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# HISTORY OF PAPER PRODUCTION IN CENTRAL ASIA

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Engineering, technology, and technical ways of producing handcrafts have been poorly investigated. Thus, the solution to these problems plays a great role in the study of economical structures of feudal society in Central Asia. Some information, concerning the technology of making paper – one of the developed, industries beginning with the early Middle Ages, gave the opportunity to re- constitute the process of making writing – paper and needed equipments.

The description of the paper-making, given in Razvadovski's, Grigotyeva, and others' work gives a chance to present a whole technological process, based on the well-known simple appliances.One of the important technical processes of making paper is the preparation of paper mass and the cast of paper. As for the method of making an old Samarkand paper, we can learn from the data that trace back to XI Century. The author of it is considered to be Zidiyski sultan al-Mu'izz b. Radis or his son Tamim.[1] We have every reason to suppose that the methods of making paper, be it in Central Asia, or other eastern countries, were thus similar.

The content of the given work shows that the anther describes the process of making writing paper in one of the Arabic countries. According to A.B.Halidov's view the method of making writing paper, beginning with the Chinese method, has not changed much, and he is right to call the manufacture of paper Chinese- Samarkand.[2]

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[1] Umdad al-kuttab va uddat zavi-al-albab, al-mansub li-l mu'zz b.Badis (457h.). Ma'had al, makturat al-arabiya.
[2] A.B.Halidov. Arabic Manuscript Tradition. Moscow. 1985.

The author of the work describes the process of making paper in the following way: “They take an excellent Syrian hempen rope, untwine all strand and comb till it becomes soft. Then they take lime mortar and put hemp fibre in it for a night, they knead with both hands and lay out in the sun to dry it. Then they put this mass into lime milk and let it stay in it a night again. The next day knead it and lay out in the Sun for the third time. They dry it three or more times, better 5-7 days while milk can be renewed (even twice a night). When the whitening is finished, they cut the mass into pieces with scissors and put into fresh water for 7 days and the water is renewed every day. When the constituent parts of lime disappear in the mass they ground it in the mill, keeping it fresh and raw. When it is soft enough without any nods and dry they dissolve it in water again, in a clean dish, till it becomes silky. Then they use this form to cast, prepared from reed, the size depends on the needed size of paper. Ready mass is grinded in a big vat, till it is completely made small, then they dip the form to distribute it equally. The constituent form is turned inside out to the board and lean against a clean smooth wall till it dries and comes out”.

We can see that the description of the recipe for making old paper of XI Century, which is the only or at least the complete recipe of making paper, is not reliable now to reconstitute the secret of old high-quality paper. The description shows that the process of making paper was elucidated not by the master but by the observer. This conclusion was reached on the basis of the research done by Martin Levis, Karabachek, and Endris that said the composition was written by sultan Mu’izz b.Badi or his son Tamim. Probably, the author of the treatise either has observed how to make paper or a master has told him. In both cases the author made nuances which are of no small importance in making paper. First, the author writes that after the hemp fibre is softened in lime mortar it is mixed with hands. But, in our opinion, any master must have known that it should not have been done this way. The master should cover his hands or mix it with an instrument as the slaked lime can eat away hands. Secondly, one of the important moments in the process of making writing paper is the determination of readiness of paper mass before casting. This moment is not mentioned. Thirdly, the process of paper casting, which is the most complicated operation in

making paper, is unfortunately not described by the author. Only one sentence is given: "If it is done well, then the mass is let to stay till it is ready".

In spite of the fact that this treatise is not written by the master, it is valuable information for researchers, and it expands our knowledge about making old writing paper. Kokand paper that came into use instead of the famous Samarkand paper was of a completely different view. It had no "warmness" or pleasure to the touch. Having good quality Kokand paper – good polish, durability, general good qualities, it was rough and translucent. However, thick, top-quality Kokand paper was of high-quality. Besides the monotony of the material used to make Kokand paper, its roughness and the lesser quality in comparison with Samarkand paper can be explained in the primitive process of making it, given in the literature. Some parts of this work include ethnic materials which are of great value for our theme. More clear descriptions of the methods of making Kokand paper can be found in A.A.Semenov's work. In the pre-revolutionary and Soviet investigations, the techniques of making Kokand paper are presented in the following manner. Raw material for paper, old rags, and wadding from old blankets or gowns were brought to paper workshops, which are called "plants". In the plant everything was sorted with white rags being separated from colourful rags. The former were used to make boxes, while the latter were for writing paper. This kind of sorting of rags was used to convert it into a special crush of mass that essentially was like rice crush. It is known that in early times paper in Central Asia was made in dzuvaz-i kogazah – in special crushes, in books known as "paper" mills. The fibre mass was ground in it, then it was used in making paper. The workshops for manufacturing paper were usually near the mills called "korhona".[3]

