A brief history of photography in 1839 – 1918

@ Pavel Scheufler

Translated by @ Lenka Scheuflerová

Contents

Preface

This book is a basic guide to the history of photography till 1918 and it is expected that the reader will consult literature for further research. It is not arranged strictly chronologically or by individual authors, but rather by logical groups of topics, with the development in the Czech lands and the central European region, respectively, mentioned in separate subchapters. Individual photographers, both foreign and domestic ones, are introduced only briefly because emphasis is laid on an understanding of interrelations and of the context. Terms involving photographic technology, the level of which determined photographers' artistic expansion to a great extent at that time, are only explained to an extent necessary for an understanding of how a photograph was obtained and of the effect it had on the viewer.

1. Photography in the era of early photographic processes

1.0. Introduction

The invention of photography gave rise to a new type of image, where technical and mechanical aspects played a significant role and substituted for manual work in obtaining a recording of reality. The new technology was no longer based on a manual process, but on a photochemical one. For centuries, people kept records of the world using their hands, but after photography was invented it was done by a piece of equipment, which was a completely new feature of the imaging process. The earliest photographic processes meant a breakthrough in imaging and were perceived as such. From the viewpoint of timeline, this chapter deals with the prehistory of photography to the announcement of the first practical process of photography (1839) to about 1851.

1.1. The prehistory of photography

In order to invent photography, it was necessary to combine in practice the findings in the areas of fine arts, optics and chemistry to take advantage of the properties of light-sensitive materials using a photographic camera manufactured

for the purpose. In the area of fine arts, it was necessary to combine the knowledge of reproduction processes, from wood engraving to lithography, the knowledge of perspective principles used in painting, and various artistic illusion methods.

The photographic camera was based on the idea of camera obscura (which means "dark room"), originally an actual dark room with a small hole in one wall. On the opposite wall, light rays passing through the hole created a reversed image of objects placed outside the room. The phenomenon was noticed already by Aristotle (ca 350 BC), described by Alhazen (Abu Ali al-Hasan) about 1020 and by Roger Bacon about 1250. But it was not until the High Renaissance, when the perspective rules in painting were sought for and defined, that the principle of camera obscura was used purposefully, first in the form of adapted rooms and soon after that in the form of portable devices used first by painters and later on by travellers to allow an easier drawing of sketches of landscape views and architectural monuments. Leonardo da Vinci in his work Codex Atlanticus described the relations between perspective and the function of the human eye, pointing out the use of the principle of camera obscura. Gemma Frisius published the first known picture of a camera obscura in 1545.

Two improvements of the camera obscura are particularly important from the viewpoint of its change into a photographic camera: the addition of a lens into the enlarged hole (by Girolamo Cardano in 1550), aimed to increase the image brightness, and the introduction of an aperture for better sharpness (by Daniel Barbaro in 1568). Giovanni Della Porta came up with a detailed description of the phenomenon and function of the camera obscura in his work Magia naturalis (1568). From the late sixteenth century, the use of a camera obscura was recommended in many books as an important aid for painters, which is why its design underwent numerous modifications depending on the purpose the particular device was to serve. Johan Zahn described the effect of lenses with different focal lengths on the size of the image projected, and the use of the ground-glass plate in 1685. Just before photography was invented, the camera obscura was in regular use, and was also employed by the inventors of the early photographic processes.

The history of examining light-sensitive substances, in particular silver salts, is linked closely to the beginning of chemistry as a branch of science. One of major ways leading to the invention of photography were experiments carried out by Thomas Wedgwood and Humphry Davy in 1802. They brushed paper or white leather with a silver nitrate or silver chloride solution, placed plant leaves or other flat objects on top of it and exposed them to light, producing a photogram. However, they were not able to fix the images obtained this way.

1.2. The invention of photography

At the beginning of the history of photography were three individuals whose contributions were essential: Joseph Nicéphore Niepce, a French inventor who was the first to produce a permanent photographic image; Jean Louis Mandé Daguerre, who invented, after cooperating with Niepce for some time, the first widely used

photographic process; and William Henry Fox Talbot, who developed the first negative-positive process of photography.

Joseph Nicéphore Niepce, after being pensioned off from his job as an army officer, pursued research in various areas; among other things, he wanted to perfect the process of lithography. Probably as early as 1816 he achieved first practical results with heliography, the earliest photographic process based on the light-sensitivity of bitumen. The first heliography supported with specific evidence was produced in 1822. In 1826 (but some sources say 1827), he obtained an image of the courtyard of his house, which is the oldest preserved photographic image in the world obtained by means of an adjusted camera obscura. In 1826, he also started correspondence with Daguerre, which resulted in an agreement on cooperation (1829). After Niépce's death in 1833, his son, Isidor, continued with the partnership. Niépce's main contribution was in that he proved that it is possible to obtain a photographic image and adjusted the camera obscura for that purpose. The process of heliography did not spread because of its low sensitivity (the exposure time needed was about eight hours).

Jean Louis Mandé Daguerre was the owner of the Diorama in Paris and the inventor of the earliest photographic process used in practice, the daguerreotype. After a brief news released in January 1839, the technical details of his invention were made public at a ceremonial meeting on 19 August 1839.

The basic defining characteristic of a daguerreotype is that the image changes from the positive to the negative and the other way round depending on the viewing angle. The image looks fluffy, lying on the very surface of a silver-plated copper plate, not within any coating layer, very sharp with fine details and a wide range of halftones. The method of obtaining the image differs from all other commonly used photographic processes. The framing used for daguerreotypes copied that of miniature portrait paintings. What the two methods often had in common was the author, for many painters switched from the uncertain art to the more profitable photographic business. Frames were mostly used for the earliest daguerreotypes, while the later ones were rather placed in cases. The daguerreotype was used in the 1840s and 1850s. Each daguerreotype was unique, it was not possible to produce multiple identical copies.

Given the long exposures, first daguerreotypists specialised in still life and landscape photography, and did not take portraits until Josef Max Petzval designed a special lens in 1840. As early as 7 October 1839 Alexander Simon Wolcott took a portrait of his friend John Johnson, and in March 1840 he opened in New York the first daguerreotype studio in the world. A few months later, a studio was opened in New York by Samuel Finley Breese Morse along with John William Draper. He achieved shorter exposure times (3-5 minutes) by improving the camera design and by means of portable mirrors used in lighting. The first photographic studio in Europe was probably opened by Aleksey Fedorovich Grekov in June 1840 in Moscow. From the spring of 1841 daguerreotype studios had appeared in all major cities of the world. Among the most outstanding studios in Paris was that of the brothers August and Louis Bisson, in London it was the daguerreotype studio of Richard

Beard (opened on 23 March 1841) and that of Antoine Francois Jean Claudet. In that year, Hermann Biow opened the first studio in Hamburg, and Johann Baptist Isenring did so in Munich.

1.3. First negative-positive system of photography

William Henry Fox Talbot was a brilliant English inventor who was the first to introduce image reproduction through the negative - positive process. His method called calotype ("kalos" is the Greek word for "beautiful") was an improvement of photogenic drawing, Talbot's previous invention of 1835. Calotypes were used between 1840 (patented by Talbot on 8 February 1841) and about 1855. In 1835, Talbot obtained the first negative image in the world. Based on Talbot's experiments, John Herschel introduced the term "negative - positive" process. Calotype negatives, whose image quality was better than that of photogenic drawings, are transparent negatives on paper. The calotype made it possible to produce any number of prints and was cheaper than the simultaneously used daguerreotypes. The calotype was the first process allowing a broader use of photography in the society (for example in the form of photographically illustrated books). While the daguerreotype represented a sort of a "blind" branch of photography, the calotype directly indicated the future development of the medium. Besides portraiture, calotypes were employed, to a much greater extent than daguerreotypes, in a documentation of architecture and in topographical photography, especially pictures of foreign landscapes.

Among outstanding calotypists was Talbot himself. In the early period of photography, many images were obtained within cooperation of a painter and a photographer - technician. Scottish painter David Octavius Hill was supposed in 1843 to paint a group portrait of 474 participants of a meeting of clergymen and other dignitaries. He teamed up with Robert Adamson, who was familiar with the calotype process, to produce portraits of not only the clergymen, but also many other people. They took photographs outdoors, raising the total amount of light in the scene by means of mirrors for example. Employing their artistic talent and a feeling for psychology, they posed and arranged each portrayed person in a way making the sitters look impressive and enabling them to stay motionless during exposures of one-to-two minutes.

1.4. The position of photography

The invention of photography is one of the links in the chain of changes, which affected all spheres of life in the nineteenth century and the core of which was the industrial revolution. An advance in natural sciences, especially physics, and mechanisation of manufacturing processes provided a major stimulus to inventiveness as a widely spread social phenomenon. Besides a revolution in transport, agricultural revolution, demographic revolution etc., there was also a revolution in the area of visual imaging. Photography brought a new type of image, in the obtaining

of which technical and mechanical aspects played an essential role, replacing manual work in the process of recording the reality.

From the very beginning of its existence, the new invention was compared to painting, from which, however, it differs in many aspects. Particularly, the process of photographic image recording happens without a direct participation of its author, as a physicochemical process. This fact means a completely new feature in the history of the imaging process and, at the same time, determines other properties of the new visual medium, especially its direct dependance on the reality being recorded. Also derived from this fact is the defined relationship to light, space and time, and the concrete and accurate depicting of reality, only limited by the physical and chemical properties of the photographic materials and equipment used. The photographer can only indirectly influence the whole process of recording the reality. The three-dimensional reality is transformed into a two-dimensional photographic image by purely optical means, and the process does not involve the author's subjective intention and control. It seems that everything depends on the object depicted, instead of the author of the photograph. In any case, the relations among technology, science, craft and art are mixed in different proportions and in a different way in photography compared with traditional imaging methods. In photography, mechanicalness prevails over creativity and manipulability.

A mirroring quality is the basic feature of photography. This is what fascinated contemporaries at the time photography was invented because the new medium guaranteed, for the first time in the history of imaging, a fidelity in the recording of reality. The mirroring quality of photography was used as a guarantee of objectivity and exactness. Naturally, this feature of photography was used in science. Like in a mirror, which offers no choice, reflecting all details of reality and being merciless to the object in front of it, a photographer looking through a lens sees the world including all details and only chooses the visual field. Unlike a painter, who makes his first strokes on a white canvass, a photographer chooses a section of an already given scene. A photographer, unlike a painter, is directly tied to reality, to the object being recorded. That is why the question arose whether photography can be assessed according to traditional artistic criteria when it cannot transform the reality in an artistic way like the other branches of art do.

Besides the mirroring quality, another fascinating feature of photography when it was invented was its time element. Photographs always involve the awareness that the image depicts a previous situation that had to exist in the past. Roland Barthes in his book La chambre claire (1980) stressed that the magic involved in photography does not rest so much in its ability to copy the reality but primarily in that it radiates past reality. The power of authenticity is bigger than the power of reproduction, says Barthes. Besides the physical meaning of time, each photograph has in it the time that has passed since the instant it was obtained. All photographs are old because they depict a single and unique moment that is already gone. That is why there is a close relationship between a photography and memories, photography always preserves the past for the future. If the reality preserved on an image loses in the course of time its ability to tell something to the viewer, then the photograph

is no longer able to serve its commemorative purpose and becomes "speechless". This is why historical photographs sometimes are difficult to interpret.

The relationship between photography and time is also essential for the act of obtaining an image. The exposure time used for nineteenth-century photographs was typically determined by the stage of development of photographic technology. Low sensitivity of photographic materials was a major limiting factor in photographers' efforts to capture the reality. It took decades before photographers were able to capture fractions of a second and freeze movement.

Exposure time is tied directly to the amount of light. Light in nineteenth-century photographs mostly does not act as an artistic element because the properties of photographic materials did not allow that. A major progress in this respect only came with more sensitive materials, faster-to-use photographic cameras, and particularly with the introduction of electricity as a source of light. The objective of photography in the nineteenth century was to depict WHAT a camera sees, not HOW it sees.

Nineteenth-century photography is different from twentieth-century photography in many respects, for the latter started to follow different objectives, was applied in different areas, and used different technical means that freed photographers from their immediate dependance on photographic equipment.

To a much greater extent than modern photography, nineteenth-century photography employed the illusion of space. In nineteenth-century studio photography, space was always created artificially for each image, and the use of studio props and painted backgrounds in studios was often done without any respect for spatial relationships. In outdoor photographs, the illusion of space was sometimes achieved by producing composite images. The action depicted in photographs was staged, and the movement captured in images was contrived, with models required to freeze in certain positions. Illusion, theatricality, a staged quality, and construction are among the defining features of nineteenth-century photography.

Besides these internal characteristics, also important are the external features of photographs, which are also derived from the technical means available. Typical for the scale of tones in positives was a limited range of halftones. It was impossible to record clouds, while flowing water had the appearance of opaline glass and moving objects were depicted as blurred. The basic tonal scale in nineteenth-century photography was brown-and-white, not the black-and-white used in most twentieth-century photographs. In the nineteenth century, photographs were not produced for use in printing, but were usually distributed as originals pasted to cardboard.

1.5. Photography in the Czech lands in 1839-1859

The first Czech citizen to become familiar with the method of daguerreotypes production in greater detail was probably Prague university professor, physicist Ferdinand Hessler, on his journey to western Europe in the late summer of 1839.

Hessler was also the first in the Czech lands to publish the technical description of Daguerre's process.

