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# **The Christian Reformed Church Periodical Index: A Local Solution to Indexing Periodicals**

**Greg Sennema**

**ABSTRACT.** This article describes the creation of a web-based database that indexes less well-known periodical titles of importance to scholars in the Christian Reformed Church, and generally not covered by other indexing services. The author explains how the data from the index, originally stored in a card catalog, was moved online to a text-based system, and eventually into its present form in a web-based system. Highlighting some of the challenges that were overcome in creating this resource, brief details are provided on how the data is stored and retrieved in the web environment, on how the data are searched and presented to the researcher, and on the methods used to keep the database current.

**KEYWORDS.** periodical index, indexing, database, Web site

## **Introduction**

Researchers often rely on reference librarians to help them identify and utilize the tools needed to locate periodical articles. A skilled librarian will usually be able to identify the correct index or research database that covers the periodicals, but only if the periodicals in question have been indexed in the first place. For periodicals not indexed in standard indexing tools, often the only way to locate articles is to browse through the pages of the periodical itself, or to ask someone with a good memory, both time-consuming and tedious methods.

It was to address this scenario that the Christian Reformed Church Periodical Index (CRCPI)<sup>1</sup> was created by librarians at the Hekman Library of Calvin College and Calvin Theological Seminary.<sup>2</sup> Among the library's many holdings are a substantial number of periodicals (see Appendix B) that are either published by the Christian Reformed Church in North America (CRCNA)<sup>3</sup> and her agencies, or are of importance – theologically or historically – to scholars in the denomination. Most of these periodical titles are not indexed in any other indexing service.<sup>4</sup> This article describes the project of how the CRCPI was created to provide enhanced access to these publications in a freely available web-based database.

## **History of the CRCPI**

The CRCPI was not initially referred to by its current acronym; in fact, perhaps like many such projects, it began as a card catalog that was maintained by various library staff. Documents in Calvin's archives indicate that a card index was started around 1925; however this card catalog covered a wide variety of periodicals because the library "never purchased the various Guides to Contemporary Literature because they are expensive, and also become bulky after a while."<sup>5</sup> By 1935, with some of the more

important periodical indexes being purchased, the library continued to index various periodical titles in the card catalog, and by 1960, there were an estimated 100,000 cards in the catalog covering approximately twenty seven periodicals<sup>6</sup> (see Appendix A).

In the early 1990's, as many libraries in North America began to shift their card catalogs to an online, automated environment, library staff began to investigate the possibility of transferring its card catalog of periodical titles into a "resource module" on the library's text-based online catalog system (Dynix). The Hekman Library contracted with the vendor to significantly modify the resource module to suit the indexing needs of the library staff. From 1993 to 1999, one library staff member entered over 40,000 records, retrospectively converting the card catalog data, and indexing current issues into the text-based CRCPI. Although no documentation exists to determine what was being indexed, it appears that at one time a decision was made to enter only the titles that were of primary importance to the CRCNA.

Because the CRCPI existed in a text-based online environment, data entry and searching were both complex and involved. So involved, in fact, that data entry was completed by only the one half-time librarian. Searches tended to be completed only by librarians at the reference desk, although lengthy and involved instruction sheets (the legacy of a text-based system) were created to aid the patron in searching the data.

In 2000, the Hekman Library made the decision to purchase a new web-based library catalog. Among the multifarious issues that needed to be addressed was that of the CRCPI data within the "resource module" of the system being replaced. Compared to the primary concerns of transferring the bibliographic, serials, circulation, and acquisitions data from the old to the new Library system, transferring CRCPI data was considered to be secondary. Before the new system was purchased, the vendor (SIRSI Inc.) indicated that the data could theoretically be migrated into the new system, although details were not given nor were they pursued. The potential problem would be in the actual migration of the data since it had not been entered in a consistent manner in the text-based online catalog.

After WebCat, the Hekman Library's new catalog, went live in the spring of 2001, library staff had time to pursue the task of migrating CRCPI data. Due to staff changes, no indexing had been completed for over one and a half years; however, in delaying the conversion of the CRCPI data to the end of the

entire conversion process, library staff inadvertently placed themselves in a position to deal with the data in what has turned out to be an ideal solution.

### **Databases and the web**

Part of the staff changes mentioned above included the hiring of a Library Systems Programmer, who together with the author decided that the data could appropriately be stored in a MySQL database, and retrieved as well as maintained via CGI forms created using the Perl programming language. Two months later, in July 2001, the web-based CRCPI went online.