References to korhona are found in the documents of the XVI Century. They state that from dzuvoz-i kogaza, where the fibre mass was produced, the fibre mass was transferred to workshops.

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[3] Detailed description of "Korhona" and "Dukan" see in the work of R.G.Muminov "History of Craftsmanship in Samarkand and Buhara in XVIc." P.P. 179-185.

Paper crush consisted of iron, wood, and stony equipments. In the workshop "Korhona" there were two rolling machines. Accordingly, from dzuvaz-i kogaza the fibre mass was given to korhona, and here it was turned into sheets of paper using rolling machines. According to the investigators of XIX$^{th}$ and the beginning of the XX$^{th}$ century, common paper crush had two pestles which were put in motion with a special shaft. The rotation of wheels was done by pouring water into its paddles – not roughly and not fast as in mills, but quietly providing steady rotation of shaft, as A.A.Semenov writes. Old rags, about 32 kg., were put to mortars of pestles and were poured with water. Reupholstered with pestles the mass was washed, then was wrapped into linen and wrang out with a press. Then the mass was put again under pestles, and it was mixed with potash or alkali and slaked lime adding water. After an hour, it was taken out and put under the sun: in summer on hot days for 4 days, in autumn for 8-10 days, and in winter for a month. Subjected to chemical actions of potash and lime, the mass obtained a light-grey colour. At the end of the process, the dirt in the rags was washed, while the colour of the cloth faded.

In books the amount of rags, potash is given in relation to the lime. Usually for 80 kg. of rags, 32 kg. of potash and 16 kg. of slaked lime was used. The given quantity was divided into two and used twice. There is another proportion of it: for 96 kg. of rags 24 kg. potash and 2.4 kg. lime were added. The decoloured and skimmed mass was again put under pestles for ten continuous nights while mixing with water. Afterwards, the mass was removed, washed and wrang out. Dissolved mass in water had the appearance of starchy jelly and after wringing out it was mixed with potash and lime, moistened in water, and laid out under the sun. Then the mass was put again in paddles, gradually mixed with water, and pounded during 15 round the clock. The readiness of paper mass was known as this: they grasped fibre mass and if the fibre stuck to the fingers, the mass was considered not ready, and they continued the process untill it was ready. Afterward, the mass was wrang out and laid on wooden boxes.

In other way they prepared the mass out of 16kg. rags and 409gr. lime, they pounded three days and then mixed vitriol and pounded for

two days again. Afterwards, they added tuhmak-yellow paint of vegetable origin.

This was taken from unbloomed flowers, which were picked, dried, and used as a paint. “In the first years of Russian expansion in Central Asia ‘tuhmak’ was rare in Samarkand, where there were only four trees, but in Fergana and in Hogzikent it was a lot. ‘Tuhmak’ gave the paper a little yellowish tone. Sometimes they add ‘shirash’ in to mass – the root pounded into small powder ‘Shirash’ was found in Kizil-Kum and ‘Tashkent”. The Ready mass took out and put on ‘hum’ – a big pan and poured it with water. The difficult work begun at this stage. A worker was supposed to climb into the pan in order to trample down the mass. According to the tradition, he was supposed to knead the mass with his feet five thousand times**.**

From the big pan, the paper mass was replaced into setted on the floor pool (kuduk) with clean water and diluted with special one with a churn-staff (seshah). The mass was usually shaked with a churn-staff two thousand times, and it was left in the water filling the kuduk to such level where the water coned nit reach the edge of pool approximately of 25 sm. The drawing of the paper mass was started the next day. A so called togara - a wood frame with a thick net on the cane (chee), fastened together across with horse hair on the distance of about 0,7-0,8 mm from each other. There was a special grill so called tas under the togara. According to A.A. Semjonov, a togara (basin) and a tas (pan) were called “halpa”.