The findings available at present show that there were four major centres in the Czech lands in the early period of the daguerreotype process: Prague, Brno, Litomyšl, and Pilsen. In Prague, Ferdinand Hessler produced daguerreotypes in the autumn of 1839 together with natural scientist Ludwig Redtenbacher and then planning officer, later an outstanding photographer, Wilhelm Horn who later wrote an article about their joint experiments. The most notable among Brno's daguerreotypists was physics professor, Premonstratensian Bedřich (Friedrich) Franz, who produced in 1841 the oldest preserved photographic portraits in the Czech lands. Probably at the same time, Brno's Augustinian Filip Gabriel, professor of mathematics, and Evangelical priest Anton Plutzar learnt how to make daguerreotypes as well. In June 1841, one of the Brno daguerreotypists (most probably Franz) took an image of the festival of Corpus Christi at Brno's square Zelný trh, which is one of the world's earliest photographs depicting an event. Brno therefore became the first centre for daguerreotypes production in the Czech lands.

The daguerreotype was introduced in Litomyšl by Andreas von Ettingshausen, professor of physics at the Vienna university, who met Daguerre in person and among whose friends was Florus Ignác Stašek, the rector of the local Piarist college. In early June 1840, he even brought a daguerreotype camera for Stašek and made him familiar with how to use it. The device is now part of collections of the National Technical Museum in Prague. On 2 June 1840 they produced jointly a picture of the post office in Litomyšl, which is probably identical to a daguerreotype preserved until the present time, the earliest produced in the Czech lands. Stašek's photomicrograph on daguerreotype plate of a cross-section through a plant stem, taken probably in 1842, is a valuable proof of efforts at employing daguerreotype in science. This image ranks among the earliest preserved daguerreotype photomicrographs in the world.

Josef František Smetana was a daguerreotypist in Pilsen, but none of his daguerreotypes has been preserved. However, a unique proof of Smetana's work is the daguerreotype tools that he used and a daguerreotype camera (both deposited in the National Technical Museum in Prague).

Franz and Stašek were the most outstanding figures of a period in which the interest in the daguerreotype prevailed on the part of scientists. The fact that first daguerreotypists focused on scientific work and on how to employ daguerreotype in science is specific to the early period of photography in the Czech lands. Probably the first photographer in the Czech lands involved in commercial production of daguerreotype portraits was Salomon Sturm, son of a well-known Prague optician. There was a report about his work in the Květy magazine on 29 April 1841. Wilhelm Horn's studio opened in early October 1841 at what is today the Wenceslas Square is regarded as the first permanent daguerreotype studio in the Czech lands. Horn, who moved his studio four times to different localities in Prague, became significantly involved in photography in the upcoming decade in terms of organizational and commercial activity, and can be described as the most outstanding figure of the

beginning of photography in the Czech lands. In early March 1842, Jozef Božetěch Klemens, Slovak painter, natural scientist and inventor, opened his Světloobrazárna (Light Picture Gallery) in Prague, but his activities in the field of daguerreotype were only short-lived.

Typical for daguerreotype studios of the 1840s all over central Europe was that their owners mostly did not stay in one place, but travelled with their daguerreotype equipment. Besides major administrative centres, the travelling daguerreotypists settled especially in guesthouses and hotels in spa towns, where the biggest demand for daguerreotype portraits was expected. Among such spa resorts were Karlovy Vary and Teplice, which became, thanks to frequent stays of travelling daguerreotypists, the most important centres of commercial photography in the Czech lands in the 1840s. Besides the capital city of Prague, these two spa towns are therefore the birthplace of commercial photography in the Czech lands.

Except for Prague, there is no proof of permanently operating daguerreotype studios in any other town in the Czech lands until 1848. Even in the capital city, W. Horn's studio remained the only one for a long time, with that of academic painter Jan Maloch, who produced daguerreotypes of numerous Czech artists, opened probably in 1848. Other photographic studios were opened in Liberec and Olomouc in 1848. The first "amateur daguerreotypist" whose image is supported by specific evidence is Vilém Trajc (Wilhelm Treitz), who photographed on 12 June 1848 a religious service at Prague's Wenceslas Square that was a prologue to the revolutionary events of 1848.

2. Studio photography in the nineteenth century

2.0. Introduction

Most nineteenth-century photographs were taken in studios and involved commercial portraits. Images produced outside studios were much more complicated. A fundamental change in the way people perceived photography came with the photographic carte-de-visite. The name carte-de-visite means a technical term referring to the size of the images, but also a phenomenon, which made photography a visual medium broadly used in the society.

2.1. Portraiture

From 1854, most photographic portraits came in the form of cartes-de-visite (roughly a 94 x 58 mm positive was mounted on a 102 x 63 mm card). The name and the idea of the carte-de-visite was patented in 1854 by Paris photographer André-Adolphe-Eugene Disdéri, whose aim was to make photographic portraits cheaper. The idea of a lower price rested in the possibility to make several exposures on a single plate.

Cartes-de-visite provoked an exceptional boom in photography especially between 1859 and 1865. The carte-de-visite allowed to take advantage of the so-far insufficiently developed possibilities of photography: it was fast- and cheap-to-produce, easy-to-view, and an unlimited number of prints could be made. Cartes-de-visite caused that the 1860s are described as the "golden age of photography", where the excitement about and intoxication with the possibilities of the medium, which was not widely spread until that time, led to an unseen boom and popularity of photography. The carte-de-visite gave rise to a completely new type of family portrait galleries that would be unthinkable without photography in such an extent - it gave rise to the family album. Photography in the form of hanging pictures, which was based on the previous painting tradition, started to decline.

During the carte-de-visite boom, the equipment of individual studios started to differ considerably. In every large town there was a studio that was regarded as prestigious by the cream of the society, as well as studios popular with the middle class. The attractiveness of a studio was usually derived from the variety of backgrounds, costumes and other accessories available to produce portraits in different environments. The cheapest way of having a portrait made towards the end of the century was at the stands of so-called express photographers, who used portable studios at various fairs.

The possibility to distribute photographs in bigger volumes gave rise to projects for portraying outstanding personalities of the era. The first to focus on such an "album", a series of portraits of the most outstanding personalities of contemporary politics, science and art, was Franz Hanfstaengl in Munich, one of Bavaria's most prestigious photographers. His portraits met with great success at the Universal Exhibition in Paris in 1855. His subjects are depicted in magnificent poses, often with some accessories characteristic of their activity. Another court photographer in Munich, Josef Albert, photographed members of the Bavarian royal family as well as many European monarchs, but also aristocrats, famous music composers and fine artists.

In the history of photography, the most valuable portraits were always those where the photographer attempted to render the individuality of the portrayed person. Among the most famous portrait photographers of the nineteenth century was Gaspard Félix Tournachon, called Nadar. Even though the way he equipped his studio was meant to attract customers, he did not resort to retouch or any other methods improving artificially the sitter's appearance and in most cases did not use any studio props. The essence of his portraits was to rest in the soulfulness and internal beauty of his sitters. Among Nadar's customers were many leading personalities, whose portraits Nadar wanted to include in a representative gallery of the most prominent figures of that time, which he entitled Pantheon Nadar. Since many of the people he portrayed were his friends and acquaintances, he was familiar with their typical gestures and facial expressions and was therefore able to produce excellent studies. Nadar's competitor in the field of art was Étienne Carjat, caricaturist and writer, who, however, worked in much more modest conditions. At the opposite pole from the two photographers was Anton Samuel Adam-Salomon, who often took in-

spiration in seventeenth-century Dutch masters for the way he depicted his subjects and for his use of draperies.

The most outstanding photographers in Vienna were Emil Rabending, Joseph Löwy, and Ludwig and Victor Angerers. Among the biggest and best equipped studios in Europe was that of Walery Rzewuski in Krakow. The studio was big enough to photograph a coach with four horses. The oldest and most famous photographic studio in St Petersburg was that of Sergey Lvovich Levitsky. Andrey Ivanovich Denier created a gallery of outstanding representatives of Russian culture, including portraits of writers, scientists, doctors, artists, and travellers. Andrey Osipovich Karelin, who lived in Nizhny Novgorod, built a very long studio where he used long focal length lenses to photograph his sitters from a big distance to avoid distortion.

Outside Europe, portrait photography experienced the biggest progress in the USA. Among the most respected photographers there was Mathew B. Brady, who had a studio in New York and a branch in Washington. It was thanks to his 1860 portrait of Abraham Lincoln that the significance of photography in politics was publicly highlighted for the first time in history. Another outstanding American portrait photographer was Alexander Gardner, famous for his journalistic approach to portraiture. Among famous photographers in New York were Napoleon Sarony and William Kurtz, with a studio on Broadway. The standardised carte-de-visite-style portrait photography spread all over the world, and portraits approached in a similar way, with identical features, can be found everywhere.

A completely new approach to the role of the photographic portraiture came at the end of the nineteenth century, which brought, on the one hand, works idealising human appearance using technical means of expression (see Pictorialism, section 5.1.) and, on the other hand, images seeking realistically approached portraits without any manipulation. Among outstanding representatives of the latter movement was Frances Benjamin Johnston, one of the most remarkable figures in the history of US photography. Thanks to her photographic skills, but also to her unconventional way of life and the prestige she earned, Johnston could take portraits of many outstanding personalities of the then USA.

2.2. Early art photography, English Pictorialism

In the nineteenth century, most photographs were taken without any artistic ambitions. Photography was regarded as a commercial activity, and a photographer could be a reputable businessman, but not a respected artist like a painter or sculptor. The power of photography was seen above all in its documentary faithfulness, and towards the end of the century also its ability to capture passing moments was appreciated. In relation to art, the contribution of photography was seen in the way it mediated artistic values, in particular in the form of reproductions of works of art. This is the reason why there were so many cartes-de-visite, cabinet prints and stereographs depicting sculptures and paintings. Photography contributed this way to an increase in the general level of education. However, from the beginning of the

medium there had been authors who made efforts to demonstrate by means of their works that photography is capable of a higher, artistic effect. The key area of these efforts was portraiture, where sitters in "artistically rendered images" no longer represented themselves, but their gestures and the whole composition were meant to express a certain dream objective, usually inspired by literature. There were also efforts at a photographic depiction of the "eternal topics" like Justice, Love, Farewell, often inspired by particular paintings. First valuable results in this field were achieved in England in the 1850s.

Regarded as the "father of art photography" is Swedish-born Oscar Gustave Rejlander who settled in England in the 1840s. He studied painting in Rome and worked as a portraitist and copyist of works of the old masters. Rejlander began to photograph to obtain studies for his paintings. However, using photographs as a substitute for live models placed great demands on capturing interesting facial expressions. Rejlander was probably able to engage his sitters' interest, and even make them laugh, to such an extent that he achieved very lively facial expressions with his subjects. That confirmed the well-known fact experienced in portrait studios that a photographer primarily had to be a good choreographer able to arrange certain situations and moods. Rejlander produced photographic images that could be compared to genre and allegoric paintings. He started to experiment with scenes involving more sitters, combining individual partial images into the final photograph following a scenario worked out in advance. He achieved significant renown for his allegorical study "The Two Ways of Life", which depicts a sage showing two young men two ways to choose from - good and evil, the way of temptations and vice and the way of positive values. Rejlander used thirty negatives to produce the final 40 x 77.5 cm image. His models were strolling players experienced in presenting staged tableaux. A copy of The Two Ways of Life was purchased by Queen Victoria in 1857 as a gift for her husband, an act demonstrating a significant social appreciation of photography as such.

Besides the laborious composing of individual parts of an image by copying them gradually onto the final positive, Rejlander also employed the method of double exposure on a single negative. He was probably the first to use, achieving a creative result, the method of sandwiching negatives together. It was these techniques what made Rejlander famous, but he still had to make his living as a portrait photographer. His ability to record emotions was used for illustrations of Charles Darwin's famous book "The Expression of the Emotions in Man and Animals" (published in 1872). Among Rejlander's other famous photographs are Head of John the Baptist in a Charger, Judith and Holofernes, Drat the East Wind, and Hard Times. When the laboriousness of composite images made him get back to realistic photography, demand for his work declined despite the fact that he produced remarkable images capturing everyday life, such as Second Edition.

Rejlander's work was a major inspiration for another Englishman, Henry Peach Robinson, who studied drawing and painting and began to photograph in 1852. In 1857 he opened a portrait studio in Leamington, where he attempted, more or less for his personal satisfaction, to employ photography also for artistic objectives. In

1858 he published "Fading Away", a composite photograph from five negatives, which made him famous overnight. His work also attracted the attention of the British royal family. Despite achieving success and social prestige, Robinson, like Rejlander, could not have lived on art photography only and had to take commissions for ordinary portraiture to earn his living. What made his work famous, however, was especially his extensive publication activity and lectures. Besides articles in journals, he published eleven books on photography. The most famous one, "Pictorial Effect in Photography" (1869), became a sort of a theoretical summary of the term "art photography". Later, in the last decade of the nineteenth century, the name of the book was used as the base of the term "Pictorialism", which in general refers to the employing of painting principles in photography. The term "English Pictorialism" can be used to describe the period inspired by Rejlander's and Robinson's works.

What Robinson regarded as the main tasks of art photography was "to avoid the mean, the base and the ugly", then the necessity of posing to achieve increased picturesqueness, and a balanced composition of the final image. A combination of several negatives should be the main technical means to achieve these objectives. In his pictures, Robinson also depicted the daily life, idyllic nature scenes, as well as images in the style of medieval masters. He defended avidly his opinions about the value of composite photographs, and only in 1896, at the end of his life, he admitted that also taking a direct image on a single negative can give excellent results and that the method of montage should be reserved for extraordinary cases. To support his new stance, he provided his own photographs from a single negative, which, at the same time, complied with academic composition rules.

