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A treatment was undertaken at the Canadian Conservation Institute to conserve a botanical album compiled by Catharine Parr Traill from the collection of the Peterborough Museum and Archives. The botanical specimens, many detached, were vulnerable to mechanical damage due to the stiffness of the binding. After consultation with conservators at the Canadian Museum of Nature, a treatment method was developed to reattach the detached specimens using micro solvent-set straps of Japanese paper. This solvent-set strapping interfered minimally with the movement of the book's pages and was comparable to methods used within herbariums. The strips are easily reversible and require minimum moisture and adhesive. Some portions of the specimens were lightly adhered using methyl cellulose. The binding itself was structurally altered by adding a moulded spine hollow in order to improve the opening of the volume and to prevent further mechanical damage.

Un traitement a été entrepris à l'Institut canadien de conservation pour restaurer un herbier de la collection du Peterborough Museum and Archives, compilé par Catharine Parr Traill. Les spécimens botaniques, dont beaucoup se sont détachés, étaient vulnérables aux dommages de nature mécanique en raison de la rigidité de la reliure. Après consultation avec les restaurateurs du Musée canadien de la nature, une méthode de traitement a été mise au point pour refixer les spécimens détachés au moyen de papier Japon recouvert d'adhésif, découpé en micro-bandes et réactivé au moyen d'un solvant. Ces micro-bandes n'ont presque pas nui au mouvement des pages du livre et étaient comparables aux méthodes utilisées dans les herbiers. Les bandes sont facilement réversibles et nécessitent un minimum d'humidité et d'adhésif. Certaines parties des spécimens ont été légèrement collées à l'aide de méthylcellulose. La structure de la reliure elle-même a été modifiée par l'ajout d'un dos creux moulé afin d'améliorer l'ouverture du volume et d'éviter d'autres dommages mécaniques.

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BACKGROUND

"In cases of emergency, it is folly to fold up one's hands and sit down to bewail in abject terror: it is better to be up and doing." Catharine Parr Traill, *The Female Emigrant's Guide* (1854).

Catharine Parr Traill was one of Canada's most important nineteenth-century writers. Along with her sister Susanna Moodie, Catharine captured the life and survival strategies of early Canadian settlers. She became known for her amateur botanical work, collecting plant specimens for over thirty years, particularly those near her home in the Peterborough area, and subsequently publishing, with her niece, the landmark *Canadian Wild Flowers* (1868).[1]

In 2010, a botanical album assembled by Catharine Parr Traill was brought to the Canadian Conservation Institute for treatment. From the collection of the Peterborough Museum and Archives, the book is a commercially bound scrapbook with adhered botanical specimens, primarily mosses, lichens and ferns. Handwritten notations by Catharine Parr Traill accompany each sample. The book is dedicated in a mossy wreath to her grandson (**Figure 1**).

The volume arrived with very poor opening characteristics which resulted in lifting of the botanical specimens throughout. The tightness of the binding meant that the specimens would follow the arc of each page turn, which led to failure of the original starch/protein adhesive bond in many places, leaving the samples detached and extremely vulnerable to damage during handling.

The album's significance is tied to Catharine's work assembling the book with her handwritten notations, as well as to the presence of some potentially unusual or endangered plant specimens, as noted by a botanical expert in Peterborough.[2] The goal of the treatment was, therefore, to stabilize the very fragile specimens and improve the overall opening characteristics of

Figure 1. Dedication wreath at beginning of the volume.

the volume. Minimal intervention is the guiding principle for conserving a scrapbook, where the very essence of the artifact is that it was hand compiled. In the past, severe modification of scrapbooks, through treatment that focused on content rather than the volume, led to the loss of vital contextual information for research scholars. Bound herbariums, such as the Catherine Parr Traill book, often experienced the same treatment approach. Books were often fully dismantled and the enclosures dismounted, or sheets were cut out of bound herbariums. This historic precedent, however, is no longer appropriate. Thus, efforts were undertaken in this treatment to address the damage and risk while leaving the book's general structure intact.

This article discusses the development of a treatment methodology for a unique and delicate artifact. The structural concerns of the volume were balanced by the rarity and importance of the botanical specimens within the context of the book's provenance. Technical details are presented of the conservation of the binding to add to a sparse literature on book conservation published within Canada. Non-book conservators may wish to consult Etherington and Roberts' *Dictionary of Descriptive Terminology* for any unfamiliar terms.[3]

STRUCTURE PRIOR TO TREATMENT

Structure

The book is a commercial quarter-bound scrapbook with grey-brown cloth sides and a leather spine. It arrived as a tight back, meaning that the spine was adhered directly to the back of the book with no groove at the shoulder. Gold lines were tooled around the raised impressions of the flat supports. The spine leather is likely sheepskin, given its appearance, texture and soft handling properties.

