S

0 0

At 11⁰⁰ 5° North Declination

11° S 10° N

12° S

13° S

14° S

15° S

16° S

17° S

18° S

19° S

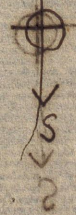
20° S

21° S

22° S

23° S

Place 4" high vertical style here

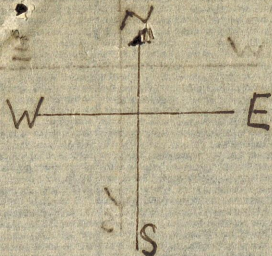


N
↑

Afternoon

(Delhi)

(11.15)



Sun's declination $23\frac{1}{2}^{\circ}$ S

20° S

15° S

10° S

5° S

0

5° North

10° N

11 $^{\circ}$

12 $^{\circ}$

13 $^{\circ}$

14 $^{\circ}$

15° N

20° N

$23\frac{1}{2}^{\circ}$ N

⊙
↓
S

Place 4 inch high vertical
style here