Compared with Rejlander, Robinson had considerably better technical skills, which was apparent not only in the way he produced his montages, but it also had an effect on the durability of his prints. Apart from the gradual copying of several negatives onto a single positive using the method of masking, Robinson also employed a simpler technique of pasting cut-out parts of contact copies into an image based on preliminary sketches. After arranging these parts and retouching the result, he photographed the work, and only this negative served as a source for the final copies. Robinson valued photographic montage especially for its ability to give sharp image both in the foreground and in the distance. Robinson ranked among the most successful photographers of the period because he was awarded the largest number of medals and prizes at exhibitions.

Robinson's work was an inspiration to many other photographers especially in England, who proved they were guided especially by experience obtained from paintings by outstanding painters. Among the "English Pictorialists" was William Lake Price, originally a painter, who produced photographic genre scenes and portraits (Don Quixote in His Study) with romantic features. Close to the Pictorialist principles are photographs by Julia Margaret Cameron, many of which were apparently inspired by particular pantings and literature. In the spirit of contemporary romantic sentiment, she produced allegoric and sometimes even somewhat sentimental photographs depicting the "eternal topics" such as Faith, Fidelity, Hope.

Similar in nature were her illustrations of Tennyson's poetic work Idylls of the King (1875). The same emotional approach to photography was also applied by Clementina, Lady Hawarden, who used her daughter as her principal sitter appearing in many different gestures and robes. Fascination with different types of clothing used with a single girl model was also typical for Lewis Carroll, born Charles Lutwidge Dodgson, a professor of mathematics at Oxford known primarily as the author of the children's book Alice's Adventures in Wonderland (1865). In his images of children and portraits of adult sitters he applied a creative search aimed to fulfill the dreams of beauty and perfection.

Works composed in photographic studios based on painting principles and inspired by literature and theatre can be described as "photographic scenes". These staged scenes came not only as part of photographers' artistic ambitions, but also within the development of the entertaining and educational aspect of portraits production. This gave rise to allegoric arrangements and staged tableaux, but also to parody and images of theatre scenes or various scenes from the real world and from the world of fantasy. "Staged tableaux" was a type of photographic scenes that was very popular in the nineteenth century. Arranged on various occasions, especially in theatres, at festivals, exhibitions and balls, a staged tableau was a spectacular composition glorifying some idea or commemorating a historical event. The staged tableau involved many areas of art (theatre, stage management, painting, sculpture, literature), was composed by artists, and aspired to become an art form equal to the traditional art categories.

Producing photographs from several negatives failed to take root outside England. The French Society of Photography even forbade its members to exhibit images produced this way. The artistic effect was achieved in particular by means of inspiration by painting and by taking over some of the generally recognised and famous themes. French photographer Julien Vallou de Villeneuve, who originally wanted to become a painter, depicted women posing in the style of famous paintings. In Italy, it was in particular Giorgio Sommer who composed staged tableaux besides his made-to-order studio work. In his studio, he composed simple arrangements depicting the everyday life in Naples (for example "Customary Neapolitan Behavior"). Prague photographer František Fridrich arranged scenes on various proverbs, using simple means of expression as well. In Russia, genre scenes were composed in studios by the best-known photographers - Vasily Andreyevich Karrik and Andrey Osipovich Karelin. Danish photographer Harald Johan Caspar Paetz arranged simple scenes inspired by Andersen's poetry.

Overall, the production of photographic scenes is a valuable testimony of contemporary lifestyle and of the cultural image of the period as an important part of popular culture of the nineteenth century. As a testimony, it is interesting, among other things, for the process of exploring of the ambitions of photography and for its development as a medium of communication. It is apparent that photography in the nineteenth century "lagged behind" the development of traditional art forms and it is logical that photographers copied contemporary style and fashion and that they come to some specific possibilities only under the influence of painting. Photogra-

phy influenced nineteenth-century art only unofficially, while painting still set the tone in public. However, it was photography that provoked the birth and expansion of modern art in the early twentieth century.

2.3. Nude photography

Depicting a naked human body in photographs was regarded basically as unacceptable in the nineteenth century. Despite the fact that classicist painting devoted relatively significant attention to the nude, the faithful depiction of naked models in photographs posed a problem, which was influenced, besides moral restraints, also by awareness in that the model really had to appear in front of the photographer. In potential court disputes over seized nude photographs the verdict was mostly against the photographer, which reflected to a certain extent the way the society perceived photography. The opinion was that photography is not art, and therefore a photographer of nudes cannot be capable of any artistic pose, which is why the image is not art and therefore it represents "the selling of nudity" and as such it deserves punishment.

Despite this, nude photography already represented a very stratified area in the nineteenth century, and within this area there were also pictures depicting naked men and women that did not provoke disapproval because nobody doubted their artistic value. The first extensive category of nude photographs was catalogues of pictures of men, women and children only dressed in draperies. These images were meant as studies for painters. Available in central Europe were especially cabinet prints by Vienna photographer Hermann Heid each comprising a set of small images with order numbers. The images were called "an aid for painters and friends of art". Some painters produced such studies on their own or in cooperation with a photographer.

A second area where art critics allowed depiction of naked human figures in photographs were allegoric compositions. These can be divided, based on the subject they depict, into mythological, historical, romantic, and literary and philosophical ones. Allegoric works were based on previous tradition, and it was considered natural to depict characters like Justice, Motherland etc. as unclothed figures. It was this type of images that came as part of photographers' desire to win artistic recognition. Here we can remind the famous image "The Two Ways of Life" (1857) by Oscar Gustav Rejlander, where nude figures first appeared in a publicly exhibited photograph.

A third area where the depicting of the naked human body was regarded as natural were images of native people especially in Africa and America taken for educational and ethnographical purposes.

The artistic nude was rare in nineteenth-century photography and was usually produced for private purposes without any effort to make it public. Artistic nude photographs can be found in the works of Hermann Krone, Franz Hanfstaengl, Nadar, Roger Fenton, Mathew Brady, that means mostly outstanding portrait photogra-

phers. Their objective mostly was to idealize the human figure, which was usually depicted in a very decent way and in line with traditional painting principles.

Among photographers for whom the nude represented the main area of their artistic interests, let's mention first the works of Jean-Louis-Marie-Eugéne Durieu, a general inspector in the educational system, a man commanding significant respect. Among his friends was painter Eugén Delacroix who assisted the photographer many times in the production of nude photographs. The studies of men and women usually correspond to painting themes. Delacroix employed some of the images when painting his canvases (for example Odalisque). Another French painter, Gustav Courbet, is said to have employed images by Julien Vallou de Villeneuve, who was the first in France to photograph nudes using the calotype process. In his photographs he often used poses and natural environment corresponding to daily life situations. On the other hand, Pierre-Charles Simart mostly employed, as a teacher at an academy of fine arts, academic painting poses, and so did Jacques Moulin, whose subjects also resembled those of contemporary painters. Guglielmo Marconi, described in a French anthology as an art academy photographer, took images of naked men, women and children for studies used in the education of painters. Paul Berthier was educated as a painter, and his photographic nudes were distinguished by extraordinary refinement. A special relation between painting and photography can be found in the works of Richard Polak of Rotterdam. Inspired by the works of old Dutch painters and using an interior furnished in seventeenth-century style, he photographed in a way that gave a masterful illusion of works of the old masters. "Painter and academic teacher" Heinrich Eickmann's effort when taking nude photographs was to enable students to study the proportions of the human body. Thomas Eakins, a professor at the Pennsylvania Academy of the Fine Arts, went furthest in the use of images of unclothed figures as studies for painting. One of the most outstanding nineteenth-century American painters, Eakins started with photographic studies of female students holding stationary poses and wearing togas, then got to images of naked students during bathing, which approximated to genre scenes, and ended up carrying out a systemic study of human locomotion, depicting naked athletes when performing a sport activity. When photographing these studies, he captured several stages of movement on a single plate. In this area Eakins continued the pioneering work of Eadweard James Muybridge, who, in his photographic studies of motion, depicted human models during various types of physical exercise and other activities. Specialised in the depicting of unclothed male body was Wilhelm von Gloeden, who studied history of art in Weimar, Germany. Living in Sicily after 1880 and enchanted by the region's ancient heritage, he composed scenes with ancient subjects, his sitters being the sons of local herdsmen. The composition of his nude photographs is excellent, revealing the great refinement of the author as well as his extraordinary technical skills. Similar images were produced by Wilhelm Plüschow in Naples, who however took more of his photographs in the studio.

In the last decade of the nineteenth century, the interest in the photographic nude increased, with as many as hundreds of authors taking images of unclothed

figures. The bigger interest in the nude was connected not only with the more liberal sentiment in the society, but also with the expansion of amateur photography allowed by a progress in photographic technology. The rising number of nude images resulted in an increase in symbolic and allegorical compositions and in certain affectation and naivety. On the other hand, however, photographers also produced stylized images using pigment processes and soft lenses. It was through these tools that nude photography proved it was able to follow in the footsteps of art.

A completely extraordinary figure among nude photographers was Ernest James Bellocq who was totally outside the framework of ordinary photographic work before the First World War. Bellocq owned a portrait studio in New Orleans and repeatedly visited the red-light district of Storyville to photograph local prostitutes. As nobody was aware of this documentation, it did not influence contemporary photography. The negatives depicting nudes, often magic images giving the impression of an illusion and mystery, were discovered by coincidence as late as 1966.

The most outstanding Pictorialist nude photographers include Robert Demachy, Clarence Hudson White, Edward J. Steichen, Heinrich Kühn, Franz Fiedler, and Czech author František Drtikol. American photographer Clarence Hudson White did not use pigment processes for his nudes, but photographed the unclothed body using purely photographic means and stylization. He used soft lenses and close-up lenses to suppress the naturalism of the scene, and photographed against the light to strengthen the soft-focus effect. French author Robert Demachy believed that a photograph should not be a copy of the reality, but rather a loose expression of the photographer's vision, and that an image should be produced step by step with attention paid to every detail in order to suppress some areas and highlight others. Franz Fiedler, who settled in Dresden, was regarded a master of oil print. His formally perfect nudes were distinguished by a fascinating technical mastership. Luxembourg-born Edward Jean Steichen represented a connection between the American approach to soft-focus photography and the European liking for pigment prints. When taking nude photographs in the Pictorialist period, Steichen took advantage of his experience as a painter while employing pigment processes, deliberately breaking traditional composition rules and getting closer to his sitters. During the Pictorialist period, the most distinctive nudes in the Czech lands were produced by František Drtikol, who came up with fine, delicate studies filled with Art-Nouveau melancholy, and dramatic passionate nudes in very courageous poses. In his nudes we can find both beauty and a sense of destruction, love and death, a contradiction between the physical and the spiritual ...

The nude played an enormously important role in Pictorialist photography. It was Pictorialists who convinced the puritan society that the photographic nude can be a work of art. And after the artistic nude was accepted, there was an argument for including the entire photography among "high arts". This is why the photographic nude played a very important role in history, it was primarily this area of photography that convinced that the medium is capable of valuable artistic results.

2.4. Most outstanding nineteenth-century portrait photographers in the Czech lands

At the turn of the 1850s and the 1860s a new generation of photographers, who were not trained as painters and had no previous experience in painting, started gaining ground also in the Czech lands, even though painting academy graduates still held a significant position in photography (in 1870, for example, photographers trained in the arts still accounted for a third of all photographers in Prague). The most remarkable photographic portraits in Prague during the carte-de-visite boom were produced by two former painters - Jan Adolf Brandejs and Hynek Fiedler. However, regarded as the most renowned in Prague was the studio of Moritz Ludwig Winter, whose commercial success made him open branches in Karlovy Vary and Vienna. A tradition of photographic studios that served as art and social centres was established in the 1860s. Artists in Prague started to meet at J. A. Brandejs's studio, and later at Jan Mulač's and Jan Tomáš's. The two most outstanding figures of nineteenth-century Czech photography - František Fridrich and Jindřich Eckert - opened their photographic studios in Prague in the early 1860s.

Many of the successful photographic studios outside Prague were also in the hands of photographers trained at painting academies (in Brno: Antonín Mayssl from 1852 and Karel Václav Klíč from 1864; in Pilsen: Otto Bielfeldt from 1859 and Josef Böttinger from 1867; in České Budějovice: Čeněk Hrbek from 1863 and Adolf Pech from 1868; Eugen Bourdon in Chrudim from 1864; Alexandr Seik in Tábor from 1864). Some of these photographers were also successful as painters and drawers (Mayssl and Russ, as well as Jan Umlauf in Kyšperk and František Maischaider in Železný Brod). Others tried to take advantage of their experience as artists in a totally distinctive way (the Quast family operating in Písek and Sušice). Besides photographers influenced by the artistic environment, there was a number of other photographers who came up with unconventional solutions and whose businesses - established in the 1860s and 1870s - sometimes remained in existence for decades. Besides portraiture, these studios had a significant effect on the documentation of their regions (Josef Hoffmann in Liberec, Sigmund Wasservogel in Olomouc, Julius Menzel in Pardubice ...). The most notable example of a commercially successful photographer was Jan Langhans with branches in several Czech towns. However, by far the most successful photographic business was that of Carl Pietzner of Teplice, whose chain of photographic studios employed some 300 people around 1900.

3. Photographs of landscape and monuments

3.0. Introduction

Progress in topographical photography was linked closely to the popularity of the photographic carte-de-visite. The small images mounted on card not only had served a commemorative purpose as a family or personal documentation, but also

had an educational and entertaining role. The carte-de-visite was a tool to distribute reproductions of works of art, topographical photographs from all around the world, pictures of personalities as well as staged genre scenes. Cartes-de-visite stored in albums had become an indispensable part of cultural knowledge, comparable to books in one's library. That was also a reason why the earliest collections of photographs were founded in libraries.

