

ANNA DRAŻKOWSKA

CONSERVATION OF TEXTILES EXCAVATED FROM POLISH OFFICERS' COLLECTIVE GRAVES IN KATYŃ AND KHARKIV (RUSS. KHARKOV)

Katyń has been for years a symbol of thousands of Polish officers' murdered beyond the eastern border of Poland martyr's death. Various execution places of unknown localization were termed with the name of that small locality. Successive mass graves were disclosed not before 1991: in Mednoye – of prisoners held under arrest in Ostashkov, and in Kharkov where bodies of the officers imprisoned in Starobielsk reposed. All these crimes were committed basing on one decision of the Central Committee of the Communist Party of the Soviet Union (CC CPSU) from 5th March 1940. They horrify with atrocity and ruthlessness the more so because they were performed on unarmed war-prisoners. Since new facts concerning Katyń crime were discovered, new efforts for executions' localities commemorating in form of Polish war-cemeteries have been undertaken. As soon as international agreement with Russian Federation and Ukraine on memorial places of burials, wars and repressions was signed, initial works, ante-ceding erection of cemeteries, began¹. In 1994 probing-exhumation proceedings started in Katyń and Mednoje, and similar actions were undertaken in Kharkov one year later (Fig.1). After opening graves, it became evident that they contained numerous objects belonging to assassinated officers. Materials bearing the stamp of very serious destruction were returned back to the earth – to the same trenches in which they were found. The remaining part was preserved and prepared for transporting to Poland. Conservation of thousands of objects was carried out in private conservation studio in Toruń.

Besides daily utensils and military equipment's elements a great collection of textiles was obtained from the graves. They were clothing's fragments, uniforms, shirts, underwear, head gears (field-caps, berets, four-cornered caps), shoulder-straps, handkerchiefs and single objects: greatcoat, overall, cassock, tie and arm-band with medical service emblem.

Clothing's elements made of knitted fabric, fragments of sweaters, socks and scarf (muffler) were also found.

¹ A. Przewoźnik, *Zaawansowanie prac nad upamiętnieniem ofiar Zbrodni Katyńskiej*, [in:] *II półwiecze zbrodni. Katyń – Twer – Charków*, „Zeszyty Katyńskie”, nr 5, ed. M. Tabaczyński, Warszawa 1995, pp. 98-104.

Great variety of clothing forms involved considerable raw-materials' differentiation. Several sorts of textiles of which particular clothes were made, among others: uniform cloth, thicker coatings, linen, cotton and silk were distinguished in this group. Hemp strings with which officers' hands had been tied were also subjected to conservation. Conserved textiles had different sizes, thickness, texture and color. State of their preservation and degree of particular objects' impurity were also differentiated. Ten to twenty historic textile objects from Katyń and 70 items of clothing (about 200 textiles fragments) from Kharkov underwent conservation. Conservation and reconstruction of clothing was carried out by conservators Anna Drażkowska and Małgorzata Grupa from the Institute of Archaeology Nicolaus Copernicus University in Toruń.

Textile objects of historic heritage obtained from the graves of Polish murdered officers were in very bad condition; destructed and highly contaminated with organic substances deriving from bodies' decomposition. They were covered with wax-fat substance² mixed with sand and clay, which deeply penetrated into their structures and filled all spaces between fibers (Fig. 2, 3). Besides, the textiles were intensely soiled, some of them discolored. Mechanical damages: frays, tears, creases and holes were also noticeable on them. Great damages on shoulder-straps and epaulettes filled with embroidery were also observable. Embroidery had been made of metal thread: thin metal band (wrap) was wrapped around cotton fiber. It crumbled and peeled off as a result of corrosion. Textiles from Katyń were less resistant to mechanical factors because after being excavated from graves they got dried.

The textiles' state of preservation and type of impurities pointed out subsequent conservators works' stages. First excavated textiles had to be subjected to initial disinfecting

² Wax-fat transformation occurs during decomposition of human body. The chief point of the transformation is transition of free non saturated fatty acid into saturated stable acid. It takes place after hydrolysis of body fat. Analyses proved, that fat-wax is water insoluble calcareous- magnesium soap. A. Jakliński, Z. Marek, *Medycyna sądowa podręcznik dla prawników*, Kraków 1996, p. 110. It forms hard-plastic substance of white-yellow color. Bodies subjected to such changes keep their shape and facial features.