For those readers who have no idea what MySQL, CGI, and Perl are, the following two paragraphs may help. Computer users with some basic experience with Microsoft's office management software such as Word, Excel, or Access may also have a basic understanding of how a database works. For example, an address list in an Excel spreadsheet or Access database contains information in columns (fields) and rows (records) which can be imported into a single Word document using the program's "Mail Merge" function. Furthermore, an Access database can be complex, with a single database made up of various tables. For example, a store-owner may have a database comprised of an address table, an order table, and an invoice table. If each of the tables contains a field that is identically related with a field in another table (such as customer ID), then the database is a relational database. Because these Microsoft programs are typically installed locally on a computer's hard drive, making the database available on the web is impossible using the program alone. True, these programs offer a "Save as HTML" option, but this produces static pages in HTML format; changes to the database would require the HTML pages to be updated as well.

In order for database information to be dynamically presented on the web, a programming language needs to be used to translate the information from the database language into HTML language. In the case of Access, a program called ColdFusion<sup>7</sup> can be used to complete this task. However, not all databases are stored in Microsoft Access, and one popular alternative is MySQL,<sup>8</sup> an open source (i.e., free) database often used when information is meant to be displayed in a web environment. And as ColdFusion translates the Access data into HTML, CGI forms created from the widely used Practical Extraction and Report Language (Perl)<sup>9</sup> present the database information on dynamic web pages. In both

cases, web pages need to be created to present the database information, and changes made to the database are immediately reflected on the web.

Since the CRCPI data already existed outside a program like Access, creating the database "from scratch" using MySQL in combination with Perl scripting was a viable option, especially considering the fact that the library employed staff with the expertise to write the advanced programming. If we did not have the programming staff, or if the data were simply stored in a Microsoft Access database, as the case may be for other theological libraries, it would have been possible for someone with some Access and HTML experience, as well as the aptitude to learn a program such as ColdFusion, to make the database available on the Web.

### **Custom Database Creation**

In its text-based format, the CRCPI database was stored in a proprietary format unique to the Dynix system. The Library Systems Programmer spent many hours writing scripts that would extract the data from this format into separate delimited files, a type of file where each piece of data (such as author, title, etc.) is separated by a consistent character, allowing data to be easily transferred from one database system to another. The resulting three files were imported into MySQL tables. The first file contained all the records of each article citation -- author, title, subject, page number, and so on. The second and third files contained the authority information for the author field and the subject field respectively. The information in these two "authority tables" contain the authorized terms and spellings that are allowed in these fields. As a relational database, the CRCPI matches the information in each authority file with their corresponding field in the article table. Many hours were spent in cleaning up the data in those three tables to allow links between the appropriate match points. For example, an author listed in the author authority file might have a punctuation mark at the end of the entry, while in the article table the punctuation mark was missing. To properly link the author in the authority file and the article citation, the punctuation mark needs to be removed. The importance of being able to link between the two authority tables and the article table will be demonstrated below.

Another challenge encountered was that all the citation data was stored in one "citation" field. For example, a typical citation field was "99:10 July 3, 1964" which translated into volume 99, page 10, July 3 1964. In most cases, this data could be extracted and placed in unique fields such as (such as volume,

issue, page, and year) that would offer the public more options for searching. However, the format of the information in the citation field was inconsistent, and entries like the following were not uncommon: " 3-17, all issues from February 1932 to November 1945." The transference of the data for these article citations has to be dealt with on a case by case basis.

