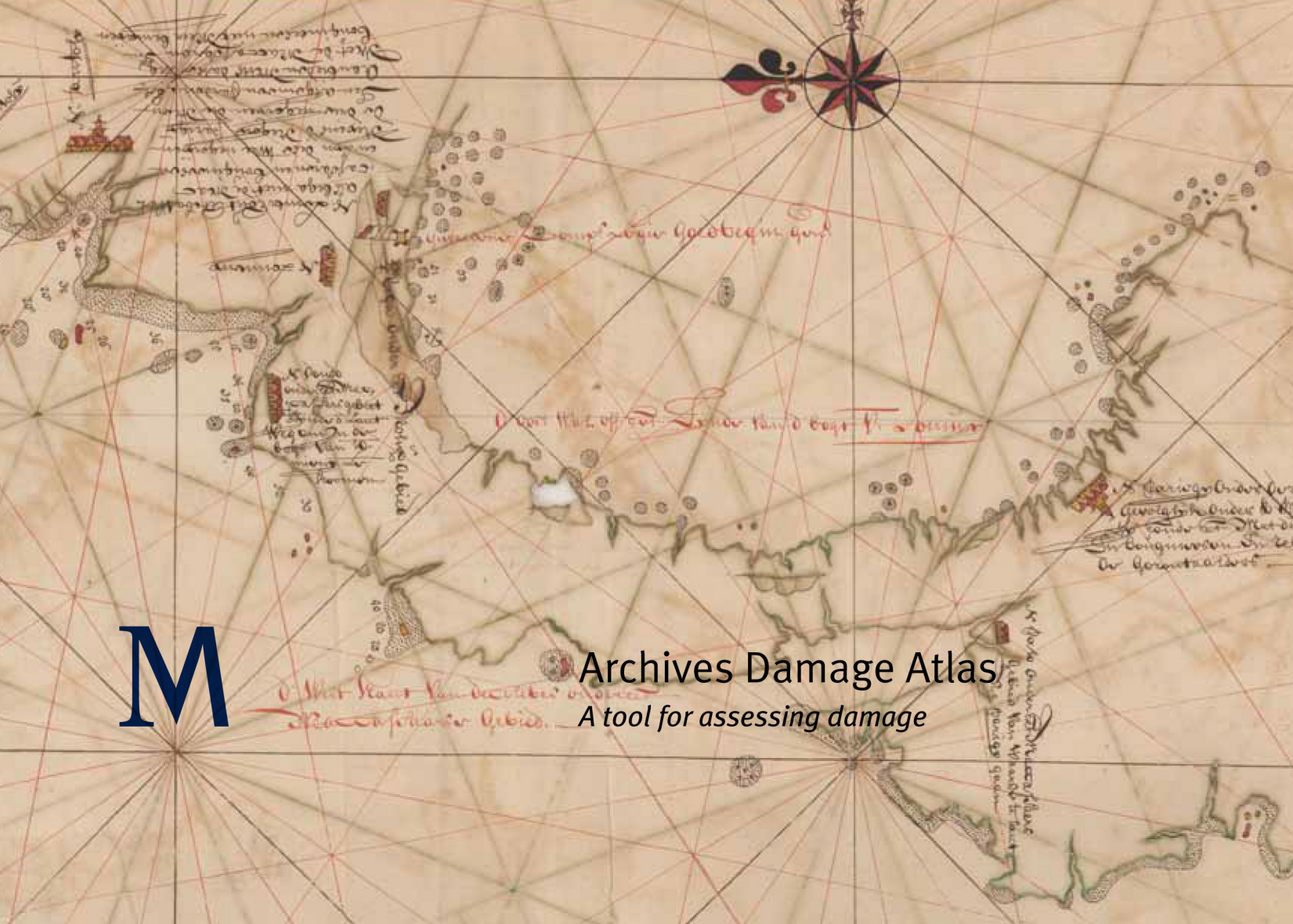

Archives Damage Atlas

A tool for assessing damage

Archives Damage Atlas

Metamorfoze, the Netherlands' National Programme for the Preservation of Paper Heritage, is a collaborative effort of the Koninklijke Bibliotheek (National Library of the Netherlands) and the Nationaal Archief (National Archives of the Netherlands) and is an initiative of the Ministry of Education, Culture and Science. The purpose of the programme is to engage in the struggle against acidification and other forms of intrinsic paper decay, such as ink corrosion and copper corrosion.

Archives Damage Atlas

A tool for assessing damage

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Metamorfoze 2010

PREFACE

Martin Berendse, Director Nationaal Archief
Bas Savenije, General Director Koninklijke Bibliotheek

CONTENTS

Preserving the millions of pieces of archival material that exist in the world is not the only purpose of archives and libraries. Their aim is to enable researchers to access this material. This means that the written and printed documents which are stored by archiving services and in libraries must be sound enough to be handled.

Archiving services are required by law, moreover, to pass on archival documents to future generations in good, well-ordered and accessible condition. For this reason it is important to be aware of the condition, not only of the individual documents but also of the archive as a whole. By determining how many archival documents in a piece (or a part of it) are in poor or even bad condition, a general statement can be made about its quality and accessibility. At the same time, a vision can be developed about the need for future preservation work.

Air purification, climate control and packaging help keep archives in the best possible condition. However, there are two weak links that cause archival documents to deteriorate, even if the preservation conditions are good: intrinsic decay and human agency. To what extent an object can be accessed is closely connected to how damaged the documents are.

Being able to recognise a damage profile requires training, since damage of one particular kind does not necessarily result in the same restrictions on access in every case. A damage profile consists of the type and extent of the damage. If an archival document contains small water stains, for instance, it can be said that the document is damaged because the stains were not present on the object in its original state. However, such damage will not be aggravated by accessing it.

Some archival documents deteriorate due to accelerated intrinsic decay, which is degradation that is inherent in the material itself, such as acidification, ink corrosion or copper corrosion, even if they are not being accessed. The Archives Damage Atlas is a tool that can be used to recognise and classify damage to archival documents in order to establish the level of accessibility. The atlas should also provide more insight into the types and causes of damage.

Metamorfoze, the Netherlands' National Programme for the Preservation of Paper Heritage, is engaged in the struggle against intrinsic paper decay. This involves transferring the information to another storage medium by means of microfilming and digitisation. If necessary the originals are also treated. Deacidification and ink corrosion treatment can limit further deterioration so that the documents can be accessed in the future. To make the material camera-ready, preservation treatment is necessary for many different kinds of damage. This atlas helps to identify such damage and to pinpoint its causes. It can also serve as the first step in putting together a preservation plan.

The *Archives Damage Atlas* is a translation and supplemented edition of the revised version of the damage atlas published by Metamorfoze in 2007, which itself is based on the damage atlas drawn up by the Nationaal Archief in 2001. This earlier work appeared only digitally. The need for an updated version, and one that can be used on the job, has resulted in an improved edition in Dutch in a printed format.

Due to the many international contacts of the Nationaal Archief (National Archives of the Netherlands) and the Koninklijke Bibliotheek (National Library of the Netherlands), the two partners in Metamorfoze, there is a demand for an English edition. With the founding in 2009 of the Dutch Common Cultural Heritage programme the need for a damage atlas in English grew. This programme aims at the preservation of the common cultural heritage in countries with which the Netherlands have kept close relations in the past and with which it shares a common history. The Dutch government has defined Surinam, Indonesia, India, Sri Lanka, South-Africa, Ghana, Brazil and Russia as important partners in this programme.

The Common Cultural Heritage programme, which is financed by the Ministry of Education, Culture and Science and the Ministry of Foreign Affairs, has made possible the publication of this English edition. The translation was coordinated with The National Archives in Kew and The British Library in London. Additional illustrations of damage to tropical documents and new paragraphs on palm-leaves and damage caused by termites were added. Now even more people, all over the world, may use the *Archives Damage Atlas* for what it is intended for: a tool for assessing damage and preserving our paper heritage.

The *Archives Damage Atlas* is based on the archives accessibility model developed for the Nationaal Archief in the nineteen nineties. This model makes use of different damage categories. The present atlas follows the same classification system.

Damage is divided into the following categories:

B	Binding and text block damage
C	Chemical damage
M	Mechanical damage
P	Pest infestation
W	Water damage

Several damage profiles are shown for each category and are classified according to severity. This division distinguishes between:

Slight damage

The damage to the object is not exacerbated when the archival document is handled (when it is moved, for instance, or paged through).

Moderate damage

The damage to the archival document is not exacerbated when it is calmly and carefully handled. However, if the piece is subjected to handling or treatment that is a bit too rough, there is a good chance that the damage will worsen.

Serious damage

Even careful and painstaking handling of the archival document (for instance, when paging through it) will result in aggravation of the existing damage.

It should also be noted that if there is a danger of information loss, the damage to the archival document should always be regarded as serious. Even if only part of a single leaf of an object is seriously damaged, the entire object should be considered seriously damaged and therefore should not be made accessible.
In practice the aforementioned damage categories sometimes occur in combination. In such cases, the separate damage profiles should be precisely described and identified.

Archival material is very diverse. For this reason we have imposed limits on ourselves that are partly based on the archive accessibility model and the accompanying inventory form developed for the Nationaal Archief by the applied scientific research organisation TNO. The atlas deals with loose and bound objects, maps and drawings, from the sixteenth to the twentieth century. Apart from a few exceptions, parchment charters and photographic material are excluded.

B

Binding and text block damage

Damage to bound objects can be subdivided into:

- Damage to the binding of the object.
- Damage to the text block.

The characteristics of the damage can be highly diverse. The most common types are mentioned in this chapter.

B Warping

Characteristics

A portfolio or a bound object can be affected by warping. In many cases this damage can be considered slight because the accessibility of the object is not an issue.

Causes

- Improper and incorrect storage.
- Wear and tear caused by use and transportation.

Illustration

Warping can be seen in the text block and the binding, as shown in Illustration B1
(also see: B - Spine damage).

Slight ● | Moderate | Serious | Code B

B1 - Warping

B Spine damage

Characteristics

Loose or damaged threads in the stitching of the text block. In most cases, however, handling will not immediately result in more serious damage. Degree of damage: slight. If accessing (or rough handling) will result in more serious damage, the degree of damage is moderate or serious. Worn stitching can manifest itself in loose pages and loose threads. Loose pages are more vulnerable to mechanical damage (see that section) than other types of damage. In this case the damage can be serious. However, loose pages in themselves, are seldom a reason for restricting access.

Causes

- Construction faults.
- Production method faults.
- Incorrect use of materials.
- Wear and tear caused by use and transportation.

Illustrations

If the stitching of a book is worn, the sections become loose. Illustration B2 shows a close-up of worn stitching. This object has both broken sewing supports and spine damage. Degree of damage: moderate.

Another example can be seen in Illustration B3, where the spine covering is completely gone. The stitching and the sewing thongs are worn and broken.

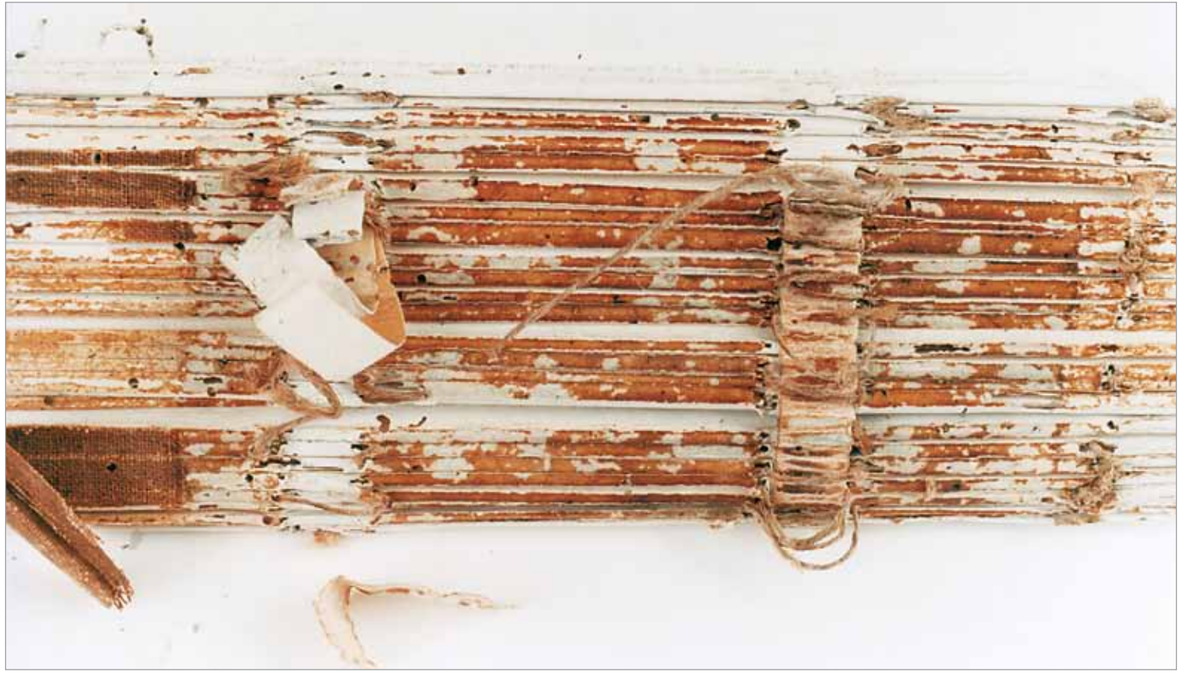
In Illustration B4 the spine covering, stitching and bindings are worn and loose, Handling will aggravate further damage. Degree of damage in Illustrations B3 and B4: serious.

Slight | Moderate ● | Serious | Code B

B2 - Worn stitching

Slight | Moderate | Serious ● | Code **B**

B3 - Worn stitching



Slight | Moderate | Serious ● | Code **B**

B4 - Worn stitching

B Spine damage

Characteristics

Hollow or broken spine. The damage to an object with a hollow spine is usually considered slight to moderate, while a broken spine can be serious. The bottom of the boards (on which the book is resting) and the spine are worn. This damage is considered moderate to serious, depending on the extent of the damage.

Worn corners on the boards. The damage is usually light, sometimes moderate.

Torn out upper edges of spines or worn lower edges. Access can often lead to greater damage. The degree of damage is moderate to serious. The damage to the binding can be serious, but the object can still be handled and accessed.

Causes

- Improper or incorrect storage.
- Wear and tear caused by use and transportation.

Illustrations

Illustration B5 is a clear example of a hollow spine. The connection between the sections is not strengthened with glue and spine lining, causing the text block to warp through repeated use. Degree of damage: moderate.

Illustration B6 shows a text block without a cover with worn out stitching and sewing supports. Degree of damage: serious.

Illustration B7 shows a text block lying open with a broken spine. The stitching is worn and broken, and as a result the object has broken into parts (also see: B - Worn stitching). Degree of damage: serious.