The use of the photographic carte-de-visite launched an "image era", in which visual information is mostly distributed to people by means of photographs. From a technological point of view, the key landmark event in this change was the 1851 invention of the wet collodion process. When this process became widely spread, the method of obtaining photographs was from a negative on a transparent support (at that time glass) to a positive (mostly paper). However, the invention of the wet collodion process had its problematic part in that the exposure and the subsequent development of the plate had to be done while the negative was wet (this is how the process got its name). Photographers who wanted to take images outside their studio therefore had to carry a portable darkroom. This technical aspect is one of the reasons why a relatively low number of photographers took photographs outside the studio in the wet collodion process period.

Another factor discouraging photographers from laboriously taking outdoor pictures was the fact that such images were more difficult to sell unless they were directly ordered by a customer. Until the 1880s, there was no possibility to directly print photographs in image magazines, so photos were mostly reproduced in the form of xylographs. A photographer needed a well-organised distribution network to be able to sell his images of urban and nature sights. Cartes-de-visite were purchased to be put in photo albums, while large format images were used as hanging pictures for interior decoration, like graphics of city views. Still in the 1850s the range of subjects and the photographer's position often copied the positions and approaches chosen by drawers and painters.

3.1. Landscape photography

Besides still life, landscape was the most popular subject matter among the pioneers of photography because it could be captured even with the long exposures needed for first daguerreotypes. A mere two months after the invention was published, Horace Vernet, a painter of historical scenes, travelled to Egypt to obtain on daguerreotype plates studies for his painting of the battle of Nazib. Vernet was so excited about daguerreotyping in Egypt that he took as many as 1,200 shots there! A tenth of these images were used by Parisian optician Lerebours to produce copper engravings from daguerreotypes for the two-volume book "Excursions Daguerriennes". Vernet was followed by several other daguerreotypists and particularly calotypists who all travelled to the magic Mediterranean region where there were traces of the beginnings of European culture (for example Maxime Du Camp, August Salzmann, James Robertson). They were people of different professions and interests, and it was mostly their fondness for travelling what brought them to

photography. Their images were sometimes published in thematic series, with emphasis laid on the depicting of sights and monuments. In the first two decades of the development of photography, we cannot yet speak of any purposeful landscape photography. In most cases images were taken with respect to architectural monuments, with the landscape being a natural component of the image.

First landscape shots of the Alps were taken by French daguerreotypists August and Louis Bisson. Accompanied by an army of bearers, the Bisson brothers were the first to climb (in 1861) with a camera to the summit of Mont Blanc. Another outstanding author photographing the Alps and landscapes in general was France's Adolphe Braun, who published in 1859 a two-volume book with images of Alsace. Braun also photographed the Czech mountains of Krkonoše.

William Henry Fox Talbot can be described as the first significant landscape photographer, with his landscape shots showing his perceptive vision, inventiveness, a sense of how changing light can change the subject matter. Other photographers started to discover many of these qualities as late as the turn of the century.

Besides city views, Roger Fenton, one of the most outstanding English photographers, also took landscape images on calotypes, for example in Russia that he visited in 1851. Gustav Le Gray was probably the first to use two negatives for landscape images, one exposed with regard to the ground and the other only with regard to the sky.

In the first decades after the invention of photography, the way the medium developed in the USA was different from the practice in Europe and in countries to which European traditions were exported by colonial powers. American photographers were exploring in particular their own country. Among the first outstanding landscape photographers in the USA were Timothy H. O'Sullivan and William Henry Jackson. O'Sullivan started his career as a portrait and documentary photographer during the Civil War. After the war, he took part in geological expeditions aimed to explore the west of the USA. Within his activities he captured not only geological formations, but also extensive mountain sceneries, pictures of which were published in three books. Later he also photographed during expeditions to South America. Jackson's landscape work is of extraordinary value, and American landscape photography has later always been based on his experience. Jackson began his working life as a documentary photographer recording railways construction in Omaha. His opportunity came when he took part in a geological survey, within which he photographed in the Yellowstone area. His image of the famous Mountain of the Holy Cross, located in the Rocky Mountains of Colorado, was used as inspiration by Henry Wadsworth Longfellow for his poem The Cross of Snow. Henry Hamilton Bennet, famous especially for his images of sandstone rock formations, had a special position among American landscape photographers. He also took panoramic images as long as 150 cm, obtained from three negatives. The best known landscape photographer in Canada was William Mc Farlane Notman, who ran an extensive network of studios and was the owner of Notman Photographic Company.

A completely new approach to landscape photography came with the so-called naturalistic photography movement, which advocated a return to a direct experience of nature and to the photographing of natural subjects in their natural surroundings, without artificial techniques and manipulation. The idea of naturalistic photography was championed by Peter Henry Emerson who, as a scientist, analysed the physiology of vision and tried to apply some of his findings to photography. He believed in particular that the man spontaneously focuses those parts of reality that he regards as the most important. In his images, Emerson was able to perfectly express the depth of the area depicted, thanks to his use of long lenses, while the technique of platinum prints eliminated the total black that Emerson said cannot be found in nature either. Emerson's characteristic subject matter was the East Anglia landscape and its people, "the birds, beasts and fishes of the Norfolk broadland", as is the title of his portfolio of platinum prints published in 1886. There are many analogies between Emerson's work and that of Frank Meadows Sutcliffe, and to a certain extent also that of George Davison whose image "The Onion Field" of 1890 is regarded as the first photograph with an impressionistic solution employed.

Emerson was also a major photography theorist, and his publications were undoubtedly much more influential than his photographs. Among his best-known books is "Naturalistic Photography for Students of the Art", published in London in 1889, which provoked vitriolic argument in photography circles. Emerson later disclaimed his earlier opinions in a funereal pamphlet entitled "The Death of Naturalistic Photography".

Landscape photography was the key subject matter for the amateur photographic movement, which came into existence at the turn of the 1880s and the 1890s, along with the emerging Art Nouveau movement. Pictorialist photographers brought to the society a new feeling about images, like the Impressionists did in painting. Instead of a descriptive and documentary character and faithfulness, it was atmosphere and impressions what was highlighted. Most Art Nouveau Pictorialists used pigment processes. Belgium's Léonard Misonne was regarded as the "king of landscape photographers". Another outstanding landscape photographer was Alfred Horsley Hinton, also known for his books. The most appreciated Pictorialists, the brothers Theodor and Oskar Hofmeister of Hamburg, produced many atmospheric landscape photographs as well. Specific results - not much known in Europe - were achieved by Russian Pictorialist photographers, who purposefully drew inspiration from landscape paintings. The most outstanding Russian Pictorialist, Yuri Petrovich Yeromin, originally studied landscape painting in Moscow. Many photographs by Nikolai Platonovich Andreev resemble Corot's paintings. Central Europe was dominated by the "Vienna trio", three Pictorialists, Hans Watzek, Hugo Henneberg and Heinrich Kühn, who had their first joint exhibition in Vienna in 1896. Photographs by Austrian and German Pictorialists undoubtedly served as inspiration for the most outstanding Czech Pictorialists, František Drtikol and Vladimír Jindřich Bufka, in whose early works landscape played a relatively important role. Like in the avant-garde period that came later, works by photographers and paint-

ers became interwoven in the Pictorialism era. Photography started to be perceived as an art form, including the financial terms.

3.2. Photographs from exotic countries

New photographic technology (the wet collodion process) provided landscape photography with better opportunities than the daguerreotype did, for copies of images could be presented to more people. Photographs depicting the mysterious beauty of distant countries generated the strongest response. Unique views of the Himalayas were produced by Samuel Bourne during his three expeditions in 1863-66. The British Journal of Photography published part of his notes and diaries, which show their author's courage and tenacity, but also give an idea of how photographs were taken at that time. Besides the highest mountains of the world, Bourne took some 3,000 images in Burma, Sri Lanka, India and in what is now Pakistan. The photographs were used both as sources for printing and for pasting of original images into books, but also for portfolios of original photographs. In the Czech lands, these portfolios were often exchanged and evaluated by photographic clubs.

The most outstanding photographer-publisher of topographic and landscape images of the wet collodion process period is Francis Frith. He made his first expeditions to distant countries in 1856-1859, travelling to Egypt, Palestine, Lebanon and Turkey. He used three camera formats: a stereoscopic camera with two lenses, a standard 8 x 10-inch camera (approximately 20x25 cm) and a 16 x 20-inch camera (approximately 40 x 50 cm). Equipped with this photographic technology and accompanied by a number of bearers and pack animals, he visited territories that fascinated Europeans for their long history as the cradle of Christianity and of the European civilisation. Before Frith, nobody photographed in such a thorough and generous way in this territory so frequently visited by photographers. In 1859 Frith opened a publishing business in England, which produced large quantities of original contact copies, stereographs, photographically illustrated books and later also postcards. For his two-volume book entitled "Egypt and Palestine Photographed and Described by Francis Frith", which ran to an edition of 2,000, his company had to make some 150,000 original prints. In 1862 Frith published the Bible, in a limited edition of a mere 170 copies, illustrated with photographic views of the Holy Land.

A number of photographers from Britain as well as other European countries explored the British empire, many of them establishing a tradition of a photographic business in their new place of residence. They pursued portraiture to make their living, while landscape photography was rather their hobby. This was the case of New Zealand photographer James Bragge and Australia's Bernhard Otto Holtermann, for example, with the latter becoming famous for using exceptionally large negatives for his landscape images.

Perhaps the first Czech to take a larger number of photographs during his journeys was Brno-born Jindřich Vávra. According to his travel diary, he probably photographed on his 1856 trip to the Mediterranean, and certainly during his journey across the South Atlantic in 1857-58. In 1864 he sailed in a flag ship to Mexico

and in 1868-1871 sailed around the world. He was ennobled for his contributions as a traveller. Unfortunately his photographic inheritance has not been found yet.

Among the first Czech travellers-photographers was Josef Wünsch, who discovered the source of the Tigris and Euphrates. He began to photograph on his travels only in 1890 during his expedition to Montenegro. At the same time, it was his last expedition, during which he significantly corrected that country's map.

The best known traveller of the Austrian-Hungarian period, besides Emil Holub who did not photograph, is Enrique Stanko Vráz. In 1894 he captivated Prague and other cities by his lectures illustrated with slides of his own images and those of other authors. Very important is the photographic work of Alberto Vojtěch Frič, even though at that time it did not receive as much publicity as that of Vráz. Photographs by ship's doctor Heinrich Wawra (Jindřich Vávra), who photographed as early as 1857, unfortunately are nowhere to be found at present. Photographs by Eduard Štorch, who in 1898 took his first images in Tripoli and its surroundings with his friend Bedřich Machulka, are of extraordinary value as well. Both men were outstanding Czech travellers, professional hunters and hunting expedition guides. In the winter of 1911-12, for instance, Štorch led an Austrian scientific expedition that was to explore the northern areas of Uganda. During the seven-month-long journey, Štorch produced dozens of stereographs. What also represents an interesting heritage is images that some travellers from the Czech lands purchased in distant countries and that in some cases form remarkable sets of photographs (Erwin Dubský, Joe Hlouchy).

3.3. Photographers of landscape and monuments in the Kingdom of Bohemia

Despite having difficulty selling their images, already during the first decade of the wet collodion process some photographers specialised in photographs of monuments and other places of interest. In central Europe, among the pioneers in this field was Vienna photographer Andreas Groll, who produced the oldest preserved sets of images of Prague and other towns in 1855-1856. Other photographers focusing on places of interest from the late 1850s included Amand Helm in the town of Teplice and Wenzel Ferdinand Jantsch in northern and northeastern Bohemia.

The most successful Czech topographic photographer was František Fridrich, who became one of the most outstanding publishers of topographic views in the whole empire around 1870. Besides towns famous for their architectural monuments, such as Prague and Kutná Hora, photographers focused on spa resorts and their surroundings, with the biggest attention paid to Karlovy Vary and Teplice. Besides architectural monuments, in particular those built in Gothic style, photographers also found interesting other places that had a symbolic meaning related to history. Technical and architectural novelties, in particular bridges, were popular subjects as well.

After Fridrich, a new element was brought to Czech landscape and monuments photography in the 1870s and 1880s by Jindřich Eckert. During his trips to photograph bridges for his customers, he began, out of pleasure, to take images of castles and chateaus using a large-format camera, and in cooperation with geologist Gustav Laube started to photograph landscape with regard to capturing different landscape types. Eckert was a passionate tourist; so the new element rested in taking photographs while on tourist trips. During such trips in 1880 - 1884, Eckert produced series of images of Šumava and Krkonoše regions. As tourism expanded, structures like lookout towers and tourist inns gradually acquired the status of tourist sights as well. The rise of tourism and indirectly that of commemorative photography was influenced by construction of the railway network. Railways construction was documented by many local photographers who, while doing so, also captured the landscape that changed significantly as new railway elements like tunnels and bridges were built.

3.4. Stereoscopic photography

A stereograph is a pair of images adjusted to produce a three-dimensional effect. As a very popular technology it was fundamental for the transformation of photography into a means of communication. Before the invention of photography, stereoscopes were a sort of a toy used by scientists. In 1849 English researcher Sir David Brewster introduced a refracting stereoscope design. A stereoscope manufactured based on his design became a sensation at the London Great Exhibition of 1851 and subsequently gave rise to the first big wave of interest in stereoscopic photography. The small format of stereoscopic pairs of images made it possible already in the 1860s and the 1870s to use relatively lighter cameras as well as shorter-focal-length, relatively faster, lenses allowing to take snapshots and to capture action more easily. In this respect, a photographer using a stereoscopic camera had a certain advantage over those using standard cameras with 24x30 or 18 x 24 cm negatives and benefited from this advantage in terms of the subjects he was able to capture.

