

The Historical Literature of Astronomy, via ADS

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Abstract. Nearly every working astronomer now uses the NASA Astrophysics Data System Abstract Service regularly to access the modern technical literature.

The ADS has begun a long term project to put the most important historical literature of astronomy on-line. This paper presents a progress report, details our short term goals, and requests the assistance of astronomical bibliophiles to make the collection complete and useful.

The ADS can be reached at: <http://adswww.harvard.edu/>

1. Introduction

The NASA ADS Abstract Service (Kurtz et al. 1993) is now a standard research tool for the majority of astronomers; more than 15,000 different astronomers use it each month, more than 400,000 queries are made, and more than 50,000 papers are read (Eichhorn et al. 1994).

Now that the majority of current journal articles in astronomy are published electronically the ADS is able to give up (most of) its responsibility to create the digital form of modern journal articles by scanning.

This frees the ADS to begin to populate the database by going backwards in time (Eichhorn et al. 1997). Our goal is to eventually provide a complete collection of the astronomical literature in bitmap form to our users. We also aim to provide an index to this collection.

2. The current status

Currently the majority of “old” (i.e. before 1940) entries in the ADS are from the Library of Congress (LoC) catalog; ADS contains the “QB” entries from this catalog. ADS also has individual PhD theses from the beginning of this century from University Microfilms, and a number of classic papers on specific astronomical objects from SIMBAD (Egret et al. 1995).

Beginning in 1944 ADS has scans of AJ papers on-line, and beginning in 1950 the SIMBAD bibliography begins to be inclusive. Figure 1 shows the number of entries in ADS per decade where LoC entries are the dotted line, and all other entries are the solid line. The ADS is substantially incomplete before 1975, as is clear from the graph. Once the project is completed we expect that the shape of the time distribution of ADS entries will be similar to that for LoC

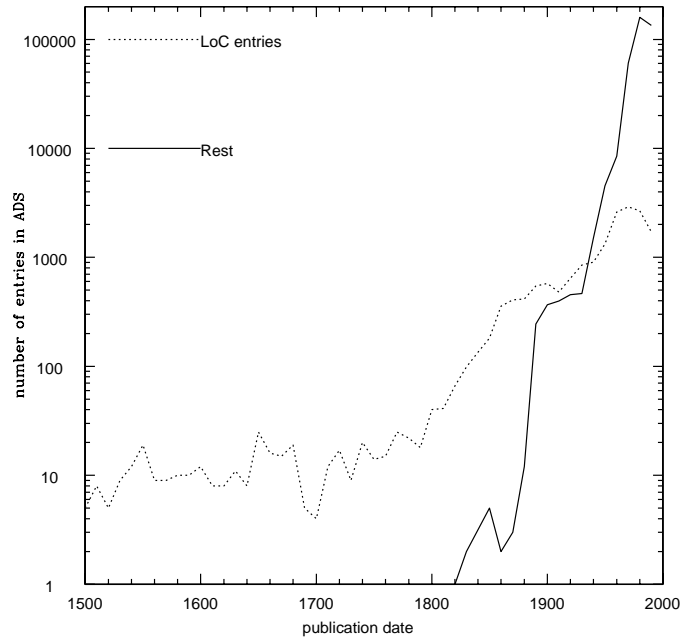


Figure 1. Number of bibliographic entries in ADS, binned in 10 year increments, as a function of publication date. The dotted line represents entries from Library of Congress, the solid line are all other entries.

entries, at least back to the beginning of the 19th century. The total number of articles should be a large factor times the number of books in the LoC.

3. Use of the Older Astronomical Journal Papers

Recently we have been able to scan copies of the AJ beginning with 1944, and create an index consisting of author and title for these data. While the older data is used but a small fraction of the current data, the use is still substantial. Figure 2 shows the number of reads per paper via ADS as a function of publication year. Note that from about 1970 backwards the number of reads per paper is about constant at more than once per year.

Figure 3 shows the percentage of papers which were read at least once via ADS (in the six month period ending 31 March 1998). Note that this increases for papers published before 1960.