Illustration B8 shows a spine torn at the top, most probably caused by incorrect removal from the shelf. Degree of damage: moderate

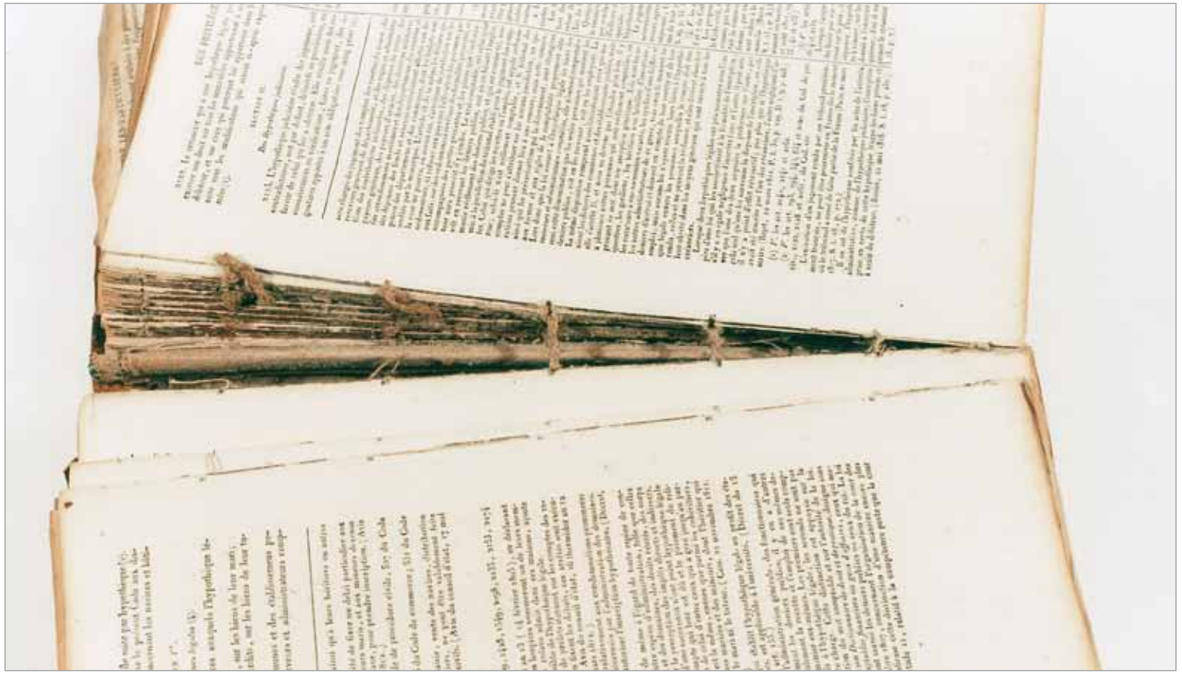
An example of a damaged spine can be seen in Illustration B9. This illustration clearly shows a torn out, loose spine. The covering has become completely detached from one sewing support, while the other sewing support is still partly intact. The stitching is still fully intact. Careful handling of the object will not immediately aggravate the damage. Nevertheless, degree of damage: serious.

Slight | Moderate | Serious ● | Code B

B6 - Spine damage

Slight | Moderate | Serious ● | Code B

B7 - Spine damage



Slight | Moderate ● | Serious | Code B

B8 - Spine damage

Slight | Moderate | Serious ● | Code B

B9 - Spine damage

B Loose binding / sewing support

Characteristics

Broken joints and/or loose spines.

Broken sewing supports. Sewing supports form the raised cords in the spine of the binding and may consist of leather, cord, strips of parchment, linen or gauze.

In both characteristics the damage can be regarded as serious. However, if the text block or the sections are in relatively good condition and if the binding is of no special (added) value, the damage can be considered slight or moderate.

Causes

- Improper or incorrect storage.
- Production method faults.
- Incorrect use of materials.
- Construction faults.
- Wear and tear caused by use and transportation.

Illustrations

Two examples of broken sewing supports are shown in Illustrations B3 (under B - Worn stitching) and B10. One of the two boards has almost become completely detached. Illustration B3 clearly shows spine damage in addition to worn stitching. Illustration B10 also shows surface damage to the covering material. In both cases the damage is serious.

Slight | Moderate | Serious ● | Code **B** | B5 - Loose binding / sewing support

B Loose fragments

Characteristics

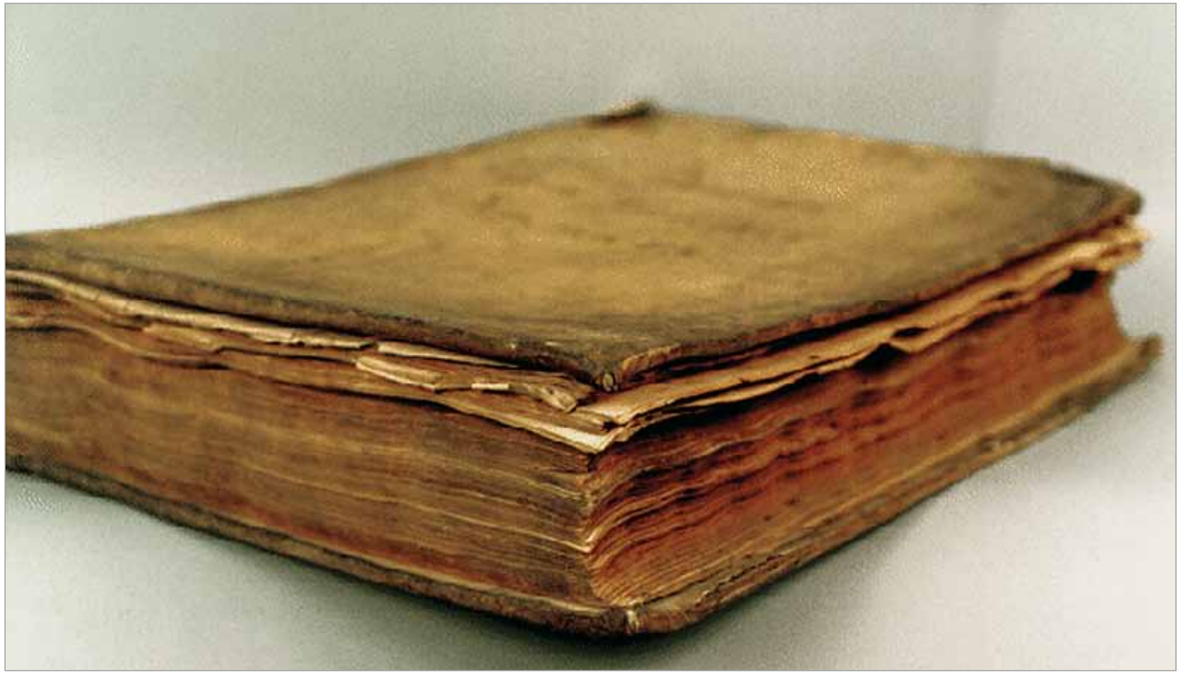
Loose fragments can go missing when the object is handled. Therefore the damage is serious.

Causes

- Wear and tear caused by use and transportation.

Illustration

An example of loose fragments is shown in Illustration B11. Loose fragments can easily go missing when the object is accessed.



B Surface damage

Characteristics

Severe abrasion marks, deep scratches or even tears in the material covering the boards.
In leather bindings: large areas where the outer layer of leather has disappeared. These areas look very much like wear spots but they have a chemical origin, and in fact the damage should really be classified in that chapter. However, as this is a specific type of surface damage affecting the binding, we have decided to put it here. The leather in these areas is brittle. Fibres easily come loose from the surface.
In some cases, pieces of leather easily become detached from the binding. This is known as 'red rot', a result of the tanning process of leather. The damage should be regarded as moderate to serious, depending on the historical value of the material covering the binding.

Causes

- Improper or incorrect storage.
- Production method faults.
- Incorrect use of materials.
- Wear and tear caused by use and transportation.

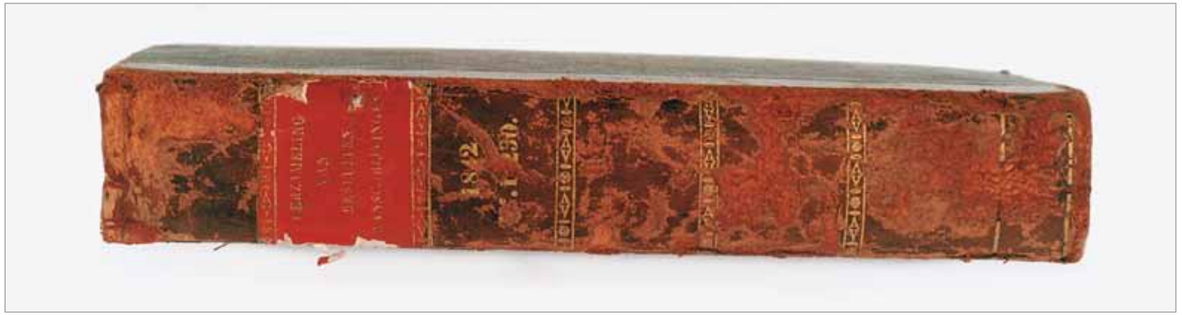
Illustrations

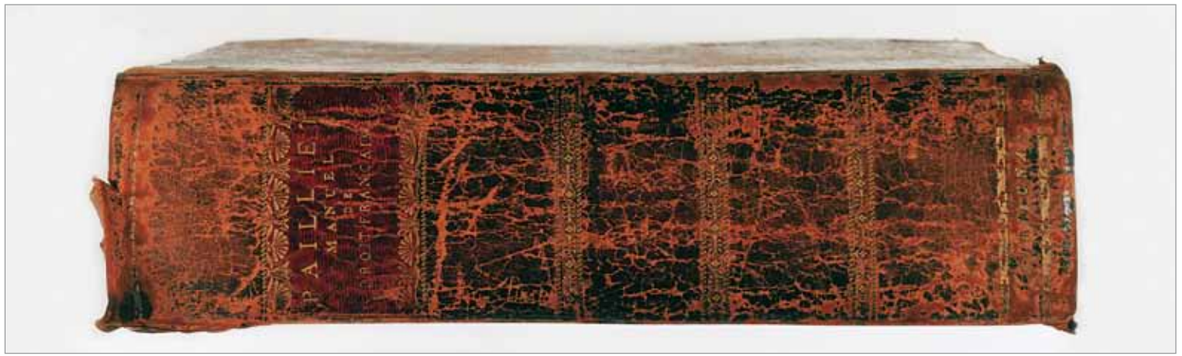
Illustrations B12 and B13 show surface damage to one of the boards of a book. Illustration B12 shows scratches and wear spots. Illustration B13 shows torn cover material. Damage to the edges of the covers is also clearly visible, and as a result some of the pages have become damaged (also see M - Mechanical damage). Degree of damage, Illustration B12: slight. Illustration B13: moderate.

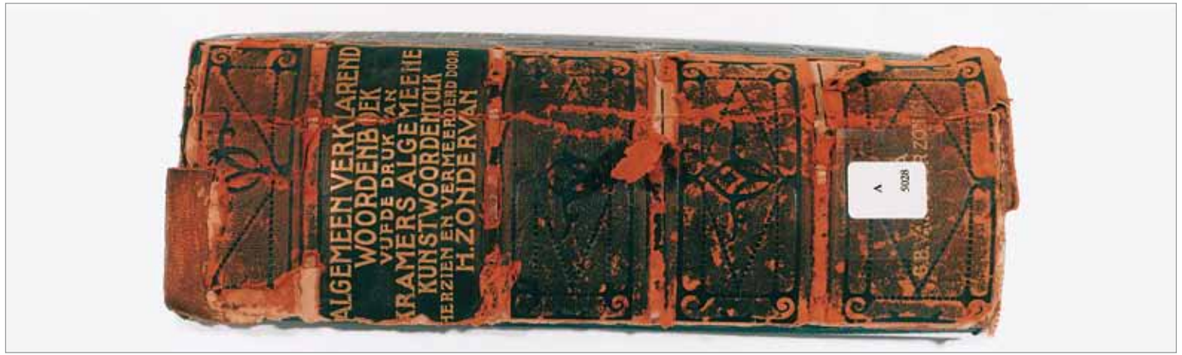
Illustrations B14, B15, B16 and B17 show the phenomenon of 'red rot'. This can cause the leather to crumble, causing surface damage followed by the disappearance of any inscriptions that may be present. Illustrations B14 and B15 have a moderate degree of damage. At a further stage the leather will tear and pull away. Degree of damage, Illustrations B16 and B17: serious.
In Illustration B18 there is surface damage of the leather cover of a sixteenth century book. Because handling will not aggravate the damage the degree of damage is slight.

Slight ● | Moderate | Serious | Code B

B12 - Surface damage


1842


PAILLET
MANUEL


ALGEMEEN VERKLAREND
WOORDENBOEK
VAN
KRAMERS ALGEMEENE
KUNSTWOORDENBOEK
HERZIEN EN VERMEERDERD DOOR
H.ZONDERVAN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C

Chemical damage

Chemical damage to documents can be caused by internal and external factors. Examples of internal factors are the materials used during the paper production process. External factors include storage environment and materials applied to the document (inks, tape, stickers, etc.).

C Fire damage

Fire damage is a typical example of chemical damage. This is because burning is essentially oxidation: a reaction with oxygen. Fire damage often occurs in combination with water damage (also see W - Water damage) because water is often used to extinguish fires.

Characteristics

In the least serious case the damage is very slight. An object with this kind of damage is slightly discoloured and may have a typical burnt smell. It would have been exposed to the smoke and moderate heat of a fire. What should be kept in mind is the fact that fire can leave an object badly soiled and can even cause carcinogens (cancer-causing compounds) to be released from the object. The object may have small burn holes. If these holes do not become enlarged through careful use, the object can be regarded as having moderate damage. If text has been affected and the area around the text is slightly brittle, the damage is serious.

If the edges of the object have turned brown to black because of fire and are very brittle (parts may even be missing), the damage is also serious.

Causes

- Smoking in the vicinity of the object: sparks or ashes from cigarettes can fall on the object.
- Fire in the building or repository where the object is kept.

Illustrations

The archival documents in Illustrations C1 and C2 show slight fire damage (singed spots, especially on the spine), and those in Illustrations C3 and C4 show serious damage.

Slight ● | Moderate | Serious | Code C

C1 - Fire damage

Slight ● | Moderate | Serious | Code C

C2 - Fire damage

Slight | Moderate | Serious ● | Code C

C3 - Fire damage

Slight | Moderate | Serious ● | Code C

C4 - Fire damage

C Foxing

Foxing is a phenomenon that can occur spontaneously over time. Foxing is classified as chemical damage because it is currently understood to be chemically induced. It is not clear what degree of damage foxing can inflict on an object. The presence of foxing may sometimes qualify as ‘no damage to the object’.

Characteristics

Foxing can be identified by its fleck-like spots. These flecks can be spread across the entire surface, but sometimes only parts of the surface are affected. The flecks come in many different colours, ranging from light yellow to light brown and black. It may happen that an object contains one page with foxing flecks, while the surrounding pages seem to have no foxing. However, if these apparently unaffected pages are examined under ultraviolet light (UV light), they may prove to contain foxing flecks as well.