The subjects most frequently depicted in stereographs include city views and monuments, nature scenes, reproductions of paintings, sculptures and graphic works, as well as educational and entertaining images. The educational and entertaining roles often overlapped without any strict dividing line between them. Stereographs sometimes depicted complicated staged scenes involving live actors and figurines, with the latter used rather for theatrical scenes, especially ballet, while real live actors were employed for moralizing and erotic compositions. Some of the staged scenes were very laborious in terms of the scenery used, with the themes including paradise and hell, scenes from the New Testament as well as from home life, people at work, children playing games, masquerades, and also the most private moments in people's lives captured in various environments.

Viewing stereographs became a popular activity at home as early as the middle 1850s, bringing visual perceptions of unseen dimensions into households. A

huge wave of popularity of stereographs hit the cultural world in the early 1860s along with cartes-de-visite. However, to a much greater extent than cartes-de-visite did, stereographs strengthened people's awareness of the birth of a new visual culture, a culture based on the dissemination of information through the photographic image. Depicted in stereographs were all areas of human activity. Stereographs therefore represent an extremely interesting source of information about contemporary lifestyle, especially when it comes to the depicting of everyday life. The fact that there often was not a direct recording of those ordinary moments, but a staged reality, yet staged for the camera with the objective to give an illusion of reality, does not detract from the value of this photographically authentic source. The choice of themes and subjects made stereoscopic photography part of pop culture that indeed penetrated the masses. It was the first photographic means produced for mass consumption.

Perhaps the world's most outstanding company producing stereographs was that of Francis Frith. In the Czech lands, the most important publisher of stereographs in the 1860s and 1870s was František Fridrich, followed by František Krátký in the 1890s.

4. Photography as a visual document

4.0. Introduction

During the first decades of the development of photography, the possibilities in the field of documentary photography were strongly determined by the photographic equipment and materials available at that time. One of the most obvious signs of progress in photography was a gradual reduction of the exposure time, which was a major factor behind an increase in the range of subjects photographed. The determination by the technical level of photographic equipment therefore necessarily implied staged elements, which sometimes led to a certain theatricality. The basic principles of documentary activities of nineteenth-century photographers thus included a staged quality, construction, and often an effort at creating illusions.

Most photographs at that time were taken "for memory", that means, to make memories last longer. The purpose of the then photographic work was to preserve the image over time. Most nineteenth-century "documentary" images were produced as keepsake pictures for a particular customer, with documentary photographs inspired by the interest and initiative of the photographer himself occurring only rarely. Before photographs were reproduced in the press, only a limited number of viewers could see the final images. Presenting originals of photographs at exhibitions as certain visual "proofs" was important in that big exhibitions directly initiated several significant documentary projects. With the possibility to distribute halftone photographs in the press, the role of documentary photography from the 1890s shifted from that of a testimony for future generations to that of a source of

information, a testimony for or even an appeal to the contemporaries. In that sense, the printing of photographs in picture magazines is of key importance for the future direction of photography! And it is typical that this transformation of photography's role gave quickly rise to a new specialised photographic occupation, a photographer who no longer had a portrait studio that would provide him with the security of commissions - a news photographer.

4.1. Photographs of events

Besides their studio work, some photographers attempted to obtain outdoor images regardless of the long exposure times required and problems connected with potentially preparing the photographic material in the field. What caught their attention was, apart from exotic countries, especially various important events. Moreover, a successful image depicting attractive action could draw attention to the photographer himself and therefore bring him new customers. This was a reason why many photographers took images of local events besides portraiture. However, only few were real specialists in "news photography" in the nineteenth century.

One of the world's earliest photographs of an event was produced in the Kingdom of Bohemia when Bedřich Franz in 1841 photographed the festival of Corpus Christi at Brno's Zelný trh square. Similar daguerreotypes by the brothers Josef and Johann Natterer of Vienna were taken at about the same time. A year later Hermann Biow and Carl Ferdinand Stelzner captured the great fire of Hamburg and its aftermath on a series of daguerreotypes, which is probably the world's first set of "reportage" photographs depicting a particular event. In 1850 Alois Löcherer in Munich reported photographically on the production and the triumphant erection of the monumental Bavaria statue.

After the wet collodion process was invented, the presence of a photographer at major events became an increasingly common practice. However, it was difficult to employ such images because at that time it was still impossible to print halftones in photographs, so images were usually redrawn and presented in the form of xylographs. Particularly detailed photographic documentation was obtained during Universal Exhibitions where photographers paid attention especially to the documentation of pavilions and more rarely to the recording of visits by important guests. The first exhibition that was of major importance to photography was the officially first Universal Exhibition held in London in 1851, or the Great Exhibition, where, at the same time, stereographs were introduced for the first time. The second one was the Universal Exhibition of 1855 held in Paris.

The first war event that was systematically examined and documented by photographers was the Crimean War of 1854-55. The best known photographer in this conflict was Roger Fenton, who, equipped with a mobile darkroom, tried to provide summary information on the environment itself and on the event in general. Very highly acclaimed at that time were his images of cannons ready to fire as well as genre pictures of soldiers relaxing after battle. The cruelties of war occur in his pho-

tographs rather incidentally, for he did not capture particular battle scenes or the dead. Károly Pap Szathmáry went much further in his war coverage than Fenton, but as a Transylvanian German, he was not as widely known at that time as Fenton whom his Crimean War images secured a promising career.

Claude-Marie Ferrier was an outstanding event photographer in France who took courageous images during the 1856 flooding on the Loire and as a photographer accompanied Emperor Napoleon III during his Italian expedition in 1859. Christian Friedrich Brandt and Charles Junod photographed in the Danish-Prussian war in 1864, taking most of their images as stereographs. Interestingly, the German-French conflict of 1870-71 was mostly documented by totally unknown photographers (except for Carl Friedrich Mylius of Frankfurt).

Photographers paid extraordinary attention to the American Civil War, perhaps because the American nation was constituted to a certain extent during the conflict and because photography's documentary significance was strengthened in the American environment. The key figure in nineteenth-century American documentary photography was Mathew Brady, who realized the historical significance that the War between the North and South had for future generations and for the future of the country. To be able to capture the course of war simultaneously at more battlefields, he had several teams of assistants who, equipped with mobile laboratories, travelled to different front lines. Brady's most important field photographer was initially Alexander Gardner, who however started his own business in 1863. Employing a great degree of courage and a sense of dramatic effect, Gardner took photographs shortly after battles were over, including detailed views of the dead. However, it was his photographs of Abraham Lincoln's funeral and a series devoted to the hanging of Lincoln's assassination conspirators what won Gardner his greatest renown. Perhaps for the first time in the history of photography, he achieved a dramatic effect in his reportage by mixing overall views and details obtained over a longer period of time, for Gardner not only recorded the course of the execution, but also produced prison studies of the conspirators. Likewise, the funeral march was recorded both in details (for example engine decoration) and overall, bird's eye, views. For the first time in the history of photography, Gardner's coverage brought indeed a comprehensive and impressive information about the course of a particular event.

Gardner's friend Timothy Henry O'Sullivan was an exceptionally universal documentary photographer as well. Effort at an artistic effect is apparent in many of his images, with emphasis put on composition. O'Sullivan also deliberately used motion blur in an unconventional way in cases where it multiplied the dramatic effect (an image of an attack). After the war, both Gardner and O'Sullivan used their experience as documentary photographers at government expeditions focused mostly on geological surveys of the western territories.

From the middle 1870s, every major event was photographically documented, a photographer had to be present at every ceremony. At that time, however, a photographer still was not regarded as an indispensable part of events, but just as someone who was tolerated by the company. The photographer basically became a

necessary part of social and political events only after the First World War, or more precisely, during the war. This is a reason why for a long time there was not any distinctive author specialising in photographic coverage of events. In this respect, Czech photographer Rudolf Bruner-Dvořák was a very exceptional figure because as early as 1890 he described himself as a "moment photographer" only taking instantaneous news images (from the German word Momentaufnahmen, the word "moment" meaning the capturing of an instant that is decisive for something or someone). This happened at a time when progress in printing technologies made it possible to print photographs directly. The first ever halftone reproduction of a photograph was made public on 2 December 1873 in The Daily Graphic in New York. However, a radical change in the use of photographs in periodical publications occurred only in the course of the 1890s. The famous "The Illustrated London News" gradually switched to direct image reproduction from photographs in 1892, while "Daily Mail" was the first in the world to start using only photographs in 1894.

The 1890s therefore brought several outstanding documentary photographers. French-born Paul Martin opened a photographic studio in London in 1892. What attracted attention was Martin's views of London streets, and especially his contemporaries were fascinated by how natural people looked in his images. Particularly acclaimed was his series of images of Queen Victoria's funeral of 1901, which was a presage of real modern-style photographic news reporting. Horace W. Nicholls photographed battlefields during the Boer War, and after his return to England focused on scenes from the life of the upper classes. Nicholls sometimes employed the method of montage from several positives to multiply the effect of his images. In Germany, Hans Breuer distinguished himself in the field of documentary photography of events at the turn of the century, becoming famous mainly for his series of images depicting the imperial shipyard and imperial yacht and images of the boarding of soldiers dispatched to suppress the Boxer Uprising in China. Also praised was his photographic coverage of the Universal Exhibition in Paris in 1900.

In the USA around 1900, photographs by William Herman Rau of flooding in Pennsylvania and scenes from the Spanish-American War taken by Percy Claud Byron were published in the press and caught readers' attention. Besides Jacob August Riis (see 4.2.), the second most outstanding American documentary photographer of the 1890s was Burton Holmes. As a rich man, he first pursued photography for pleasure, but decided to become a professional photographer after his 1892 trip to Japan thanks to an enormous success of his lectures with slides handcoloured in Japan. Burton Holmes then travelled almost all over the world, always trying to capture typical scenes from life. He also wanted to be at important events of the time, so he photographed for example the ceremonial taking over of the Panama Canal construction by the Americans as well as the Russo-Japanese War of 1905 where he managed to take images on both sides of the conflict. Most of his images were only meant for his own use during lectures, which is why his work, involving virtually all branches of photography, somewhat sank into oblivion.

At the beginning of the new century, the magazine New York World began to publish images by William Warnecke who won extraordinary renown for his 1910

photograph of the murder of New York mayor William J. Gaynor. Warnecke managed to take the unique photograph, unparalleled until that time, thanks to the fact that he photographed aboard a ship taking outstanding personalities to Europe and had the presence of mind to record the assault. Warnecke's method of work was a presage of quick reactions by future reportage photographers.

4.2. Photographs of street life

From the very beginning of the medium, photographers went out of their studios to photograph the streets of their towns or carried their photographic equipment on their sightseeing trips. In the beginning their effort was to record the face of towns and cities in a complex way in the manner of graphics of city views, which is why photographers copied the positions and views used by graphic artists. There were few photographers specialising in urban life in the nineteenth century because most authors focused on the secure and profitable commercial portraiture and only went out to the streets on exceptional occasions. As a result, the earliest images from the urban environment are in fact photographs of events. The first ever set of images of city streets was taken on daguerreotype plates by Josef and Johann Natterer in Vienna on 13 March 1841 on the occasion of celebrations to mark the hundredth anniversary of the birth of Joseph II.

Rising tourism, which led to demand for cartes-de-visite and stereographs of sights and monuments after 1854, represented a big opportunity for urban photographers. Particularly popular were well-known spa resorts and cities famous for their beauty (Venice, Athens, but also Prague). Carlo Ponti, Leopoldo Alinari, Carlo Naya, and Robert MacPherson photographed in the north of Italy. Many photographers taking pictures on their trips to distant countries also recorded major towns and cities (James Robertson, Felice Beato, Francis Frith, John Thomson...). Frith, one of the biggest publishers of photographic views in the nineteenth century, also recorded urban views in England, Scotland, Wales and Ireland. In the Czech lands, František Fridrich specialised in commemorative images from localities frequently visited by tourists.

There was a special group of photographers for whom urban sceneries provided inspiration comparable to landscape views and who captured urban scenes particularly for their own pleasure, not for distribution. This concerned the work of amateurs as well as professional photographers who made money in other areas of photography. The beginning of urban photography as a leisure activity can be found as early as the calotype period. A lot of attention was paid to urban views for example by English amateur photographer Thomas Keith who produced some 220 calotypes by 1856. Hippolyte Bayard recorded on calotypes urban views in Normandy. Henri Victor Regnault took photographs in Sevres, while Carl Friedrich Fuchs captured the harbour canals and streets of Hamburg.

Another group of urban photographs was documentary images of people in the urban environment. In these images, the urban settings served rather as a mere background because the main objective was to capture various street characters

and bizarre fates. In the 1860s these street characters (a bill sticker, a shoe cleaner, a barrel organ player...) were photographed in studios, with the street backgrounds added by the photographer in the form of painted backgrounds. Only a decade later these "street types" were photographed in their real surroundings, first with staged gestures and later as authentic snapshot images. The earliest work, and a very exceptional one, was the daguerreotypes by Richard Beard that were used as the basis for woodcuts for numerous illustrations in Henry Mayhew's pioneering sociological work "London Labour and the London Poor" published in 1851. This type of photographs was quite frequent because they were produced by commercial portrait photographers. Let's mention for instance Giorgio Sommer in Italy, Ignacy Krieger in Krakow, and Adolphe Braun in Paris. In Prague, Zikmund Reach became famous as the publisher of thematic series entitled "Pražské typy" (Prague Characters). John Thomson was an exceptional photographer who travelled across China and the Far East and who believed that a testimony of foreign countries can be best provided through images of people. Instead of local notables, he chose ordinary people to depict what was typical for a given territory. With this idea in mind, Thomson also produced a series of images for the publication "Street Life in London" published in 1877 using the method of woodburytype. It was a real turnabout in the approach to books about towns and cities, which until this moment always depicted selected official monuments. In "Street Life in London", it was people what in fact formed the typical urban scenery, a scenery that faithfully, accurately and convincingly expresses the nature of the town or city but also the nature of the period. The book depicts flower sellers, wandering musicians, men getting on the omnibus, simply ordinary people and everyday situations.

