Association for Preservation Technology
International
Australasia Chapter

BUILDING TECHNOLOGY HERITAGE
LIBRARY SCANNING

PROJECT REPORT
Association for Preservation Technology International
Australasia Chapter

BUILDING TECHNOLOGY HERITAGE LIBRARY SCANNING
Miles Lewis Collection

Project Report

Meher Nishchal Bahl

03.04.2020
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1. The Project

The Association for Preservation Technology International [APT] maintains a very extensive on-line Building Heritage Library containing digitised versions of technical and trade literature freely available for the use of architectural conservators and historians:

![Snapshot of the Building Technology Heritage Library as hosted on the Internet Archive](https://archive.org/details/buildingtechnologyheritagelibrary)

Although the collection is in principle international, the material so far collected is predominantly North American. In seeking to rectify this, Mr Mike Jackson, co-chair of the APT Building Technology Heritage Library, identified in the collection of Professor Miles Lewis, Melbourne, about 400 relevant items which have not so far been copied by the APT nor, so far as searches reveal, by any other body. He approached both Lewis himself and the APT Australasia Chapter with a view to capturing this material.

The APT Australasia Chapter agreed to advance the proposal, though the identified publications in the Lewis collection are by no means all Australian.
2. The Association for Preservation Technology

The Association for Preservation Technology International (APT) is a multidisciplinary, membership organisation dedicated to promoting the best technology for conserving/preserving historic structures and their settings. APT members come from more than thirty countries and include preservationists, architects, engineers, conservators, consultants, contractors, craftspersons, curators, developers, educators, historians, landscape architects, students, technicians, and other people directly involved in the application of methods and materials to maintain, conserve, and protect historic structures and sites for future use and appreciation.

The APT’s mission is to advance the application of traditional and contemporary technology appropriate to the conservation of the built environment and to nurture the cultural resources that contribute to its significance.


There is a small Australian membership, and an Australasian chapter convened by Dr Donald Ellsmore.
3. The Building Technology Heritage Library

The Building Technology Heritage Library (BTHL) is a free, online digital library. The content includes architectural trade catalogues, house plan books and technical building guides which are in the public domain (pre-1964 in USA terms). These materials can aid in the preservation and conservation of older structures as well as other research goals.

The initial focus of the Building Technology Heritage Library has been the architectural trade catalogue. These catalogues have excellent descriptive and technical content and are of particular value to heritage professionals. They are also difficult to access. There are only a few specialised research collections in North America and their content was not being reprinted or digitised by any other institution. By coordinating the conversion of these to online documents the APT makes rare materials available to everyone, and helps to avoid the duplication of items from various collections.

3.1 Sources

The BTHL contains materials from a variety of private and institutional collections. These materials are rarely available in architectural and professional libraries. The first major architectural trade catalogue collection was that of the Canadian Centre for Architecture (CCA), which encompasses more than 3,400 catalogues from the early 19th century to 1963. In addition to the architectural trade catalogues, the initial contributions include a large number of house plan catalogues, which are of great interest to owners of older houses. The CCA collection also contains a number of European catalogues, which provide an international dimension to the BTHL. The American materials on the BTHL end in 1963, as materials after this date are still under copyright protection by the original publishers.

3.2 Hosting

The BTHL is hosted by the Internet Archive (www.archive.org), which was founded to build an on-line library offering permanent access to historical collections of digital materials to researchers, historians, scholars, and the general public at no charge. Materials placed on the BTHL are in the public domain.
3.3 History of the BTHL

The BTHL was initiated on the APT website in 2006. That autumn, the first thirteen catalogues were made available on the APT Digital Archive of Building Technology. The goal of the project was stated: ‘This new digital archive will greatly expand the availability of rare and hard-to-find materials related to the construction and finishes of historic structures and become a valuable research tool for design professionals, building conservators, and preservationists.’ Over the next year the site grew to thirty documents, which was the beginning of what would become a much larger project. In 2010 the APT and the Canadian Centre for Architecture (CCA) initiated a project that added more than 3,400 architectural trade catalogues from the CCA collection. During 2018 the content of the BTHL exceed 10,000 documents by the addition of material from the Lewis collection.

