Dear Stationers,

I have been privileged to receive the Major Award for 2019 to complete my master's degree in Conservation at West Dean College. It is with great pleasure that I am writing this report on what this funding has made possible for me and my professional development. The Stationers' Foundation has provided me with £4 500 which covered the bulk of my tuition and living costs of the last semester of my degree. This last semester was crucial to receive a master's degree diploma. Without the help of the Stationers' Foundation I would not have been able to participate in this last semester and only received a postgraduate diploma. The last semester at West Dean College consisted of completing a 10 week research project which resulted in a masters' dissertation. The total tuition cost of this semester was £5 970.

My research topic was interleaving as a conservation treatment. Interleaving in this contexts refers to the placement of a sheet between two pages of a book for protective measures. The easiest way to visualise this is when you think of photo-albums which are most common to have interleaving. The idea for this topic arose after observing a lengthily discussion at the Victoria & Albert museum between the book conservators, the curator and, the photo conservator. Interleaving was considered as part of a treatment for a large album in their collection. The idea arose followed by a confused conversations about the questions what material to use for interleaving and how to integrate the interleaving into the binding. This discussion led me to research the topic which turned out to be sorely lacking in available literature. My research therefor had the purpose to consolidate the existing data and knowledge on the topic and generate date on the effectiveness of interleaving in mitigating abrasion between delicate surfaces.

After searching the available literature on the topic I conducted a survey among book conservators to get an idea of the available knowledge and experience shared but unpublished among conservators. Secondly I conducted an experiment. For this experiment I bound a book with integrated interleaving to record and measure the behaviour of the interleaving. For this research I selected four types of paper that have been used to interleave by conservator: 16gsm tissue paper, Bondina and Silver Safe interleaving paper sold by PEL and MicroChamber interleaving paper sold by Conservation Resources International. These papers were placed inside the experiment/book in three different application methods, sewn into the binding, tipped into the binding and places loosely into the binding. The experiment/book had riddles and questions

together with instructions to move between the pages following a certain path. The idea was to create an interactive experiment in contrary to rigid laboratory testing, I wanted to record the realistic behaviour of interleaving. The book was handled by 50 people total.

The results of the literature review and the survey provided the following list of situation in which interleaving has been done as a conservation treatment:

- to reduce the need for direct handling of fragile leaves and facilitate turning the leaves;
- to prevent handling damage to lose items in scrapbooks;
- to replace the original interleaving;
- to add bulk or make up thickness for a specific reason;
- to reduce the ghosting of platinum prints;
- to isolate silver gelatine photographs from acidic sources;
- as an alternative for treatment or as a passive treatment;
- to absorb smells caused by mould;
- to prevent ink, graphite or pigments from transferring on to the touching page;
- to counteract acid transfer and yellowing or staining of the paper caused by high acidity levels of the paper;
- to prevent the media e.g. photographs, from sticking to each other;
- to protect the media e.g. photographs, illuminations, from getting mechanically damaged by rubbing or sliding of pages against each other;

From this list, the effectiveness of the last situation of interleaving was researched with the experiment. The results of this were interesting as well as surprising. From the experiment the following observations were made on the different ways of application:

(1) sewn-in interleaving causes the least abrasion between the three tested application techniques;

(2) tipped-in pages show abrasion in the inner fold of the gathering where sewn-in pages do not. The restriction of the movement of the interleave caused by the adhered edge seems to negatively influence its behaviour;

(3) the tipped-in pages distort and thereby obstruct the closing of the pages. This is unfavourable and can cause dust and pollutants to enter the text-block. Bondina™ and Silver Safe™ are more prone to distort than the other tested materials;

(4) all the placed-in interleaves were dislodged from their position when the volume was handled, all creased and folded and became cumbersome to handle;

(5) the bottom outer corner of the interleaves abrades more. Due to the general motion of the pages when turned over, this area receives more pressure;

(6) the control group showed significantly less abrasion than the interleaves. This is an indication that interleaving causes more abrasion than when a volume is not interleaved.

The testing of the selection of interleaving materials gave the following performance results:

(1) MicroChamber® sewn-in interleaving has the lowest measured abrasion, followed by Silver Safe™, then Bondina™ and then tissue paper. Tissue paper did yield significantly higher measured abrasion values suggesting that this is the least favourable material to use. Tissue paper also creased and folded more than the other materials.