Fig.1. Wet grave in Kharkov inside.



Fig.2. Uniform jacket of general, view after excavation, soiled with wax-fat substance.



Fig.3. Uniform jacket of general soiled with wax-fat substance, close view.

in order to ensure conservators to approach work safely. First disinfecting was performed immediately after excavating the historic objects from the graves. However, the appropriate preservation of textiles against fungi, bacteria and insects was carried out not sooner than after cleaning the objects.

After initial disinfection the longest stage of works started – cleaning the textiles. The most difficult task for conservators was to remove wax-fat substance³³ from textiles. The duration of cleaning treatment depended on: an object's state of preservation, its size, level and kind of contaminations and also kind of textile, which the object was made of. Historic objects from Katyń as a result of rapid water evaporation lost their resistance to mechanical factors and became dry, fragile and breakable. Therefore, conservators desisted from dry cleaning treatment, and firstly an attempt at giving elasticity to the fibers was made. Initially, unfurling and unbending clothing fragments until the fibers regained more flexibility, was also delayed. The material was gradually moistened with water solution of



Fig.4. Uniform jacket of general after conservation.

³³ A. Drażkowska, M. Grupa, *Uwagi o konserwacji przedmiotów znalezionych w grobach oficerów polskich w Katyniu i Charkowie*, [in:] *Zbrodnia nie ukarana. Katyń-Charków-Twer*, ed. M. Turczyński, Warszawa 1996, pp. 78-90.

PEG 200 or PEG 300 until finally wet textiles were entirely immersed in this solution. For several months the materials were subjected to static bath in temperature from 30°C to 35°C. When they regained the elasticity, starting their cleaning became feasible.

Textiles from Kharkov owing to the fact of being packed into plastic bags were delivered to the conservator's studio wet, therefore it was possible to begin preparations to their cleaning immediately. Before setting about fibers' surface cleaning, all elements made of other materials e.g. plastic or cardboard stiffeners of caps, metal badges (eagles), uniform buttons or stars on epaulettes were separated. Metal objects' conservation was performed separately to enable stitching them again to their right places in course of doubling.

Wet textiles manifested better resistance to mechanical factors, therefore immediate surface cleaning starting was possible. The treatment started with plunging an object in a tank filled with warm water and detergent dissolved. Thick, greasy, and nasty smelling coating formed on water surface immediately. When wax-fat layers became very thick, they were removed using flat spatula. The impurities were delaminated and fluffed by applying dynamic bath. Running water helped to rinse them out. Cleaning was hastened by adding to the bath delicate surface-active agents, that made dissolving greasy dirt easier. Impurities were also removed mechanically with brushes, soft brushes and needles. Wax-fat substance cumulated particularly in pockets, under uniforms' lining, in shoulder stiffeners, seams and free spaces, which were formed in effect of textile bending.

When fibers were uncovered from under the wax-fat layer, 10% PEG 200 (polyethylene glycol) was added in order to make them more flexible. Conservation soap softening dirt was also applied. Some fragments of clothing had to be ripped in order to perform cleaning treatment thoroughly and properly, because sewn and folded nooks and corners cumulated contaminations, particularly wax-fat (adipocere) substance. Therefore cuffs of uniform jackets' finishing lining, greatcoats' linings, backstitches of caps' peaks and pockets were ripped off. The decision to unpick stitched clothing's fragments was undertaken, because after several months of cleaning white impurities being the evidence of greasy wax-fat substance depositing in those places were still impossible to remove. Seams were ripped using lancet, being cautious not to cut weakened textile. During greatcoat cleaning, for instance, which lasted several months all stiffing and warming elements were removed, as in stiffener and wadding wax-fat substance was cumulated in greatest amount.

