RETRIEVAL OF ASTRONOMICAL INFORMATION FROM PADOVA-ASIAGO
OBSERVATORY PLATES ARCHIVES

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This paper shortly describes a software procedure for the on line infor-
mation retrieval from astronomical plates archives. The procedure is
active in Padova Asiago Observatory and will be improved linking them
with other retrieval and graphic procedures acting on astronomical ca-
talogues.

1. BACKGROUND

The information retrieval from astronomical plates archives is the first
step to extract information from a single plate contained in the archi-
ves itselves. This is evident, for example, in tasks such a sky surveys
for Nova, Supernova (SN), or variable stars. When a SN is detected, the
retrieval of plates that contain the same sky area of the SN is the
first task to be done. In a more general way, when the number of plates
of the archives is large, a synchronous view of all the useful. pieces
of information becomes quite impossible without using a software pro-
cedure that allows to retain all the records of the archives plates
and to search through'them the desired plates, if they exist.

The plates contained in the Padova Asiago Observatory archives are
those produced with the four telescopes that operate in Asiago. In the
table at the top of the next page the more important figures of the
main plate "types"are shown. In the observations log books a single
plate is identified by two parameters : the name of the register, that
is the name of the telescope used and the serial number inside this re-
gister. Each record consists of entries common to all types of observa-
tion : date, α' , δ , observer name, emulsion type, filter, sky conditions,
general remarks, and of some other observations and "boundary" condi-
tions (type of spectrograph, slit conditions, dispersion used, type of
intensifier).

ASIAGO TELESCOPES

	Type	N° of Plates	Operating from
122 CM	Photo	9492	1942
	Spectra	16753	1949
50/40 Schmidt	Photo	14498	1957
	Obj. Prisme	1862	1962
90/60 Schmidt	Photo	10751	1964
	Obj. Prisme	580	1966
182 CM	Photo	2757	1972
	Spectra	1940	1973

58663 as at 31.12.1980

2. SOME PROBLEMS

There are some problems in switching such a kind of register forms from paper to magnetic support. The most important is that a standardisation of the information record concerning an astronomical information does not exist until now. A second problem is : how many pieces of information can be considered common to all observations and how many are sufficient to retain a specific type of observation ? A third one that is coming up is that the record of new types of images can be completely different from that of the plates (i.e. Reticon or Digicon images, CCD or satellites images). It is easy to forecast that the number of these images will grow quickly ; also for these images it is very important to define right now a standard record.

3. THE PROCEDURE IN PADOVA

A procedure for the on-line retrieval of astronomical information from the data base built with the information registers exists at the Padova Observatory. All the information contained in the paper registers has been copied on disc files in order to be able, in the future, to fit a standard different from that in use in Asiago. The data base consists of eight files containing the eight observation log books. The name of the file identifies the telescope used and the type of observation. The serial number inside the register directly defines the record position inside the file ; in this manner a plate is completely identified, in the disc volume, by these two parameters with which astronomers are generally familiar. Each plate record in the data base consists of eight different entries common to all observations (object name, α , δ ,

plate type, filter, exposure, year, date) and of a "comment-field"
where specific conditions or remarks are stored (type of spectrograph,
intensifiers, slit condition, etc...)