Sewing

The book was sewn on three flat sewing supports which are visible under the front and rear pastedowns. There are single false raised bands at head and tail but no endband or evidence of an endband. The sewing supports are a beige textile, likely linen, and small stubs of the supports were adhered to the boards under the pastedown.

Endpapers

The endpapers are part of the first and last signatures of the volume. The pastedown was adhered directly to the interior of the front and back boards. A square, which measures 8.2 cm in length by 5.8 cm wide, was cut out of the front flyleaf.

Textblock

The book is composed of eight signatures of eight leaves (sixteen pages) and one signature of ten leaves (twenty pages). Including the endpapers, it consists of 74 pages, made up of 37 sheets of paper folded in two. The signatures were interspersed with folded compensation guards made from the same paper as the signatures. The guards were made up of five sheets of paper folded and sewn through. Compensation guards were sewn into commercial scrapbooks in order to compensate for the thickness of the clippings, photos and other scraps the purchaser would adhere into the book. Often however, the heavier paper would damage the pages of the scrapbook as they flexed within the gutter (inner margin of the page spread). The paper is a heavy machine-made wove. The interior pages (textblock) are constructed from what is likely mechanically pulped paper made of wood fibres.

Media

Descriptions of the specimens were handwritten in two inks: a pale brown ink and a grey-brown ink. The notations were written on labels adhered into the lower gutter of the book or directly below the specimens described. The label notations are on paper that is ruled and lighter in colour than the textblock paper. Catharine Parr Traill's handwritten notes on each page are legible, although some show signs of fading. Some notations were obscured by the amount of glue in the gutter.

The book contains a handwritten title page with a circular wreath of mosses and ferns surrounding (**Figure 1**): "With Grandmother's Affectionate love, To Dear Willie Traill. Lakefield, Doure 1891." A ruled paper label was adhered into the lower gutter which proclaims, "Ferns, Flowers & Mosses from the Sauro Woods of Stony Lake. Collected by Mrs. CP Traill during the Summer of 1890."

Botanical Specimens

Plant specimens were adhered to the right-hand pages with an adhesive identified by Elizabeth Moffat as a mix of a collagen-type protein such as animal glue and a starch paste.[4] The specimens include mosses, ferns and flowers. Some samples were adhered to small squares of paler paper before being adhered to the scrapbook page.

CONDITION PRIOR TO TREATMENT

Binding

When bound, the leather was poorly applied to both the spine and the front cover, and was wrinkled and lifting. The adhesive used on the spine was identified by Elizabeth Moffat as a collagen-type protein such as animal glue.[4] This adhesive leaked, likely during the application of the spine, onto the top of the signatures. This darkened and stuck together the textblock in those areas.

The leather was abraded over the raised supports at the head and tail headcaps and there was a prominent wrinkle in the upper part of the spine from the head to the first false raised band. The spine was intact but had been partially crushed at the tail as a result of being stored upright before it came to the Peterborough Museum and Archives. The headcaps were weak and bent towards the textblock.

The spine shape (**Figure 2**) was distorted by textblock drag, leaving the bottom of the spine wider than the upper part of the spine. This type of damage occurs over time when a book is shelved vertically, particularly if it was wedged by other books. The spine shape had also distorted horizontally with the textblock leaning towards the front board. This threw the back board and front board out of alignment which thereby exposed some of the textblock edges at the tail. The spine leather was also split at the shoulders of the book.