A master, sitting at the pool, carefully lowered the togara with a grill into a liquid mass, and in the same manner, he carefully lifted the halpa keeping its surface parallel to the surface of the liquid. At the same time, he shaked the halpa from one side to another in order to join separate fibres that accumulated on the grill.

Some masters, permitting the water to flow down, lowered the halpa into the pool with a paper mass twice. As a result, the quality of the paper was better.

The accumulated mass from the grill was quickly removed, and a sheet of raw paper was put on the board covered with a rag. It took great knowledge and experience to get the sheets of one and the same thickness, and the master had to adjust the thickness of the sheet, taking

into account solution depletion, inevitable accumulation of the mass, and other phenomena. Depending on these, he had to lower the halpa into the solution deeply or slightly.

The ready papers, rather delicate but nonglued together, were put one over another a finger off the edge of the first paper, and the third flush with the first one. A master could prepare 180 sheets of paper in a twelve hour working day (according to other dates – 240 sheets) put a thick board with a stone of three pounds on the surface of this ream that was wrapped with a rag, and after an hour, he put another stone of the same weight, then he added a three pound stone every quarter of an hour. The load whose total weight was 40 pounds, was usually added over 15 hours, and it stayed on the paper until the next morning. Such gradual increasing of the load was needed in order the single big pressure couldn't result in water stream because of pressing of raw paper and in order that water stream couldn't tear the paper with its passage.

The next day the papermaker took off the load and began to dry the paper sheets. He did it on the wall, that was plastered by alabaster. A thin layer of paste was brought on the wall surface, and the paper sheets were put on the wall to dry. The above mentioned methods, especially the preparation of fibre mass using rags, gives us an idea about the complicated and rather difficult process of paper making. This hard work was done by the men who prepared paper mass, especially those of the men who had to do five foot strikes or two thousand shaking motions by churn-staff. As a rule, in the absence of data about technological methods of making handicraft articles, given methods of investigation which were interested in questions of paber manufacturing in Kokand, are of great interest.

Description of technological methods on which paper manufacturing is based creates the possibility to imagine the picture of social stratification among the people which were busy with paper manufacturing. There were not only paper makers called "kogazgar" among them. Rather hard work was done by the people who were busy with preparation of mass from which writing paper of high quality was made.

Nevertheless, Kokand paper made consessions to its predecessor – Samarkand paper. Kokand masters probably didn't know all secrets of

medieval masters. “Thick first rate paper – writes A.A.Semenov – was however of high quality, in spite of some coarse.

The above mentioned method of paper making makes us to conclude that paper manufacturing methods haven’t greatly changed for many centuries. Over the course of time, especially as the result of appearence of factory paper, the skills and some secrets of paper manufacturing were lost little by little.” Analized materials of the XI-XIX Centuries confirm the conclusions of vitality of traditions, of handicraft manufacturing methods, of their steadiness and invariability, stipulated by stagnation in economy of the country, including handicraft make us to conclude that in XVI-XIV Centuries, writing paper manufacturing didn’t change greatly.

Factory writing paper, produced in Russia, began to satisfy the requirements of official circles and the most diverse sections of society, and at the same time, it was the main competitor for local handicraft paper makers. This was the final stroke against the activity of local paper makers and their production couldn’t compete with paper parent state any more as local paper was forced out of markets.

At the end of the XIX Century and at the beginning of the XX Century, machine production of paper had already spread in many countries, and Central Asia, according to scientists and travelers – A.P.Fedchenko, AA.Semenov, V.K.Pazvadovskiy (kogoz-objivoz (Paper production) and others, handcraft production of paper was still used. Handicraft paper production didn’t meet the requirements of the population of the time. It was needed to master new methods of production, the description of which were found in the articles published in three issues of the “Turkistan region newspaper” for 1883. Its author point out evident advantages of machine method of paper production over handicraft, giving a lot of examples that showed the technology and methods of paper manufacturing in Russia. In order to compare machine paper manufacturing in Russia and local handicraft paper manufacturing and on the base of studied literature, we shall try to describe the process of paper manufacturing in Turkistan.