Another big group of urban photographs was connected with changes in architecture in connection with industrialisation. Extensive redevelopment plans were put in place in many European towns and cities after 1850, which affected the original medieval layout, and industrial activities modified many localities as well. It was with nostalgia, typical for the end of the nineteenth century, that some photographers captured the disappearing buildings with the objective to preserve for future generations an evidence of what their town looked like in the past. Institutions in charge of such documentation were established in many countries. One of the earliest ones was the French commission for historical monuments, which many photographers cooperated with from the 1850s (Gustav Le Gray, Henri Le Secq, Edouard Denis Baldus...). When Emperor Napoleon III. initiated a generous redevelopment of Paris, Charles Marville photographed districts slated for demolition or complete rebuilding. During what was the world's first documentary act of its kind, Marville captured the original old character of Paris. Just as Marville documented Paris, Ferdinand Albert Schwartz photographed in Berlin, Henry Dixon in London, and Thomas Annan in Glasgow. Annan's work, however, is rather a documentation of the difficult living conditions in slums than a recording of disappearing buildings. In Prague, Jindřich Eckert and Jan Kříženecký became famous for their effort to capture the disappearing Jewish ghetto and districts slated for redevelopment.

Simultaneously with the documentation of the old face of towns and cities, purposeful recordings of the situation in contemporary towns began to occur. Photographers gradually freed themselves from descriptive images of architecture and tried to capture authentic life. Hermann Walter photographed in the streets of Leipzig from the 1870s, Georg Koppmann focused on images of people in the streets of Hamburg, Polish photographer Walerian Twardzicki took pictures of street characters in Warsaw. Edward Anthony was the first to systematically capture the busy streets of American cities. Among photographers whose documentary work is particularly extensive are for example German authors Louis Held and Heinrich Zille, and Czech photographer Rudolf Bruner-Dvořák. Some photographers aimed to systematically record the contrast between poverty and wealth. A very early work involving a socially critical accent is that of Scottish painter and photographer Thomas Annan, who was commissioned by the Glasgow City Improvements Trust to photograph the dismal living conditions in the streets of Glasgow in 1867-1877. Jacob Augustus Riis, who took interest in the life in New York slums from as early as 1877, went furthest in the area of social documentary in the nineteenth century. His 1890 book entitled "How the Other Half Lives", illustrated with his own images and drawings based on photographs, provoked many discussions of social issues. The turn-of-the-century documentation of life in San Francisco's Chinatown by Arnold Genthe came rather in the form of a bizarre statement than a criticism of the social situation. By contrast, a strong socially critical subtext was present in the work of American sociologist Lewis Wickes Hine who employed photography from 1903 even as a certain tool in the fight for social justice. In his articles and images, Hine drew attention to the problem of immigration, child labour, and the misery of living in slums.

As a counterbalance to the dominating descriptive character of photographs, some authors began in the early twentieth century to lay emphasis on the mood and atmosphere in their images and also started to use soft-focus lenses. Pictorialist-style urban views were produced from the turn of the century for example by English-born Alexander Keighley, J. Huysen in the Netherlands, and Vladimír Jindřich Bufka and František Drtikol in Bohemia. In 1911 Drtikol and Augustin Škarda published a portfolio of oil prints entitled "Z dvorů a dvorečků staré Prahy" (From Prague's Courtyards and Backyards). Paul Martin took photographs in the streets of London before the turn of the century. His series "London by Gaslight" (1895) earned Martin a Royal Photographic Society medal.

Atmospheric images from the urban environment can be also found in the work of Alfred Stieglitz, one of the key figures in the birth of modernist photography, who had an enormous effect on future development of photography in the USA. Used in connection with his work is the term "straight (pure) photography", which rejected retouching and any other form of image manipulation, that means in particular the pigment processes. In 1893 Stieglitz took up the post of the editor-in-chief of the magazine American Amateur Photographer and a year later became a member of the prestigious photographic organisation Linked Ring Brotherhood. In 1897-1902 Stieglitz published Camera Notes and then (1903-1917) the famous

Camera Work that can be described as the first modern-style paper addressing the issues of art photography. His best-known image from the urban environment is Winter on Fifth Avenue.

Many photographers who found "straight photography" as suiting their attitudes (without knowing and using the term, however) were supported in their effort by image magazines whose editors liked to search for spontaneous "lively" images. Photographers no longer visited conventional well-known localities and rather paid attention to unknown picturesque and quiet places as well as the special relations and links between ordinary simple things. What they sought was ordinariness and dailiness rather than monumental beauty. The photographer's readiness and quick reaction started to be appreciated. At that time, Eugéne Atget entered history, creating a multiform work comprising descriptive images used as preliminary studies by painters, but also studies of "Parisian street characters" as well as works whose uncommon atmosphere was admired by Surrealist artists. Atget was rightly described as "a Balzac of the camera", even though his work was only appreciated by future generations. Jacques-Henri Lartigue, who was born in 1894 and began to photograph at the age of seven, did not influence photography of the first decade of the twentieth century either. His images were neither published nor exhibited until 1963, with the first book of his photographs entitled "Diary of a Century" published in 1970. To Lartigue the camera was a companion that helped him capture the world around him in an unconventional way, with a striking freshness and spontaneity. Lartigue's work, which continued over the following decades, also testifies to a further stratification and transformation of photography towards a personal recording of feelings and visions, towards values typical for modern photography.

4.3. Photographic documentation of the rise of industry

One of the fundamental objectives for nineteenth-century photography was to document the rise of industry and technology. Through this documentation, photography, which itself was a product of the industrial revolution, performed some kind of self-examination concerning its own purpose and necessity in the new technology age devoted to inventions and progress. Photography tried to convincingly demonstrate that its own development was a contribution to technical progress, which, as was believed at that time, would liberate mankind and bring it new and unexpected possibilities. From the present point of view, it is apparent that the documentation of the industrial boom is an independent branch of nineteenth-century photography and that photographs from the field of technology are similar in style and identical in the way they see and depict certain motifs regardless of in which country of the world the images were obtained. The basic features that these documents had in common were the staging of the action depicted, an effort at a certain complex view of the reality, and an effort at picturesque composition, which sometimes resulted in a monumental quality given to the object depicted. A certain

narrative character was typical for many photographs, as if the image was telling a story about the documented action.

One of the basic ways of photographically documenting the rise of technology was recording the construction of new railways, roads and waterways, which was usually done by the most outstanding photographers. The construction of railways in the USA was photographically documented by Timothy O`Sullivan, William Henry Jackson, Andrew Joseph Russel, Charles R. Savage, and John Carbutt, while in Russia it was for example A. K. Engel. One of the earliest photographic documentaries of this kind was a portfolio of calotypes by Edouard Denis Baldus depicting the construction of the Paris-Lyon rail route. Charles Clifford and José Spreafico documented the construction of waterways and numerous bridges in Spain in the period of the wet collodion process, with the latter superbly photographically interpreting the courageous design solutions employed in railways construction in the mountains of Spain. The construction of the Austrian Northwestern Railway, which used to be a backbone route in the north of the Austrian-Hungarian Empire, was documented by Vienna's most prominent photographers: Josef Löwy, Josef Vlha and Herrman Heid. Photographing bridges was particularly popular, with images depicting the construction of railways in mountainous regions being often a kind of an expression of the triumph of man over nature.

However, the photographs documenting the construction of railways are also the first visual recordings of significant human interference in an unspoiled landscape, recordings of the transformation of a natural landscape into an industrial landscape. Photography was the only medium to document the extensive changes to landscape caused by industrial activity. This is perceived especially in photographs depicting opencast mines and oil fields. From the present point of view, we can even find traces of some environmental awareness in some photographs, even though this aspect was not explicitly present in the work of nineteenth-century photographers. The images were rather a mere testimony, but in some cases they involved glorification of the changes made by "the master of the world". Probably the first such series in the Austrian-Hungarian Empire was the documentation of the chemical plants of Jan David Stark by photographer Otta Bielfeldt, taken for the Universal Exhibition in Vienna in 1873.

Another major group involves photographs of industrial architecture, which are actually the oldest images taken. Probably the first series ever documenting systematically the progress of architectural activity comprised photographs of the dismantling of the Crystal Palace, the main pavilion at the Universal Exhibition, in London's Hyde Park and its reassembling in Sydenham in 1852 - 1854, which was photographically recorded by Philip Henry Delamotte.

A special branch of the documentation of the rise of industry and technology were photographs of people at work, usually depicted with their working tools. The earliest photographs in this group are self-portraits of photographers and images of their studios. This richly diversified branch comprises images of representatives of various professions in staged poses. Originally, they were photographed in studios or outdoors, and only from the last decade of the nineteenth-century these images

were taken in production halls and in natural working environment. The long exposure time needed did not make it possible to capture motion, which therefore had to be staged and thoroughly choreographed. Images of people frozen in positions pretending labour actually simulated instantaneous, snapshot photography. Working with sources of light was very difficult and was a measure of a photographer's professionalism. There is also a certain emotional charm in many of the documentary photographs. The arranging of machines and people at work was not only determined by the existing photographic technology, which did not allow short exposure times, but also connected with the general atmosphere in society, pervaded with theatricality and a desire to show off. Among the earliest images are those taken by Robert Howlett during the building of the Great Eastern ship in 1857. Photographs in mines were obtained under extraordinarily difficult conditions; the earliest images taken in this environment using magnesium flash were produced by O'Sullivan in 1868. Forty years later, Czech photographer František Drtikol took documentary photographs in Czech ore mines in Příbram, where the play of lights and shadows give an impression of an illusion.

Another group of images of technology comprises numerous photographs depicting machines, taken, on the one hand, for purely documentary purposes as a description of the objects' appearance, and as a subject of admiration, glorification, or promotion on the other hand. Some of the images demonstrated the relationship between the machine and the man as a master, others were perceived as portraits where the man was photographed with his machine as a testimony for future generations. With many machines, the documentation was to reveal as much as possible about the machine depicted, about its complex design and power; in this respect, steam engine and steam machines in general became almost a symbol of nineteenth-century technology. Some of these images were to serve as some instructions, showing how to handle the specific tool or machine. The largest photographic camera ever, The Mammoth, designed by G. R. Lawrence, was manufactured in Chicago in 1900 and used to photograph trains for Chicago and Alton Railroad Co. With picture size of 1.38 x 2.45 metres and weight, including the chamber, reaching 640 kg, it took fifteen men to operate the camera. When fully extended, the bellows was 6 metres long. A special railway wagon was used to transport the camera.

Connected with the aspect of "technology as a spectacle" was presentation of new technology at exhibitions. In the specific conditions of multinational states, images of machinery could represent not only technical progress, but also increasing power and position of a certain national society. At exhibition shows, one could even see a certain glorification of technology, with the promotion of economic and technical progress boosting the nationalistic spirit in the society. That is why technology displayed at exhibitions drew a lot of attention on the part of photographers. The first official universal exhibition, the Great Exhibition of the Works of Industry of All Nations, was held in London in 1851 and its contribution to photography rested in that it made the world familiar with the phenomenon of stereographs. Next came the Paris Universal Exhibition of 1855, which brought a significant deepening of in-

terest in photography. The 1862 Exhibition in London had an immediate impact on the foundation of the Czech Industrial Museum (now the Náprstek Museum of Asian, African and American Cultures, a unit of the National Museum). Then came the 1867 exhibition in Paris. The 1873 Vienna Exhibition meant a big opportunity to demonstrate the advanced level of industry in the Austrian-Hungarian Empire and therefore in the Czech lands. Some of the following universal exhibitions were held outside Europe: Philadelphia 1876, Paris 1878, Sydney 1879, Melbourne 1881, Torino 1884, London 1886, Paris 1889. The Prague Jubilee Exhibition of 1891 to a certain extent copied the Paris exhibition of 1889, including the construction of a lookout tower. The 1900 Paris Exhibition brought a change in perceiving the role of arts at universal exhibitions. The individual exhibitions were basically very similar, followed the same rules, and became some sort of a ritual of the industrial technical civilisation. Documenting these exhibitions photographically was very important, with a number of renowned photographers usually participating in such documentation.

A number of nineteenth-century authors, whose main contribution rests in other areas of photography, were also interested for some time in depicting people at work. One of them is Frederick Henry Evans, who produced, as a contributor to Country Life magazine, a series of impressive images of French locksmiths in 1906. Another example was František Drtikol and his images taken in ore mines. The opposite of emotional documentation was a descriptive testimony of the appearance of factories. These images were used in particular for promotion purposes in magazines, leaflets, books, and at exhibitions. The documentation of factory interiors brought a new topic to photography. An example of this is photographer Rudolf Bruner-Dvořák, who systematically pursued this branch of photography in the Czech lands and whose images were used for instance in a book about Czech textile industry ("Český průmysl textilní slovem i obrazem", 1909).

American photographer Lewis Wickes Hine dealt with the relationship between the man and technology in the production process from the sociological point of view.