3.4 Building Technology Heritage Library Usage

The BTHL has seen steady growth in content and use, and thousands of documents are now being viewed each day. For the preservation community, it has become a primary research tool accessible from anywhere in the world. The original goals of the project have been far surpassed in both the comprehensive set of documents and the user-friendly interface supported by the Internet Archive. APT has now reached a point where other libraries are contacting it with a view to contributing their material. The BTHL has proved to be an unqualified success for APT and a great service to the world’s building conservation community.

3.5 The Australian Project

Mike Jackson first contacted Miles Lewis in May 2017, since when a number of options have been explored. Lewis was not prepared to ship the collection to the USA for scanning, and was not prepared to be the manager of the project or to handle the funds. However he offered full cooperation, and obtained an overhead scanner at his own expense to facilitate the work.

The APT Australasia Chapter was prepared to be the sponsoring organisation, but because it had no office establishment or capacity for detailed administration it was proposed to do the work by contract for a set number of hours,

As at August 2017 Jackson estimated that there were over 400 items in the Lewis collection suitable for scanning, viz:

- 166 Australian trade catalogues and technical publications
- 211 non-Australia publications
- 29 Other early publications of ‘noteworthy historic value’, with more yet to be checked out

He was working from the on-line catalogue last updated in 2009, and as the library has been considerably augmented since then the numbers will have increased. He quoted a figure of US$12 average to a document from US experience, and subsequently estimated that one person can scan and upload two documents per hour, based on an average of 70 pages. But these calculations were not directly applicable to the items identified in the Lewis collection which were on average much larger (one, for example, with over 1200 pages). Moreover some are in very large format and difficult to handle.

Stage 1

Collage of cover pages of documents scanned in stage 1

The first stage of the project officially started on the 3rd of January 2019 at Osbert Lancaster Memorial Bibliographic Institute, Professor Miles Lewis’s library. Out of the over 400 identified materials, the scanning started with catalogues consisting a couple of dozen pages and went up to publications of up to a thousand pages. While, the scanner at Professor Lewis’s library
was fit for smaller, flatter catalogues, it turned out unsuitable for more complex materials. The work was then completed at the University Digitisation Centre.

Addition of materials from Professor Lewis’s library contributed majorly in extending the reach of the BTHL from being a primarily American collection to including documents from other parts of the world. During the first stage, as a part of Professor Lewis’s collection, a 1904 tile, terracotta and fireplace catalogue from a French company: Emile Muller & Cie was added to the BTHL as its 10,000th upload. It was carefully selected as the milestone catalogue. It is beautifully illustrated and gives an overview of ceramic tile and architectural terracotta available at the start of the 20th century in France.

Stage 2

Collage of cover pages of documents scanned in stage 2

After the successful run of stage 1 of the project, funding for stage 2 was sought even before stage 1 ended. Stage 2 of the process was majorly revolving around completing scans and applying the learnings from stage 1 to achieve better results in stage 2. For the same amount
of hours spent scanning in both stage 1 and stage 2, the process proved to be more streamlined with an approximately 4000 extra pages scanned in the second stage.

During stage 2, we were approached by Luca Milano from Italy, who had inherited glass transfer panels from his aunt in Paris. These glass transfers were made essentially of impregnated paper, which were stuck to windows to imitate stained glass. He was not aware of what the material actually was, but on the bottom found the name ‘Levens’, which directed him to one of the scans uploaded during this process. Another international interaction was sparked through the project with a Usonian wallpaper expert, Bo Sullivan. He owns the largest known collection of Lincrusta catalogues. He contacted Mike Jackson about what he called the ‘fabulous recent post’ of Professor Lewis’s Beck Lincrusta catalogue on the BHTL. It resembles one in the Getty collection but has extra pages which make it ‘the best reference available for Lincrusta patterns at their peak, that I am aware of.’ Professor Lewis has since been in correspondence with Mr Sullivan about various wallpaper matters. Seeing widespread application of the recently digitised collection proves the success of the project and also its reach to audience worldwide.