### **Public Interface**

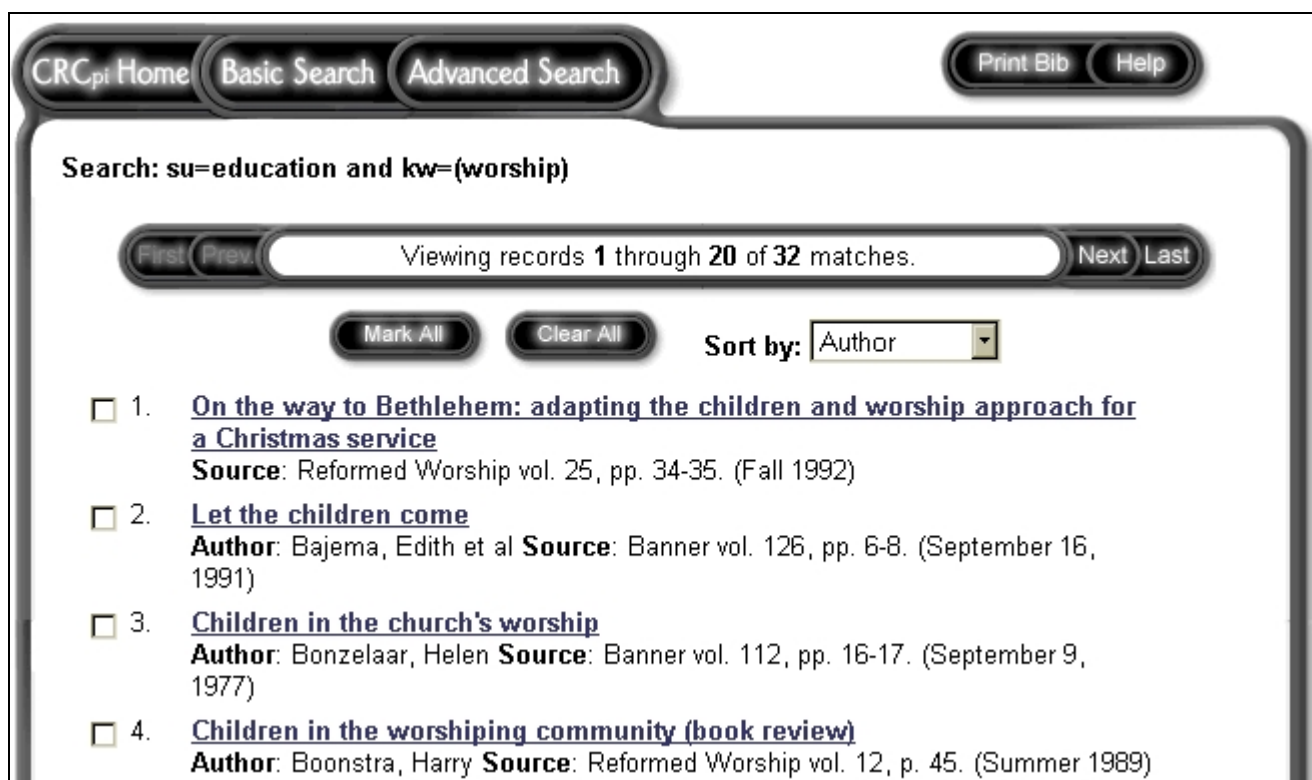
The whole purpose of this entire project – of converting the CRCPI data from the text-based catalog, and of making the data available on the web -- was to make this information easily available to the public. Thus, the creation of an easy-to-use public interface was of extreme importance, and accordingly will be dealt with in detail at this point. The data entry, or on-going maintenance of the CRCPI, will be dealt with below.

Having placed all the CRCPI in MySQL tables, the Library Systems Programmer set out to create the publicly available "front end" that displays the database information within HTML formatting. In essence, the HTML pages allow the general public to query the database, while behind the scenes the query is translated into a MySQL script that displays results in the user's HTML browser.<sup>10</sup>

The current interface of the CRCPI is comprised of three main pages: a CRCPI Home page, a Basic Search, and an Advanced Search. The Home page introduces the database and its contents to the users, explaining to them what is included in the database, and the intellectual context to which this database belongs. The Basic Search allows the researcher to enter keyword searches, with the search being performed on every indexed field (excluding the full text of included articles). The Advanced Search (Figure 1) screen offers users the ability to search for and locate citations based on a wide variety of criteria. Searches can be completed on keyword, author, title, subject, year, abstract, and even issue.