4. Future Plans

In the next year or two we hope to be able to complete the scanning of several major journals, back to issue one. These include AJ, ApJ, ApJL, ApJS, A&A, A&AS, MNRAS, PASP, PASJ, and AN. We have physical copies of most of

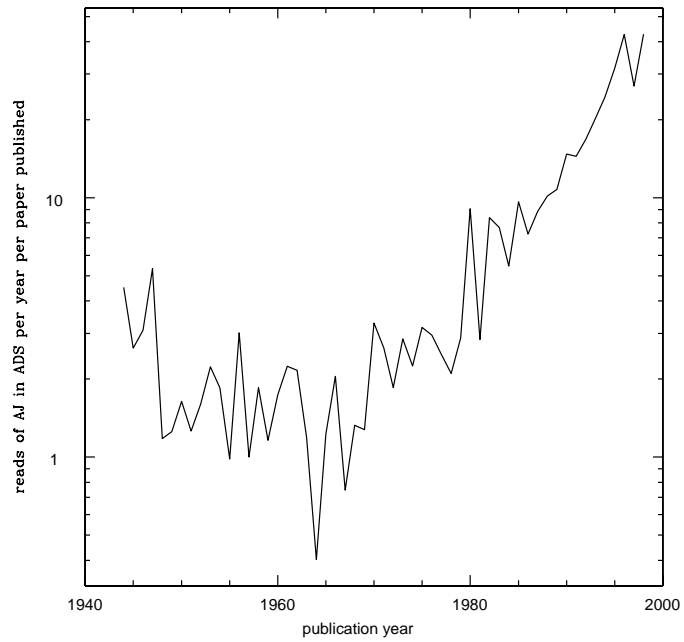


Figure 2. Average number of times a paper from the AJ is read during one year via ADS, as a function of publication date.

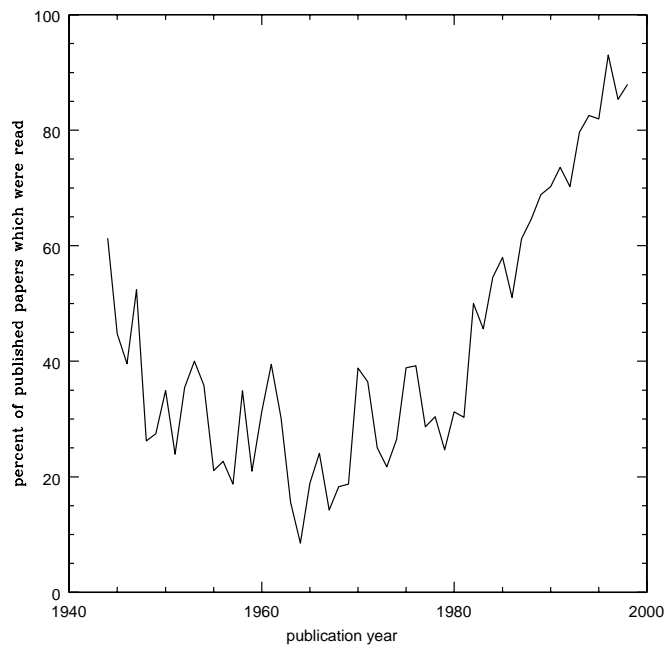


Figure 3. Percentage of papers published in AJ which were read at least once via the ADS in the six month period ending 31 March 1998.

these already in hand. We also expect to begin to scan microfilm copies of several observatory publications, created by a Harvard archiving project (Corbin & Coletti 1995). These two projects will provide access to a large part of the historical literature back to the early 1800's.

Once scanned, this historical literature will be available on a page-by-page basis. The user can select a journal, volume, and page, and retrieve the selected page. In order to make these scanned articles accessible like the more recent literature, we need table of contents for these volumes. We appeal to all friends of astronomical bibliography to help us in this task by building tables of contents for the historical literature that does not contain regular tables of contents.

Another long-range project is to convert the scanned article images into electronic text through Optical Character Recognition (OCR) software. This will eventually allow the user to search the complete literature through the ADS search system. We intend to make the OCRd text also directly available to qualified researchers. It will not be directly available on-line since it will not be 100% correct. It nevertheless should be a valuable resource for historians for searching word usage, determining who first used a particular expression, and similar research objectives.

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