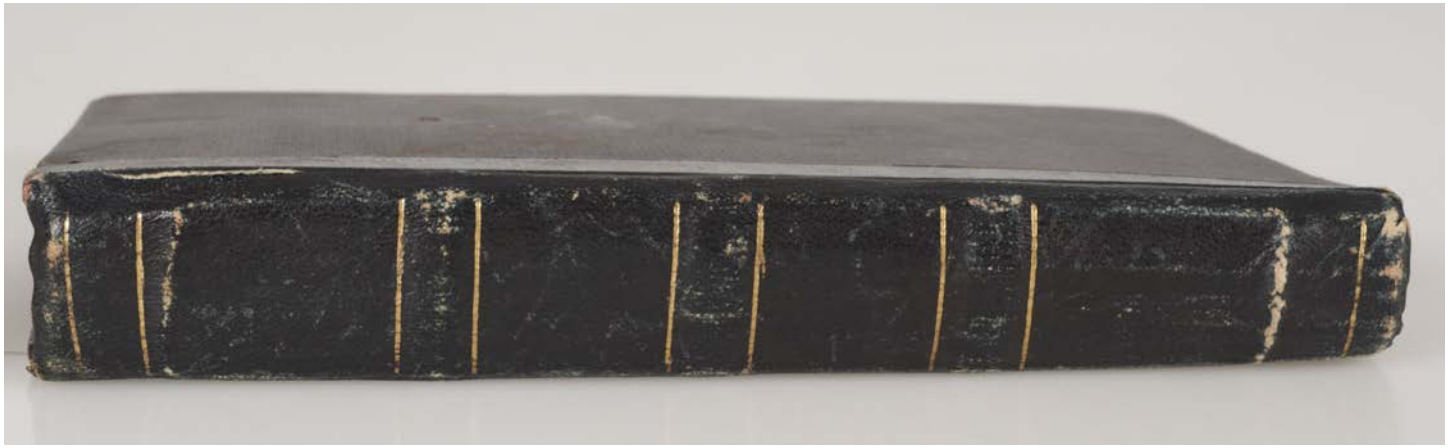

Figure 2. Distorted spine before treatment. The tail of the spine on the left side of the image shows typical gravity drag from being shelved vertically. Tears in the leather are also visible along the joint.

The cloth sides showed abrasion and some soiling. The corners of the boards at both the head and tail of the book were worn and bent, and the cloth had frayed leaving the millboard exposed.

Sewing

There was no evidence of any spine lining. The sewing was strong without any evident breakages and the supports were firmly attached to the cover.

Endpapers

The paper along the hinge of the front cover paste down and flyleaf was cracked and torn in four areas. There was also a tear, 3 cm in length, along the hinge of the back cover pastedown and flyleaf at the tail end of the scrapbook.

Textblock

The pages had an average pH of 4.45 based on three samples measured with an Orion 230A portable meter. The pages showed signs of yellowing while the adhesive used to adhere the specimens and labels appeared to have slightly bleached and cockled the pages. Offset staining was visible on most of the pages directly facing a botanical sample. The heavy adhesive on the spine had stuck some of the labels to the textblock and obscured some of Catherine Parr Traill's notations.

Media

The notations appeared stable throughout the majority of the volume, with no iron gall ink burn visible. In November 2010, two spot tests for free iron(II) ions were carried out on the pale brown ink notation on the recto of leaf 14 recto (page 25) and the grey-brown ink found on the recto of leaf 15 (page 26). The pale brown ink was positive for iron(II) ions: 25 according to the CCI iron(II) test strip colour chart.[5] The grey-brown ink was negative for iron(II) ions, indicating it is likely a carbon ink. Six pages within the scrapbook showed evidence of the pale brown ink while the rest of the notations appeared to be consistent with the grey-brown carbon ink.

These results suggested some risk of ink corrosion from the iron gall ink given the iron(II) test and the measured acidity of the paper. The pH of two labels adhered into the scrapbook measured 4.22 and 4.33. Given their location and that they did not appear to have any iron gall ink burn or other damage to the substrate, it was recommended that labels be left in situ. They were also unlikely to damage the botanical specimens as they had been adhered a sufficient margin away.

Botanical Specimens

The adhesive had failed on many of the specimens which were lifting from the page or had become completely detached (**Figure 3**). This led to the phenomena of loose samples "trailing" the pages when turned, particularly those that were

Figure 3. Example of a detached botanical specimen in the Catherine Parr Traill scrapbook.

almost completely detached. Several of the plant specimens had a white shiny residue on them, which may be paste. The majority of the specimens were very brittle but still retained their natural colour and characteristics. Some specimen fragments were found within the gutter of the book.

Choice of Treatment Methodology

The treatment recommendations for this object were greatly influenced by the archival significance of the volume. Archival book conservation emphasizes the necessity of protecting all aspects of the book. In this instance, the delicacy of the botanical specimens was weighed against the importance of leaving the relatively intact binding as undisturbed as possible. Because the contents were assembled by Catharine Parr Traill herself, any interference could alter the historic record. At the same time however, many samples were lifting off the paper substrate and needed to be readhered or else risk further damage. Several treatment options were considered for the botanical album. Canadian Museum of Nature conservators and curators as well as other book and paper conservators were consulted to discuss through some of these options.