Image of the glass transfers as forwarded by Luca Milano
3.6 Copyright

Under Australian law, copyright expires seventy years after the death of the creator, but the situation is more difficult when the creator is a corporate entity. Most of the trade literature will have been produced by companies now defunct. Good practice is to make an attempt to contact the author or heirs, but in the event of no response, to proceed. In the unlikely event of an objection the document is simply taken down off the web. There will be a few companies which exist or whose successors are known (for example, the Powerhouse Museum in Sydney acquired all the Wunderlich company’s material, and possibly holds the rights to the Wunderlich materials in the Lewis collection).
4. Funding

4.1 Stage 1
The initial budget for stage 1 was based upon the funding of 400 hours of work, in the knowledge that this would be unlikely to complete the task, but that it could be expected to establish what more might be needed. Upon this basis an application for support was made to the Vera Moore Foundation for:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 hours scanning @ $50</td>
<td>20,000</td>
</tr>
<tr>
<td>5% contingency</td>
<td>1,000</td>
</tr>
<tr>
<td>Administration fee 5% of $21,000</td>
<td>1,050</td>
</tr>
</tbody>
</table>

Total $22,500

The Vera Moore Foundation granted the funding sought in full. The administration fee was allowed for in the belief that it might be necessary for an incorporated body to hold the funds, rather than APT Australasia, which is not incorporated. Fortunately this proved not to be the case.

4.2 Stage 2
After the success of stage 1, funding for another 400 hours of work was sought from the Vera Moore foundation, without the administration fee for the second stage.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 hours scanning @ $50</td>
<td>20,000</td>
</tr>
<tr>
<td>5% contingency</td>
<td>1,000</td>
</tr>
</tbody>
</table>

Total $21,000

4.3 The Vera Moore Foundation
The Vera Moore Foundation (business name: The Trustee for the Vera Moore Foundation) is a discretionary services management trust registered with the Australian Charities and Not-for-Profits Commission (ACNC). It was established in 1998, and aims to support the general
community in Australia. It has in the recent past been a regular supporter of architectural history related projects based in Victoria.

Its details are:

ABN: 28701176116

Address:

Level 11, Suite 2, 379 Collins St

Melbourne VIC 3000

Australia
5. Project Process

Over the course of the project the workflow has been iterated on continuously as deemed fit on a case by case basis. As mentioned previously, originally the digitisation was to be done at the Osbert Lancaster Memorial Bibliographic Institute, Professor Lewis’s library but soon after the start of the project, it turned out to be impractical to carry out the digitisation at the location as the scanner present was not suitable for an array of documents. The scanning was then moved to the University of Melbourne’s Digitisation Centre. The centre provides self service facilities for students and staff to carry out scanning. The range of scanning equipment present at the digitisation centre is apt for accommodating the varying nature of the documents in the collection.

The basic workflow for the upload of the documents was already defined by APT International for the Building Technology Heritage Library. This included naming conventions, metadata creation and uploading the document. The main challenge during the project was to understand the process of digitisation and produce scans of high quality, which meant identifying the right scanner for each document, devising tips and tricks depending on the physicality of the material and post processing the scans. It is also essential to understand to what point one can produce perfect scans without compromising its physical condition.

5.1 Contractor

Miles Lewis and Meher Bahl at the Osbert Lancaster Memorial Bibliographic Institute (Lewis’s library) during the first stages of the project.

A contract was entered into between APT Australasia and Meher Nishchal Bahl for the provision of 400 hours of scanning work. Bahl had previously digitised archives for the Architecture, Building and Planning Library at the University of Melbourne.

The contractor’s primary responsibility is the care of the material. Although there has inevitably been some wear and tear caused by the scanning process, only one book had
suffered specific damage, a split spine, and this has been repaired by Scribe Bookbinding of Carlton.

It had been envisaged that the scanning would take place at Lewis’s Library, but this soon proved impracticable, as will appear below, and the work has been completed at the University of Melbourne’s Digitisation Centre.

5.2 Digitisation Workflow

Project workflow and its adaptation to Professor Lewis’s library and the UDC (Source: Author)
5.2a MATERIAL SELECTION

Around 400 items were identified by Mike Jackson in the library of Professor Miles Lewis. These were selected as they have not so far been copied by APT nor, so far as searches reveal, by any other body. The books were provided in stages, following the list prepared by Jackson. When the digitisation was carried out at the UDC, it had to be first transported from Lewis’s library to the UDC. The digitisation centre has secure compactors to safely store the rare collection.