**Figure 1. Screenshot of the CRCPI Advanced Search.**

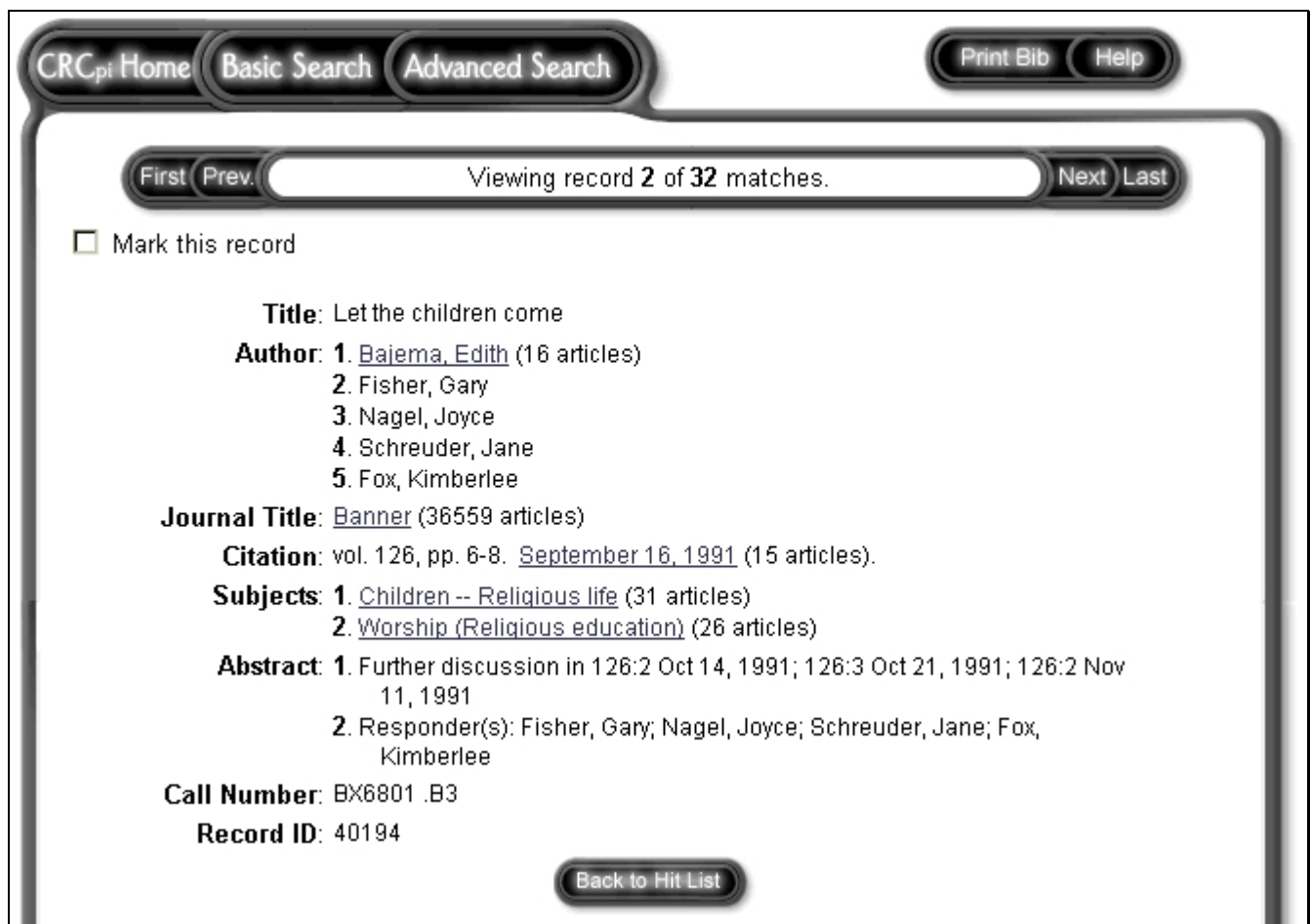
Searches can be limited to the type of citation (e.g., articles, book reviews, poetry, etc.) and to the particular publication (e.g., the Banner, Reformed Worship). As shown in Figure 2, results are displayed in brief format, with some of the basic article information (title, author, periodical title, date, etc.)



