THE SONNEBERG PLATE COLLECTION: HANDLING THE ARCHIVE

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1. The Sonneberg Plate Collection

The Sonneberg collection numbers about 250,000 photographic plates; those of the Sonneberg Sky Patrol and Field Patrol reach back into the past as far as 1926. The Sky Patrol aims at providing a continuous record of the whole northern sky; the Field Patrol, of 81 fields selected along or near the Milky Way.

This collection has been one of the cornerstones of the Sonneberg programme of variable star research. One quarter of all variables known in the Galaxy were detected by means of its plates. The particular value of this collection consists in that it is an excellent source of information on the long-term behaviour of active objects. Increasingly, it is supporting observation made from satellites at non-optical wavelengths (Bräuer, H.-J. and Fuhrmann, B., 1992. *The Messenger*, **68**, 24).

Table 1. Photographic telescopes currently in operation

Telescope	d (cm)	f (cm)	Plate Dimension (cm x cm)	Field Size (° x °)	Resolution ("/mm)	Plate Limit (m^{as})	Number of Plates
Schmidt Camera	50/70	172	13 x 13	3.8 x 3.8	120	18.5 (B)	8500
Field Patrol:							
Astrograph	40	200	30 x 30	8 x 8	100	17.5 (pg)	6855
Astrograph	40	160	30 x 30	10 x 10	130	17.5 (pg)	10197
Sky Patrol:							
7 Tessars	7.1	25	13 x 13	26 x 26	830	14.5 (pg)	73677
7 Tessars	5.5	25	13 x 13	26 x 26	830	13.5 (pv)	57291

H. T. MacGillivray et al. (eds.), Astronomy from Wide-Field Imaging, 369–370.

2. The Sonneberg Plate Archive Database

During the past five years every possible effort was made by Bernd Fuhrmann and Hans-Jürgen Bräuer to archive the exposure data for the Sonneberg plate collection in computer-readable form. Today about 90% of the data (i.e. the logbook data of about 220,000 plates) is computerised and retrievable from a 20 MByte database.

At first, owing to limited computer resources, lack of memory and hard disk space in particular, the data was captured via tricky programs on different computer platforms and in a special binary format. Presently PC ATs are the final medium on which the catalogue is supplemented and updated. Using this base file set therefore requires special software, which was written in Turbo Pascal 6.0 by Bernd Fuhrmann.

The catalogue mainly contains date and time of exposure, Julian date, field name (or coordinates), photographic emulsion, sensitivity, filter, plate number, and comments on external conditions (weather, observer's fitness, etc.).

Typically, a user queries the catalogue by the coordinates of an object and a period of time, and asks for the plates available. The output then is a list of plates identified by field name and number of plate. Armed with his listing, the user will then easily find the plates in the vault.

3. How to access the Sonneberg Plate Archive

So far, a person wishing to use the Sonneberg collection, must be willing to visit Sonneberg and inspect the corresponding plates by microscope, plate photometer, or coordinate measuring machine. In most cases, the visitor will arrive without knowing how many plates are available for his purposes and how they are distributed in time. This is clearly a handicap, e.g. for someone in pursuit of optical counterparts of high energy events or outbursts of eruptive variable stars.

To overcome this unsatisfactory situation, Peter Kroll and Bernd Fuhrmann prepared, as a first step, a software tool which can be distributed on floppy disks to interested persons. The software package contains a reduced and compressed set of the most important parts of the plate catalogue (Julian day, exposure time, field, and colour sensitivity for each plate and each instrument — as far as the data has already been captured). We have written a short search program (**pfind**) that accompanies the data files. With this program, the plates available in the Sonneberg plate archive can be identified and listed for any position and magnitude. The software package as a whole can be obtained from Sonneberg Observatory.

4. Future Plans: Network Access and Digitisation Activities

It is our express purpose to make the Sonneberg plate archive accessible to the whole astronomical community. This however presupposes at least two physical conditions: network access and digitised plate information. At present, we are trying to get INTERNET access. Then, immediate access to the daily updated plate catalogue will be possible.