(2) Bondina™ and Silver Safe™ distorted when tipped-into the binding more than the other two tested papers. This distortion obstructs a full closing of the pages and is unfavourable.

(3) MicroChamber® performed best between the tested materials, although the difference in performance is minimal. Additionally, MicroChamber® is the most expensive paper between the four tested materials. MicroChamber® costs $4.5/m² or £3.6/m². Silver Safe ™ costs £2.12/m², Bondina™ £2.99 and tissue paper being the cheapest for £0.94/m².

It was clear from the questionnaire that an interleaf needs to be light weight enough to cause a minimum of bulk and have a surface that is least abrasive. From the four tested materials, MicroChamber® performed the best by exhibiting the least amount of carbon transfer indicating the least abrasive properties. Unbuffered tissue paper performed the worst. The drawback of MicroChamber®, however, is that is heavier weight and more expensive while tissue paper is lighter weight and the least expensive. Of the application techniques, sewing-in was most favourable but would, in most cases, not be an option because it requires disassembling the volume. Tipping-in caused deformation of the interleaves obstructing the closing of the pages

providing dust and pollutants more opportunity to enter the text-block. Placing-in the interleaves is cumbersome to the handling of a volume, all the placed-in pages were creased, folded and some misplaced after being handled by 50 people.

*Figure 1: Side view of the book after 50 people had handled it. You can clearly see the dislodgement of the interleaves that have been placed in loosely*

Besides finishing my research and my dissertation providing me with a master's degree in conservation, the funds provided by the Stationers Foundation made it possible for me to travel to London to consult the National Art Library and use their interleaved volumes as case studies. I was thankfully also able to once more join the book conservation lab at the Victoria and Albert Museum to complete a project I started during my placement in winter but was unable to complete at the time. This project was the treatment of a 17th century book made with wooden book boards of which one had split in half. Due to the shrinkage of the leather used to cover the spine the left book board had come to slightly lift upwards and leave a space between the board and the text-block. Gravity and handling had caused the board to break as the front edge of the

board was forced to lay down on to the text-block but the spine edge of the board was forced upwards due to the leather.

*Figure 2: Book before treatment*

The board had been mended a year prior to my arrival but the mend had failed right after application. Paraloid B72 was used to re-adhere the board pieces but the adhesive had failed almost immediately. During my time in winter at the V&A I spent the better of 3 weeks chemically removing the Paraloid B72 to be able to replace it with a new mend. This is when time ran out and I needed to return during the summer. I returned and together with the other book conservators and in dialogue with the furniture conservators we decided to use pegs to reconnect the pieces and re-establish a sufficient bond between the pieces. Using pegs is quite an invasive decision to make and it was not one taken lightly. We decided to use microfiber rods as pegs because they had proven strength and aging stability. Metal can corrode and using wooden pegs has the risk of the pegs acting counterproductive to the movement of the historic wood. After the pegs were put into place there was still a large gap caused by the loss of material that occurred due to wood termites. To fill this loss we decided to use hide glue mixed with paper fibres to mitigate the shrinkage of the hide glue and help with a better adhesion.

*Figure 3: Placement of the microfiber rods.*

*Figure 4: Book during treatment, before the space between the pieces was filled.*

*Figure 5: Finished treatment, a support was designed to permanently sit between the text-block and the board to prevent gravity or handlers from pushing the front edge of the board unnecessarily down and creating strain on the board.*

I am writing this report from Chicago where I am currently blessed with a fellowship at the Art Institute of Chicago. The Art Institute is the second largest museum in the United States and one of the largest museums in the World. Without completing my master's degree I would not have been considered for the position. I am currently working with their photograph collection and surveying the albums in that collection. After completing the survey, the gathered data will be used to identify treatment, priority of treatment and further development for the preservation of the albums in the collection. I will be here for two years which I believe will go by fast after which I can return and use my knowledge gained here to help the collection in Great Britain and Europe.

I once again want to thank the generosity of the Stationers Foundation which enables me to complete my degree and secure a fellowship at the Art Institute of Chicago which will provide me with valuable experience and knowledge that I can use to better the collections in the UK upon return. I am looking forward to returning to London and engaging further with the Foundation.

Nayla Maaruf

Major Award Recipient 2019