**Figure 2. Screenshot of the CRCPI Search results in brief display**

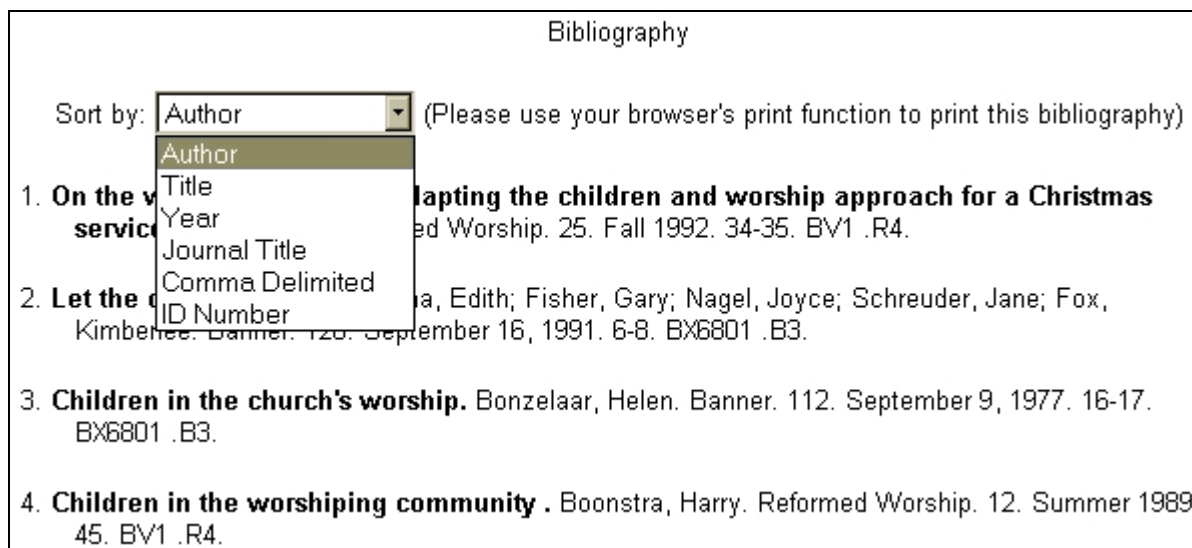
By clicking the hyperlinked title, users are able to view the full record format (Figure 3) that includes the periodical title and call number (in the Hekman Library), abstract information, and other information depending on the type of record.





**Figure 3. Screenshot CRCPI citation record.**

Whether in the brief or full format, the CRCPI searcher is able to mark (or "tag") records of interest, and after perusing and marking the desired results, to click "Print Bib," producing a new browser window that displays all the marked results (users can also choose to mark the entire page of 20 results by clicking "Mark All"). The results in this new browser window (Figure 4) can in turn be sorted by any number of combinations, and printed using the browser's print function.



**Figure 4. Screenshot of CRCPI print screen with alternate sorting options.**

Since the CRCPI article table is linked to the author and subject authority tables, additional tables are derived that contain information about the links, such as the number of occurrences of an author's name in the author field. To the user, this means that a citation record for an article (see Figure 3) contains hyperlinks to identical information in the same fields of other citation records, allowing the user to branch out from his search results based on a particular piece of information. For CRCPI users, who often look for articles by authors who wrote for a variety of publications, or for hot topics in the denomination's history, this feature is invaluable.

### **Data Entry – The Content**

Of the twenty seven titles originally indexed in the card catalog, only four of these were continued in the text-based CRCPI. In addition to these four titles, a number of other titles (which also reflected title changes) were indexed in the CRCPI between 1993 and 1999 (see Appendix B). Moreover, a hodge-podge of citations were included from a large number of miscellaneous periodical titles. After migrating the data to the web-based CRCPI, it became evident that the CRCPI's purpose needed clarification by answering the questions "What periodical titles should be indexed?", "How thorough should the coverage be?" and perhaps most importantly, "Who would do the indexing?"

To help answer the first two questions, a CRCPI Committee was formed, made up of the library's director, two theological librarians, and the author (Digital Resources Librarian). The first task of the committee was to identify which titles (listed in Appendix B) were still being published, and to understand

which titles were merged together. Of those still being published, the committee needed to decide if they were still considered important to the members of the CRCNA community. Defining what this meant was and still is a complex issue. Limiting the indexing to only official publications of the CRCNA would limit access to other peripheral titles that include a large number of articles by, or of interest to, CRCNA members. On the other hand, indexing titles that are in some way "reformed" could enlarge the pool of suitable journals to an unrealistic size. After deliberating this issue, the CRCPI committee decided that the indexing would cover periodical titles that met the following criteria:<sup>11</sup>

1. if the title is currently being published by the CRCNA and any of its agencies (not including strictly promotional publications)
2. if the title, even though not an official CRCNA publication, had already had some amount of indexing already completed, and could still be considered of interest to some segment of the CRCNA constituency.
3. additional titles as they came up and as time and resources would allow.

