The maintenance of the historical photo collection at the department of Physical Geography and Quaternary Geology

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Introduction

The department of Physical Geography and Quaternary Geology at Stockholm University possesses a photo collection from the early scientific expeditions to the arctic regions such as the Swedish–Russian Arc Expeditions (Gradmätningsexpeditionerna) from 1898 to 1902, Hans W:son Ahlmann's work in Spitsbergen during 1931 to 1934, and pictures from the Swedish mountains by Fredrik Enquist from 1910 to 1918 and by Arvid Odencrants in 1922.

The photo collection consists of different kinds of film types. The two predominant types are black and white negatives of nitrate based film and negatives of glass plates. The largest nitrate negatives are 13x18 cm and the size of the largest glass plates is 18x24 cm. These sizes of negatives are extremely rare. The sharpness and resolution in the negatives are excellent.

The collection was recently found to be in a serious condition. In order to stop, or at least reduce the ongoing disintegration of the negatives, intense work was immediately started. Curators of historical photography were consulted. The priority was to immediately change the environment around the negatives in order to stop further degeneration. Next step in the process is to make the photos available for research. Either by making paper copies of them or by digitising the negatives in a scanner. The third step includes restoration of the negatives. The restoration of the negatives has to be performed by curators in order to secure the quality. At present we still work with changing the environment around the negatives. Due to the conditions of the negatives none of the photos are available at present, except for some existing older paper copies.

Present state of the negatives

The damage to the nitrate negatives consists mainly of changes with age of the film emulsion, resulting in a faded picture. The negatives have previously been stored in close proximity with each other so the change due to ion transportation appears as colour phenomena on the negative. Fingerprints on the nitrate negatives affect the emulsion and corrode it.

The glass plates have until now been stored together in their original boxes or in envelopes (figure 1). Between the glass plates there was a shelter paper to protecting them from abrasion. This protection paper caused most of the damage on the negatives in the form of extensive ion transportation in the emulsion. Visually, the ion transport is shown as colour phenomenon from silver to a rainbow colour shade. The glass plates stored without shelter papers show no destruction. Some of the glass plates are broken. The fingerprints on the glass plates strongly affect the emulsion and corrode it. It is also possible to see some ion transportation in the old fingerprints.

Change of the environment around the negatives

As the collection consists of both nitrate and glass plate negatives, the treatment of the negatives differs.