Option 1: Consolidation of botanical specimens with Parylene. One part of the treatment discussion focused on the possibility of using Parylene C (poly-para-xylylene) to stabilize the delicate plant specimens. As the samples were too fragile to be removed from the substrate, this would involve putting the volume into the Parylene deposition chamber with its pages slightly open, to allow the coating to penetrate into the backs of the sections. There are a few difficulties with this potential treatment. Standing the book up on its edges with pages open would be stressful to the delicate specimens and there would inevitably be loss of smaller fragments found within the gutter. The treatment is irreversible, uses a polymer that is less stable than originally thought,[6] and in this instance may not provide sufficient structural benefits to the botanical specimens. It had been noted previously that Parylene is not ideally suited as a treatment for botanical specimens in an herbarium.[7] As well, a discussion with curators at the Canadian Museum of Nature indicated that coating the samples with Parylene could make future sampling or scientific testing, such as DNA analysis, impossible. In this case, the use of an irreversible treatment, for limited benefit, made Parylene an unacceptable treatment option.

Option 2: Deacidification. In situ deacidification of the paper substrate was similarly deemed inappropriate as the alkalinity of the non-aqueous solution might damage the botanical specimens or alter their appearance. The paper, while yellowed and of low pH, appeared stable and there was no significant cracking or loss of the substrate. The benefits of a deacidification treatment in this case were outweighed by the potential risks to the botanical samples.

Option 3: Modification of the problematic binding. The binding style of the scrapbook was the most significant mechanical problem. Comparable Catharine Parr Traill scrapbooks at the Canadian Museum of Nature do not show the same level of specimen detachment which is likely due to the tight-back binding of this volume. In a tight-back structure, the whole of the book has to move with the covering material. This can make opening difficult if the leather is stiff or if there is an excessive amount of adhesive.

The spine adhesive had also spread into the top/bottom of the signatures further restricting the book's opening. This was aggravated by the fact that many of the specimens were adhered too close to the gutter and by the stiffness of the compensation guards. Before treatment photography of the volume was difficult: each page needed careful adjustment and Mylar strapping to allow the page spreads to open without stressing the specimens. The high arch of the book meant that samples were being bent with the flexion of the page. Improving the opening characteristics of the volume would lessen the mechanical stress on the samples. In order to retain the original sewing, a modified papier mâché hollow[8] was chosen for this purpose.

Option 4: Reattachment of the botanical specimens. How to reattach lifting specimens was of particular concern in this treatment. A day of practical experimentation was held at the Canadian Museum of Nature with object conservators Carolyn Leckie and Luci Cipera, as well as preparator Micheline Bertrand, prior to choosing a treatment. Replica scrapbook bindings and dummy botanical specimens were used to test various methods of attachment based upon traditional "strapping" methods used in herbarium collections. Our focus was limited to heat-set tissue and solvent-set tissue straps, although we compared these to traditional botanical straps made of gummed linen tape. We tested commercially available heat-set tissue as well as making our own, using a few different adhesives (**Table I**). Criteria used to evaluate the test strips were: ease of use, minimal potential for damage to the sample in treatment, adhesion, reversibility, as well as aesthetic criteria regarding the adhesive and tissue's general neutrality on the page.

Testing was exploratory towards the goal of finding a solution for this particular artifact, rather than a thorough assessment of the adhesives or strap substrates. Although heat-

Table I: Strapping methods tested.

Materials	Attachment method
traditional "strapping" – gummed linen tape	solvent set using water
commercial heat set tissue	heat set
Lascaux 360 on Tengujo	heat set
Lascaux 360 on 10 gsm kozo tissue	heat set
BEVA film on Kurotani Japanese tissue	heat set
methyl cellulose and wheat starch paste on 10 gsm kozo tissue	solvent set using ethanol
Lascaux 498HV on 10 gsm kozo tissue	solvent set using ethanol

set tissues were included, we were concerned about use of heat near specimens. Linen tape, Tengujo and Kurotani straps were considered inappropriate for delicate specimens. Beva film and methyl cellulose/wheat starch paste had poor working properties as adhesives in this context. The approach decided upon for the final treatment – mini solvent-set "straps" of kozo tissue and Lascaux 498HV acrylic adhesive – was chosen for the sympathetic colour match of the straps, its reversibility, and the minimal amount of moisture in contact with the botanical material. The adhesive developed tack and dried quickly when reactivated with ethanol. Straps were easily removed by lightly remoistening the strip with ethanol using a size 000 brush.