A block diagram of the procedure is sketched in fig. 1. A main program
manages the facilities offered by the procedure : search, display and
print (lists, graphics). An Help program can be invoked by the user after
each question posed by the procedure. It gives a two level information :
the first is a longer description of the question and of the possible
answers, the second is represented from the access to the procedure user
manual that is loaded on line. The search program has two different
branches : one to search only in Schmidt plates files if a defined area
in the sky has been covered in the past, another, more general, to make
a sequential search in all the entries of the data base. The user at
the start of the session can select from one to eight files, that means
the complete data base or only a subset. Limitations can be posed to the
eight entries and also to the "comment" field. In the alphabetical en-
tries a variable length label can be searched (in fig. 2 the character
ℓ defines the end of the label to be searched). This feature is use-
ful in particular to retrieve labels whose codification is not well known
to the user, or to retrieve all objects of a certain type (i.e. all the
NGC objects). Conditions to numerical entries can be set by giving the
value of an interval, including zero length. Through the use of the lo-
gical operators OR and AND the desired plates subset can be built with
any combination of entries values. In the short example shown in fig. 2
conditions are posed to observer name (OB) AND to object name (OJ) AND
to plate type (PT). The search is done on the photo log. book of the
182 cm telescope. An users manual is available that the contains a
longer description of the capabilities of the procedure and provides
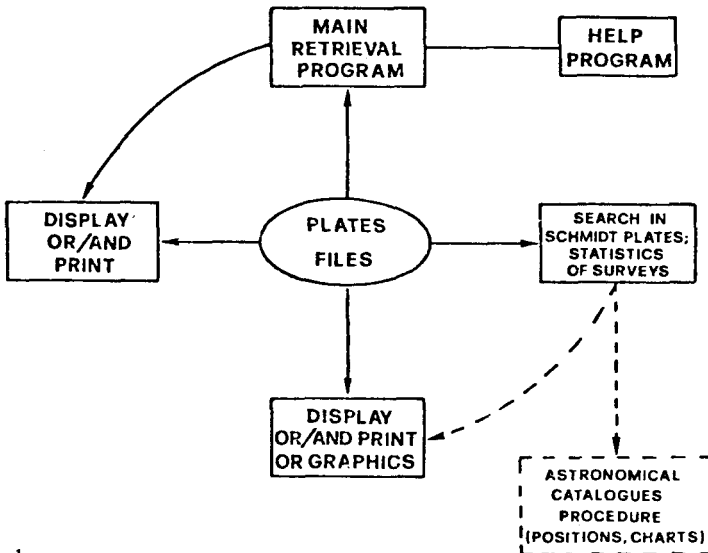examples.

Figure 1

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Welcom to  IRA  : Type your name and then press RETURN
JEMO

O.K. Date :11:50 AM  WED.,  1  JULY, 1981 User : DEMO
Start session
Remember  that if You answer HELP to any question from  IRA
You will have a longer description of the question
Now press RETURN to continue


+ + + + + + + Select Register ( /E To End)
T182FO
/E
+ + + + + + + Enter Key to select
OB
+ + + + + + + Input label to search ( Remember @ )
ROSN@
+ + + + + + + Finding label :ROSN
+ + + + + + + Data base in use : T182FO
+ + + + + + + Total number of plates sorted :    484

+ + + + + + + Plates sorted in this cycle /   484

+ + + + + + + Enter action : AND     OR     PRINT     EXIT    GRAPHICS
AND
+ + + + + + + Enter Key to select
OJ
+ + + + + + + Input label to search ( Remember @ )
ORION@
+ + + + + + + Finding label :ORION
+ + + + + + + Data base in use : T182FO
+ + + + + + + Total number of plates sorted :     14

+ + + + + + + Plates sorted in this cycle /    72

+ + + + + + + Enter action : AND     OR     PRINT     EXIT    GRAPHICS
AND
+ + + + + + + Enter Key to select
PT
+ + + + + + + Input label to search ( Remember @ )
103A0@
+ + + + + + + Finding label :103A0
+ + + + + + + Data base in use : T182FO
+ + + + + + + Total number of plates sorted :     2

+ + + + + + + Plates sorted in this cycle /  1242

+ + + + + + + Enter action : AND     OR     PRINT     EXIT    GRAPHICS
PR
+++++++++++++++++   REGISTRO OSSERVAZIONI : T182FO   +++++++++++++++
OGGETTO : ORIONENEBULO ALFA : $$ $$ $$  DELTA : $$ $$ $$ LASTRA NO. :      1
DATA :    8  3  1973    T.U. :    0  0  0  POSA :   5.00    FILTRO     :

TIPO LASTRA  : 103A0    OSSERVATORE : ROSN
COMMENTO : SERENO.LUNA ULTIMO QUARTO. NON GUIDATA

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+++++++++++++++++   REGISTRO OSSERVAZIONI : T182FO   +++++++++++++++
OGGETTO : ORIONETRAPEZ ALFA : $$ $$ $$  DELTA : $$ $$ $$ LASTRA NO. :   104
DATA :    4 10  1973    T.U. :   25 42  0  POSA :  30.00    FILTRO     :

TIPO LASTRA  : 103A0    OSSERVATORE : ROSN
COMMENTO : SERENO

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Figure 2