The author describes the process of paper manufacturing in detail. Special people bought up old rag, sorted it, and passed it to the “paper factory”. Then the rag was cleaned of dust and cut into small

pieces. According to the author, in some factories this process was done by machines that ground big and small rags. Then special nets (elak) and iron sieves (galvir) were used to clean the rags of dust. To prevent explosure of eyes to dust, cleaning was done under special tubes for dust sucking. Once cleaned, rags were boiled with lime and alkali until they became colourless and then the rags were washed in the water again for a complete cleaning. Then this mass, put in special mortars (keli) … was made small until it became soft and elastic. The keli was usually made of a hard species of trees or of stone in the shape of mortar, and the paper mass was made small simultaneously pouring water.

From the content of reviewed articles, we can suppose that paper mass in Kokand was made small by machine method. None of the above mentioned investigations which dealt with the questions of paper manufacturing mention machines that were used for this purpose. Most likely, at the end of the XIX Century, a mechanized method of paper manufacturing was used in some stages of production. Currently, we have no any data to answer this question exactly.

Concerning special machines that made small paper mass, the author writes that they were invented in Holland. He calls them "kulindim" ….. This machine was done like a big bucket, at the bottom of which were iron teeth that twisted like screws. Paper mass was put into a bucket with the help of a stick and twisting teeth made paper mass small: at the same time water was poured to make the paper mass soft. The machine did 130 revolutions in a minute, and after three hours, this mass was put into another machine that did 220 revolutions in a minute. This machine the author also called "kulindim". Chlorine was added to the mass, and it was made small again until it became soft and colourless. Then the mass was boiled in special boilers that were constantly stirring.

The name of the grinding machine, "kulindim", given by the author, most likely, is a misrepresented name of "golendur" as rolling machines were called. Thus the author describes the work of "kulindim" like the work of grinding rolling machines.

The following process consisted of ladling the mass by a scoop and removing it via a special net. Paper thickness depended on the method of ladling and removing. Then a special "machine" pressed a

ready paper, wrang it out several times, and during this process, there was a felt placed between the sheets.

In the third article the author speaks about the economical effectiveness of papermaking machines which would reduce the labour-consuming nature of paper production. The analysis of the content of the mentioned articles shows that paper manufacturing process was partly mechanized at that factory, while the main part of work was still done by hand. As well as in Russia, the first stage of paper production in Central Asia, namely selection and cutting, were still done completely by hand.

The workers also had hard conditions in the factory. At that time in Europe and in Russia, a steam engine was already used which certainly made it easier for the workers. Special closely plugged chambers were used to prevent poisoning of the workers during chlorine usage, while in Central Asia, the workers breathed poisoned steams when using chlorine.

As we see from the content of the mentioned articles and the data of Russian investigators of the pre-Revolutionary period, the main part of paper production, whether it was glossing or drying, was done by hand. The following stages of paper production were also carried out by hand. The drying process in Central Asia was described above rather specifically. From these facts, it is seen that by the end of the XIX Century, paper production level in Central Asia was relatively low, as the labour was not efficient and rather hard. Handicraft paper production couldn't complete with industrial paper manufacturing, and as V.K.Razvadovskiy said, handicraft paper making was little by little replaced by machine production[4].

The next stage of paper manufacturing is drying. During the preparation of paper mass and paper casting the rewriting material was damp and thus had to be dried. Drying methods in the process evolution were different. In the above mentioned research by A.Groman, it was noted that "the sheets taken out of the frome were dried and ironed. It was done on the rough base or on the heated by Chinese method in the

[4] B.K.Razvadovskiy. "Research of pottery and other handcraft wares in Turkestan". Turkestanskoye Hozyaistvo. 1916. №4. P.344.

sun or on the rude felt, to the surface of which the sheets stuck better. According to a treatise of the XI Century, "the content of the frame turned out on a board and leaned against smooth wall till it gets dry and fall off". "Next day – says V.K.Razvadovskiy in his article "Kogaz-ab - juvoz" – the sheets were glued on the wall, covered in alabaster for drying. The sheets are quickly dried here.

In the article "Preparation of Paper" from the "Turkestan Region Newspaper", the process of paper drying is also described. It is carried out in a special room that must be big with many windows in order to air the room. The ropes which were made of horse hair were drawn in the room, and the sheets of paper were weighed out. A fire was lit in the middle of the room for quick paper drying. According to the author, in winter the paper was dried in the open air where it became more crunchy. That is why paper manufacturers tried to produce paper in winter. However, descriptions of paper drying methods are absent in the works of investigators. Most likely, Central Asia masters learned to do it from Russian or European paper markers.