Causes

Although the immediate cause is not yet known, there are various explanations for the origin of foxing flecks.

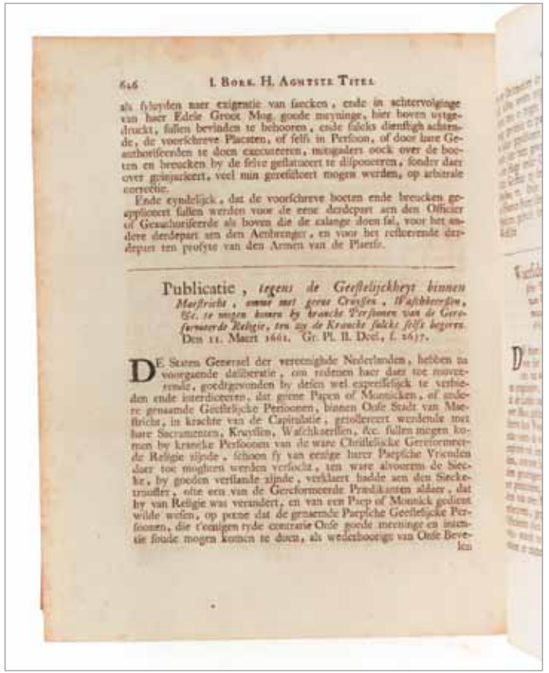
- Caused by metal particles left in the paper during the production process. The flecks are the result of a chemical reaction between these particles and the paper itself.
- The effect of built-up humidity. A combination of fibre morphology and metal salts can lead to localized degradation, which manifests itself in discolouration.
- Moulds may also result in these brown flecks. In that case we would not speak of biological damage but of biochemical damage. This browning is among other things described in terms of biochemical processes (the Maillard reaction).

Illustrations

Foxing can occur on a sheet indiscriminately. Two examples are shown in Illustrations C5 and C6. In Illustration C5 the flecks can be observed across the entire sheet. In Illustration C6 the flecks seem to be concentrated along the margins of the sheet. By exposing the sheet to UV light, it becomes clear that the flecks are scattered across the entire sheet (Illustration C7). In all these cases the degree of damage is slight.

KERKELYK
PLAKAAT-BOEK,
Behelzende de
PLAKAATEN,
ORDONNANTIEN,
Ende
RESOLUTIEN,
Over de
KERKELYKE ZAKEN.
BY EEN GEBRAGT
Door
NIKOLAAS WILTENS,
Bedienaar der H. Evangelium te Amsterdam.

IN 's GRAVENHAGE,
By PAULUS en ISAAC SCHELTUS, 's Landts Drukkers. Anno 1722. Met Privilegie voor 15. jaren.



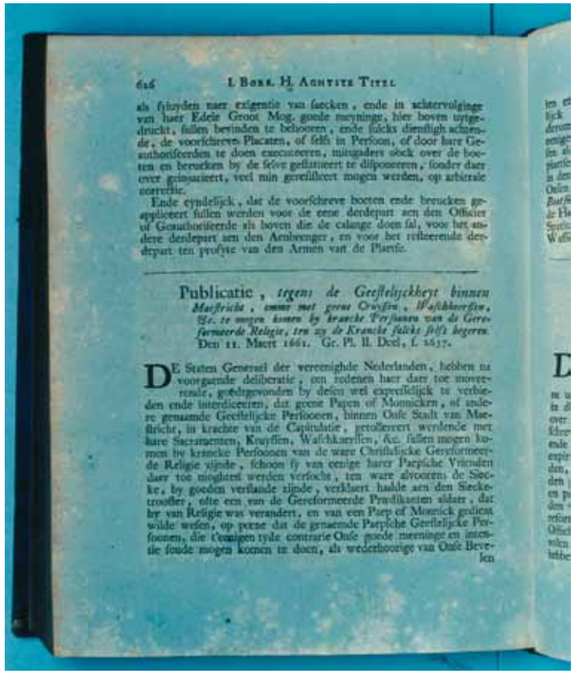
616 I. Boek. H. Agtste Titel

als fyluyden naer exigentie van saecken, ende in achtervolginge van haer Edele Groot Mog. goede meyninge, hier boven uytgedruckt, sullen bevinden te behooren, ende sulcks dienstigh achtende, de voorschreve Placaten, of selfs in Persoon, of door hare Geauthoriseerden te doen executeren, mitsgaders oock over de boeten en breucken by de selve gestatueert te disponeeren, sonder daer over geinjuriceert, veel min gerefuseert mogen werden, op arbitrale correctie.

Ende eyndelijck, dat de voorschreve boeten ende breucken geapplicoeert sullen werden voor de eene derdepart aen den Officier of Geauthoriseerde als boven die de calange doen sal, voor het andere derdepart aen den Aenbrenger, en voor het reste rende derdepart ten profyte van den Armen van de Plaetse.

Publicatie, tegens de Geestelyckheyt binnen Maestricht, omme met geene Crucifixen, Wasschkoorsten, &c. te mogen komen by kranche Persoonen van de Gereformeerde Religie, ten sy de Kranche sulcks selfs begeren. Den 11. Maert 1661. Gr. Pl. II. Deel, f. 2637.

DE Staten Generael der vereenighde Nederlanden, hebben na voorgaende deliberatie, om redenen haer daer toe moverende, goedtgevonden by desen wel expresselijck te verbieden ende interdiceeren, dat geene Papen of Monnicken, of andere genaemde Geestelijcke Persoonen, binnen Ouse Stadt van Maestricht, in krachte van de Capitulatie, geconfirmeert werdende met hare Sacramenten, Kruyssen, Wasschkaersten, &c. sullen mogen komen by kranckе Persoonen van de ware Christelijcke Gereformeerde Religie zijnde, schoon sy van eenige harer Paepsche Vrienden daer toe mochten werden verlocht, ten ware alvoorens de Siecke, by goeden verstande zijnde, verklaert hadde aen den Siecketrooster, ofte een van de Gereformeerde Predikanten aldaer, dat hy van Religie was verandert, en van een Paep of Monnick gedient wilde weesen, op peene dat de genaemde Paepsche Geestelijcke Persoonen, die t'eenigen tyde contrarie Ouse goede meeninge en intentie soude mogen komen te doen, als wederhoorige van Ouse Bevelen



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C Ink corrosion

The phenomenon of ink corrosion poses enormous problems for book and paper conservators because it is an ongoing process. In addition to the aqueous treatment, new non-aqueous treatments are also being developed. The iron gall ink that was used for writing and drawing eats its way through the paper over the course of time. This causes the objects to deteriorate in quality and sometimes to disintegrate entirely. The mechanisms that cause ink corrosion are only partly understood. It is striking that in the case of identical objects, such as copies, one object will be affected by ink corrosion while the other remains undamaged.

Characteristics

The first signs of ink corrosion occur when the ink runs outside the written or drawn lines. Ink corrosion also goes hand in hand with discolouration of the ink, which is really only noticeable if the person evaluating the object has a long familiarity with it. The discolouration passes from light brown to almost black. Fluorescence (UV light) can help show whether the object is susceptible to ink corrosion or not. If it is, the paper around the text area will brighten. At this stage there is no damage yet. At a later stage the text becomes visible on the other side of the page as well. This damage is regarded as moderate. Browning outside the written text lines can also be observed at this stage. If accessibility causes no further damage, which is often the case, the damage is said to be slight.

In the worst case, particularly in tropical documents, holes form in the material where the written text falls out of the paper. This is categorized as serious damage.

Causes

- The causes of iron call ink corrosion are diverse. Humidity, acid and oxidation are the most important factors in the degradation of paper. Ink recipes vary from maker to maker, and even within a manufactured lot. The main ingredients in iron gall ink are iron sulphate (vitriol) and gall nut extract. Secondary ingredients are water, gum arabic and acid. The iron sulphate triggers a chemical process in which radicals can harm the paper. The acid present in the ink causes acidification of the written or drawn image. The exact role of the gallo-tannins (which are derived from gall nut extract) and the gum arabic is still unknown.

Illustrations

Illustration C8 shows the effect of ink corrosion: in the right-hand margin of every page the text from the previous page shows through.
More serious ink corrosion in tropical documents is shown in Illustrations C9 and C10. Careful paging through will not aggravate the document in Illustration C9, therefore the damage is considered moderate. The seriousness in an advanced stage is shown in Illustration C10: badly running ink, seepage onto the other side of the page and holes in the places where a large amount of ink was originally present. One of the characteristics of ink corrosion is that the ink spreads (fans out), and letters and lines become visible on other side of the page. Degree of damage: serious.

Illustrations C11 and C12 also illustrate the ink seeping through. Illustration C11 shows the front, while Illustration C12 shows the mirror image on the reverse of the page (the green seepage caused by copper corrosion can also be seen there).

Slight ● Moderate Serious Code C

C8 - Ink corrosion

Slight Moderate ● Serious Code C

C9 - Ink corrosion

Slight | Moderate | Serious ● | Code C

C10 - Ink corrosion

Slight | Moderate ● | Serious | Code C

C11 and C12 - Ink corrosion

C Copper corrosion

The cause of copper corrosion is similar to that of ink corrosion. Ink corrosion occurs in the presence of ferriferous inks (see the section on Ink corrosion), while copper corrosion occurs in the presence of cupriferous inks (in blues and greens). Because these colours were not frequently used, this type of damage is less common in written archival material. It occurs more often in objects that have been coloured in, such as maps and drawings.

Characteristics

The slightest form of damage occurs as discolouration of the text area or the drawing. This discolouration passes from light green to black. Ink seepage to the adjacent pages can also occur in copper corrosion. The text or figure is transferred to the pages lying above or underneath, sometimes in the original colour. At this stage the damage is slight. If the seepage goes through more than two pages, the damage is considered moderate.

The second stage of copper corrosion is the blackening of the areas affected by copper. The damage can still be considered as moderate. If the areas affected by copper have become brittle and holes appear in the object, the damage is said to be serious.

Causes

- The primary cause is the cupriferous ink being used. Many processes play a role in copper corrosion, including humidity and oxidation.

Illustrations

The damage caused by copper corrosion is comparable to that caused by ink corrosion. Illustration C13 shows a map of the Netherlands. At first glance the map seems to be in good condition. On the reverse of the map (Illustration C14) we see the mirror image of the green areas, which have clearly seeped through.

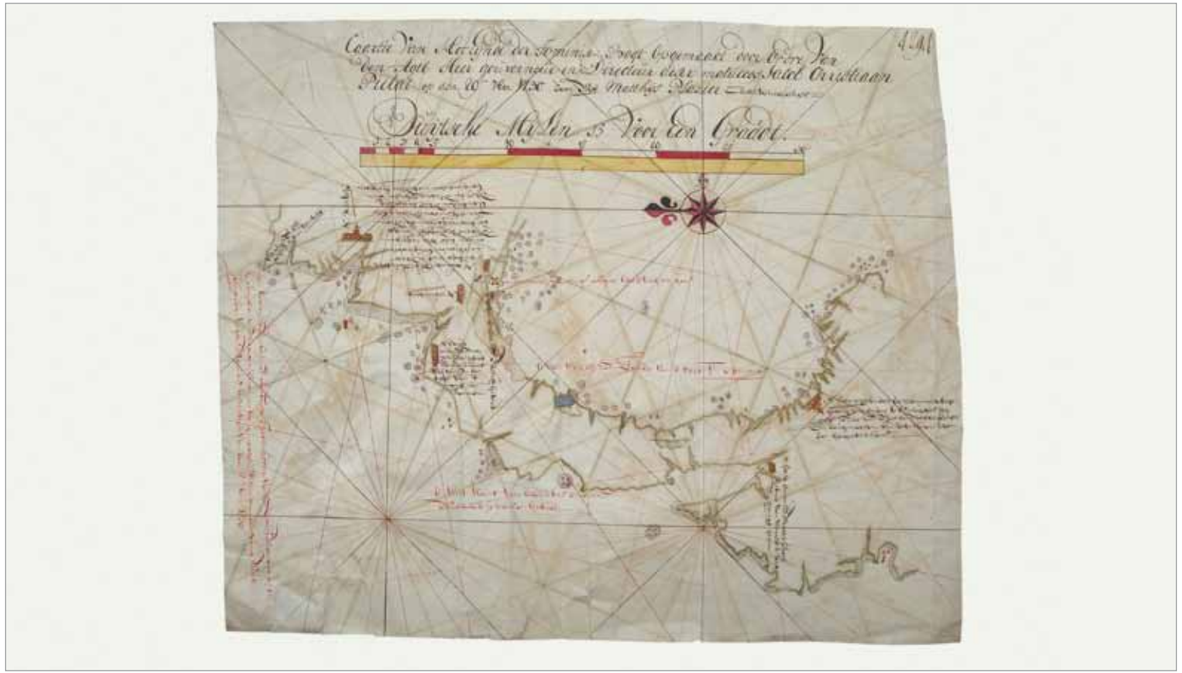
At a more advanced stage of copper corrosion, areas of the paper can also become brittle and fall out. This can be seen in Illustration C15. Illustration C16 shows the reverse of this object. Here, even after conservation (the map was supported with Japanese paper), the copper corrosion continues and the green ink has reappeared. The degree of damage is slight because the map was conserved in the past.

Illustrations C17 and C18 show the front and reverse of an eighteenth century map of the western part of the Indonesian island Celebes (Sulawesi). The lines from the compass-card, the green coastlines and the small drawings of buildings have clearly seeped through. Additional lines have appeared because the map was folded. A part in the centre with a drawing of a building has already fallen out. Unfortunately the map was renumbered several times and in different ways, causing confusion and potential chemical and mechanical damage. The degree of damage is slight because the map was conserved in the past.


DE NOORD
ZEE
ZEELAND


4
3


Zuider




1303

C Tape and stickers

The damage caused by the use of tape and stickers falls in the category of chemical damage, because the glue used on the tape or stickers reacts with the paper to which it was applied. Old repairs using tape and stickers are a specific form of damage.

Characteristics

Tape, after it has been applied, can discolour over time. This discolouration, from light yellow to dark brown, will also be visible on the paper. Tape can cause the text to become discoloured too. In these cases the damage is slight.

Moderate damage occurs if the tape comes loose in places, leaving the browned layer of glue on the paper. This glue layer can cause new tears to occur in the object.

If the remaining glue layer causes the pages to stick together, the damage is considered serious.

Causes

- Detaching pieces of a page or tears may have been repaired with tape. Older types of tape have particularly harmful properties. The tape used in these repairs is not durable and will discolour and become brittle over time. The drying of the glue layer will eventually cause the synthetic backing material to separate from it and may leave a sticky surface behind. The glue used in tape often contains acidic components that damage the paper.
- Modern types of tape are often alkaline in make-up and are more durable. The glue layer on modern tape may even be so strong and durable that it is almost impossible to remove it (non-reversible).