Another serious problem was also to clean the textile from impurities generated by corrosion of metals. They formed compact, stiff stratifications stuck among fibers. Metal corrosion products became catalyst of textiles' destruction. Removing these combined products turned out to be very difficult. They had to be cleaned out to avoid serious interference into the object. Efforts were made to soften

contaminations by immersing textiles in PEG 200 water solution, and spots, where corrosion coating was very thick compresses of citric acid were applied. After these treatments the objects went to dynamic bath to rinse all used substances out.

Efforts were made, in course of cleaning, to free the object from dirt layers packing their surfaces. This operation was done as precisely as it was possible in order to prevent causing further destruction by sediments left and also their becoming medium for microorganisms. Binocular microscope was used to evaluate precisely the level of soiling. All treatments were repeated many times. It often happened that subsequent conservation's stages started, although the cleaning process was not completed yet. In these instances cleaning was continued after the object's disinfecting and impregnation, but still before beginning reconstruction. Wax-fat substance, which had not been removed successfully in course of cleaning and remained in spaces between fibers became clearly visible after impregnation and drying. It migrated to the surface together with evaporating dissolving agent making composition with impregnating agent or with evaporating water.

It generated bright greasy spots and over-colorings. They were mechanically removed with brushes and needles. Finally textiles were pressed with warm iron through thin absorbent paper or damp cloth. It made possible to extract most of those greasy spots. Only after these treatments completion, did the clothes' doubling and reconstructing clothing start.

Removing soils from among metal threads of embroidery on shoulder-straps and epaulettes (Fig. 3) was long lasting and very laborious. Metal threads, which as a result of long deposition in the earth and contact with decomposing bodies suffered partial destruction were low resistant to mechanical factors. Textiles with embroidery were cleaned using the same method as to those textiles without decorative elements described above. First they were plunged in dynamic bath reinforced with delicate detergents dissolving fat. Detergents were to soften or dissolve layers, which made removing them easier. Additionally impurities were removed from between threads using needles but very carefully in order to avoid damaging threads. These treatments were repeated many times. Embroidery was also cleaned in ultrasonic rinsing machine⁴⁴. The textiles were plunged into the machine and subjected to minimal vibrations. Surface-active agent dissolving fat was added to the bath. The textiles were very attentively observed after each rinsing cycle to determine the proper time of treatment completing. The bath in the ultrasonic rinsing machine afforded very good results. Method of removing contaminations using ultrasonic rinsing machine

⁴⁴ A. Drażkowska, *Problemy konserwacji elementów pa-smanteryjnych wykonanych z nici metalowej*, „Prace i Materiały Muzeum Archeologicznego i Etnograficznego w Łodzi”, Seria numizmatyczna i konserwatorska, 2007, nr 13, pp.131-141.



Fig.5. Shirt after conservation.

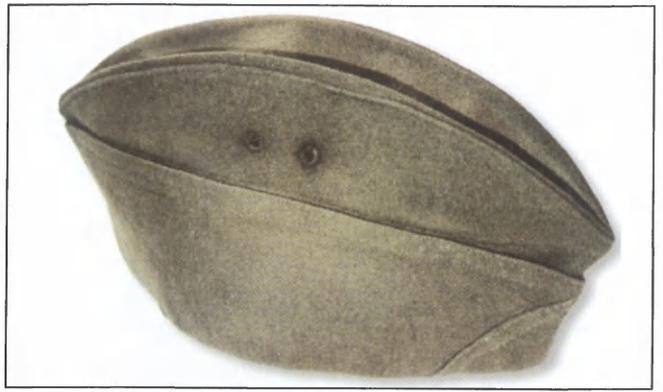


Fig.7. Soldier's field-cap after conservation.



Fig.8. Cassock after conservation.



Fig.6. Soldier's four-cornered cap after conservation.

should be applied very cautiously because it can lead to metal thread and textile destruction! It can be exercised for a very short time only for textiles and embroidery relatively well preserved!

After cleaning treatment the textiles were disinfected again with solution of PCMC in methanol. Some of them

were additionally disinfected in gas chamber. Next stage was impregnation.