TREATMENT

Treatment focused on improving the opening of the textblock and reattaching the detached specimens in an innovative and reversible manner.

Treatment of Album Cover and Textblock

The covers were first surface cleaned using Absorbene dry cleaning sponges and Mars Staedler white erasers. The textblock was detached from the cover at the previously split joints. During the treatment of the binding, the textblock was wrapped in plain archival paper to protect the interior and enclose the botanical specimens.

The leather spine piece was lifted using lifting knives and spatulas. The leather was brittle in areas with pre-existing tears. After the spine piece was detached at the joints with a scalpel, following the pre-existing damage at the hinge, the animal glue was cleaned off using a poultice of wheat starch paste (**Figure 4**). The cleaned spine piece confirmed the lack of any spine lining. Toned Kurotani Japanese tissue was used to repair the back of the spine piece. The spine was left under gentle weights prior to reattachment.

The leather sides were lifted using lifting knives. The leather lifted well and appeared strong. The endpapers were lifted on the interior of the boards by approximately one centimeter. The paper was very brittle and did not lift easily from the boards.

A Tengujo tissue lining was adhered over the entire spine using wheat starch paste. A slotted aero linen lining was then adhered lightly onto the spine using strong wheat starch paste and sewn secondarily with linen thread using the original sewing holes at the beginning, end and centre of the volume. This was done through the folds of compensation guards. Aero linen and sewing supports were then adhered under the lifted endpapers with a 2:1 wheat starch paste and Jade 403 (polyvinyl acetate dispersion) mix.

The attachment of the boards was modified so that there was slightly more of a groove between the covers and the edge of the spine. This approach was chosen to protect the botanical specimens and would not have been done otherwise. It allowed for the book to go from a tight-back binding with a small groove to a hollow-back structure with an almost imperceptibly wider groove. The spine was then lightly reshaped with a bone folder into a slightly more normal curve and dried under boards with a small amount of weight. The distortion of the spine was lessened but it remains somewhat warped due to the choice to not disturb the original sewing.

The lined textblock spine was wrapped in plastic wrap held taut without wrinkles, and then held in a raised finishing press under very light pressure between Coroplast boards. Layers of Tengujo, AIKO and Kozo Plain were used to create a papier mâché hollow for the spine. The first layer was adhered with water over the protected spine and then shaped. Torn strips were added to gradually build up a papier mâché form using watery wheat starch paste. The form was left to dry overnight and then removed along with the plastic wrap. A slotted aero linen spine liner was cut to the dimensions of papier mâché hollow. For further details on the making of a moulded spine hollow, refer to Andrew Honey's article in *The Paper Conservator*.[8]

The hollow or form was cut to the size of the volume and to the joints. The slotted spine lining was adhered to the back of the papier mâché hollow and to the outside of boards under the lifted sides using wheat starch paste (**Figure 5**). The spine lining was cut to the full length of sides. Loss areas along the board squares were infilled with a small amount of toned aero linen.

AIKO tissue was toned using acrylic paints and pencil crayons (black, burnt sienna, indigo), followed by a layer of SC6000 (an acrylic polymer and wax emulsion produced by the Leather Conservation Centre), and then a further layer of indigo and black pencil crayons. The toned paper was adhered with strong wheat starch paste under the lifted leather sides and slightly over the joint and then left to rest overnight under light weights.