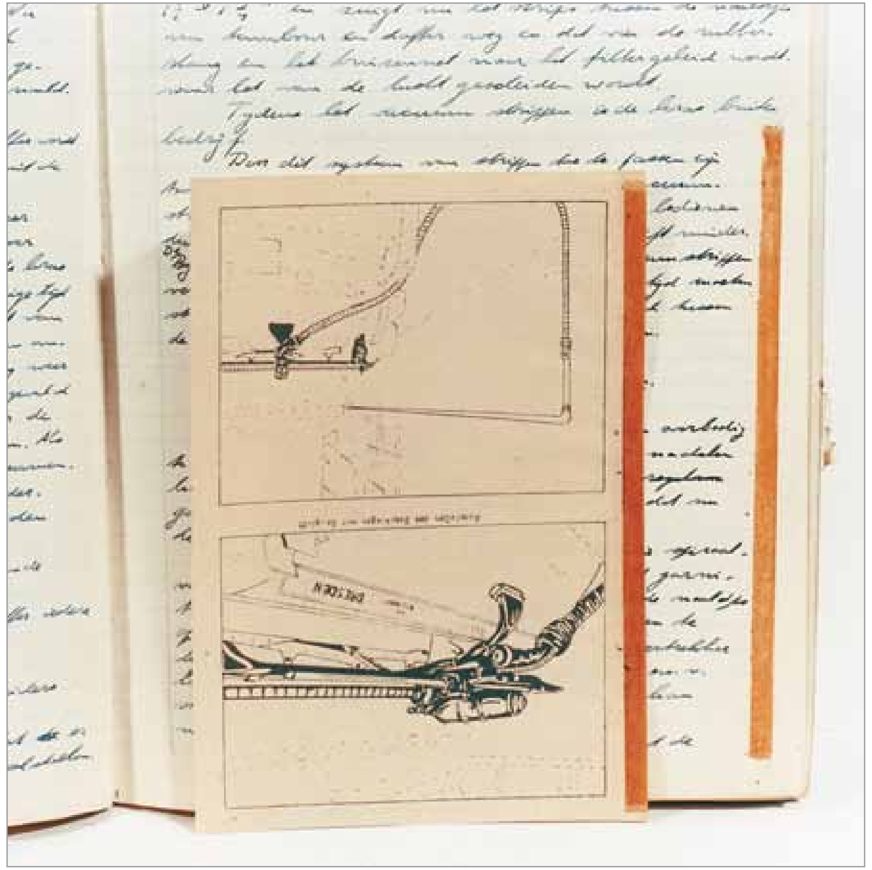
Illustrations

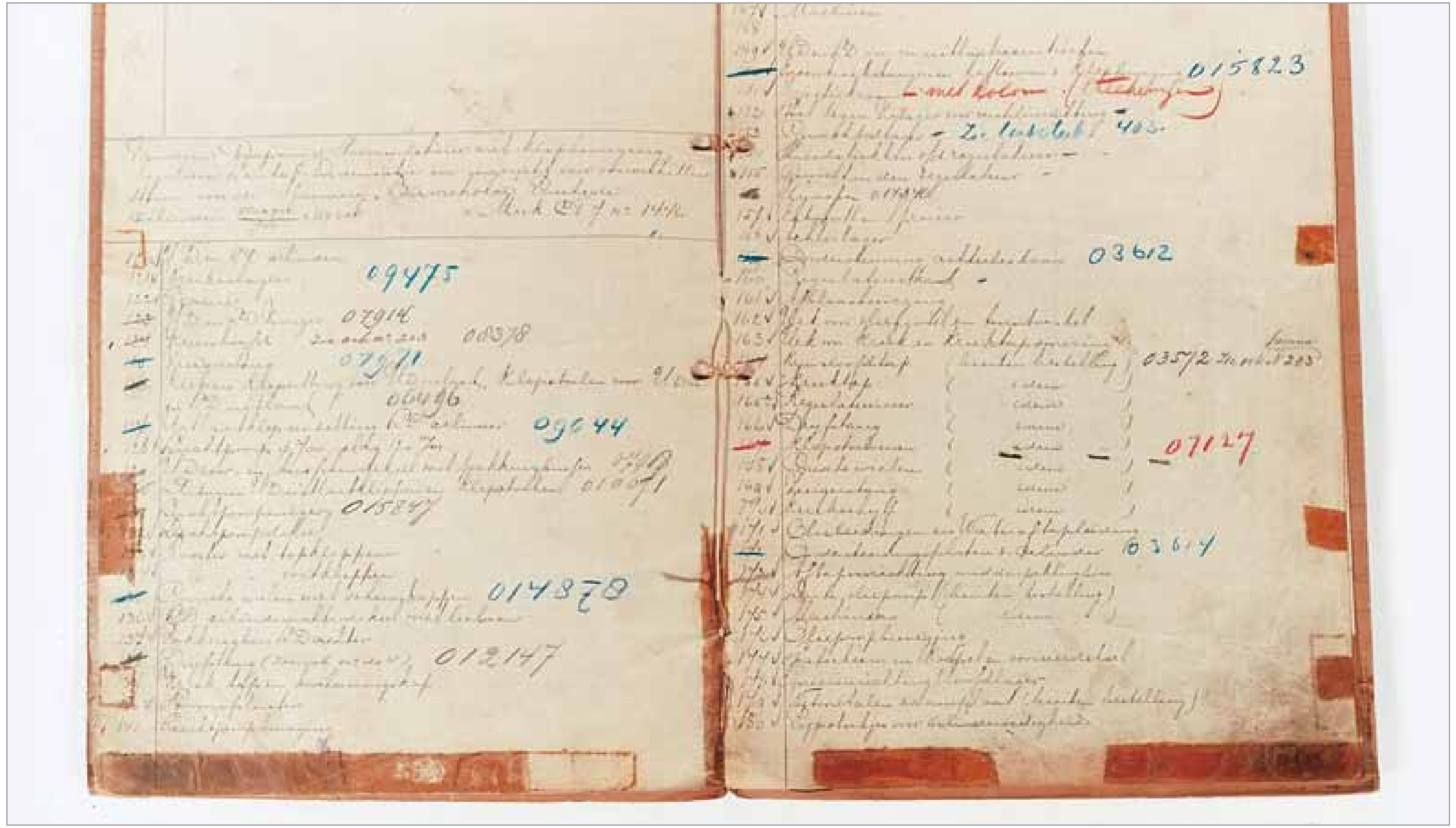
Illustration C19 shows the effect of aging on a piece of tape that was once used to hold a figure in place. The glue of the tape lost its adhesive strength, soaked into the paper and turned brown. The backing material of the tape has disappeared and the illustration has become loose.

If parts of the page can come loose through rough handling, the degree of damage will be moderate.

Illustrations C20 and C21 show areas that have been reinforced with tape. Here, too, serious discolouration is clearly visible. The tape even gave away in a few places, which may cause further damage to the object. Degree of damage: serious.

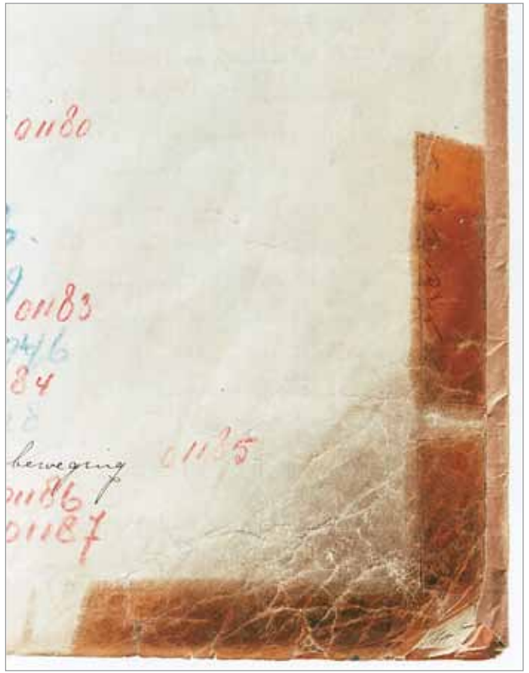
Illustration C22 features a torn map that was repaired in the past with tape. Because of aging, the plastic backing material of the tape has become separated from the glue layer. Aging has also caused the glue layer to turn brown. The resulting brown edges of the paper are very difficult to remove. Degree of damage: serious.





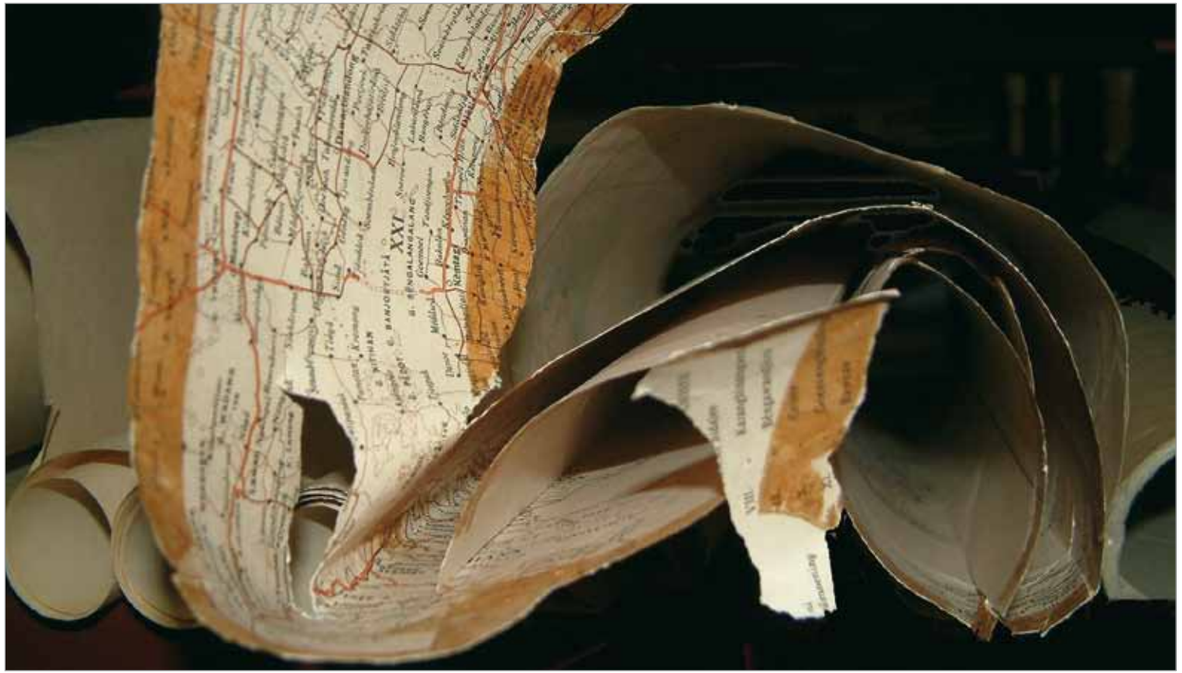
Slight | Moderate | Serious ● | Code C

C21 - Tape and stickers



Slight | Moderate | Serious ● | Code C

C22 - Tape and stickers



C Rust

Paper doesn't rust! Rust is a form of oxidation and is defined as the reaction of iron with air. Other kinds of metal oxidize too. Although the term 'rust' is often used in such cases, in fact this is referred to as corrosion. Oxidation, and therefore rust, is an external degradation factor.

Characteristics

Discolouration in and on the paper, caused by metal objects such as pins, staples, fasteners, paperclips, file clasps, etc., often made of iron.

In the early stage, the discolouration will only be visible on the metal objects themselves. An iron paperclip will turn brown because of rust. Later the archival object will also become visibly discoloured. In this case the damage to the object is slight. If the object shows serious discolouration on areas around the metal object and if the damage is aggravated by rough handling, the damage is moderate.

In a few cases, holes can be seen in the discoloured areas. If text is involved, the damage is regarded as serious.

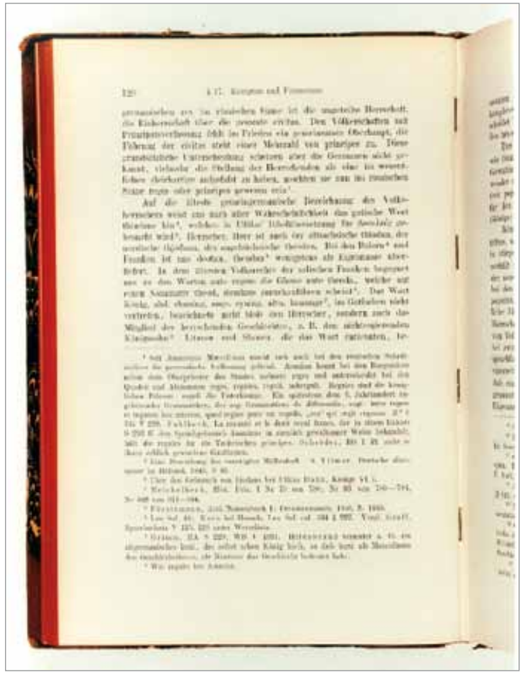
Causes

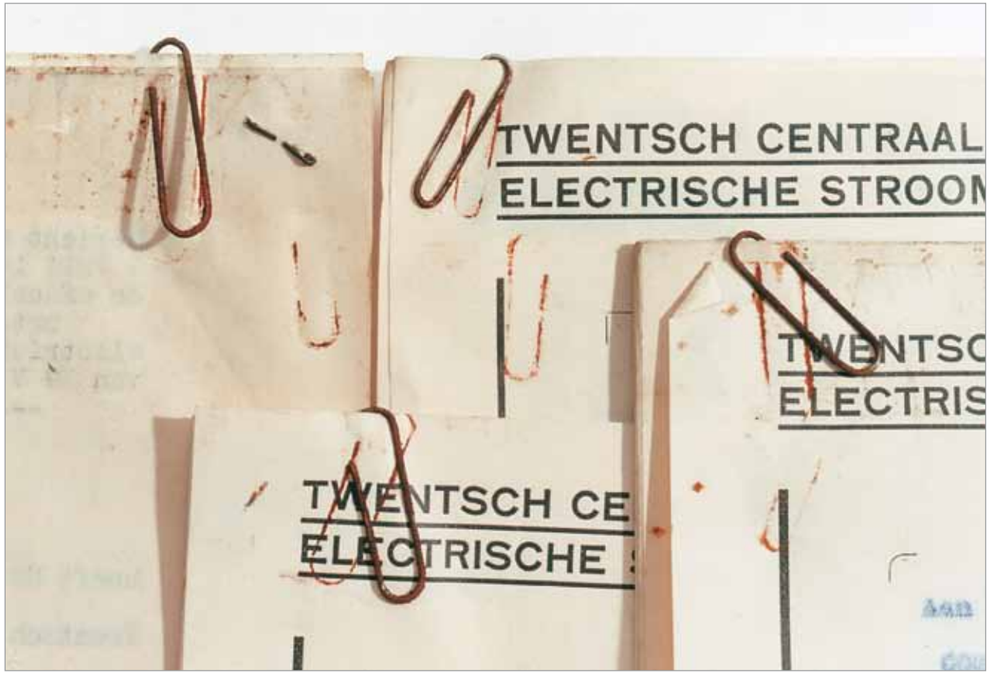
- Paper archival documents are often held together with paperclips, staples, mechanical fasteners or document files. Sometimes pins or other metal objects are added. These objects can oxidize, creating metal oxides and salts. Such compounds are slightly soluble and can penetrate the paper. Once they are present in the paper they can trigger reactions, which in the least serious cases will cause the paper to discolour. In the most serious case the paper is eaten away. Thus iron particles can accelerate the decomposition of paper.