5.2b MATERIAL INSPECTION

Prior to scanning, the document’s condition is assessed for major fails in the structure. Like a condition report for a built structure, the assessment provides clues for what parts of the document need special care while scanning and how robust will it be on various scanners.

5.2c RECORD METADATA

The metadata is recorded in accordance with the information provided by Professor Lewis about each document. The metadata fields are generated according to the field present at the internet archive. I first created a base document to collate the metadata for all objects at one place and then individually fill it up on the internet archive while upload. Standard metadata fields for the project are:

1. Company / Author
2. Title
3. Year
4. Pages
5. Size (height x width)
6. Is it a trade catalog?
7. Keyword/Subject
8. Contributor
9. Publisher
10. Coverage / place
The subject headings are based upon those which have been used in the US work previously, viz:

1. the US Library of Congress headings

2. the Construction Specifications Institute modern nomenclature

3. popular tags that go beyond the typical professional topics

In a lot of trade catalogues, it is noticed that the dates are missing. In such cases the date of the catalogue should be roughly assumed from the graphics and print of the same. The field for subjects is a crucial one as it gives keywords that people can easily search for. The BTHL keywords include the standard subject headings used by the Library of Congress and an additional nomenclature used by the Construction Specifications Institute (CSI). The nomenclature sets up a standard system, based on that of the USA.
A Fujitsu ScanSnap overhead scanner was bought by Lewis (at his own expense) on the recommendation of Mike Jackson, but it proved completely unsuitable. It is a very cheap machine which can in principle scan flat sheets, but pages which do not lie flat are seriously distorted. Even flat sheets, if they have folds, must be weighed down with a sheet of glass and scanned through that. The machine is quite unsuitable for rare books, which often cannot be forced to lie flat without suffering damage.

A machine for scanning rare books must have an angled cradle in which the book can rest. The pages can be turned with the minimum of handling and damage. The open book can be photographed from directly above, in which case it is necessary to separate the two images and remove distortions. Much better is have two cameras operating simultaneously, one angling in from each side at right angles to each page. This gives the least distortion and the best penetration of the gutter at the centre. As the pages are commonly still not lying flat it is desirable to have the equivalent of the sheet of glass. This will be two sheets of glass or plastic fixed at an angle the same as that of the cradle, and counterweighted so that they can be easily lowered and raised.
To buy a suitable scanner would have exceeded the budget of the whole project, and to rent one proved impossible. Fortunately Ben Kreunen, Technical Support Officer at the University of Melbourne Digitisation Centre, agreed to provide the necessary facilities. The Centre provides facilities for students and staff, and Bahl is a postgraduate student, Lewis an emeritus staff member. This arrangement meant working in with other users of the equipment, but that has not proved to be a substantial problem. It also meant transporting the books to and from Lewis’s library, which has been done by Uber as and when required. It further meant that Lewis was not present as the scanning proceeded and was in no sense supervising the work, as had originally been envisaged.

The University Digitisation Centre boasts of state of the art equipment catering to an array of material. During the first stage of the project, two such equipments were used for scanning. One being the Zeutschel OS 16000 Advanced Plus Flatbed Scanner, mostly used for non-fragile documents with flexible spines, and the Zeutschel OS 12000 V cradle scanner, mostly used for fragile documents. Apart from also using the above scanners in the second stage, the scanning of large format items began with the Zeutschel OS 14000 A1 scanner and scanning with high quality camera equipment was also taken forward for intricate documents.

Zeutschel OS 12000 V

The Zeutschel OS 12000 V cradle scanner was used for rare collections that required extreme care. As the maximum opening angle is 90°, the books do not lie flat open and the pages are turned with minimum damage to the book and its spine. The scanner present at the UDC did not have a glass plate to hold the pages down, which resulted in some inevitable curve present in the scan. As the book lies on the cradle opened at an angle, there is a high chance of shadow cast on either side by the book, as shown in the image below. Books with full bleed
prints were difficult to scan as it was difficult for the scanner to reach the end of the page towards the centre. The pages were held manually to prevent them from turning which increased the time spent in scanning the document.

