

THE UK SCHMIDT TELESCOPE PLATE CATALOGUE AND PROBLEMS ASSOCIATED WITH INCREASING NUMBERS OF PLATES AND USERS

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The UK 1.2m Schmidt Telescope (an outstation of the Royal Observatory Edinburgh) is situated at Siding Spring Observatory in New South Wales, Australia. The telescope has been operational since 1973 and has, to date, taken about 7000 plates. This paper discusses some of the problems associated with cataloguing these plates and keeping track of their locations.

The main initial task of the telescope was to produce the original plates to be used in making the "blue" half of the ESO/SRC Southern Sky Survey; this task is now almost complete. The telescope is also being used to produce other sky surveys, in particular the Infrared Survey of the Southern Milky Way and an extension to the equator of the Southern Sky Survey in both blue and red wavebands. As well as taking survey plates the UKST invites applications from astronomers for special plates to be taken for their own research programmes and about 50% of plates taken are for these special programmes. Each new application is given a number and there have so far been 480 such requests of which over 200 are still active and material is still on loan to a further 100. All plates remain the property of the UKST unit and cataloguing these plates and keeping track of their locations is a major task.

Due to the lack of computing facilities at Siding Spring all cataloguing of the plates, research applications etc. is done at ROE. Each month a log of plates taken is sent to Edinburgh and the data are added to the computer catalogue. Each plate is uniquely identified by a running serial number; other data included in the catalogue include the RA and Dec of the plate centre, the date, time and length of the exposure, information on the filter and emulsion used and a grade to indicate the quality of the plate. These data have been chosen to try and help users of the catalogue select suitable existing plates for use in their research projects. Information on research applications is also stored on the computer, this includes a programme title and the names and addresses (which

change all too often!) of the investigators. A separate file contains data on plates which are on loan.

Keeping track of the location of the plates is particularly prone to errors (for example, the loan is entered when a plate is first loaned but not removed from the record when it is returned) a problem which is not helped by the current mobility of astronomers who may take their plates with them or simply abandon them at their previous institution. Some plates are kept in Australia, these are mainly the accepted original survey plates and plates being used by Australian based astronomers for their own research, all others are returned to ROE. Of the latter plates some will be kept in the ROE plate library for general reference, some will be kept in the plate library while actually being on loan to ROE astronomers while others will be sent to users in the UK or overseas (mainly Europe and the USA although some have gone as far afield as China).

A further complication arises when the original plate is copied, perhaps because the original is to be used for Atlas production, perhaps so that copies can be distributed to several users for use in different programmes or simply as an insurance in case the original is damaged. The details of the copies made, whether positive or negative, glass or film, and their location need to be recorded.

At present the data are all stored on the GEC 4082 computer at ROE. The basic catalogue only is also available for consultation via the Starlink network and a series of programs for interrogating the catalogue are planned to be available for general use. All existing programs work only on the GEC and are therefore only available at ROE. Most of the programs are fairly cumbersome and have been designed with the object of producing detailed and lengthy printouts. For example, it is possible to obtain a listing of all plates taken to date together with details of the present location and the current user (if any). These data rapidly become out of date as plates are returned to the library and possibly reloaned. To check the current status of a plate it is necessary to obtain a full printout of all plates taken. The data in the basic catalogue change only occasionally (and then usually due to the discovery of an error!) while the loan data change much more frequently. When there were only a few thousand plates it was not unreasonable to produce a complete printout every month. Now this task is becoming very wasteful of computer time and paper and there is a very obvious need for a system to interrogate the plate loan file independently of producing a complete listing. A further need, which is becoming more obvious every day, is to keep a complete record of a particular plate's history. It is not only necessary to know where a plate is today, it can also be necessary to know its loan history, for example when two astronomers are using one plate for different research programmes. At present, all past history is deleted from the

computer records when a plate is returned to the library.

With a total of about 6000 plates (excluding test plates) the present system is only just managing to keep up with the taking and movement of plates. It is now apparent that a database management system is required to enable UKSTU to keep a full check on all the plates. Ideally, we would like the DBMS to be implemented on the Starlink network; this would be particularly useful in providing expertise in the use of the system and would also enable astronomers all over the UK to consult the catalogues with relative ease. While several of the problems specified above could be solved by writing Fortran programs, this can be both inefficient and time-consuming. A DBMS should allow most of the present problems to be solved fairly easily and would thereby free staff to implement a full interrogative package for general use. At present two staff members are involved in checking the whereabouts and loan status of all plates which have been returned to the UK, this has taken up a considerable amount of their time for several weeks and it seems unlikely that such a check will be possible in the future. It is therefore becoming very important that a more reliable computer system is introduced with as little delay as possible.

Two problems will not be solved even if we obtain a DBMS. The plate log will still be handwritten in Australia and the errors inevitably introduced due to copying the data several times will still occur. Nor will we be able to keep a full record of the plates held in Australia (at present we only note that they are in Australia). These problems will only be solved with the introduction of a similar system in Australia so that the data can be sent directly to Edinburgh in computer readable form. With luck, in a year or two we will have a fully working DBMS in Edinburgh and a suitable computer in Australia and will then be able to offer a much better service to the several hundred users of plates taken by the UK Schmidt telescope.