

on sand; the tray was carried on wooden blocks, with small pieces of sheet india-rubber to aid in deadening the vibrations by increasing the number of surfaces where there was a change of elasticity. This was used in December last, and I hoped I had conquered the difficulty, but the time was very favourable as there was (owing to the cold) no traffic at night. When the weather became warm it became manifest that I must either give up the observation by reflection, or devise some means of destroying tremor. I never hardly could get a bearable image of the wires till long after midnight, and to set half a dozen observations entailed an hour's watching.

I have now made two blocks, each a couple of inches high, consisting of six sheets of deal and an equal number of printer's blankets glued together, care being taken not to let the glue penetrate the blankets; these form piers carrying a board, supporting a large and flat dish of mercury. The result, as I anticipated, is excellent; unless carriages are passing along roads only 100 yards off, I have usually reflected wires as sharp as those seen directly. I have yet to devise some plan of avoiding glue, which will certainly yield in India, &c.; it was in the hopes of doing this that I have delayed making up the apparatus till the closing of the rainy season made action necessary.

It will be seen that the great advantage of this form of support is its extreme compactness. The use of such a suspension as that for the mercury of the Reflex Zenith Tube at Greenwich was out of the question here, both from want of space and inability to procure india-rubber, and to preserve it when got. Probably the ultimate form for use here will be a box containing coarse millboard and printer's blankets in alternate layers, but the present arrangement is more compact than anything could be made without the use of glue.

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*Note on Prof. Pritchard's Ephemeris of Circumpolar Stars.*

By Colonel Tennant, R.E., F.R.S.

In the January number of the *Monthly Notices* (Vol. XXXV. p. 113) is a paper giving the places of 12 close circumpolar stars for the current year, in the course of which Professor Pritchard expresses a hope that the Director of the *Nautical Almanac* would take into consideration the question of publishing such Ephemerides in future. In this hope I cordially join; but I am doubtful if the stars chosen in this paper would be generally suitable.

If the ends of the great body of amateurs who have not a computing staff, and of moving astronomers, official or private, can be served as well as those of Observatories having powerful

instruments, it would, I think, be desirable. I have no doubt that other parties employed, like myself, for the late Transit of *Venus*, have felt greatly the want of circumpolar stars, and the want will be again felt in 1882. Few have had more powerful means of observing transits than myself, yet stars so small as most of those of the Oxford list would have been quite useless to me, and I should have been obliged to select some (as I have done) from such Catalogues as were available. Another reason why I think a better selection might be made is, because I doubt whether the *close* circumpolar stars are either the most convenient or most accurate for determinations of azimuth. I find that stars 10 or 12 degrees distant from the Pole are far more accurately observed, and they have the great advantage that they pass the wires much more quickly.

I think, then, that the stars selected should, if possible, not be of less than 6.5 magnitude, that they may be generally available; and that no loss of practical accuracy would result if the limit of polar distance were  $15^{\circ}$ . I do not offer my own selection, as it was made entirely from the Greenwich Catalogues, and is very defective, especially in the early hours of Right Ascension. This has partly arisen from my not using stars which had been observed very few times, but more from an apparent want of large stars in that part of the sky. It is probable, however, that a better selection may be made. If satisfactory means of determining the azimuthal correction of the Transit in each sidereal hour could be given, it would be a very great boon to many establishments where time is wanted, but where meridional observation is not a principal object.

*Roorkee, September 26, 1875.*

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*On the Aspect of the Zodiacal Light opposite the Sun.*

By T. W. Backhouse.

I have lately observed a curious phenomenon respecting the Zodiacal Light which I have never heard described before; that is, a comparatively bright patch opposite the Sun. It does not appear to be generally known that the Zodiacal Light is visible at all opposite the Sun; but it is so, very commonly. But the phenomenon I now refer to is one I never noticed with such distinctness previous to September 28; on which night there was, in *Pisces*, a remarkably definite oval patch of light about  $20^{\circ}$  by  $14^{\circ}$  in diameter. Its boundary was at  $\epsilon$ ,  $\omega$ , 21 and 29 *Piscium*, and 13 and 20 *Ceti*. Further west the Zodiacal Light faded away very suddenly; indeed at first (at  $10^h 15^m$ ) I could not perceive it any further in this direction; but afterwards I could trace it, though extremely faint, to  $\sigma$  *Aquarii*. East of the