Illustrations

A German method of bookbinding from the 19th and early 20th centuries consisted of stapling the sections to a piece of gauze. These staples eventually rust, as can be seen in Illustration C23.

Paperclips also produce rust marks on the object (Illustration C24). These rust marks can eventually cause holes in the paper. Degree of damage: moderate.




TWENTSCH CENTRAAL
ELECTRISCHE STROOM
TWENTSCH CE
ELECTRISCHE

C Acidification

Acidification can occur as a result of the way an object was made. Materials may have been used in the production process that cause the object to acidify over time. The environment in which the object is stored also plays an important role.
Maps and drawings made on tracing paper are a separate problem. This kind of paper is used because of its transparent qualities, making it possible to produce a number of prints from a master drawing.

In earlier times, the transparent effect was achieved by oiling the paper or treating it with a compound like beeswax. Later the paper fibres were subjected to lengthy milling in the production process, which made them very short. Sometimes a strong acid was added to accelerate the milling process.
The shortness of the fibres, in combination with the acidic residues in the paper and the conditions under which the paper was stored, cause the paper to become brittle within a relatively short time. Folding just a few times can result in paper breakage.

Characteristics

A typical characteristic of an acidified object is the smell: from a vanilla fragrance to a vinegary smell. There may also be slight discolouration of the object from cream/yellow to dark brown. This discolouration can be seen mainly along the edges of the object (from outside to inside). Acidification can easily be identified with an indicator or pH pen. If only the smell and/or slight discolouration is present, the damage to the object can be considered slight.
If the acidification is in an advanced stage, the object will exhibit serious defects. When the paper is handled it will easily break. This means it is brittle. At this stage the damage is regarded as serious.

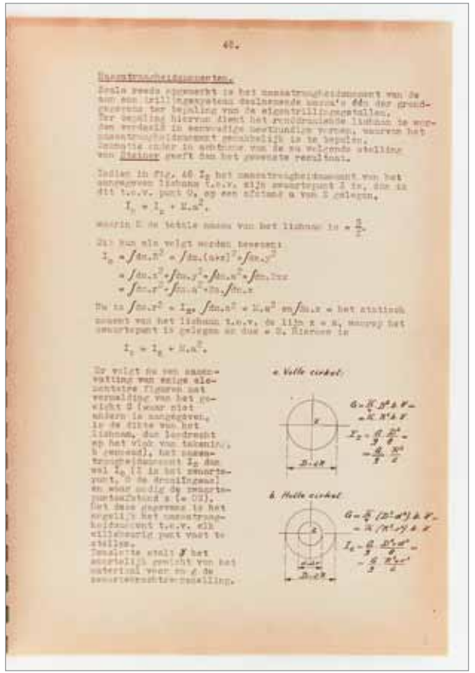
Research has shown that the degree of acidification is greatest in paper manufactured between 1870-1880 and 1940-1950.

Causes

- Use of impure materials and alum rosin sizing. The degree to which the paper fibre has been milled can also play a role.
- Storage conditions such as temperature, humidity and the presence of air pollution.

Illustrations

Illustration C25 shows the early stage of acidification. The edges of the object have turned brown. In an advanced stage of acidification the object becomes brittle, so that touching it produces shreds of paper. At that stage the object can no longer be accessed. An example of this is shown in Illustration C26.
Degree of damage: serious.
Illustration C27 shows a map made on tracing paper. Because of acidification the paper has become so brittle that parts have broken off.
Severe browning as a result of acidification of a tropical document is shown in Illustration C28. The underlying sheet is clearly less acidified. Because accessing will not aggravate the damage the degree of damage is slight.




Dat achter dezen oorlog de sociale revolutie sta
houd ik voor absoluut zeker. Dit conflict is slec
een inleidend conflict, misleidend omdat het na
zisme misleidend is, en toch waarachtig, omdat
het nazisme eerst verdwijnen moet, wil het werke
lijke conflict aan den dag kunnen komen. De
vraag alleen: onder welke formule zal deze sociale
revolutie zich aandienen? Het socialisme, dat na
1918 nog een aureool had, is hopeloos gecom
promitteerd, zoowel als nationaal-socialisme als
ook als stalinisme, dat zich met Hitler heeft af
gegeven en dus geen aanspraak meer kan maken
op het ware gezicht van Europa. Welke nieuwe
formule voor den „klassenstrijd" (die tusschen
haakjes geen klassenstrijd is, maar een veel gecom
pliceerder gevolg van onze christelijke erfenis)?
Vandaag een brief van Gr. uit Kaapstad. De laat
ste? Alleen om met hem een half jaar naar een
blauwe zee te kunnen kijken zou ik dezen oorlog
willen overleven. Verder gaan mijn verlangen
niet, maar het is al heel ver voor dezen tijd. Onge
rustheid over het lot van Du P., die ergens op den
Oceaan moet zwalken.
Ik slaag er nog in „den dag te plukken", maar

C Old repairs

Characteristics

Archival documents were also repaired in the past, often with the best of intentions. One of the methods for making faded writing visible consisted of treating the type area with a tincture of iron gall. The effect this produced was astonishing. Texts became clearly readable once again. Unfortunately, the area around the type area browned irreparably over time. Other forms of old repairs are tape and stickers (see that section). These materials were used with quite some regularity to mend tears and are sometimes still used today.

Causes

- Incorrect materials used in repairs.
- Incorrect methods used in repairs.

Illustrations

Treating faded iron gall ink with gall nut extract makes the ink dark again. Over time, however, the extract causes the surface to discolour, making the text less readable (Illustration C29). In most cases, handling the object will not result in further damage, so the assigned degree of damage is slight.
If the object is so affected by the treatment with gall nut extract that it becomes brittle, the assigned degree of damage is serious.

Illustration C30 shows a coloured-in map. In previous conservation, Japanese paper was applied to the front and the lower right-hand corner to prevent further deterioration. If the map is conserved at a later stage, this emergency covering will be removed. See the details of this map (Illustrations C31 and C32). Degree of damage: slight.


HARING
VELEY
OVDT
PIERSHIL
NIEV
PIERSHIL
SCHOKKE

Slight ● | Moderate | Serious | Code C

C31 - Old repairs

(detail of C30)

Slight ● | Moderate | Serious | Code C

C32 - Old repairs

(detail of C30)

M

Mechanical damage

Mechanical damage is brought about by use, improper handling, storage or violence (war). As a rule this type of damage manifests itself in frayed edges and mechanical adhesion. Mechanical adhesion causes the frayed edges to interlock, making it seems as if the pieces were ‘glued’ together.

M Damage through use

Characteristics

Curls and dog-ears in the paper. In many cases the damage seems more serious than it really is and can be regarded as slight.

Small tears along the edges of the archival documents, otherwise known as frayed edges. This damage is usually moderate.

Paper fracture. Paper can break along a fold when it is repeatedly folded. This is especially true with maps.

Badly frayed edges, with parts interlocking so it looks as if the paper is stuck together. The damage is usually regarded as serious.

In tropical regions other materials then paper can also be found in archives and libraries, such as palm-leaves. They have been a popular writing medium in South and Southeast Asia. The leaves of several types of palm (e.g. lontar, palmyra, talipot) were used for creating manuscripts. The writing was created either through incisions and enhancing the legibility of the script by applying lampblack or turmeric, or by using a pen or brush. Aromatic oils were used for their insect repellent qualities. Several palm-leaves were often bound together into a 'book', using a threaded cord in a winding system around the edges of the bundle. Palm-leaf is particularly susceptible to mechanical damage, mainly as a result of desiccation (losing its flexibility and becoming brittle). Some of the mechanical damage is caused by the traditional binding method. There can also be insect damage, staining and discoloration, splitting and delamination.

Causes

- Careless treatment of archival documents can cause folds and dog-ears. This, in combination with incorrect storage materials, can lead to frayed edges.
- If incorrect packaging is used (for example if the archival document is too large for the box being used or too many maps are being stored in a drawer), serious warping may occur. If an archival document is stored upright, parts of the frayed edges, especially those on the side on which it is standing, can become interlocked as a result of the item being repeatedly taken on and off the shelf. The various sheets seem to become stuck together.
- Pulling the pages apart can cause large (or larger) tears. Repeating this action can even result in separated parts.
- Palm-leaves are extra sensible to dehydration. As a result they loose their flexibility, become brittle and handling leads to parts breaking off.

Illustrations

Illustration M1 shows a loose bundle of archival documents with folds and dog-ears. Careful handling of the paper will however not directly contribute to deterioration. Degree of damage: moderate.

The two maps shown in Illustration M2 were stored in a container that was too short and too narrow. Because the ends of the maps extend beyond the ends of the container, serious fraying has occurred. As a result, the map on the right in particular (made of tracing paper) cannot be rolled out without aggravating the damage.

Illustrations M3 and M4 are examples of mechanical adhesion: the frayed edges of the volumes are interlocked. This means that handling the object will cause the pages to tear. Degree of damage: serious.

Illustration M5 shows a map that was reinforced with a textile backing. Repeated use has caused parts of the map to wear away (see the detail in Illustration M6). Degree of damage: serious.

The tears in the map in Illustration M7 can result in bits of paper breaking off and go missing. The map can however be accessed if it is kept in a transparent folder.

Degree of damage: moderate.

The damage to the drawing on tracing paper shown in Illustration M8 is caused by incorrect storage. Degree of damage: serious.

Illustration M9 shows a small tear. Degree of damage: slight.

Fold damage, as shown in Illustration M10, is caused by repeatedly folding and unfolding a map. In the worst case the map will break along the fold. The degree of damage shown here is moderate.

Illustrations M11 and M12 show damage at the edges and at the point in the middle where the original binding the palm-leaves were held together. It also shows old repairs, but parts already broke off. Handling will cause further loss of material. Degree of damage: serious.

Slight	Moderate	Serious	Code	M1 - Damage through use
	●		M	

Slight	Moderate	Serious	Code	M2 - Damage through use
		●	M	

Slight | Moderate | Serious ● | Code **M**

M3 - Damage through use

Slight | Moderate | Serious ● | Code **M**

M4 - Damage through use

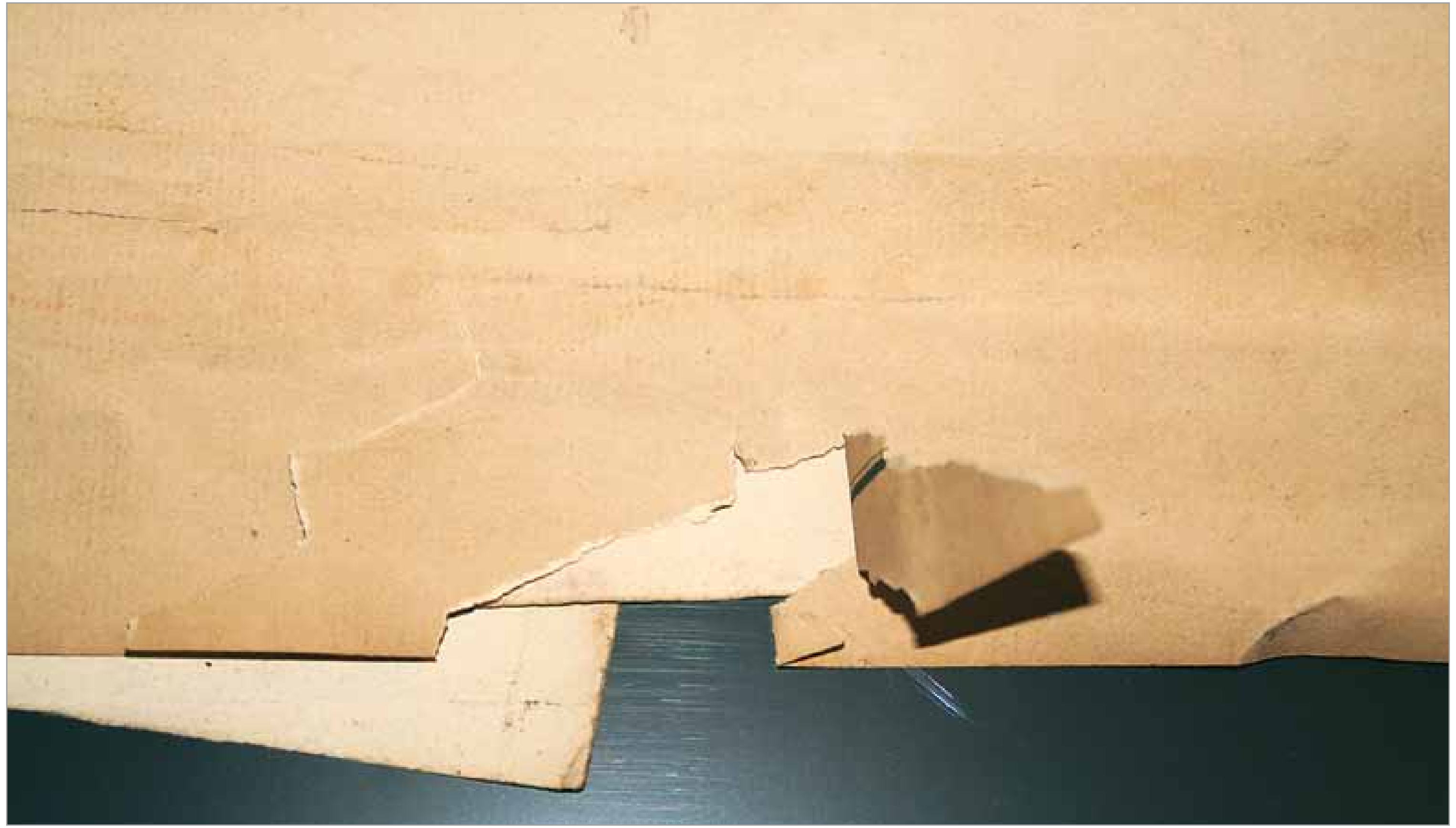
Slight | Moderate | Serious ● | Code **M**

M5 - Damage through use

Slight | Moderate | Serious ● | Code **M**

M6 - Damage through use

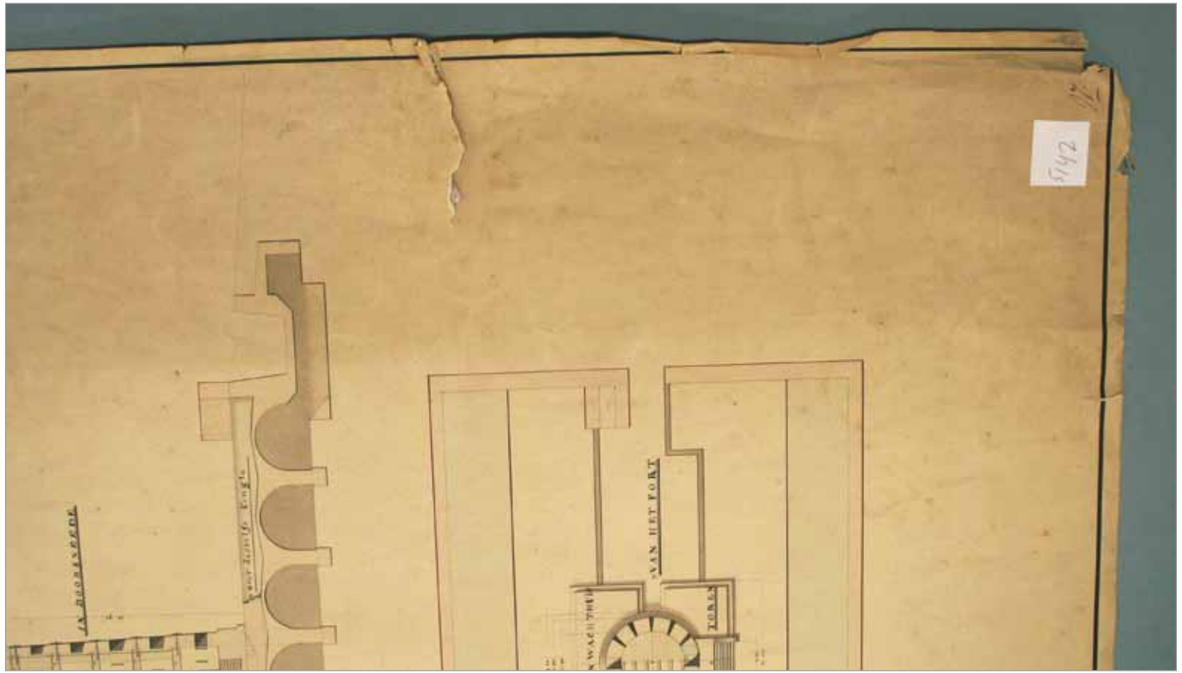
(detail of M5)




Forged Steel Rudder.