Impregnation treatment consists in inserting to textile's structure a composition strengthening fibers and simultaneously protecting them from destructive activity of external factors. Substances used for textile should first and foremost

meet the following requirements: increase textiles' resistance to mechanical factors, protect materials from external factors, give elasticity to fibers, penetrate well spaces between threads not causing changes of their color, resistance to aging processes and, what is very important, the impregnating substance should be easy to remove.

To strengthen and preserve textiles from Katyń and Kharkov a composition consisted of: PEG 300, methanol, Paraloid B 72 and toluene was applied. Impregnating agent was brushed on the textiles with soft brush to cover all their surface thoroughly. After completing this operation all textiles were wrapped up tightly into plastic bags and put aside to let them dry slowly. During this process it was essential that impregnating agent's evaporation should progress very slowly, under strict control. That was from fear that evaporation of dissolvent might cause impregnating agent's migration from inside textile's structure onto the surface. If such an event occurred, strengthening substance would not serve the purpose and the object would still remain susceptible to mechanical factors. After several weeks the textiles were taken out from plastic bags and placed in exiccator, where drying process was continued. Doubling and reconstruction of clothing started after accurate textiles pressing. Doubling consists in reinforcing old archaeological textile with new material. It completes losses and fastens together fragments of weakened fibers into the whole. However, the main task of doubling material is counterbalance of old fibers and take over their bearing function⁵.

The decision to double some of Kharkov textiles was taken up because of intention to strengthen weakened fibers, and also on account of prospective exhibitions plans, whereas textiles from Katyń were preserved in too small fragments, which were not sufficient base for making reconstruction.

While deciding to reconstruct preserved clothing's fragments, peculiarity of their place of origin (mass graves)

and their future role (prospective exhibition in museum show-cases) were taken into account. Objects excavated from graves of murdered Polish officers are the evidence of cruel crime and should be an admonition for future generations. Objects qualified to doubling (replication) and reconstruction included: field-caps, berets, four-cornered caps, uniform jackets of a captain and of a general, cassock, shirts, winter military greatcoat (Fig. 4, 5, 6, 7, 8). Material used for doubling besides strengthening old textile simultaneously completed losses in its structure. It became evident, that at the time when conservation of textiles from Katyń and Kharkov was carried out (in 1995-2000), the most serious problem was to find suitable glue (adhesive). Adhesives for textiles accessible on the market in that period were used. Then, patterns were made on the base of preserved parts of clothes and lacking elements were reconstructed after the patterns. Next, the doubling material was covered with glue and historic textile was stuck to its surface. Under the influence of heat glue became sticky (adhesive) and joined both textiles together. The glue used at that time was not much economical, but served all technical requirements⁶. It was easy to remove, when necessary, did not leave impurities and did not cause textile stiffening. Afterwards both textiles were sewn together along joining edges and all subsequent clothing's constructive elements were completed.

Thanks to performed treatments textiles were cleaned, disinfected and strengthened and complete garments were reconstructed. All objects excavated from officers' graves were transported after conservation to the Museum of Katyń in Warsaw and displaced in permanent exhibition. Ten years have passed since the date of last conservation works. From the retrospective point of view we can positively estimate the methods applied by conservators. Practiced agents have served the purpose and properly protected the textiles.

Translated by Ewa Józefowicz

Streszczenie

Przez lata Katyń był symbolem męczeńskiej śmierci tysięcy polskich żołnierzy, pomordowanych za wschodnią granicą. Nazwą małej miejscowości określano różne miejsca kaźni o nieznanej lokalizacji. Dopiero w 1991 roku ujawniono kolejne mogiły zbiorowe: w Miednoje, gdzie spoczywają jeńcy przetrzymywani w Ostaszkowie oraz w Charkowie gdzie złożono ciała oficerów więzionych w Starobielsku. W 1994 roku rozpoczęto prace ekshumacyjno-sondazowe w Katyniu, Miednoje oraz w VI strefie leśno-parkowej w Charkowie. Po otwarciu mogił okazało się, że zawierają one liczne przedmioty należące do pomordowanych oficerów. Materiały charakteryzujące się bardzo zaawansowaną destrukcją trafiały z powrotem do ziemi do tego