### **Data Entry --The Procedure**

After successfully creating the web-based CRCPI and search interface, as well as clarifying the CRCPI's purpose, it still needed to be decided who would complete the data entry, and how they would do this. In considering the time commitments of already busy librarians at Calvin, it was decided that student assistants and community volunteers would be used to complete the data entry portion of the indexing, while librarians would retain control of assigning subject headings. In cooperation with CRC Publications staff, an advertisement was placed in the Banner,<sup>12</sup> the official periodical of the CRCNA, calling for volunteers. The volunteers would need some familiarity with computers and the Internet environment, and preferably some cataloging experience. Response to the advertisement was better than expected, with four people from across the United States offering to help with indexing. Two of the volunteers were librarians at a sister college of Calvin (Dordt College), with one of them indexing a periodical title published by that school.<sup>13</sup> In addition to the volunteers, librarians and student assistants at the Hekman Library also began to index articles.

Web-accessible databases are often populated with data from Microsoft Access, a relatively easy program to use for data entry by anyone with basic word processing and/or spreadsheet experience. However, since the CRCPI data already existed outside the framework of Access, migrating to Access and using a program like ColdFusion to push it into the web environment was not feasible. To facilitate

the process of adding citation records and subject headings, a MySQL-based Administrative Module for the CRCPI was created (herein referred to as CRCPI-ADMIN). The CRCPI-ADMIN allows authenticated indexers to add, edit, or delete records, as well as to add, edit, or delete records in the author or subject authority tables. The screenshot in Figure 5 shows the screen that indexers use to enter data.

## Creating new record


Separate multiple authors or subjects with a **pipe (|)**.

Copy/paste diacritics: á é í ó ú â è ì ò ù ä ë ï ö ü ã ê î ô û

**Data Type:**

**Title:**

Separate multiple authors with a **pipe (|)**, and no space afterward.

**Author(s):**  

**Jrnl. Title:**


**Citation:** **Old: do not edit!**

**Volume:**  **Pages:**  **Internal Sort Date:**  (MM/DD/YYYY)

**Issue Name:**  (date viewed by public)

**Journal Section:**

Separate multiple subjects with a **pipe (|)**, and no space afterward.


**Subjects:**  


**Year:** **Old: do not edit!**

If a book review, fill in these fields:

**Reviewed Title:**

Separate multiple reviewed authors with a **pipe (|)**, and no space afterward.

**Reviewed Author(s):**  

**Abstract:**  

**Figure 5. Creating a new record in the CRCPI-ADMIN.**

The fields that are controlled and linked to the authority records have links (the circular "fingers" icon to the right of the field) that when clicked opens a separate window containing the authority file. The indexer can browse a list of existing authority records and mark all that apply to that particular field. If the correct authority record cannot be located, the authority window is simply closed, and the indexer continues indexing the article with new, unverified information. Once complete, the indexer clicks submit,

and is presented with a verification screen which shows all the information that will be entered into the system (Figure 6).

**Please verify this record (65569)**

<b>Data Type:</b>	article
<b>Title:</b>	Rumors
<b>Author:</b>	<b>WARNING!</b> The following entries were <b>NOT</b> in the authority file: 1). Meyer, Galer ( <a href="#">Browse Similar</a> ) ( <a href="#">Add to Authority</a> )
<b>Journal Title:</b>	1). Banner
<b>Volume:</b>	126
<b>Pages:</b>	2
<b>Issue Name:</b>	August 12, 1991
<b>Internal Sort Date:</b>	08/12/1991
<b>Journal Section:</b>	Fifth Row Center
<b>Subjects:</b>	<b>WARNING!</b> The following entries were <b>NOT</b> in the authority file: 1). Truthfulness. ( <a href="#">Browse Similar</a> ) ( <a href="#">Add to Authority</a> )

**Figure 6 The CRCPI-ADMIN screen informs the indexer that data in two of the fields do not match the data in the authority records that are linked to these two fields.**

If data in the field that is linked to an authority table does not match, the line appears in red with the text "WARNING! The following entries were NOT in the authority file:" and the indexer is given the option to again browse the authority file to locate a match (Figure 7), or add the information to the authority file. In this way, periodical article citations can be added, or, if the record ID number is known, edited.

## Browsing Author Authority

Mark desired authority record(s) and then click "Back to Form". If you don't find the term you want, just [close this window](#) and type the term in the appropriate input box.