Dried papers were folded up and numbered. Produced in this way, paper was still a half finished product. One still could not write on it, because it still needed to be glued and glossed. In the works of A.A. Semenov,[3] we find a description of paper glossing that was taken from Indian sources. According to his description, in earlier times masters produced wonderful gloss that was inherent in ancient paper which was greatly different from the products of gloss masters of the XIX century.

Semenov writes that it is advised to take thick paper, dissolve wheat flour in water, and boil this syrup in the morning on medium heat until the desirable concentration is reached. The result is called ahar. Ahar should be neither thin nor thick. Next, a sheet of thick paper smeared with ahar equally on both sides is put on a clean and smooth board. Then another sheet of paper is dipped into a basin full of water, and the sheet is smeared with ahar. If the surface of these two sheets is uneven or if some air still exists between them, it is necessary to press the surface with one's hand covered in ahar, forcing the air to escape from the edges of the combined paper. After this procedure, the sheet of paper is dried in the open air, but not in the sun. When it is thoroughly dry, both sides are polished with a shell.

Next, another side of the sheet is smeared with a thinner layer of ahar, dried in the same way, and polished. This procedure should be done 7 times, and only after the eighth polishing, can one write on the paper. If while writing one makes a mistake or blots the paper with ink, the errors can easily be washed off with a sponge but not water. Thanks to repeated smearing of the paper with ahar, blots are removed without any traces. Afterwards, the washed surface is covered with ahar one more time, dried, polished and is ready for writing again.

Another way of paper polishing is described in a treatise dated to the XI century. We use examples from it when describing the method of paper substance preparation and casting: "Then fine and very white flour and starch are taken and dissolved in cold water until smooth. This stuff is boiled until it seethes. When the water seethes it is poured over the flour and starch and mixed thoroughly. After that one should wait until water clears out. Then one side of a sheet of paper is smeared with this stuff and put on a beam made of Persian ruch. When the sheet is dry, the flip side is smeared with the stuff and dried. Then the sheet is again but on the board, sprinkled with water and dried".

When writing about the white flour, the author apparently means wheat flour. He also describes its subtitute.

"Instead of wheat, rice can also be used for making starch syrup. It is boiled in the kettle for a long time until water is evaporated. Then this liquid is strained. A sheet of paper is dipped into the starch liquid and put onto the Persian rush. The starch syrup neither thick nor thin. The amount of water for rice boiling should be medium".

As we can see, the two above-mentioned method of ancient paper polishing are not described in the same manner. In the first instance, the method is described very thoroughly, and the most important moments are emphasized. For example, the author states that it is necessary to smear the paper evenly on both sides and that the paper should be dried in the shade, not in the sun. It is said how many times the process of smearing and polishing should be repeated. The methods of checking the quality of polishing and elimination of drawbacks are given. The second method of paper smearing is very primitive. The author isn't giving any information about the process of polishing rather only talks about the smearing.

This fact proves our supposition that the second treatise was not written by a craftsman but rather by an observer or by a man who knew about the process by hearsay. It is very difficult to judge today how many times was the paper of magnificent ancient manuscripts were smeared and polished. 400-500 years have since passed. Time reduced their gloss and polish. A.A.Semenov states: "The latest Bukhara's calligraphers of the XIX-XX century tried to persuade me that paper wasn't polished more than 2 or 3 times "But the second volume of "The book of healing" (Kitab Ash-shefa) from the library of the last Temurid's sultan Husein Mirza (1460-1506), a contemporary of Alisher Navoi, made a great impression on me. It was very thick and glossy, like a mirror, the Arabic text was written in brillian black ink, the letters seemed to be just written and not dried yet.

This exclusive volume of the prominent medieval scholar Ibn Sina's work (Avitsena) was copied by the order of Sultan Husein Mirza. It certainly was written on the paper which had undergone repeated polishing, probably 7 or 8 times". Kokand paper polishing and smearing was described and studied in more detail than Samarkand paper. On the basis of the study of these two processes, we can form some ideas about them. After the preparation and casting of paper substance by a craftsman-kogazgar, as it was mentioned above, this paper was still not ready for use. Thus, the paper was treated by another craftsman, a so called Mukhrakash. Mukhrakash means the craftsman who polishes paper with a shell-mukhra. Later the shell was replaced by flint, and at any rate the later Kokand craftsmen used it. (Some scientists call it an agate tooth). Previously, polishing paper was specially smeared.

