

APPENDIX B

THE STATUS OF THE PLATES TAKEN FOR THE CHARTS AND THE CATALOGUE OF THE CARTE DU CIEL (ASTROGRAPHIC CATALOGUE).

Several discussions during the Symposium made it evident that there is considerable contemporary interest in the plates that were taken, several decades ago, for generating the charts of the Astrographic Catalogue and the catalogue itself. One may well suspect that even most of the plates exposed for the catalogue itself were not measured to their limiting magnitude, and it is well known that in most zones, not all the image sets were measured. The plates exposed for the charts were never measured at all. This parsimony of effort was at the time dictated by the fact that the process of measuring was extremely tedious and slow. Efforts to increase the efficiency of the measuring process, such as the employment of the Turner-type measuring machines or those used at the Vatican Observatory were successful only at the cost of diminished precision although this was not as drastic as some authors had suggested during the last three decades. Accurate plate parameters which are necessary to calculate spherical coordinates from the measured relative rectangular coordinates of the stars' images on the plates are still largely missing, even though (by and large isolated) efforts by several authors to calculate plate parameters more accurate than those originally published together with the measurements were quite successful.

Modern technology has drastically increased our abilities to measure and to calculate precisely, fast and efficiently. The age of the AC plates makes them prime first-epoch material for the determination of proper motions. It may therefore very well be advisable to remeasure them on efficient modern and precise high-speed automatic measuring machines and to attempt a re-estimation of the appropriate plate parameters. Considering that the AC contains even at this time the data from which one may compute the positions of about four million stars at epochs as early as the eighteen-eighties, the plates may well, properly measured and reduced, yield the positions of over ten million stars at epochs around the beginning of the twentieth century, and thus the foundations for determining precisely the proper motions of these stars. The potential value of material of this kind for many branches of astronomy is a matter of record and we need not rediscuss it here.

In order to help potentially interested investigators to get an overview over the existing material and an indication of its availability to investigators not connected with its home institution, the following letter was sent to the Directors and/or heads of the observatories which had participated in the observations and reductions of the plates (for the catalogue as well as the charts) of the Astrographic Catalogue:

May 30, 1984

Dear Colleague:

As you know there has been a recent revival in Astrographic Catalog (AC) work, as could be witnessed for instance at the recent IAU Symposium 109 on "Astrometric Techniques" at Gainesville and at a recent meeting of the Council of the CDS at Grasse on the relations between astrometry and the data centers.

One of the major difficulties encountered in the use of the AC is that only part of it, namely the French zones (+34: to -2:) are currently available on magnetic tape.

At these two meetings many astronomers expressed the wish that all of the published AC be made available in computer readable form, but no agreement was reached on the best way to achieve this.

Obvious approaches would be:

- a - That some data center or observatory undertakes this, using the published values. This is a major project as we know at Strasbourg from the work on the French zones. Perhaps a machine could be used to read the catalogs, but the cost is still high with the present technology - about 5 stars per U.S. dollar.
- b - To enquire if the observatories which took the AC plates would be interested in transferring their zones on to magnetic tape.
- c - Beside there are a number of excellent reasons for eventually remeasuring all plates. These reasons are:
 - a. Normally only one of the exposures of each star was measured. A remeasurement could be complete and utilize all information on the plates.
 - b. Not all stars were originally measured. Remeasurements on an automatic machine would avoid this problem.
 - q. The precision of modern automatic machines is on the whole superior to that of manual procedures and moreover would guarantee an uniformity not present in the measurements originally published.

Obvious problems with a comprehensive measurement are that the plates are scattered virtually all over the globe, usually not near an available automatic measuring engine, and the state of conservation may also render complete remeasurement impracticable.

This letter is to request your opinion on several of the above mentioned points. To facilitate your answer, let us provide you with a list of questions:

- 1 - Is your institute interested in projects using the AC?
- 2 - Would you be willing to undertake the transfer of the measurements in "your" zone into machine-readable form and if so, on what a time scale?
- 3 - If you prefer remeasurement, would you be willing and able to participate in such a task with an automatic machine?
- 4 - If this is impossible, would you be willing to make your plate collection available to another institution willing and able to carry out the task?
Note that the plates taken for the Carte du Ciel (CdC) which are considerably deeper than those of the AC never have been measured.
- 5 - Would you be willing to include the CdC plates which may be in your possession in such a remeasurement or loan project?
- 6 - Where could we find information on the state of perservation of the AC/CdC plates in the possession of your in stitution?

