

CONSTRUCTION OF A 32CM CASSEGRAIN PHOTOELECTRIC TELESCOPE

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ABSTRACT. This paper describes the building of a 32cm telescope which had been designed from the beginning to undertake high precision photoelectric photometry.

1. INTRODUCTION

The equipment is still under construction and has been so for the last four years. Due to the usual restrictions on time and finance the project has been slower than first anticipated. My final objective is to complete a photoelectric instrument that can be used to carry out high accuracy observations on contact and close binary systems.

2. THE TELESCOPE

The telescope is an amalgamation of two existing components; the R.A. assembly and pier and the optical tube assembly and some new parts consisting of a fork support, tube truss and a seven degree wedge. The mount is about a century old originally owned by D. Eglinton (the history of this telescope will be researched). Construction is of an old type cast iron resulting in a extremely rigid mount. The tube is an Ealing (U.K.) 32cm f16 cassegrain arrangement of aluminium construction. The tube is fitted to a cast aluminium backplate, which in turn is fitted to the truss. The photometer is also bolted to the backplate.

A wedge of 30mm steel had to be fabricated to adapt the mount to my latitude and permit finer alignment. The truss is made of 25mm hollow square section and is very sturdy. It is completely symmetrical so as not to upset the overall balance, an important factor to consider if you wish to eliminate useless counterweights. The balance of the telescope will not be perfect until the photometer is fitted, so temporary weights are mounted on the backplate.

2.1 The Electronics

The electronics to date consist of the following: Honeywell chart recorder, Fluke high voltage supply, HP digital printer, integrator/amplifier (D. Thomas design). An electronic clock is the other main component yet to be constructed, this will be of the same design as the one used at Midway Observatory. All the equipment will be tested at Midway Observatory before operation begins.

2.2 The Photometer Head

The photometer head will be very similar to the ones used at Siding Spring Observatory. The cold box and as yet unconfirmed filter box are coming from there, so to make a complete unit I will have the missing parts made. The PMT will be a 1P21 or Gencom that were kindly given to me by R. Reisenweber of Rolling Ridge Observatory.

3. SUMMARY

I uphold the philosophy that, if something has been proven to work, then use it. Harold Kennedy has often pointed out to me, one does not invent the wheel twice. So this is the reason I chose to duplicate a photometric system that has been proven albeit not an easy way.

4. CONCLUSION

When the equipment is operational it will be primarily used for data acquisition on the Mass-Period relationship of eclipsing binaries (Kennedy 1986) and other related phenomena associated with contact and close binaries.

5. ACKNOWLEDGEMENTS

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6. REFERENCE

Kennedy, H.D. 1986, IAU Symposium No. 118 (this volume)