Some Kokand's craftsmen prepared ahar (starch) in the following way: 7 pounds of wheat flour was put into a clean unbleached calico bag. A big basin (tagara) 70 sm. in diameter was filled with water, and then a bag of flower was put into the water and bruised until the water in the tagara became like cream. After wards, the water was poured into another tagara, and the process of bruising was repeated 6-7 times, until the flour in the bag ran out. Meanwhile, the dissolved flour settled in tagaras. Then in a big 16kg. capacity rice kettle, water was boiled, and 5 paysas of mutton fat were added. The settled water was poured off, while a small amount of boiled water was poured into the

flour mixture which was quickly stirred. Next, some more boiled water was added, and this mixture was poured into a big kettle, with continuous stirring it. When the paste (ahar) was ready, the fire was put out. The ready mass was poured into tagaras and left for cooling. Before the process of smearing, sheets of paper were pressed in the special tool and cut with a sharp knife. Smearing was done in the following way: mukhrakash were put a woolen mitten on his right hand, some starch was put on the paper with a spoon and smeared as smoothly as possible on the surface. After an hour, the sheet dried and was smeared on the opposit side. Having smeared a "plant" of paper containing 240 sheets, mukhrakash started polishing it with a special device, which looked like a ceramic (clay) "mare" 70-75 sm. in height and 60sm. long. It was 60 sm. wide in the platform. A log of a pear tree 75 sm. long and 18 sm. in diameter was bound to the device on the top. A pear tree is considered to be very durable. A flat chute (60 sm. long and 65 sm. wide) was cut on the side of this log. A smoothly polished flint shaft, made in the shape of a barrel (6 sm. in diameter in the middle and 5,5 sm. at the edges), was rolled on the shaft.

It was covered with a wooden hamper using a free rotation. The hamper had two handles. The hamper was inserted into a vertical log, which was fixed with its opposite end in the ceiling, so that it could move a little. On this log, connecting-rod, two rods were installed crosswise at the height of a human being. A basket with stones (240 kg.) was put onto it. The load was used to press the flint shaft to the chute of a pear-tree log. The slot precisely matched the shape of the flint shaft. A sheet of paper was inserted with its edge under the flint shaft and was rolled gradually. For this a craftsman moved the sheet aside for several cm. each time. Two craftsmen were able to polish 20 sheets a day, and after this procedure the paper had a glossy surface.

To make papers attractive, they were painted with different colours. Each colour had its own unique significance.

Ancient manuscripts, namely artistic ones were made with wide colourful margins of warm and pleasant colours. The artistic tradition required that that two adjacent sheets be of different colours, or at least of different shades. This means that if one sheet had light-turquoise margins, the adjacent should be pink or red. If one sheet had golden-

yellow margins, then the adjacent would have ivory colour. Quite often such margins were decorated with coloured and gold ornament. This made manuscripts elegant. The choice of a certain colour of paper was very important for calligraphers. A famous calligrapher Sultan Ali Meshkhedi noted in his works:

Letters on such papers are as beautiful as gold.

There is one more reason, when a calligrapher deals with a paper constantly, it's natural that its colour be very important. It is known that white colour and other bright colours make eyes tired. Each colour had its own meaning. Blue colour was considered to be a mourning colour. Such papers were used for bad news or death penalty. The red colour was the colour of joy and happiness. Yellow was the most popular after red. Then comes light yellow, light orange, and more rarely, grey, green, light blue, and light grey.

The academician Freyman stated that one of the documents found on Moguch Mountain was written on a thin light-grey paper. The recipes and methods of paper colouring were complicated and required care and caution. Descriptions of some of methods have been preserved in ancient manuscripts. In the above mentioned treatise of the 11$^{th}$ century, it is indicated what is required in order to get the desired colour.

Thus, we came to know that blue paper was painted with the help of indogo, cobalt and boiled aloe vera. The violet colour was obtained with the help of dyes for blue and red. The yellow colour was obtained with the help of boiled shafran and lemon peel. Bright green colour was obtained with the help of shafran mixture with alum. A.A.Semenov gives detailed recipes of paper painting in different colours. These recipes were taken from an anonymous manuscript of the XVII century, written in the Persian language.