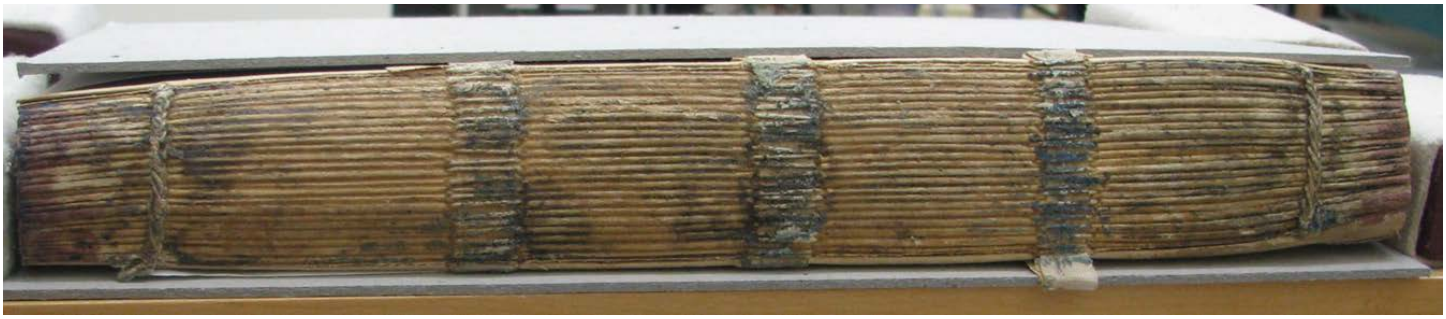

Figure 4. Exposed spine after removal of leather spine piece and excessive animal glue. Original supports and heavy kettle stitches are visible.

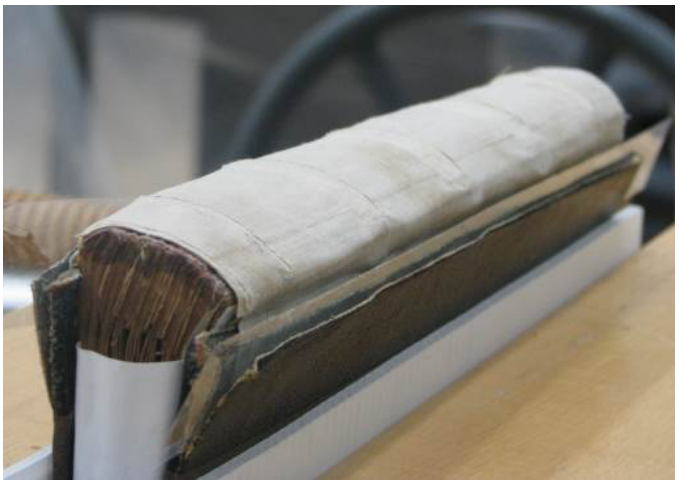

Figure 5. Reattachment of boards using spine linings and hollow, prior to recovering with toned Japanese paper and original spine piece. The leather sides are still lifted and a Mylar strip sits between the cover and the leather to protect the sides from staining.

The spine and spine leather were then pasted out with very dry wheat starch paste. The spine piece was adhered and aligned onto the back of book, wrapped in white elastic bandages, and left to dry overnight under weight. The sides were put down with strong paste and the abraded edges of the leather sides were toned in with black watercolour pencil crayon over toned kozo paper. The corners were firmed using toned, mid-weight kozo tissue adhered with wheat starch paste.

Excess board under the endpaper was lifted and removed with a scalpel. Seven strips of thin, dyed kozo tissue were laminated together with strong wheat starch paste. This was used as an inner joint under the endpapers and was adhered with wheat starch paste, gently rubbed with a folder and left to dry open.

Tears in the textblock were repaired using wheat starch paste and a thin Japanese tissue (lightweight kozo). A 2% weight/volume solution of methyl cellulose was used to clean skinned labels revealing more of the handwritten Catherine Parr Traill text underneath the botanical specimens. The pages were separated mechanically where they had become adhered.

Reattachment of Botanical Specimens

Solvent-set tissue was made up using a thin, lightweight kozo tissue.[9] A thin layer of Lascaux 498V was painted through a screen across the tissue laid out on release paper and left to dry. Tiny strips of approximately 1 mm x 50 mm were cut as "straps." Loose or detached specimens were first positioned in place. A strip was lightly dipped into ethanol to reactivate the adhesive and offset on a piece of blotting paper to prevent excess solvent. The strip was then held in place around the stem of a specimen (**Figure 6**) until the adhesive set. No pressure was placed upon the plants themselves (**Figure 7**). As few straps were used as possible, the number dictated by the size of the botanical sample and the extent of detachment. The reattachment of the specimens was done before the reattachment of the spine leather to allow for best access.

Leaf specimens were only readhered onto the substrate when they were at risk of further damage. Loose pieces in the gutter were readhered but only when there was certainty about the piece's original location, so as not to obscure the form of the plant sample. Methyl cellulose was lightly dropped using a size 000 brush under the edges of the leaves. The goal was not to adhere the plant firmly to the substrate as this would likely result in cracking and loss.