☒

- ☐ 1. **Meyer, Edward** (6 articles)
- ☐ 2. **Meyer, F. B. (Frederick Brotherton), 1847-1929** (11 articles)
- ☒ 3. **Meyer, Galen H.** (300 articles)
- ☐ 4. **Meyer, Gary** (1 article)

**Figure 7 -- Clicking on the Browse Similar link opens up the authority file, and if the correct term is present, it can be "marked" and automatically placed in the corresponding article record field.**

The CRCPI-ADMIN module also allows batch loading using delimited files converted from Microsoft Excel spreadsheets. For example, there are a number of periodical titles for which several years worth of indexing must be completed. One such title, the Calvin Theological Journal (CTJ), was indexed in the first years of the CRCPI's existence, but only for the years 1966 through 1968. In entering the estimated 2500 records of the CTJ,<sup>14</sup> indexers enter information in Excel spreadsheets, with columns that represent the fields in the CRCPI, and rows making up individual records. Once a spreadsheet has been created, librarians can sort the list in various ways and use the program's Find and Replace function to make batch changes on, for example, the author field in order to match the spelling with the author's name in the author authority table. Once the file has been proofread, it is converted into a delimited format and batch loaded into the CRCPI.

Records that are batch loaded into the CRCPI are hidden from public view until they have been approved by a librarian one record at a time. The range of ID's of batch loaded records is given to the librarian, who uses the CRCPI-ADMIN to examine each record, to double check for spelling errors, and to add subject headings if applicable.

## Creating Partnerships

To facilitate the maintenance of the CRCPI, partnerships were developed between the Hekman Library and other organizations. For example, a periodical published by Dordt College, a sister college to Calvin, was identified by the CRCPI Committee as suitable for inclusion in the CRCPI. After talking to

Dordt College librarians, it was learned that some basic indexing of the title had already been completed, with author and title lists of articles available from the Dordt College web site. With their permission, the information was imported into Microsoft Word, cleaned up and modified using Word's "Find and Replace" function, and then imported into Excel as a text file. Further modifications to the data were completed in Excel before finally importing the data into the CRCPI. Now librarians at Dordt are examining each record, adding appropriate subject headings, and "Approving" the records to make them viewable by the public.

Partnerships were also forged with staff from two CRC Publications titles. For many years, The Banner staff maintained their own subject index to their periodical; they now rely on the CRCPI and provide an initial search screen on their web pages. The staff of Reformed Worship, another CRC Publications title, also maintained their own subject index, but they also decided to rely on the CRCPI. Several meetings between the author and the editorial staff of Reformed Worship have resulted in changes in the CRCPI subject authority file to better describe some of the content of that magazine.

### **Future**

Many lessons were learned – and continue to be learned – throughout the course of this project. The current version of the CRCPI has fields for every piece of unique information, instead of placing separate pieces of information in one field. This, and including record fields that seem irrelevant (such as "Journal Section") or not always used for a citation (such as Abstract) ensures that future revisions to the CRCPI will be less complicated.

The CRCPI is currently available for free on the internet, with indexing of current articles proceeding as the periodical issues are published. However much work continues to be done to clean up the existing data. For example, many of the articles in the periodicals were regular weekly installments of a particular theme, and instead of creating individual records, previous indexers created one citation with the something like the following in the citation field: "v. 19-22, all issues from Sept 1947 to Mar 1951." In order to create an accurate table of content snapshot of each issue, the CRCPI committee decided that the student and volunteer indexers should create unique records for each individual citation.

The authority files continue to be a challenge to clean up and maintain. While Library of Congress (LC) Subject Headings work for the majority of articles, there are times that the subject

coverage is not adequate. In some cases, the decision was made to deviate from LC, as was the case with some subjects assigned to citations of *Reformed Worship* articles. This periodical contains many articles on worship for seasons of the Church Calendar, according to a particular Church Year of the Common Lectionary. LC Subject Headings allow for only "Church Year," along with the season, such as "Advent." The solution was to create the following subject headings "Church Year – Year A" "Church Year – Year B" and Church Year – Year C."

In addition to cleaning up the existing data, student assistants and volunteers are reviewing the indexing completed on existing titles, and filling in gaps. Between indexing of current periodical titles, creating multiple records from one existing record, and from retrospectively adding data, the CRCPI has grown by over 30% in the eight months since it came online in its current web form. A long term goal for the CRCPI is to incorporate the full text of the indexed articles. The short term goal, though, is to continue filling in the gaps to ensure that a CRCPI search will retrieve as many relevant articles citations as possible.