4.4. Ethnographic documentary, documentation of rural life

With a few exceptions, nineteenth-century portrait photographers aimed to idealize the image of the human face. However, there were also authors whose objective was to depict representatives of various groups of the society and well-known characters without any idealization and without artificial decoration. They first photographed these "characters" in studios, and later visited their sitters directly in the countryside, laying the foundations for documentary photography of countryside life, a special branch of which were ethnographic documentary images. It was natural for people living in towns, where there was an incessant inflow of new inhabitants, to search for support in the countryside. It was also natural that the nations being newly established saw in their countryside the true man unspoiled by

the town. This trend was also mirrored in contemporary literature. With the growing interest in their national past, many nations were also increasingly interested in ethnography and folklore. In 1868, for instance, a big representative ethnographic exhibition was held in Moscow, in which numerous photographers took part. Likewise, a significant part of the Vienna Universal Exhibition of 1873 was devoted to ethnography. A major example in the Czech lands was the Czechoslavic Ethnographic Exhibition of 1895, which presented the idea of the Czech nation belonging to the Slavic world.

It is necessary to distinguish between ethnographic research conducted by travellers in faraway countries and ethnographic interest in the people and the past of own or allied nations. Towards the end of the century, these activities, motivated first by romanticism and later by nationalism, developed into an expert interest, a scientific interest. One of the reasons was that the "traditional values" changed and declined as the influence of the industrial revolution was increasing. As their rhythm of life changed, people got further away from the "natural life" and folk customs were slowly forgotten. And here came experts as well as enthusiastic amateurs to record various demonstrations of folk culture. The interest in domestic folk skills was undoubtedly linked with a sort of searching for the original roots in connection with the process of the establishment of modern nations.

There was often a very systematic interest in domestic folk culture, which gave rise to a few really exceptional projects in this field. A lot of attention is traditionally paid to American photographers, who focused on providing complex visual information about the native inhabitants of the American continent, the Indians. Besides photographers depicting the Indians just occasionally, even though with excellent results (such as William Mc Farlane Notman), there were two outstanding authors: Adam Clark Vroman and Edward Sheriff Curtis. Vroman, who originally worked for the railways, started to take landscape photographs in 1892. As a co-owner of a bookstore in Pasadena, California, he began in 1895 to photograph villages of the Hopi tribe and in 1901 also the Navaho tribe. He used 6.5 x 8.5-inch glass plates and platinum and silver-emulsion papers. He used his pictures to accompany his lectures on the Indians, for whom he tried to gain public support. The way he documented the life of the Indians was meant to provide realistic complex information not just about the types of people, but also about the way they lived. Edward Sheriff Curtis performed yet a more generous documentation of the life of the Indians, using his images to illustrate a twenty-volume book devoted to the native inhabitants of North America (The North American Indian, published between 1907 and 1934). Comprising a total of 40,000 images, Curtis's photographic project had no parallel at that time in terms of extent. Only some 1,500 full-page photogravures were used in the text in the above-mentioned book. However, inserted in each volume was a portfolio of 36 best images 30x40 cm in size, the appearance of which was virtually the same as that of the original obtained on 14 x 7 inch or 11 x 14 inch negatives. Until 1906 Curtis covered all his expenses on his own while travelling patiently from tribe to tribe to get as complex view as possible. Curtis was a big

admirer of the Indians, genuinely concerned about their fate. Starting in 1906, he received a 15,000 dollar contribution for five years to cover his travel expenses.

No project comparable to Curtis's work can be found in Europe. Nevertheless, a number of photographers at the end of the nineteenth century and the beginning of the twentieth century documented various ethnic and national groups, especially those that differed in some way from the majority population or from the ruling class. For example Danish photographer Thomas Neergaard Krabbe photographed in particular the native inhabitants of Greenland during his stay there as a health inspector between 1893 and 1909. Famous Italian writer Giovanni Verga photographed in 1892-1897 people living in the Sicilian countryside. What he presented in literature as a representative of verism (from the Italian word "vero" meaning "truth") is convincingly illustrated also by his images. Polish author Ignacy Krieger, besides documenting the city, often took photographs of various types of inhabitants near Krakow. However, a vast majority of his images were taken in the studio. Similar examples could be found in the Czech lands, where the aforementioned Czechoslavic Ethnographic Exhibition provided inspiration for a great interest in photographic documentation of the countryside.

Ethnographic documentation and interest in ethnographic documentary photography had a specific role in Russia, a country consisting of many nations and nationalities. As early as 1871, St Petersburg photographer Vasily Andreyevich Karrik, born William Carrick in Scotland, travelled with a portable laboratory to the Simbirsk (now Ulyanovsk) region to take images of peasants in their natural environment. He paid special attention to distinctive portraits of Russians, but also of the Tatars and members of other nations. His photographic and ethnographic research was generous as well. Carrick captured 20-25 images a day on wet collodion plates. He sought to publish a portfolio of images of Russia, but did not gain official support for his plan. Life in the Russian countryside was also documented systematically by Ivan Vasilievich Boldyrev from the 1870s and by Maksim Petrovich Dmitriev from the turn of the 1880s and the 1890s. Besides excellent realistic portraits of inhabitants of the Russian countryside, Dmitriev produced a monumental project of picture geography of the Volga river. The immediate impulse for this work was the 1891 bad harvest and subsequent famine and epidemics that hit the area. In 1893, he published a portfolio of photographs depicting the bad harvest of 1891-1892 in the Nizhny Novgorod region, which is an impressive documentary work in terms of both extent and the social and critical accent.

4.5. Photographic motion studies

Efforts to photographically record individual stages of movement represent an important chapter in the history of photography of the nineteenth century. These efforts also played an important role in the birth of the cinematograph, which was initially called, not by coincidence, "a theatre of pictures brought to life".

In the Czech lands and in German-speaking countries, the term "instantaneous photography" was used for motion photography in the 1880s. The term "snapshot" photography, which started to be used around the turn of the century rather for images depicting action in general, is much older and its roots can be found in the very beginning of the medium. The first "instantaneous" images were produced in Vienna in 1841 by the Natterer brothers who recorded on daguerreotype plates street scenes involving movement. At that time, these photographs were called Sekundenbilder (instantaneous images, as opposite to images requiring exposure times as long as several minutes).

In the beginnings of motion photography, the opinion was that the method would be best employed especially in the field of science. This is also where the earliest motion studies were used. The first significant figure connected with the photographic recording of individual stages of movement was US photographer Eadweard James Muybridge, who reportedly started research in this field in 1872. However, fundamental was the announcement in 1878 of his project, in which he proved, by means of photographs taken with twelve cameras exposing a trotting horse in a sequence, that a trotting horse has all four legs off the ground simultaneously in a certain stage of movement. Apart from horses, Muybridge started to examine the motion of other animals and gradually improved the method of image taking to eventually employ electrically-controlled shutter releases. In some cases he used as many as 24 cameras, so he obtained very detailed motion studies. Muybridge used numerous sequence pictures in his extensive project for a book of photographic studies aimed particularly at fine artists as an aid (Animal Locomotion, 1878, 1888). He published partial results in other books (The Horse in Motion, 1882, Animal in Motion, 1899, The Human Figure in Motion, 1901). His invention of the zoopraxiscope, a projector enabling to recreate movement by displaying photographs of its individual stages in rapid succession, ranks Muybridge among the "fathers of cinematography".

Parisian physiologist and zoologist Étienne Jules Marey was interested in images of individual stages of movement from a purely scientific point of view. Using a camera with an adjusted shutter, he captured several successive stages of motion on a series of images recorded on a single plate. Marey called the camera, designed mainly for studies of human locomotion, a "chronophotographic camera". To observe birds in flight, Marey had a device produced based on his own design, which was called "gun camera" and which enabled to record the stages of movement of bird's wings on a single plate. Marey published his results in a number of articles and in the books Le Vol des Oiseaux (1890) and Le Mouvement (1894). Georges Demeny, who worked as Marey's assistant in 1882-1894, perfected some of the chronophotographic devices and later continued on his own with the research started by Marey.

In Germany, series of images of moving objects were obtained by Ottomar Anschütz, whose upgraded focal-plane shutter enabled him to achieve exposures as short as 1/1000 sec. In 1884, Anschütz produced his famous series of photographs of the life of nesting storks.

The area of scientific motion photography also comprises the allegedly first ever image of lightning, taken in 1883 by R. Haensel in Liberec, north Bohemia, and the first photograph of a projectile in flight, obtained by professor Ernst Mach in 1884 in Prague, which actually means the beginning of ballistic photography. The first half of the 1880s therefore played a key role in the rise of instantaneous photography.

Extensive research in the field of scientific motion photography was conducted by Josef Maria Eder, at that time the most outstanding figure of photographic science and technology in the Austrian-Hungarian Empire, a teacher and official in many photographic societies. In 1884, he published in Vienna a book entitled "Die Momentphotographie". His book dealing with the applications of motion photography in art and science, "Die Momentphotographie in ihrer Anwendung auf Kunst und Wissenschaft", was published two years later, and his instructions about how to produce motion photographs, summarized in "Anleitung zur Herstellung von Momentphotographien", were published in 1887. At that time, these were the best publications dealing with motion photography.

The progress in the area of photographic technology in the second half of 1880s also involved the introduction of cameras that were basically not designed for work with a tripod, but were meant as hand-held cameras. The English language started to use the term "snapshot photography" for this method of photographic work, a term coined in 1860 by John Herschel to describe pictures taken as impulsively as a hunter snaps off a reaction shot when there is no time to aim. Snapshot photography also means instantaneous images obtained with a hand-held camera.

4.6. Scientific photography in the Czech lands

At the beginning of photography's employment in scientific work were of course attempts by first Czech daguerreotypists, with the photomicrograph on daguerreotype plate of a plant stem cross-section by Florus Ignác Stašek being one of the earliest photomicrographs in the world. (Photomicrography deals with magnified images obtained by means of a microscope, while microphotography means producing reduced-size images for the purpose of information storage for example. Early practical applications of microphotography included the pigeon post during the siege of Paris in 1870.) Physiologist and neuroanatomist Jan Evangelista Purkinje, the most outstanding Czech scientist of the period, played an interesting role in the history of Czech photography and prehistory of cinematography. The stroboscope perfected by him (Phorolyt) demonstrated the use of a series of movement-sequence drawings for scientific purposes. Purkyně also employed sequence photographic motion studies mounted on a disc in his kinesiscope animation viewing device. At the first ever sequence photograph in the Czech lands, consisting of nine images obtained using the wet collodion process, Purkinje is rotating. Purkinje also used photographs for the examination of human physiognomy. Using a series of images depicting various states of mind and facial expressions, from cheerfulness

to contempt, he investigated and demonstrated how emotions change the appearance of the human face. Also in this case it was Purkinje who posed for the camera, with the images probably taken by other photographers.

The first Czech chemistry teacher at the Czech Technical University in Prague (ČVUT) and a professor of astronomy at the Charles University, Vojtěch Šafařík, occupied himself intensively with various modifications of the wet collodion process. Based on his experience he published in 1876 an extensive work on dry plate photography ("O fotografii na suchých deskách"), the first Czech scientific essay on photography explaining the physical and chemical fundamentals of the photographic processes used at that time.

When the use of dry plates spread from the middle of the 1880s, photography was employed to a greater extent not only by commercial photographers, but also for technical and scientific work. At that period of time, outstanding commercial photographers typically performed specific tasks in cooperation with scientists: Jindřich Eckert cooperated with geologist Gustav Laube when photographing different types of Bohemian landscape, and with physicist Ivan Puluj when producing a series of x-ray photographs. Photographer Ignác Josef Schächtl produced photomicrographs for the economic school in Tábor.

Ernst Mach, one of the most outstanding physicists in the Czech lands, worked in the department of physics of the then Charles-Ferdinand University (now the Charles University) in 1867-95. Mach's image of a projectile taken in 1885 ranks him among the founders of ballistic photography. During his professorship at the Vienna university, Mach proposed to use x-ray stereographs.

Wilhelm Conrad Röntgen's epoch-making discovery initiated experiments by many Czech scientists. The first Czech to obtain and present on 17 January 1895 his x-ray photographs was Karel Domalíp, a professor at the ČVUT. He produced them before details were known of experiments performed by Röntgen himself. Another figure that was at the beginning of interest in applications of Röntgen's discovery in the Czech lands was professor of physics and electrical engineering Ivan Puluj. In the spring of 1896, there was already a number of authors occupying themselves with x-ray photography in the Kingdom of Bohemia. The most outstanding collected works dealing with x-rays in Czech photography is that of Jindřich Eckert. In his x-ray photographs, produced in cooperation with Ivan Puluj, the initial scientific experiment was elevated to an esthetic level.

Karel Václav Zenger was an outstanding figure of Czech astrophotography. Zenger won worldwide fame in particular for his night image of Lake Geneva taken on 10 September 1884. Among the pioneers of astrophotography are also the brothers Josef and Jan Frič who became famous internationally for their photographs of the Moon taken in 1884 –1885 without using a tracking device. Prague observatory director Ladislav Weinek, who founded an astronomical and photographic institute at the observatory in 1894, received a number of international awards for his astronomical images. What was found particularly interesting was his image of a meteor, taken at the Prague astronomical observatory on 27 November 1885. From 1897 he published with Carl Bellmann a photographic atlas of the

Moon. Photographers Vladimír Jindřich Bufka a Jan Böhm took interest in astrophotography as well.

The beginning of scientific application of photography at Czech universities can be dated back to 21 May 1881 when Bedřich Čecháč was appointed a lecturer in photography at the ČVUT. After separate lectures, an independent institute of practical photography was established here in 1899 by Karel Kruis. Kruis's photomicrographs of yeast cells obtained by ultraviolet light attracted extraordinary attention as early as 1896. An institute of physics was opened at the Charles-Ferdinand University in 1908 which organised numerous lectures on photography and photochemistry. In 1922 an independent institute of photochemistry and scientific photography was established at the Charles University, where Dr. Viktorin Vojtěch later became a professor of photochemistry and photography after lecturing on photography here from as early as 1908. At the department of physics of the Brno university of technology, photography was taught by Dr. Vladimír Novák who was appointed a regular professor in November 1906 and established a laboratory of photography there in 1908.