Storage Support

A clamshell box was custom made for the album and covered in linen (**Figure 8**). Botanical specimens with no known location, plant fragments, and fragments from the binding were encapsulated and placed within a folder to be housed with the

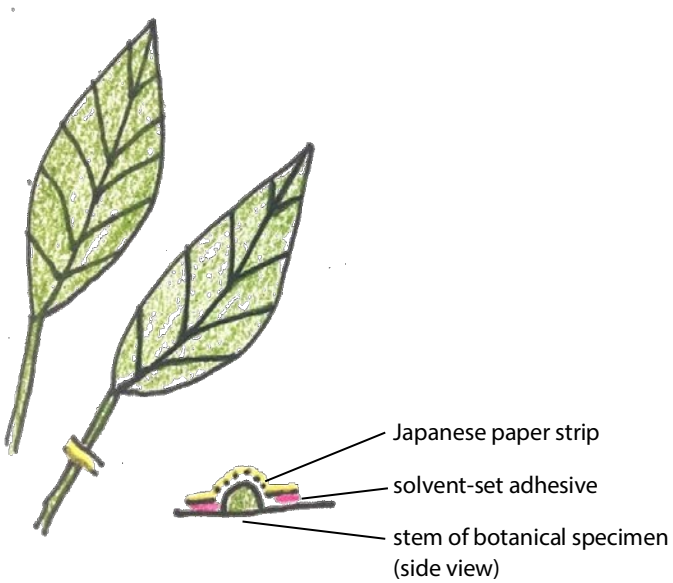

Figure 6. Diagram of solvent-set tissue strap (left) and detail image of solvent-set strap on a mock-up test specimen (right).

Figure 7. Christine McNair adhering solvent-set straps in place around detached specimens, using tweezers to gently set the adhesive around the stem (left). Specimen after attachment using solvent-set straps (right).

Figure 8. The book in its custom clamshell box.

volume. The interior of the box was lined with Plastazote closed cell cross-linked polyethylene foam. As well, a compensatory wedge was made with Davey board and covered in book cloth. The wedge permits the enclosed samples to sit flat in the box and holds the book in place. The remaining distortion of the spine would not otherwise allow the book to remain in place.

Results

The treatment successfully lessened the strain on the botanical specimens. The volume opens more easily than in its previous tight-back construction (**Figure 9**). The spine shape is improved and

Figure 9. Spread in botanical book before treatment (left) showing limited opening and detachment of specimens. The same spread after treatment (right) showing better opening, increased access to notations and reattachment of the specimens.

Figure 10. Tail view of spine before treatment (left) showing exposed board and distorted spine. Tail view of spine after treatment (right) showing somewhat improved spine shape and covered board edges.

damaged board edges covered (**Figure 10**). On the exterior cover, the book shows little change (**Figure 11***)* due to the nature of the rebacking and the overall minimal approach. The change is most notable in the "feel" or opening characteristics of the volume and the no longer imperiled samples. The botanical specimens are more firmly attached to the substrate but are still able to move with the arc of the pages.

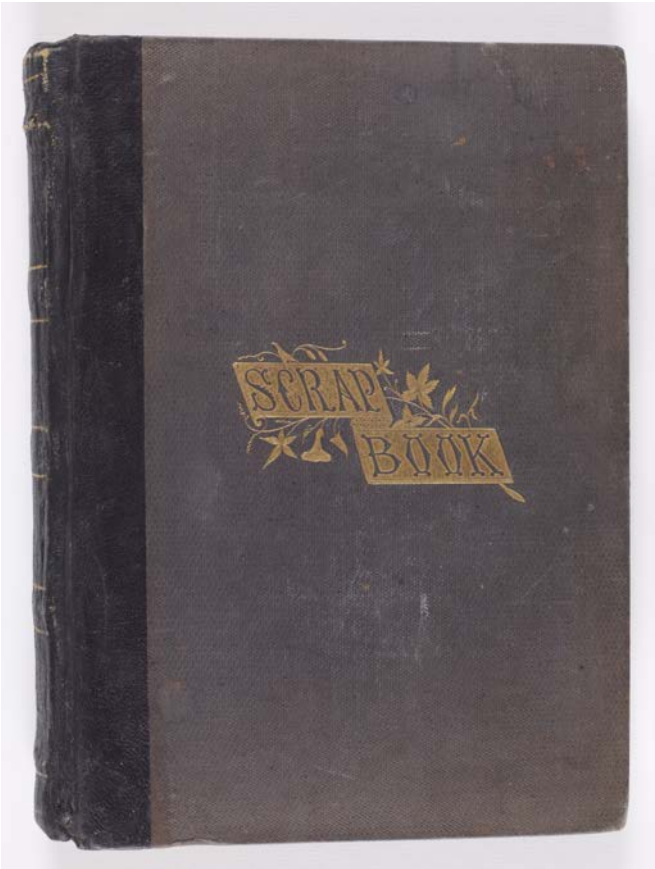

Figure 11. Front cover after treatment.