(L-R) Scan of pg. 90 of The Erection of Dwelling Houses by S H Brooks demonstrating curve in the scan. Scan of plate 1 of Mechanical Exercies; or the Elements and Practice of Carpentry &c by Peter Nicholson demonstrating the shadow cast by the adjacent page. Scan of The Mason’s, bricklayer’s, Plasterer’s and decorator’s Practical Guide by Robert Robson demonstrating the loss of data towards the left due to the print being full bleed.

Zeutschel OS 16000 Advanced Plus

The Zeutschel OS 16000 Advanced Plus Scanner
The Zeutschel OS 16000 Advanced Plus was used more widely for the project as it turned out to be the most flexible scanner for all types of documents excluding those that needed extreme care. It consists of a motorised flat cradle which adjusts according to the book and houses the spine as well. The self-opening glass plate made it easier for the documents to lie flat and worked best for curve correction. This also eliminated the problem of shadows and manually holding the pages in place, which is why, this scanner turned out to be much faster than the one above. The main problem arose when the scanner was used to scan larger documents. Having these documents lie flat was almost impossible as the pages would curve towards the spine. It was corrected by inserting a rigid surface between the pages to flatten the pages further, as shown in the picture below.

Inserting a rigid surface in order to flatten the curve while scanning on the flat bed.

For the both the scanners, scans turned out better for pages that had more text than diagrams and illustrations because the deskew operation in the software detected text better than other parameters to deskew and straighten the scan.
The Zeutschel OS 14000 A1 scanner was used to digitise large format material (larger than A2 and up to A1). Professor Lewis provided 6 elephant folios over the period of time to be scanned. The scanner offers a maximum 600 dpi scan and can produce images of up to 700 Mb. This makes the scanning process extremely slow in comparison to other scanners. Like the Zeutschel OS 16000 Advanced Plus, this scanner also has a motorised flat cradle that adjusts according to book and provides support for the spine. The glass plate makes ensures that the documents lie flat.

**Digital Single Reflex Camera**

For the digitisation of extremely intricate prints that had extreme noise in the scan from other scanners, the UDC’s DSLR set up was used. The set up consisted of light screen, a cradle to rest the book on and two DSLR cameras set up at an angle to capture both sides of the book. Similar to the Zeutschel OS 12000 V cradle scanner, the pages have to be manually held in order to flatten the pages. The capture software enables for manual cropping but most have to be post produced in Photoshop. The scans are of a higher quality but curvature is definitely more than the rest. It is the question of drawing quality VS page quality. It is mostly required for pages with illustrations or images.
The Mason's, Bricklayer's, Plasterer's and Decorator's Practical Guide. (Source: Author)

5.2e POST PROCESSING

After obtaining the raw .TIFF files, images that require further de-skewing or cloning at the edges are taken into Photoshop for post-production. This ensures that the final compilation of the document is up to a high standard of quality.

5.2f ACKNOWLEDGEMENT

An Acknowledgement page is added at the end of each scan to acknowledge the collection and laying out the project details. The following is the acknowledgement page:

The hatch in the drawing here contains a lot of noise due to the close nature of the lines within the hatch. It is corrected by scanning with the camera setup.
5.2g DOCUMENT UPLOAD WITH PRIMARY METADATA

The document is uploaded online onto archive.org on the Building Technology Heritage Library page under the public domain. Primary metadata is added in the required fields as follows:

[Table with metadata fields and values]
5.2h UPDATE METADATA

After the data is processed and the optical character recognition is carried out by the Internet Archive, the rest of the metadata must be updated. This includes adding the name of the collection, publisher and the place. This operation means that the uploader has an opportunity to check the metadata again.

5.2i WEBSITE LINKS

Professor Miles Lewis maintains an extensive record of his personal library on his website https://www.mileslewis.net/. The end step was to use Adobe Dreamweaver to add links of these scanned documents, present on the Internet Archive, within the personal library.
6. Work accomplished

In total, 363 documents have been scanned, ranging from 1 to 1290 pages. A total of 74,274 pages were scanned by the end of the project. Details of both the stages are listed below.