Slight | Moderate | Serious ● | Code M

M9 - Damage through use



Slight | Moderate ● | Serious | Code M

M10 - Damage through use

Slight | Moderate | Serious ● | Code **M**

M11 - Damage through use

Slight | Moderate | Serious ● | Code **M**

M12 - Damage through use

M Damage through violence

Characteristics

Large holes in objects resulting from vandalism, including acts of war, such as bullets and shrapnel. Here, too, pages will mechanically adhere. The damage is to be considered serious.
If there are only holes in the object, the pages do not mechanically adhere and no text has been damaged, the damage is slight or moderate.

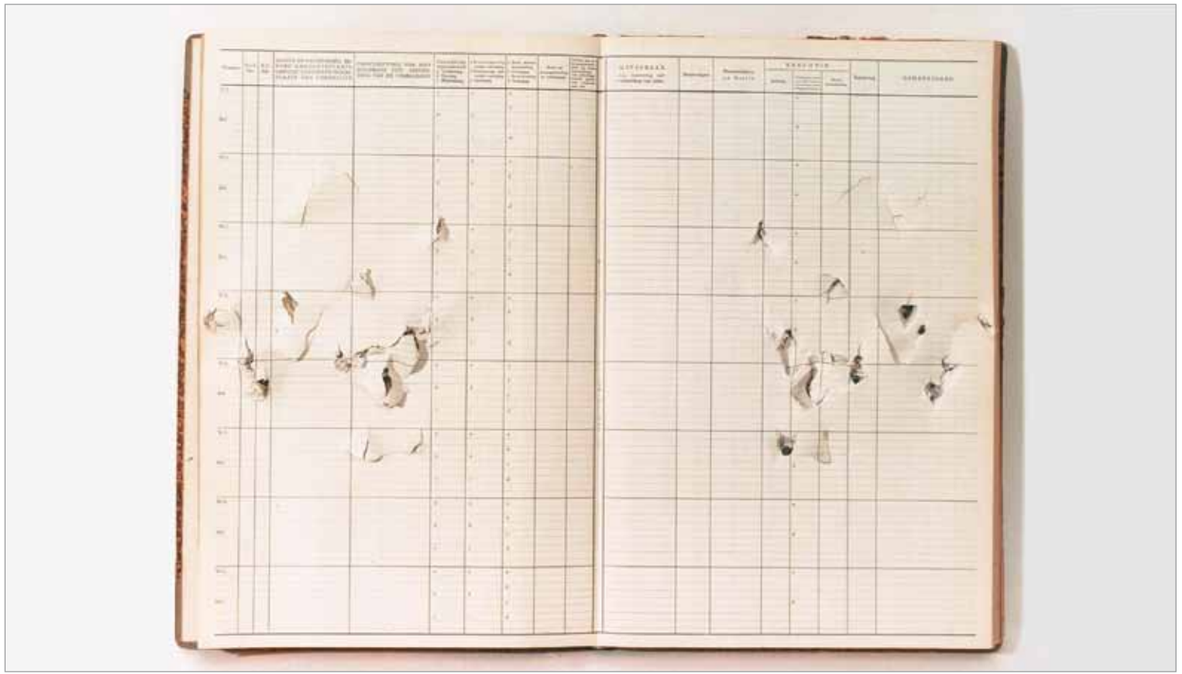
Causes

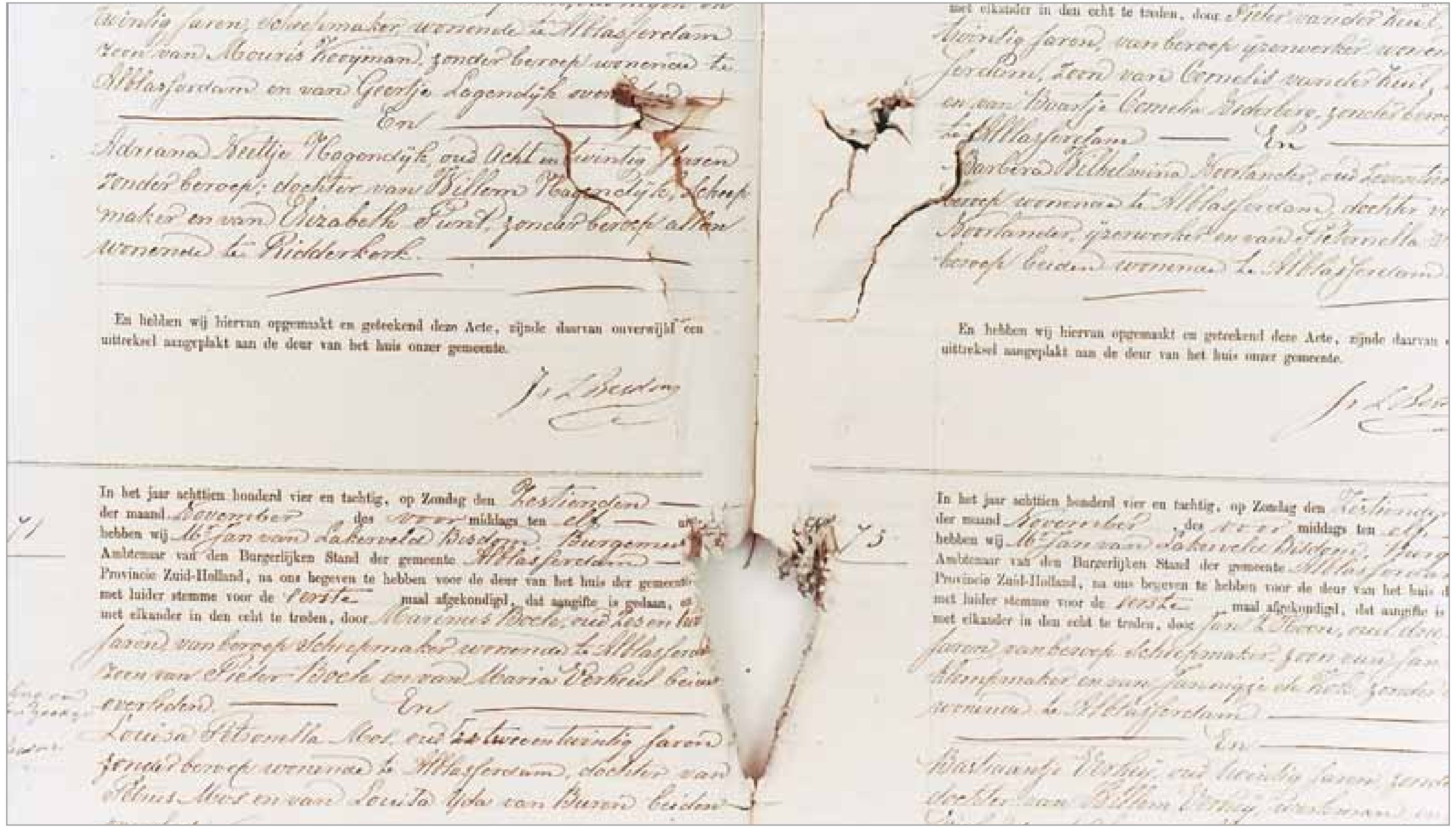
- One of the causes of mechanical adhesion in archival documents is wartime activity (bullets and shrapnel). The holes thereby created in archival documents cause the pages to stick together.

Illustrations

Illustration M13 shows bullet holes. Handling such an object will certainly cause the sheets of paper to tear because the edges of the holes mechanically adhere. Because there is text elsewhere in the volume the degree of damage is serious.
Illustrations M14 and M15 show the cover and the inside of the text block with damage caused by striking shrapnel. Degree of damage: moderate, because careful handing will not aggravate the damage. In many cases, such impact can cause mechanical adhesion. If that occurs, the degree of damage would have to be assessed as serious.

Slight | Moderate | Serious ● | Code M | M13 - Damage through violence




En hebben wij hiervan opgemaakt en geteekend deze Acte, zijnde daarvan onverwijld een uittreksel aangeplakt aan de deur van het huis onzer gemeente.
En hebben wij hiervan opgemaakt en geteekend deze Acte, zijnde daarvan
uittreksel aangeplakt aan de deur van het huis onzer gemeente.


1884
DER GEMEENTE

P

Pest infestation

Pests in archives are divided into two categories: damage by insects (including louse, moth, woodworm, beetle and silverfish) and damage by rodents (mouse, rat). In tropical regions termites can cause serious damage.

P Damage by insects

Insects function as nature's clean-up crew, and as such they contribute to the re-cycling of all materials, which is exactly what curators, conservators and archivists try to avoid.
Insects are divided into two classes: Apterygota, wingless insects, and Pterygota, winged insects. There are also two kinds of metamorphosis: complete metamorphosis, which consists of four stages (egg, larva or nymph, pupa and adult) and incomplete metamorphosis, which consists of three stages (egg, nymph and adult). The growth process in incomplete metamorphosis involves periodic moulting, by which the animal may become larger, while in complete metamorphosis a larva pupates and the adult insect emerges from the pupa. Insects are lucifugous by nature and prefer to hide in chinks, tears and clefts.

The conditions that insects need in order to survive are: food, sufficient oxygen, warmth and sufficient relative humidity.
The most common insects found in archives and libraries are: wood louse (book louse), fur moth, clothes moth, brown house moth, common woodworm, German cockroach, American cockroach, firebrat, silverfish, fur beetle, common larder beetle, old-house borer and common carpet beetle.

For the prevention and control of insects, also see: Agnes W. Brokerhof, Bert van Zanen, Ko van de Watering and Henk Porck, *Buggy biz. Integrated pest management in collections*, published by the Instituut Collectie Nederland, 2007.

In tropical regions, termites (order Isoptera) break down dead and dying plant material. However, when termites feed on wooden structures in buildings or even attack archives they become pests. Termites are social insects that build large nests in soil or wood. The many different species of termites are divided into three types: dampwood, drywood and subterranean. They can all cause damage to buildings, repositories and archives. Subterranean termites nest in soil from which they obtain their moisture and attack any wood in contact with the soil – they cause the greatest damage to buildings. Dampwood termites prefer damp wood already affected by fungus. Drywood termites bore tunnels into dry wood and they create small holes in the wood surface through which they eject their frass. Drywood termites in particular are known to attack and destroy other cellulosic materials such as books and archives.

Termite control involves a combination of annual building inspections, the use of naturally resistant or treated timbers in buildings, and implementing effective barriers around buildings. Termite identification is crucial before starting any eradication program, because each species requires a different approach.
For specific material and preservation in tropical climates, also see: *Preservation of Archives in Tropical Climates*. An annotated bibliography by Rene Teygeler, with the co-operation of Gerrit de Bruin, Bihanne Wassink, Bert van Zanen, published by the International Council on Archives and the National Archives of the Netherlands and Indonesia, Paris/The Hague/Jakarta, 2001.

Characteristics

Areas on the paper where the surface has been eaten away. These areas can be recognized by the fact that the paper seems cleaner there. In some cases part of the text has been eaten away. This form of surface damage is generally regarded as slight. Another form of damage to the surface is the presence of insect faeces. This damage is also considered slight.
Some insect larvae, such as that of the woodworm, eat right through the object, leaving behind small round holes. The larvae are not fussy as far as food is concerned, and they eat their way through the covers and covering material of book bindings. If the damage remains limited to small round holes, it can be regarded as slight.

If the book is opened, the winding holes and passageways where the larvae have eaten their way through can be seen in the pages. In many cases the damage in such cases is serious. If, however, there is no danger of further tearing of the object or further loss of text during normal use, the damage can be considered moderate.
Damage caused by termites can result in large holes and large amounts of paper shredded and eaten away. Sometimes sheets are stuck together.

Causes

- A combination of high temperatures, high relative humidity and a polluted environment (dust and/or clutter).
- The presence of dust increases the atmospheric humidity. Moulds can germinate there, which can serve as food for woodlice. This in turn serves as food for other insects. When these sources of food are exhausted, the insects will eat the paper as well.
- The presence of wooden structures, which particularly attracts termites.

Illustrations

Illustration P1 shows an example of surface damage caused by silverfish infestation: parts of the picture have disappeared. The damage will not be aggravated by normal use. This damage is considered slight.

Round holes in the spine of an object, caused by larvae of a 'bookworm', can be seen in Illustration P2. The object also shows binding and text block damage (see that section). Degree of damage: slight.

In Illustration P3, parts have been eaten away in areas where there is no text. Rough handling will cause the eaten parts to deteriorate. For this reason the damage is considered moderate. The object also shows water damage (see that section).

Illustration P4 shows the passageways made by larvae. Although this looks serious, careful handling will not damage the object any further. Degree of damage: moderate.