samego wykopu. Pozostałą część zabezpieczano i przygotowywano do przewiezienia do Polski. Konserwację tysięcy przedmiotów wykonano w prywatnej pracowni w Toruniu. Konserwację tkanin i rekonstrukcję odzieży przeprowadziły konserwatorki Małgorzata Grupa i Anna Drażkowska z Instytutu Archeologii UMK w Toruniu. Oprócz osobistych przedmiotów codziennego użytku i elementów wojskowego ekwipunku z grobów wydobyto duży zespół tkanin. Były to: fragmenty odzieży, mundury, koszule, bielizna osobista, nakrycia głowy (furażerki, berety, rogatywki), pagony, chustki do nosa oraz przedmioty jednostkowe: płaszcz wojskowy, kombinezon, sutanna, krawat i opaska na rękę z emblematem służby medycznej. W grobach znaleziono

⁵ W. Ślesiński, *Konserwacja zabytków sztuki*, t. 3, Rzemiosło artystyczne, Warszawa 1995, p. 72.

⁶ At present, however, acrylic glue 498 HV (Lascaux) is recommended for doubling.

także elementy odzieży wykonane z dzianiny: fragmenty swetrów, skarpety i szalik. Zabytki tekstylne wydobyte z grobów polskich, pomordowanych oficerów były w złym stanie. Były zniszczone i silnie zabrudzone substancjami organicznymi pochodzącymi z rozkładu ciał. Pokrywała je wymieszana z piaskiem i gliną masa woskowo – tłuszczowa, która wniknęła głęboko w ich struktury i wypełniła wszystkie przestrzenie między włóknami. Poza tym tkaniny były silnie zaplamione, niektóre spłowiałe. Widoczne były na nich także uszkodzenia mechaniczne: przetarcia, rozdarcia, zagniecenia i dziury. Stan zachowania tkanin i rodzaj zabrudzeń wyznaczyły kolejne etapy prac konserwatorskich. Najpierw należało wydobyte tkaniny poddać wstępnej dezynfekcji, tak żeby konserwatorzy mogli bez obaw przystąpić do prac. Pierwszą dezynfekcję przeprowadzono od razu po wydobyciu zabytków z grobów. Właściwe zabezpieczenie tkanin przed działaniem grzybów, bakterii i owadów przeprowadzono jednak dopiero po oczyszczeniu obiektów. Po wstępnej dezynfekcji przystąpiono do najdłuższego etapu prac – do oczyszczania tkanin. Najtrudniejszym zadaniem konserwatorskim było usunięcie z tkanin masy woskowo-tłuszczowej. Czas trwania zabiegu oczyszczania uzależniony był od: stanu zachowania obiektów, od ich

wielkości, od stopnia zabrudzenia i rodzaju zabrudzeń oraz zależał także od rodzaju tkanin. Oczyszczanie przyspieszono dodając do kąpeli delikatnych środków powierzchniowych, które ułatwiały rozpuszczanie tłustych zabrudzeń. Zanieczyszczenia usuwano również mechanicznie szczoteczkami, pędzlami i igłami. Gdy spod warstwy woskowo-tłuszczowej odsłaniano włókna do kąpeli dodawano w celu ich uelastycznienia 10% PEG-u 200 (glikolu polietylenowego). Po zakończeniu zabiegu oczyszczania tkaniny ponownie zdezynfekowano roztworem PCMC w metanolu. Po dezynfekcji przystąpiono do impregnacji. Do wzmocnienia i zabezpieczenia tkanin z Katynia i Charkowa użyto kompozycji składającej się z: PEG 300, metanolu, Paraloidu B 72 i toluenu. Zdecydowano się na zdublowanie niektórych tkanin z Charkowa ze względu na konieczność wzmocnienia osłabionych części włókien oraz planowaną działalnością wystawienniczą. Dzięki podjętym staraniom tkaniny zostały oczyszczone, zdezynfekowane i wzmocnione, a odzież zrekonstruowano. Po zakończeniu konserwacji wszystkie przedmioty wydobyte z mogił polskich oficerów trafiły do Muzeum Katyńskiego w Warszawie i zostały tam wyeksponowane na stałej wystawie.