6.1 Stage 1

206 documents have been scanned and uploaded, their size varying from 1 to 1073 pages, and the total is estimated at 35,133 pages. The material varies in date from 1755 to 1973. It is listed in the appendix below, and is categorised as:

- French: 11
- British: 83
- Usonian: 51
- Australian: 57
- Other: 4

6.2 Stage 2

157 documents have been scanned and uploaded, their size varying from 2 to 1290 pages, and the total is estimated at 39,141 pages. The material varies in date from 1753 to 1958. It is listed in the appendix below, and is categorised as:

- French: 5
- British: 81
- Usonian: 20
- Australian: 48
- Other: 3
APPENDIX 1: List of Scanned Documents

FRENCH


A Giselard, *Sur un Nouveau Type de Ferme Parabolique Applicable à la Construction de Ponts Métalliques a Voie et Dessus.* Paris 1891

C Piehl. *Mètre et Attachements, &c (3me Partie).* Paris, no date [c 1900].


L Dauchaud & C Piehl. *Mètre et Attachements, &c (2me Partie).* Paris, no date [c 1900].


BRITISH

J Durno. *A Description of a New-Invented Stove-Grate.* London 1753.


Board of Agriculture [London], *Communications, vol I 2nd ed.* London, 1804.


(p) Stephenson & Co. *Manufacturers of an improved description of strong iron cattle fence, hurdles, gates, round and square spike railing and all kinds of wrought iron work [folding broadside].* London, no date


Charles Parker. *Villa Rustica.* 2nd ed, London 1848

Charles D Young. *A Short Treatise on the System of Wire Fencing, Gates, etc. as manufactured by Charles D. Young & Company.* Glasgow 1850.

Charles D Young. *Illustrated and Descriptive Catalogue of Ornamental Cast and Wrought Iron and Wire Work manufactured by Charles D. Young & Company.* Edinburgh 1850.

The Useful Arts Employed in the Construction of Dwelling Houses. 2nd ed, London 1851.


R S Burn. The Illustrated London Drawing Book. London 1853


(p) Charles D Young & Company. Description (with illustrations) of Iron and Wire Fences, Gates, et, etc, adapted especially for Australia, invented and manufactured by Charles D. Young and company, iron and wire manufacturers, iron founders, contractors, etc. London, no date [?c 1854].

(ef) [Henry Laxton], Examples of Building Construction, intended as an Aide-Memoire for the Professional Man and the Operative, &c (4 vols in 2 [Laxton], London no date [1857-1867])

[J L Tarbuck]. The Builder's Practical Director. Leipzig &c nd, c 1858.

Robert Robson. The Mason’s, Bricklayer’s, Plasterer’s and Decorator’s Practical Guide. London, no date, c 1860.


A Nesbit. A Treatise on Practical Mensuration. London 1869.,


(ef) R S Burn. Modern Building and Architecture. London, no date, c 1870

C J Richardson. The Englishman's House. London, no date [1871]
John Birch. *Examples of Labourers’ Cottages, with Plans for Improving the Dwellings of the Poor in Large Towns*. London 1871.

Frederick Rogers. *Specifications for Practical Architecture*. London 1873


[Francis Young] *Every Man His Own Mechanic*. London, no date [?c 1882.]


(p) Ashton & Green, Limited. *Ashton & Green, Limited, Slate, Tile, Brick, Cement, Marble, and Iron Manufacturers and Merchants* [catalogue]. London 1887.


(p) Francis & Co. *Francis & Co’s New Premises, &c* [trade catalogue] London, no date [c 1895].


Daniel Clark. *Clark’s Gully Trap.* Carlisle, 1900s.

Pryke & Palmer. *Illustrated Catalogue.* London, no date [c 1900].


The Trussed Concrete Steel Co, Ltd. *Selected Illustrations Typical of … Kahn System of Reinforced Concrete.* Westminster 1913.


Banister Fletcher & H P Fletcher. *Quantities.* London 1923


Wall Paper Manufacturers Ltd. *Beautiful Rooms Artistically Decorated.* Manchester, no date [c 1925]


Henry Hope & Sons Limited. *Windows, the Eyes of your Home* [list no 55] Hope’s, Birmingham 1928.


D Anderson & Son Ltd. "Rok" *Roofing*. Manchester, no date [c 1930].


Henry Hope & Sons Ltd, *Hope's Hardware* [cataogue no 66] (Hope, London, 1930).