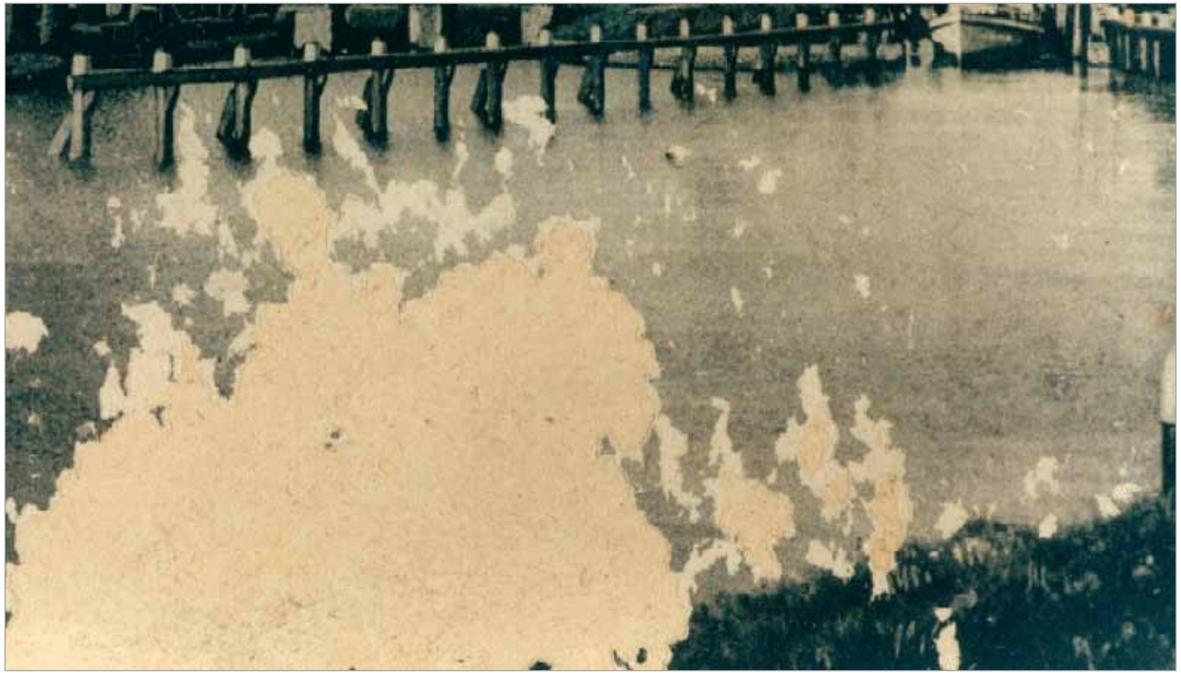
Illustration P5 shows large round holes, passageways and eaten areas. Rough handling will cause parts of the pages to break off. Degree of damage: moderate.

In Illustration P6 parts have come loose as a result of insects. It also shows ink corrosion and loose and broken bindings (see those sections). Handling leads to loss of information, therefore the degree of damage is serious.

Illustrations P7, P8 and P9 show damage caused by termites. In Illustration P7 there are large wholes eaten away. However, careful handling will not aggravate the damage, so the degree of damage is moderate. Illustrations P8 and P9 show large amounts of paper shredded and eaten away. Handling is impossible. The degree of damage is serious.

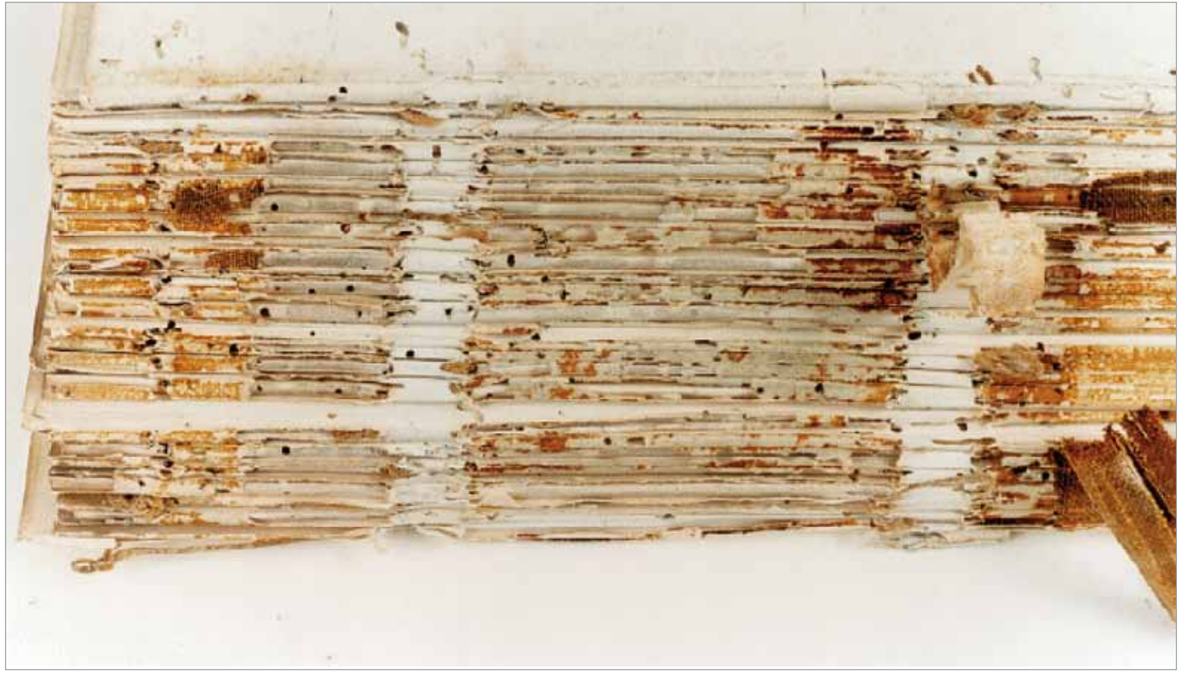
Slight ● | Moderate | Serious | Code P

P1 - Damage by insects



Slight ● Moderate Serious Code P

P2 - Damage by insects



Slight Moderate ● Serious Code P

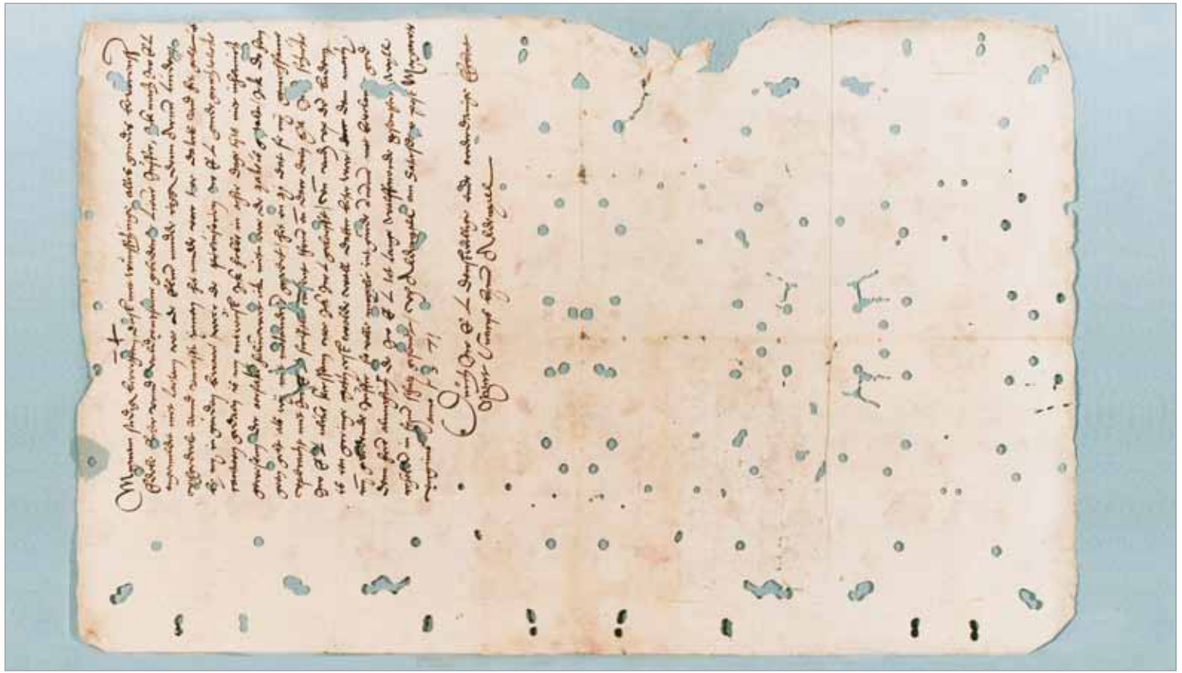
P3 - Damage by insects

Slight | Moderate ● | Serious | Code P

P4 - Damage by insects

Slight | Moderate ● | Serious | Code P

P5 - Damage by insects



P Damage by rodents

When we speak of rodents we generally mean mice and rats. Rodents that can cause damage in archives are mainly the house mouse, brown rat (sewer rat) and black rat. Like insects, mice and rats can only survive under four conditions: sufficient oxygen, water, food and warmth. These animals are often found in old buildings, where they seek shelter under wooden floors, behind cabinets and in other inaccessible places. In addition, when winters are harsh, voles and shrews are sometimes found among the archives, where they have come to hibernate. The animals gnaw parts of archival documents and carry them off to use as nesting material. The brown rat searches for damp places (such as cellars), while the black rat prefers dry places.

Characteristics

The archival document exhibits large holes. Tooth imprints from rodents can be recognized along the edges. The area around the holes has not been weakened. In this case the damage is slight.
If mechanical adhesion has taken place (see that section), the degree of damage will have to be regarded as moderate to serious, depending on the extent of the adhesion.
If the damage is serious, archival documents can be so badly affected that large areas are destroyed.

Causes

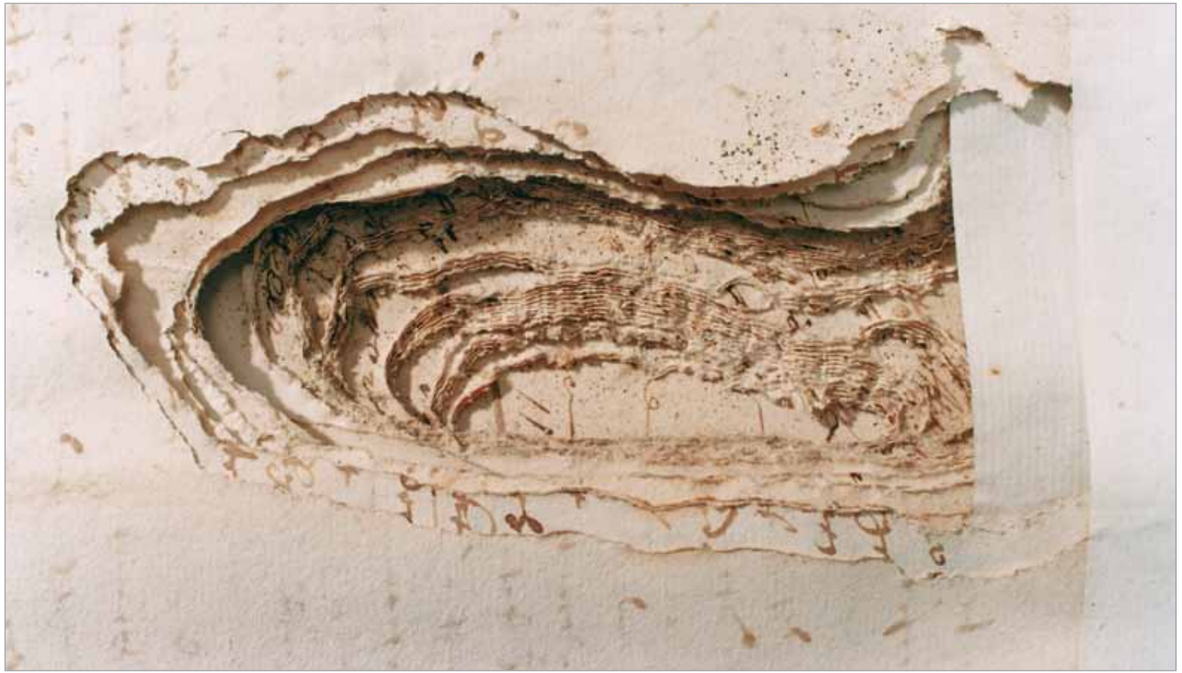
- The animals thrive in a polluted environment where there are opportunities to take shelter.
- The freedom to do as they please and the absence of weather influences also play a role.

Illustration

Illustration P10 shows a mouse hole. The paper in the object has been neatly eaten away. Although the mouse has eaten through the text, normal use does little if anything to aggravate the damage. This damage is considered moderate.

Slight | Moderate ● | Serious | Code P

P10 - Damage by rodents



W

Water damage

A great deal of water is used in the manufacture of paper. More than 80% of the pulp from which paper is made consists of water. After dehydration there is always a small amount of moisture remaining in the paper, 6% on average. This is the percentage of moisture that ‘healthy’ paper should contain.
Under certain storage conditions, paper can attain a moisture level that is higher than the desired 6%. An increase in the moisture content can result in several different types of water damage.
For example, maps can consist of a combination of materials, such as paper glued to a textile backing. Because these materials react to moisture in different ways, damage may result.

W Staining and discolouration

Characteristics

The object exhibits water stains and slight discolouration. Wherever the object exhibits water stains, yellow to light brown areas will be discernible in the paper. Parts of the paper may also be rinsed clean, which makes these areas lighter in colour. In addition, what is known as a tide line may be visible along the edges of the stains.
Occasionally dark stains appear as a result of running ink or other materials.
This is almost always considered slight damage.