TABLE 1

Observatory	Answer to question					remarks	information furnished by
	1	2	3	4	5		
Greenwich	yes	no	uncertain			12,13	P. J. Andrews
Vatican	not at this time	no	not able	yes	yes		George Coyne
Catania	yes	not able	no	yes		1	C. Blanco
Helsingfors						15	
Potsdam	somewhat	not able	not able	yes, in principle	yes	2	Gerhard Ruben
Hyderabad	yes	if funds are available	yes, if machine is lent	not really	n.a.	8	S. M. Alladin
Uccle	yes	not able				7	P. Melchior
Oxford	no	no				3	Donald Blackwell
Paris	yes	has been done	possibly in the future	preferably not	preferably not	4	Jean Delhaye
Bordeaux		done		yes	yes		M. Rousseau
Toulouse	no	done	no	yes, in principle	yes	14	R. Nadal
Algiers	yes	possibly					A. Ghezoulou
San Fernando	yes	limited, no staff	no equipment	yes	yes	9	A. Orte
Tacubaya	no	not able	no	probably yes	probably yes	5,6	Paris Pişmiş
Cordoba	yes	no	no equipment	possible	yes	10,11	G. Carranza
Perth	yes	not at this time	yes	only if impossible at Perth	n.a.		Iwan Nikoloff
Cape	yes	partly done	no	yes	yes		J. Churms
Sydney and Melbourne	yes	no	possibly with financial help	yes, in principle		13	N. R. Lomb and A. E. Vaughan

Remarks:

- 1) plates "not in a good state of preservation"
- 2) many plates were destroyed in air raids during WWII
- 3) plates located at Greenwich
- 4) intense interest in this citadel of the CdC, plates well taken care of
- 5) remeasurement of AC and CdC plates was initiated
- 6) careful inventory of existing plates was furnished by Luis Zubieta; see also Bull. Inf. CDS **29**, 67 (1985)
- 7) carte du ciel plates are at Uccle, AC plates at Paris, both in good condition
- 8) plates available and in good condition
- 9) plates dirty
- 10) second epoch also photographed
- 11) plates and alternate series well preserved
- 12) second epoch (1925) was taken
- 13) plates at Macquarie University
- 14) plates well preserved
- 15) no reaction to questionnaire received

Some current work on galactic dynamic and stellar kinematics, makes the project(s) discussed above very timely. For these reasons we would much appreciate your answer and reaction at your early convenience. In view of the importance of the matter, we intend to publish the answers in the "Information Bulletin of the CDS". Please address your answer to one –or preferably to both– of the undersigned.

We much appreciate your attention to this: we know it is time consuming and not a trivial task. Only now, after about a century, is the community of astronomers able to reap the fruits of the selfless and dedicated labor which our predecessors have contributed in an international effort that spanned the globe. We sincerely hope that our efforts will help to realize the results of work done a century ago for the benefit of astronomers and scientists in all countries of the world.

Cordially yours,

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Note: This letter is being mailed to the Directors of all institutions which took part in the AC; to the authorities of the IAU; to the Presidents of IAU Commissions 8, 24 and 33 and to those colleagues, like Prof. Gart Westerhout and Dr. J. Guibert, who expressed interest in plate remeasurements.

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The substance of the answers received is abstracted in Tab. 1 below, essentially from "North to South". Literal excerpts from the answers were previously published in Bull. d'Inf. du CDS **27**, 197 (1984); **28**, 169 (1985) and **29**, 61 (1985). We also give abstracts of the reactions from two of our colleagues at institutions which had not participated in the AC project but now house a group of interested astrometrists.

Christian de Vegt (Hamburg) points out that the Hamburg Observatory might participate in the remeasuring.

Alain Fresneau (Baltimore) states that in his opinion, a first measurement of the available chart plates to magnitude 14.5 should have preference over remeasurement of the catalogue plates.