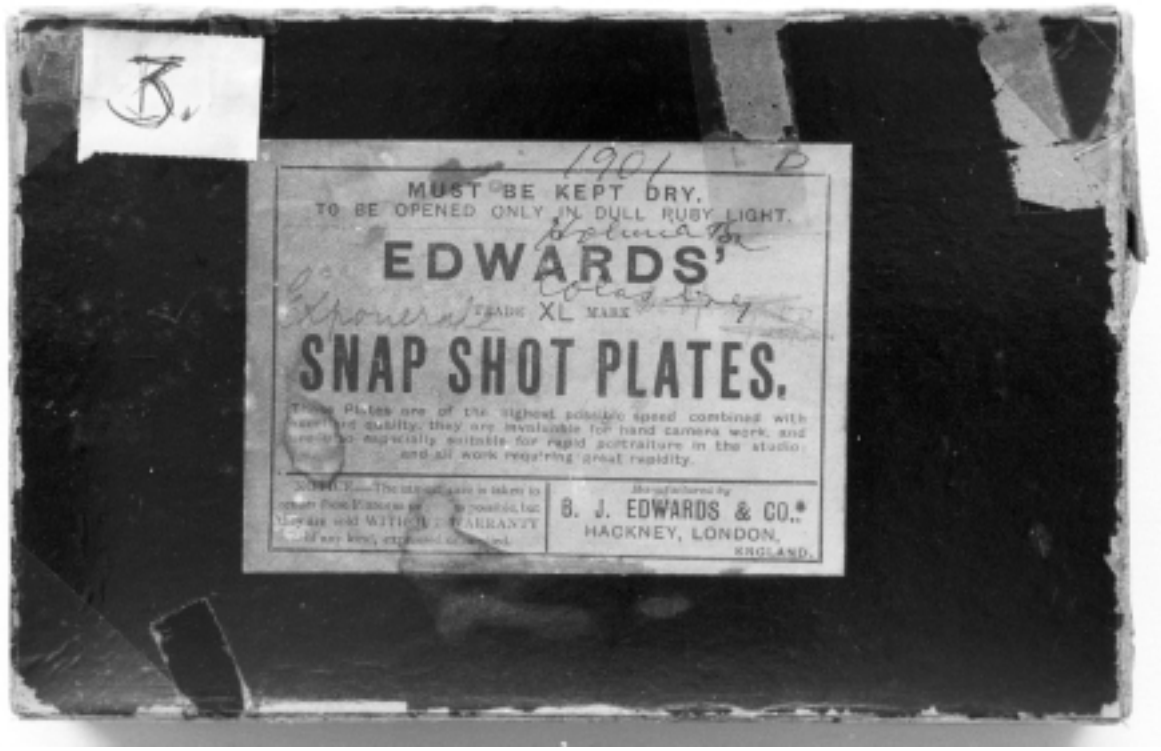

Figure 1. An original glass plates box from 1901. Photo Per Klingbjer.

The nitrate negatives are flexible and correspond to modern material used in black and white negatives. Because of the risk for spontaneous ignition of the nitrate negatives, they have to be kept in open envelopes with high durable chemical bonded fibres to counteract the ignition. They also have to be stored in uncovered steel boxes because of the fire risk. The long-term storage conditions should be dark and cold in order to preserve them for the future as much as possible.

The oldest part of the collection consists exclusively of glass plate negatives. The glass itself is extremely fragile and moreover the glass plate was manufactured as thin as possible to decrease the weight. All the glass plate negatives have to be kept in a standing position one by one in archives folder made by cotton fibres. The cotton fibres have a minimum affect of the film emulsion. The long-term storage conditions in this case are also dark and cold in order to conserve them for the future as much as possible.

Durability of the negatives

Due to the different film bases on the negatives, the long-term durability differs quite significantly.

The nitrate negatives will fade and decompose and this process is inevitable. It is not possible to prevent this, but the process can delayed substantially with favourable long-term storage conditions. These negatives will end up in unusable condition in the future. One package of measures is to make duplicates of the negatives before they are completely destroyed.

The glass plate negatives are just the opposite in all aspects. When all other film bases including modern ones will fade away, the quality of the glass plate negatives are exceptional because of the combination of the emulsion composition and the stable glass material. If the environment around the glass plates is optimised, the brilliance of the negative will remain intact in the future.

Photo gallery

In the following selection of photos (Figures 2-9), we show examples from the two predominant film types. Figures 2-5 are examples from Fredrik Enquist's nitrate negatives taken in the Swedish mountains at 1910. Figures 6-9 are examples of glass plate negatives taken during the Swedish–Russian Arc Expeditions in Spitsbergen.

Figure 2. Fredrik Enquist in Ladtjovagge, Kebnekaise 1910. Nitrate negative.

Figure 3. Mapping the terminus of Björlings glaciär in 1910. The Sami is most probably Petter Haugli from Nikkaluokta. Nitrate negative.

Figure 4. The front of Björlings glacier from the southwest slope of Kebnekaise in 1910. Nitrate negative.

Figure 5. The soapstone quarry in Handöl in 1910. Nitrate negative.

Figure 6. The expedition ship "Antarctic" at Spitsbergen during the Swedish–Russian Arc Expeditions in the summer of 1901. Glass plate negative. Photo Gerard De Geer.

Figure 7. This is probably Gullfaksebreen in the Lomfjorden at Spitsbergen in 1901. Glass plate negative.

Figure 8. A visit in the late summer of 1899 to the Swedish winter station of the Swedish Arc of Meridian Expedition at Sorgfjorden at Spitsbergen. The person in the middle of the boat is probably the expedition leader Edvard Jäderin. Glass plate negative.

Figure 9. A situation picture from one of the ships during the Swedish–Russian Arc Expeditions 1899 - 1901. The photo is probably from 1899. Glass plate negative. Photo Gerard De Geer.