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36-inch Telescope

The DAC has before it some recommendations for improvements to the 36-inch and its associated facilities. However, I wish to urge that the correction of long-standing deficiencies should take priority over the proposed improvements; indeed, the value of any improvements as well as that of the telescope in general is dependent upon such correction. Some of the deficiencies which need to be remedied are as follows.

(i) Cleaning of the dome. It must be obvious that a front-surface mirror used in a face-up attitude (like the 36-inch primary) needs to be kept in an environment as clean as possible: cleanliness is in fact of more paramount importance in the dome than in any other part of the buildings. Nevertheless it has been neglected despite considerable efforts on my part to get a proper régime of cleaning instituted. The reasons for my failure include the facts that (a) cleaners do not like to work in the dome because it is so dirty - sometimes also cold; (b) even when they do venture there they do little more than clean the floor, everything else being too dirty to touch, or inaccessible to them, or considered by them to be technical equipment and beyond their duties to clean; (c) Overhill considers himself to be in immediate charge of cleaning the dome, and although he is well aware of my concern in this matter he is very offended whenever I raise it with anyone but himself, saying that I only have to mention it to him and my wishes will of course be immediately respected.

The structure of the telescope is always very dirty, and the dirt gets blown about by the wind which is such a feature of the dome during actual observing, and is efficiently directed onto the primary mirror by the mirror fans. (The need for the fans arises from the hopeless thermal environment of the dome, which is entirely innocent of thermal insulation and is almost invariably much warmer than the ambient air when observations are in progress.) The mirror reflectivity consequently deteriorates at a catastrophic rate; within a few months of aluminising there is seen to be no reflectivity at all when the mirror is viewed obliquely from the hatch through which one removes its cover. The rapid loss of reflectivity has driven us to having the mirror aluminised every six months. Not only is this a troublesome operation involving removal of the mirror to Herstmonceux, but it is also hastening the final demise of the mirror through leaching or etching of some of the chemical constituents of its surface - it was known both to Professor Redman and Grubb Parsons that the blank was defective when the telescope was made. Its surface now has bad scattering properties. A new mirror would be expensive, but will be needed eventually in any case and will not get cheaper in the future. Professor Redman estimated the useful life of the present one at 15 years.

Before the dome could be cleaned effectively, even if there were a will to do it, some changes would need to be made. There are some very bad dirt traps, of which the ring girder upon which the rotating member of the dome is built is by far the worst, and they need to be sealed in some way. The linoleum flooring needs completing. Everything needs painting with a gloss paint of as light a colour as observers will tolerate, in order to show dirt as conspicuously as possible.

(ii) Collimation of the telescope. The telescope is, and always has been, out of collimation. Some of the adjustments needed to collimate it were lacking when it was new; they have since been provided but not all have been used. In particular, collimation at the collé focus requires measurements to be made with dial gauges while the telescope is pointed to the pole, and this in turn

necessitates a rigid frame which will straddle the spectrometer. A substantial amount of angle iron was purchased six years ago when Willstrop, who is in charge of the telescope, designed such a frame. However, Willstrop has never supervised its construction, and Overhill is, for reasons which I can appreciate, unwilling to try to construct it except under detailed supervision. I wish that the 36-inch were valued more highly within our Department, and that its effective operation were seen to be as valuable to us as the adjustment of telescopes in, e.g., Australia and Hawaii.

(iii) Primary mirror cell. The cell holding the 36-inch primary is badly designed and constructed. It often places stresses on the glass of about ten times the maximum acceptable, leading to severely astigmatic images which can be improved (if at all) only by arbitrary adjustments of the mirror-attitude screws. Such adjustments naturally alter the collimation of the telescope and ought never to have to be made in the cavalier way in which I sometimes feel obliged to make them. A new cell is the only answer.

R.F.G.

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