The Trussed Concrete Steel Co Ltd. *To the Foreman on the Job, &c*. Trussed Concrete Steel Co Ltd, London, no date [c 1935]


**USONIAN**


(p) N A Haldeman & Co. *Iron Roofing* [broadside]. Philadelphia, no date [after 1876]. This is a brochure consisting simply of a two sided sheet folded once, to create four pages.


(p) National Sheet Metal Roofing Co. Practical Hints to Builders. New York 1890.


(p) International Rolling Screen Co. International Rolling Wire Window Screens. Boston [Massachusetts], no date [c 1895].

American Clay-Working Machinery Co. [illustrated catalogue of]. Bucyrus [Ohio], no date [c 1896].

Expanded Metal and its uses in Fire-Proof Construction. Chicago 1896.

A. & P. Roberts Company. Steel in Construction as made by the Pencoyd Iron Works, &c. 11th ed, Philadelphia 1898


(p) Beck, Fr, & Co. Lincrusta-Walton. New York, no date [c 1900].

Braden Mfg, Co., Sheet Metal Products (Braden, Terre Haute [Indiana] no date [c 1905])


(p) Ducker Company, *Erected without Nail or Screw: Ducker Houses, Sectional and Ready-Made* (Ducker Company, New York no date [c 1910]).


(p) [Ducker Portable House Co]. *Instructions for Putting up the Ducker Portable Buildings* [illustrated broadside]. No date.


(p) J W Ormsby. *A Canvas Cottage.* Chicago, no date [c 1910].


J W Gerry. *Style Book No. 100 Sanitas Modern Wall Covering.* Boston, no date [c1920].

(p) Kohler Co. *Kohler of Kohler Automatic Electric Plants.* Kohler [Wisconsin], no date [1920s].


(p) Sandusky Cement Co, *Concrete Work Made Easy*. Sandusky Cement Co, Cleveland [Ohio], no date [?1922].


International Correspondence Schools. *Elements of Stone and Brick Masonry*. Scranton [Pennsylvania], c1930.

Mesker Bros. Iron Co. *Steel Windows*. St Louis [Missouri], no date [?c 1930].

(p) C A Strand. *Stran-Steel House at the Century of Progress Exhibition in Co-Operation with Good Housekeeping*. Detroit [Michigan], no date [1933-4]


**AUSTRALIAN**


(p) John Danks & Son Pty. Ltd. *Ideal Hot Water Supply*. Melbourne, 1900s.

P N Hasluck. *Electric Bells*. Melbourne, 1900s.


Newcastle Timber Merchants. *Catalogue*. Newcastle [New South Wales], no date [?c 1910]

(p) *The Cyclone Fence & Gate Book No 16*. Melbourne, no date [c 1910].


(p) Wunderlich Patent Ceiling Co. Ltd. *You Cannot Afford to Hide the Goods you want to Sell*. Sydney, no date [c 1915].


(p) Wunderlich Ltd. *Certain-teed Roofing*. Sydney, no date [?c 1920].


(p) Wunderlich Limited. *Art Metal Ceilings*. Sydney 1922.


(p) 'Arnold' Australian Made Oxy-Acetylene Equipment for Welding, Cutting, Brazing, Lead Burning, Heating, De-Carbonizing, etc. [leaflet]. Melbourne, no date [?c1925].

(p) 'Arnold' Improved Oxy-Acetylene Equipment [leaflet]. Melbourne, no date [?c1925].


(p) James Hardie & Coy. Ltd. *Catalogue for Hardie's Fibrous Plaster Sheets*. Sydney no date [?c1925].


R L Jack. *The Building Stones of South Australia* [Geological Survey of South Australia, bulletin no 10]. Adelaide 1925


(p) Reid Bros Ltd. *Wholesale Price List*. Adelaide 1926.


(p) Quirk's Victory Light Co. Quirk's Air Gas Stoves. Sydney, no date [?c1928].


(p) Australian Gypsum Products Pty. Ltd. Brick Veneer Construction with Fibrous Plaster Interiors. Melbourne, no date [1930s].

(p) Bevan & Edwards Pty. Ltd. Woodworker's and Sawmill Supplies. Melbourne, no date [?c 1930].

(p) James Hardie & Coy. Ltd. Catalogue of Hardie's Fibrolite. Rivervale [Western Australia], no date [c 1930: a letter of 1926 is quoted on p 13].

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