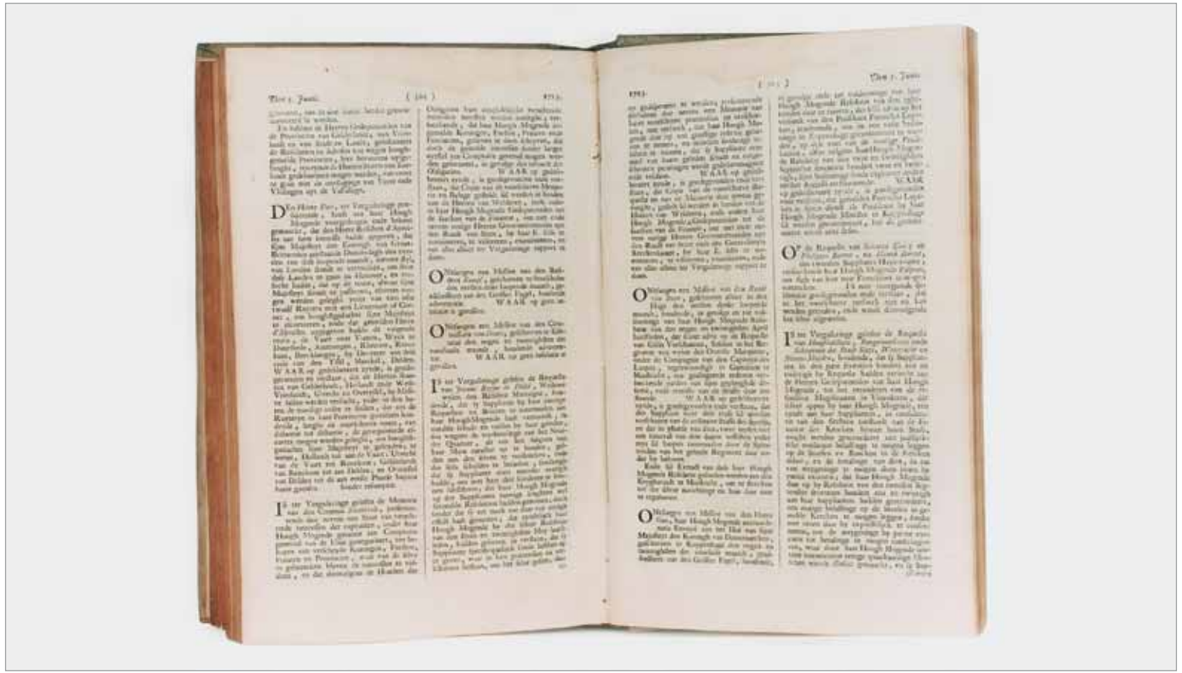
Causes

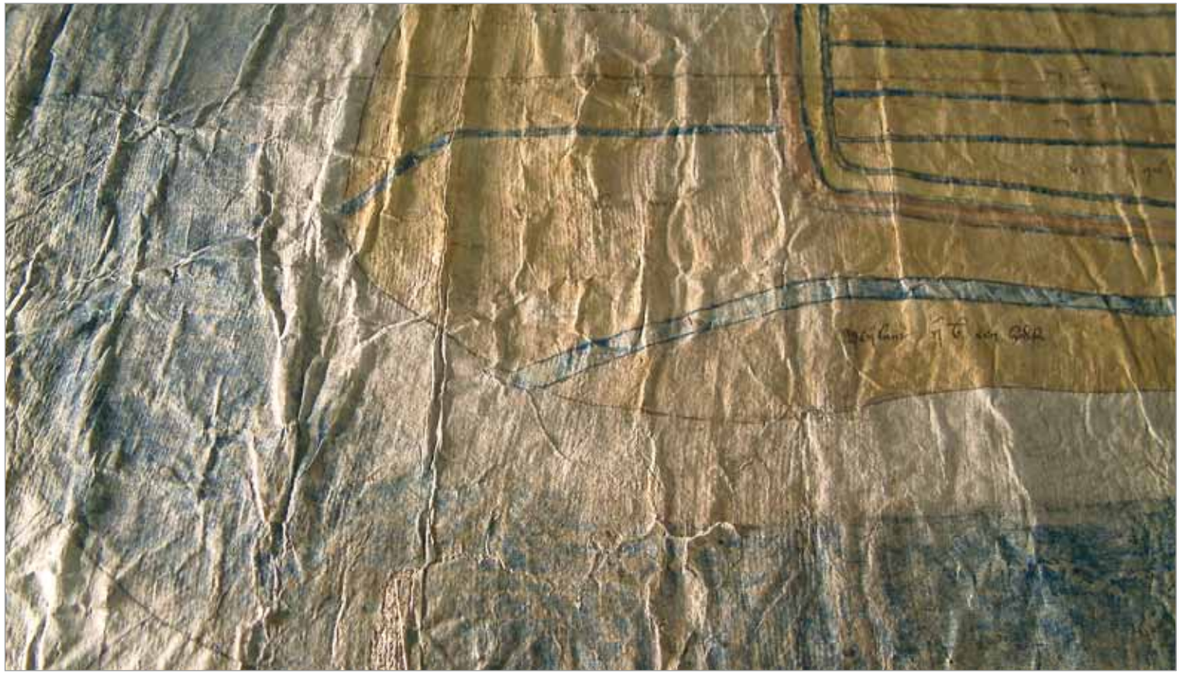
- Calamities such as flooding, breaks in the repository water pipes, fire extinguishing water and leaks.

Illustrations

Illustrations W1, W2, W3 and W4 show signs of general water damage. The archival document in Illustration W1 shows discolouration along the top, while the stains and discolouration on the archival document in Illustration W2 are mostly along the edges. These types of damage are considered slight. Illustrations W3 and W4 show water damage to the surface on the front and reverse of the object. The parchment became warped as a result of swelling. The moisture also created stains, and part of a sheet of paper stuck on the parchment when it was moist. Degree of damage: slight.

Because each type of material swells and shrinks in its own way, the use of different materials in one object can result in damage. Illustration W5 shows a map in which the various materials – the paper, the glue and the textile backing – have all been damaged by excessively humid storage.





W Felting

Felt feels soft and woolly. Paper, when affected by moisture, can deteriorate to such an extent that it feels like felt when you touch it. This explains the name given to this phenomenon.

Characteristics

The edges of the object are swollen, may look frayed and feel very soft to the touch.
The first stage of felting is only evident as a change in the way the edges feel. The sturdiness of the paper is gone and the paper feels soft and felt-like. At that point the damage is considered slight.
If the felting continues to the middle of the object, the damage is considered moderate.
In an advanced stage, the affected paper becomes very weak. When it is handled, parts will easily break off and holes may appear. In this case the damage is serious.

Causes

- Moisture can cause components of the paper, such as water-based glue, to dissolve and disappear.
- The swelling and shrinking of the fibres can lead to material transformation.
- Moulds may also be responsible for this type of damage. This occurs mainly if the paper is sized with animal-based size, such as gelatine.

Illustrations

Illustrations W6, W7 and W8 show severe damage caused by felting. The edges of the objects are frayed and parts of the objects are brittle.
Degree of damage: serious

Slight | Moderate | Serious ● | Code W | W6 - Felting

Slight | Moderate | Serious ● | Code W | W7 - Felting

Slight | Moderate | Serious ● | Code W | W8 - Felting

W Mould

Mould is a type of fungus. Mould spores are everywhere. Once they settle, the spores can germinate and grow into fungi colonies. The conditions necessary for this process are:

- Presence of a nutrient medium (paper, leather, palm-leaf or even parchment).
- Favourable temperatures (usually higher than 24°C, depending on the mould).
- High relative humidity (usually higher than 65%, depending on the mould).

Paper is an outstanding nutrient medium. Moulds thrive on paper, especially when the relative humidity is high. The cellulose of which the paper is made can be consumed by certain types of moulds. Many moulds on paper are surface moulds, which thrive best if the paper surface is somewhat acidic. Once the surface has been affected the moulds can grow easily, rendering the object irreparably damaged.

For the prevention and control of moulds, also see: Agnes W. Brokerhof, Bert van Zanen and Arnold den Teuling, *Fluffy stuff. Integrated control of mould in archives*, published by the Instituut Collectie Nederland, 2007.

Characteristics

Small spots and discolouration, comparable to foxing (see that section), and subdued coloured spots. The spots usually overlap. If the object is dry and is stored under the right conditions, the damage is considered slight.
Ultimately, moulds can lead to the decomposition of parts of the paper (resulting in holes or separated parts) and to felting. In the case of felting, the paper breaks down into its constituent components, with the cellulose left behind as 'fanned out' felt. This is generally regarded as serious damage.
If coloured spots are present on which fluffy 'growth' can be seen, the damage is considered serious.
Fungal spores can also be a health hazard.
For this reason, objects in this condition can be described as seriously damaged.

Causes

- Incorrect storage conditions in which the relative atmospheric humidity is high and the temperature is moderately warm.
- A calamity (flooding or fire extinguishing water) can cause an object to become moist and wet.

Illustrations

Illustration W9 shows discolouration and weakening of the paper caused by moulds. Degree of damage: moderate.
Illustration W10 shows a combination of types of damage: mould formation (red discolouration), felting and damage by insects (larvae passageways). Handling such objects will aggravate the damage. Degree of damage: serious.
Illustration W11 shows an extreme effect of the presence of moulds, here visible as multicoloured spots. The paper is so badly affected that felting has occurred and it has become brittle. Degree of damage: serious.
Another example of serious damage caused by moulds (and moisture) is shown in Illustration W12. Discolouration, felting and holes are clearly visible.

Slight | Moderate ● | Serious | Code W | **W9 - Mould**

Slight | Moderate | Serious ● | Code W | **W10 - Mould**

Slight | Moderate | Serious ● | Code W

W11 - Mould

Slight | Moderate | Serious ● | Code W

W12 - Mould

W Stuck sheets

The types of moisture damage already mentioned may also occur in combination. Other damage profiles are possible as well, such as sheets stuck together.

Characteristics

These are sheets that are stuck together due to excessive moisture.
Stuck sheets should always be considered serious damage. Attempting to access the sheets aggravates the damage.

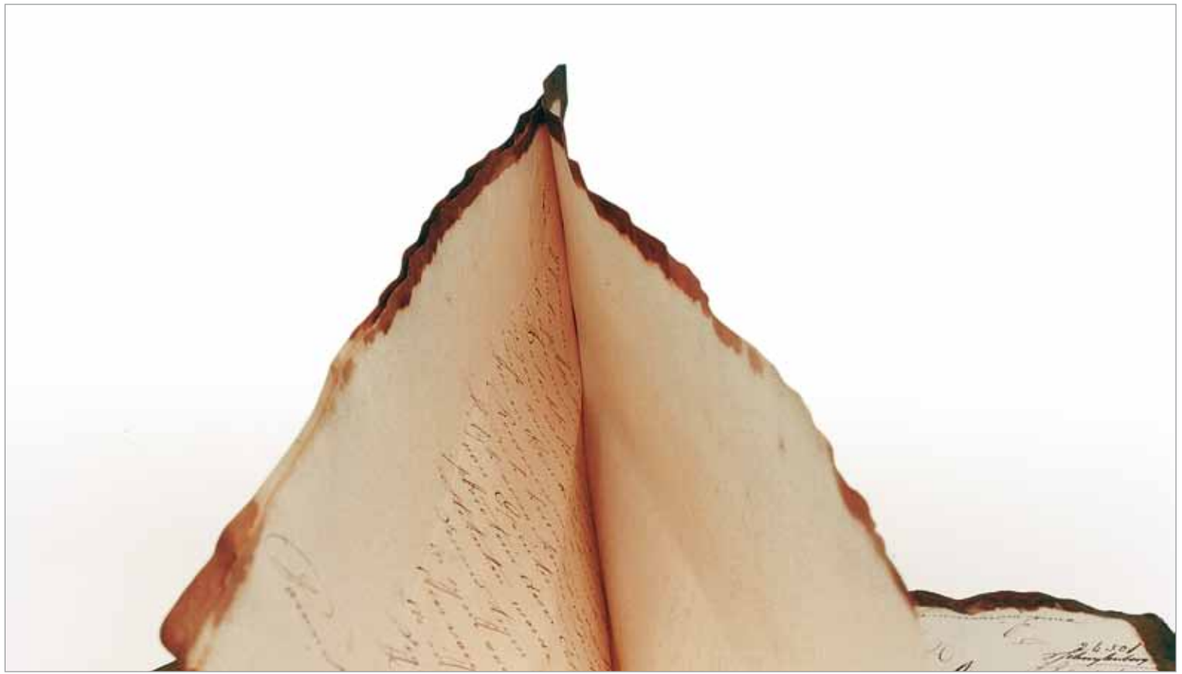
Causes

- The effect of moisture on paper can cause the elements used in the papermaking process to dissolve. When the bulk of the object dries, it is likely that sheets of paper will stick together. The dissolved material will search for the easiest way to dry and will adhere to both pages. As a result, the pages cannot be separated without force or the application of additional moisture.

Illustrations

Stuck sheets can represent the final stage of water damage. In the least serious case, only the edges of the sheets become stuck (Illustration W13). The objects can still be handled with great care, but they should not be made accessible.
Illustration W14 shows warping of the text block of a large volume as a result of water damage. The sheets are stuck together and accessing will cause further damage.
In an advanced stage, the object becomes one solid unit: all the sheets are stuck together (Illustrations W15, W16 and W17). In every case the damage must be considered serious.

Slight | Moderate | Serious ● | Code W | W13 - Stuck sheets



Slight | Moderate | Serious ● | Code W

W14 - Stuck sheets

Slight | Moderate | Serious ● | Code W

W15 - Stuck sheets

Slight | Moderate | Serious ● | Code W

W16 - Stuck sheets

Slight | Moderate | Serious ● | Code W

W17 - Stuck sheets

Glossary

Acidification

When paper becomes acidic, due to internal factors (including constituent components) and/or external factors (including the environment).

Alum rosin sizing

In 1806 papermakers discovered that when alum was added to paper pulp, the paper could be sized with rosin. This sizing is one of the factors involved in the current acidification of paper.

Archive

An archive is the sum total of archival documents, received or made up by one person, group of persons or organisation.

Boards

Flat, more or less stiff objects (about as large as a page and usually made from wood) that are applied to the front and back of a text block in order to protect it and which are hinged to the spine.

Bound object

A bound object contains a number of individual documents or sections that were originally separate and were sewn or bound together in book form.

Charter

A charter is a sheet of parchment on which a legal document written, which can be ratified by a seal.

Climate control

The possibility of controlling temperature and relative humidity within a repository.

Copper corrosion

Damage caused by cupriferous pigments.

Damage profile

Type and degree of damage to an archival document.

Document

A written or printed archival document.

Fluorescence

Property of certain bodies which, when exposed to light, radiate light themselves (of another colour). Active moulds on paper, for example, will radiate light in a whole range of colours under the influence of UV-radiation.

Foxing

Small flecks, usually light brown to black in colour, scattered over the entire sheet of an archival document.

Ink corrosion

Damage caused by the use of iron gall ink.

Joint

The hinge of a book by which the book can be opened.

Manuscript

An item that has been written by hand.

Mechanical adhesion

When torn or frayed parts of an object are stuck together as a result of use or violence.

Morphology

Study of the form and structure of organisms. Fibre morphology is the chemical structure of fibres.

Object

Each element in an archive or library that constitutes the collection.

Oxidation

The reaction of an element with oxygen.

Palm-leaf

Popular writing medium in South and Southeast Asia. The leaves of several types of palm (e.g. lontar, palmyra, talipot) were used for creating manuscripts. Several palm-leaves were often bound together into a ‘book’.

Portfolio

Two flat sheets of cardboard, connected to each other along one side and with a means to tie the object close on the other so papers can be stored between the sheets of cardboard.

Raised bands

Raised ridges in the spine covering that run across the spine of a book.

Section

Collection of one or more folded sheets, placed together in such a way that the spine folds together form a single fold. A number of sections can be sewn together to form a text block.

Sewing support

An element placed across the book spine that is integrated into the sewing structure and forms the connection between the text block and the binding.

Sewing structure

The threads by which the sections are assembled to form a text block.

Spine

The part of a book where the sheets are fastened together.

Spine lining

Piece of flexible material that is sewn or glued to the spine before the spine covering is applied.

Support

Object that bears or supports something. In the case of an archival document, map or print, the paper or parchment is the support for the text, drawing or illustration. In a painting, the panel or canvas is the support for the paint of the composition.

Text area

The part of an archival document that is written or printed on.

Text block

The unit of properly arranged sections, including any attached or inserted elements, that are or will be sewn together to make a book.

Tracing paper

Paper that has been made translucent by milling or impregnation and is usually used for technical drawing. A drawing thus made then serves as the original for reproduction.

Volume

A volume is a number of bound sheets or sections, sewn together in book form.

COLOPHON

Archives Damage Atlas

A tool for assessing damage

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