CONCLUSION

The Catherine Parr Traill album arrived at CCI in a fragile state. The treatment was designed to improve the opening characteristics of the volume and to reattach the plant specimens in an unobtrusive way that was sympathetic to the characteristics of a bound herbarium. Solvent-set Japanese tissue strips were placed over stems to reattach detached samples while methyl cellulose was lightly used to reattach lifting leaves if required. A new paper mâché hollow-back structure was created to improve the book's opening. The inherent fragility of the plant specimens and the book's rarity make cautious and limited handling vital to its continued preservation.

This project raised interesting ethical questions about the importance of maintaining the materiality of the book as artifact while protecting inherently fragile components. It allowed testing of an innovative method for the reattachment of botanical specimens using solvent-set strips that were subtle, reversible, and compatible with the type of volume being conserved.

ACKNOWLEDGEMENTS

With thanks to staff at the Canadian Conservation Institute for their assistance with the project, especially Greg Hill, Sherry Guild, Carole Dignard and Janet Mason. Photography was done by Mylene Choquette and analysis of the adhesive used within the volume was done by Elizabeth Moffatt. Early consultations during the treatment development were held with Canadian Museum of Nature conservators Luci Cipera and Carolyn Leckie as well as preparator Micheline Bertrand. General discussions on the Catherine Parr Traill botanical books within Ottawa were also held with the Canadian Museum of Nature conservators as well as the Canadian Museum of History paper conservator Amanda Gould. This treatment was presented as part of the 2012 Canadian Association for Conservation of Cultural Property Annual Conference in Peterborough, Ontario.

MATERIALS

Absorbene dry cleaning sponges, Mars Staedler erasers: Carr McLean, 461 Horner Avenue, Toronto, Ontario M8W 4X2, Canada; Tel.: 1-800-268-2123; Website: <www.carrmclean.ca>

Acrylic paints, Watercolour pencils: Wallack's Art Supplies and Framing, 231 Bank Street, Ottawa, Ontario K2P 1W9, Canada; Tel.: 613-234-1800; Website: <https://wallacks.com>

Aero linen (airplane linen), Book cloth (Buckram), Davey board, Linen sewing thread, SC6000 leather conditioner: Talas, 330 Morgan Avenue, Brooklyn, New York 11211, USA; Tel.: 212-219-0770; Website: <www.talasonline.com>

Coroplast (fluted polypropylene copolymer): Carr McLean, 461 Horner Avenue, Toronto, Ontario M8W 4X2, Canada; Tel.: 1-800-268-2123; Website: <www.carrmclean.ca>

Iron gall ink test paper (bathophenanthroline indicator strips): Preservation Equipment Ltd, Vinces Road, Diss, Norfolk IP22 4HQ, UK; Tel.: +44 (0)1379 647400; Website: <www.preservationequipment.com>

Iron(II) test strip colour chart: Canadian Conservation Institute, 1030 Innes Road, Ottawa, Ontario K1B 4S7, Canada; Tel.: 613-998-3721; Contact: crystal.maitland@canada.ca

Jade 403: Carr McLean, 461 Horner Avenue, Toronto, Ontario M8W 4X2, Canada; Tel.: 1-800-268-2123; Website: <www.carrmclean.ca>

Japanese tissue (kozo, Kurotani, Tengujo, tissue comparable to AIKO tissue): The Japanese Paper Place, 77 Brock Ave, Toronto, Ontario M6K 2L3, Canada; Tel.: 416-538-9669; Website: <www.japanesepaperplace.com>

Lascaux 498V, Methyl cellulose, Wheat starch paste: Talas, 330 Morgan Ave, Brooklyn, New York 11211, USA; Tel.: 212-219-0770; Website: <www.talasonline.com>

Plastazote (closed cell cross-linked polyethylene foam): Conservation by Design, Timecare Works, 5 Singer Way, Kempston, Bedford, MK42 7AW, UK; Tel.: 00 44 (0) 1234 853555; Website: <www.conservation-by-design.com>

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