Creating the web-based CRCPI has benefited the Hekman Library in the experience gained by library staff. Already three other local databases have been created, modeled on the structure of the CRCPI. The Hekman Library Sermon Index (HLSI)<sup>15</sup> contains citations to sermons within books of the Hekman Library; the Calvinism Resources Database (CaRD)<sup>16</sup> provides access to articles, essays, and lectures dealing with John Calvin and Calvinism from the 16th century to the present. And the Cayvan Choral Music Database (CCMD)<sup>17</sup> contains citation records for choral music held by the Hekman Library's Cayvan Music Room. Each of these databases in their own way fill an information gap that benefit the entire Calvin community as well as scholars worldwide.

## **Appendix A**

Periodical Titles included in the Original card Catalog, entered between 1925 and 1992. Titles preceded by an asterisk \* indicate those that were included in the CRCPI when it went online in 1993.

American Journal of Theology  
Antioch Review  
\*Banner  
Bibliotheca Sacra  
Christendom  
\*Christian Home and School  
Christianity Today  
Church History  
Ecumenical Review



Evangelical Quarterly  
Harvard Theological Review  
Hibbert Journal  
Journal of Biblical Literature  
Journal of the History of Ideas  
New Scholasticism  
Pastoral Psychology  
Philosophia Reformata  
Pulpit Digest  
\*Reformed Journal  
Reformed Review  
Reformed Theological Review  
Southern Literary Review  
Southern Review  
Theology  
Theology Today  
Thomist  
\*Torch and Trumpet  
Westminster Theological Journal

## Appendix B

CRCPI Periodical titles. Titles preceded by an asterisk \* indicate those that were retrospectively converted from the card catalog when it went online in 1993; titles in parenthesis reflect title changes.

\*Banner (Banner of Truth)  
Calvin Theological Journal  
Christian Educators Journal  
\*Christian Home and School (Christian School Magazine)  
Christian Renewal  
Church Observer  
Insight (Young Calvinist)  
Messenger (Federation Messenger)  
Missionary Monthly  
Origins Outlook (\*Torch and Trumpet)  
Perspectives (\*Reformed Journal, Calvin Forum)  
Stromata

## NOTES

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<sup>1</sup> <http://www.calvin.edu/library/databases/crcpi/>.

<sup>2</sup> The Hekman Library serves both the College and the Seminary.

<sup>3</sup> For more information on the Christian Reformed Church in North American, visit <http://www.crcna.org>.

<sup>4</sup> Of the 23 titles that have a significant amount of coverage in the CRCPI, only 2 are also indexed in another major indexing service. These are the Calvin Theological Journal (ATLA Religion Database, Religious & Theological Abstracts), and Reformed Worship (ATLA Religion Database).

<sup>5</sup> Library Director's Report to the Board, 1927. College Archive Collection, Archives, Calvin College, Grand Rapids, MI.

<sup>6</sup> Library Director's Report to the Board, 1960. College Archive Collection, Archives, Calvin College, Grand Rapids, MI.

<sup>7</sup> For more information on ColdFusion, visit <http://www.macromedia.com/software/coldfusion/>.

<sup>8</sup> For more information on MySQL, visit <http://www.mysql.com/>.

<sup>9</sup> For more information on Perl scripting, visit <http://www.perl.com/>.

<sup>10</sup> Please contact the Library Systems Programmer at [jkoops@calvin.edu](mailto:jkoops@calvin.edu) for more information.

<sup>11</sup> Periodical titles added were Calvin Seminary Forum, Reformed Worship, and Pro Rege.

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<sup>12</sup> The advertisement appeared in the October 22, 2001 issue of the Banner. The advertisement referred to <http://www.calvin.edu/library/database/crcpi/helpus.htm>, which gave more details on the experience and qualifications sought.

<sup>13</sup> Pro Rege (bib information).

<sup>14</sup> 1969 through to the present, with a large percentage of the records book reviews.

<sup>15</sup> <http://www.calvin.edu/library/database/hlsi/>.

<sup>16</sup> <http://www.calvin.edu/library/database/card/>.

<sup>17</sup> <http://www.calvin.edu/library/database/ccmd/>.