4.7. Documentary photography in the Czech lands

The expansion of documentary photography is linked closely to the rise of industry and industrialisation in general. First structures, in the depicting of which documentary photography played a role, were bridges and construction of railways. The first known complex documentation of railways in the Czech lands was performed in 1870 and 1871 by Vienna photographer Joseph Löwy, who recorded construction of the Austrian Northwestern Railway from Vienna via Moravia to Trutnov, northeastern Bohemia. In 1875 Ignác Kranzfelder, photographer in Klatovy and Domažlice, documented construction of the Pilsen - Železná Ruda rail route, producing particularly impressive images of the tunnel construction under the Špičák mountain. Independently of each other, Jindřich Eckert and Josef Benda simultaneously photographed some railway stations on the route from Prague via Beroun to Rakovník or Protivín. Images by F. Brož, of whom not much is known, of construction of several local rail routes in south and southwestern Bohemia can resemble the atmosphere of railways construction in the USA. Unintentionally, the photographic recording of railways also revealed the insensitive human interference in landscape, where the harmony of nature contrasts with railway embankments, tunnels and furrows.

Exhibitions represented an important factor in nineteenth-century documentary photography. Photographer Otta Bielfeldt documented the chemical plants of Jan David Stark, in the western Bohemian region of Pilsen, for display at the Universal Exhibition in Vienna. Extensive photographic documentation of property of the Schwarzenberg family was carried out for the same purpose. Bielfeldt's series is the first known set of photographs documenting production premises in the Czech lands. Images by the Pilsen-based photographer were the first in the Czech lands to document with brutal openness the extensive human interference in landscape

that came in the form of huge opencast mines as early as 1872. Perhaps in connection with the Vienna Universal Exhibition was also launched the documentation of rail vehicles manufactured by the company Ringhoffer, a project which then continued for a few decades (photographer J. Eckert). Exhibited at the Universal Exhibition in Vienna, in a spa pavilion, was a series of images by F. Fridrich of the spa resort Teplice and its surroundings, commissioned by the Teplice town council. J. Eckert received at the exhibition the Voigtländer Medal of the Photographic Society of Vienna for his collotype facsimile of a medieval codex. Photography's role at the 1873 exhibition was therefore that of an evidence and of a source of information.

A fundamental change in the approach to photographic documentation in the Czech lands came with the Jubilee Exhibition of 1891, held at Prague's exhibition grounds. At no other event before have so many images been taken and so many photographers presented! Presented at the exposition were, among others, the club of amateur photographers with its own pavilion Helios, several photographers in their own separate pavilions, and an exhibition of photographs where Karel Bellmann won the first prize for his collotypes. Výstavní deník Praha, the first Czech daily publishing printed photographs on a regular basis, released on 16 June a photographic reporting by Rudolf Bruner- Dvořák of the accident of the Kysibelka balloon. This set of photographs was the beginning of a successful career of the photographer who began to describe himself as "moment photographer".

From the 1890s photographs started to became part of extensive publication projects. These projects reflected the fact that the Czech society was completing its emancipation process at the end of the nineteenth century, becoming a self-confident nation, very successful in economic terms, within the Austria-Hungarian Empire. Major political and economic achievements were logically accompanied by efforts in the areas of education, culture and science. Several essential works were published that have been a source of information and inspiration until the present time. Many of these works were serialized and sometimes published for as long as several decades. As printing techniques progressed, photography gradually replaced the method of xylography for illustrations. Published at the Christmas of 1880 was the first part of the work by August Sedláček entitled "Hrady, zámky a tvrze Království českého" (The Castles, Palaces and Fortresses of the Kingdom of Bohemia). The encyclopaedia "Ottův slovník naučný" was published from the beginning of 1888, while work on an inventory of historical and artistic monuments of the Kingdom of Bohemia ("Soupis památek historických a uměleckých v Království českém") was launched in 1893. Containing 500 images from 96 photographers, the work entitled "Letem českým světem" (Czech World in Brief), published in instalments by J. R. Vilímek in 1896-98, can be perceived as the peak of employment of photography in contemporary society. The work followed the book "Světem letem" (World in Brief), which showed in 256 photographs the "most remarkable places, structures, natural wonders, and works of art all around the world". The project "Letem českým světem" was followed up by "Národní album" (National Album) comprising portraits of outstanding personalities. In 1882 - 1908 a different publisher put in place the project entitled "Čechy" (Bohemia). The list of publications addressing national history and geography and illustrated with photographs also in-

cludes "Die österreichisch-ungarische Monarchie in Wort und Bild", published in Vienna from 1894.

Like in other countries, a certain nostalgia for the old times, which seemed to be changing rapidly with the progress in industry and transport, spread in the Kingdom of Bohemia towards the end of the nineteenth century. It seemed that the traditional values and certainties were disappearing and that the society was changing too fast. The construction boom changed the historical centres of many towns and cities. Particularly extensive was the architectural transformation of the capital city centre, where a redevelopment project was put in place from 1893. Some local photographers attempted to carry out a photographic documentation of the existing face of their towns. In 1894 a monument inventory commission was founded in Prague to organise photographic documentation of buildings and streets that were slated for demolition within the redevelopment. In every major town the local portrait photographer pursued documentation of local events. The quality or extent of the work of some authors extended beyond their region (for example that of B. V. Liška in Jindřichův Hradec, J. Picek in Jičín, S. Wasservogel in Olomouc, the Šechtl company in Tábor). At the beginning of a new century, some of these photographers started to cooperate with postcard publishers.

Ethnographic documentary represented a specific area of documentary photography in the Czech lands. Greater importance was attached to ethnographic documentary here than in other countries because it was connected with the reinforcing of national self-confidence. Moreover, there were regions in Bohemia and in particular in Moravia that could be regarded as almost untouched by civilization from the viewpoint of folk culture. This is what fascinated sculptor August Rodin during his 1902 trip to southeastern Moravia and what was the reason why outstanding German photographer Erwin Raupp visited the region in 1904. In any case, the end of the nineteenth century was a time when the peculiarity of the Moravian and Bohemian countryside was rapidly changing and the photographic camera was seen by many as the ideal tool for documenting the existing situation. Particularly the Czechoslavic Ethnographic Exhibition provided a major incentive to photographers when its photographic department in July 1893 called on amateur photographers to carry out photographic documentation for the purpose of the exposition. As a result, organising the event had a significant effect on the specialisation of many amateur as well as professional photographers. Among them was also painter Ferdinand Velc, who produced in the summer of 1893 a valuable ethnographic photographic documentary in the village of Postřekov in the Chodsko area, covering a wide range of topics from folk customs to religious ceremonies to work scenes. Velc recorded everything spontaneously without any sign of staging the scene. The ethnographic exhibition also had an effect on the specialization of František Duras, a professional photographer in Slaný, as well as the influential amateur photographer Karel Dvořák. Influenced by the exhibition, Bohumil Vavroušek began to photograph vernacular architecture for the first time, with his work entitled "Dědina" (Village) published thirty years later. Countryside was the main subject matter for Kolín photographer František Krátký as early as the turn of the 1880s and the 1890s.

Around the turn of the century, photographers all across central Europe were interested in documenting folk culture. When the preparations for the Czechoslavic

Ethnographic Exhibition were fully under way, Michael Haberlandt, the founder of the Austrian ethnographic museum and an outstanding collector, began to create an ethnographic photography archive in Vienna. In 1896 he delivered a lecture at the Vienna Camera Club on photography serving ethnology, in which he formulated rules that photographers should follow when documenting folk culture. Shortly afterwards - and in cooperation with Haberlandt - a museum of photography was opened in Dresden that specialised in Saxon folk culture. This museum in 1902 served as a model for a similar institution that preceded the establishment of the photographic archive of what is now the Ethnographic Institute of the Moravian Museum in Brno. The museum's photographic collections include for example images by Josef Klvaňa, who used his camera to document folk dresses, and by Josef Braun who photographed spontaneously everyday life around the southern Moravian municipality of Uherské Hradiště in 1901-1910.

The amateur photographic movement brought a completely new approach to documentary photography from the turn of the century. The amateur photographer, independent of commercial orders, could express himself photographically much more freely, but on the other hand his photographic equipment was mostly not as good as that of professional photographers. Most of the amateurs used the 9 x 12 cm image format, but the smaller and lighter camera gave them more artistic freedom. Particularly photographers who were not members of camera clubs captured spontaneously various scenes from everyday life, as if taking photographs to them was a "shooting" of the life around them. Besides the unusual, they often depicted totally banal and unexceptional situations. For their depicting of contemporary lifestyle, pictures by these lay photographers are often much more interesting than the posed and polished images taken by members of amateur clubs who were often considerably regulated in their photographic activities.

5. Pictorialism and social perspectives - an age of contrast - contrasts in photography

5.0. Introduction

The term "Art-Nouveau Pictorialism" is used for end-nineteenth-century art photography, for which the use of pigment processes was typical, while the term "impressionist" or "purist" Pictorialism can be used to describe a movement, popular especially in the USA, which sought to achieve the pictorial effect and soft focus by optical means.

The popularity of pigment processes is closely connected with a progress in photographic technology, which was adapting to the growing needs of amateur photographers from the second half of the 1880s, and with changes in perceiving photography as such. For photographers who perceived themselves as artists, both professional and amateur ones, employing pigment processes was not only a way to become different from ordinary amateur and commercial photographers, but also a tool to tell something about themselves and about their feelings through their pho-

tographs. A mechanical description of the world around them was no longer what they wanted. Their images, often depending on the photographer's skills and experience, compared photography to graphics and, in a more general meaning, came as part of photographers' aspiration to produce recognized pieces of art. It thus seemed that pigment prints crowned the efforts at emancipation of photography and of photographers who felt a strong desire for photography to become a form equal to the other forms of art. In terms of the degree of hand-made work involved and of the appearance of the final result, pigment prints had really come very close to the traditional fine art forms. Many of the images provided information about the photographer himself rather than the reality they depicted.

From the time that a cast shadow in studios was becoming an important part of portraits and that outdoor photographers put emphasis on the mood and atmosphere and took delight in low light and dusk, photography started to be called "the play of lights and shadows". At that time, however, photographers' work was already on the threshold of modern photography for which the depicting of lights and shadows was one of the key topics.

5.1. Social perspectives

The content of the term "social documentary photography" had been formed for decades and was sometimes overused and interpreted in various ways. In a broader sense, what we can describe as social documentary photographs, in line with the Anglo-American approach, is all documentary images of living and working conditions of the middle and the poorer classes, resulting even in social scientific surveys. In a narrow sense, it is a systematic and goal-directed photographic testimony from the environment of the socially weak involving a deliberate critical accent and an effort to help. So it is not only the extent of the photographer’s concern about social problems what makes the difference, but also how broad a sample of the society was covered.

As early as 1851, Richard Beard produced a series of daguerreotypes, the name of which indicated a certain social perspective: "London Labour and the London Poor". In the carte-de-visite period, images of the poor were sometimes perceived as illustration of bizarre characters and street types, without anyone taking care to a greater extent about the social issues. Some of these images were idyllically staged, with professional actors and actresses representing certain social types (a shepherd, a tinker). For that reason, many of these photographs were taken in a studio. An illusive social subtext can be also found in some images by Oscar Gustave Rejlander.

Probably the first photographer ever to take social documentary photographs purposefully was English author Thomas John Barnard, who, as a philanthropist, established in 1871 a home for abandoned boys, which was later expanded to include a facility for girls. As part of the institution he founded a photographic department, where photographs of boys were obtained just before they were admitted, sometimes in their authentic environment where they used to live. This gave rise to

a noteworthy documentation of poor children and youth, which at the same time served as an argument that such institutions are useful. Images by Thomas Annan of the Glasgow slums have been mentioned already. Unlike Charles Marvill's photographs of Paris, where the social tone is rather unintentional, Annan's documentary images contain a strong socially critical subtext. Reportage covering famines, whether in India (William Willoughby Hooper, Lala Deen Dayal) or Russia (Maksim Petrovich Dmitriev) can also be included in the history of social documentary photography. The disastrous harvest of 1891 in the Nizhny Novgorod region and subsequent famine and epidemics in the area inspired Dmitriev to carry out an extensive two-year photographic project that had no parallel at that time.

The strongest photographic protest against social contrasts in the nineteenth century was registered in the USA. In 1888, an article by Jacob Riis called Flashes from the Slums was published in The Evening Sun, with xylographs from photographs used as illustration. Born in Denmark, the journalist and writer Jacob August Riis was moving in the environment of poor immigrant families after he came to New York in 1870. He started to work as a reporter for The New York Tribune in 1873 and later joined The Evening Sun. Riis covered in particular the poor and their living conditions, taking photographs using magnesium light. The big response to his first images of the Lower East Side made him in 1890 publish the book "How the Other Half Lives". Illustrated with 17 Riis's images and 19 drawings from photographs, the book provoked a lot of discussion, and the arguments it contained were even used in an election campaign. Riis then published nine more books addressing the same topic (for example The Children of the Poor - 1892, Children of the Tenements - 1903). Through his lectures with slides and his publications Riis aimed to improve the living conditions of the poor. His work is therefore among the most remarkable humanitarian documentary projects in the history of photography.

Another outstanding figure that had a fundamental effect on documentary photography was Lewis Wickes Hine. While employed at a factory and later in a bank, he studied painting and sculpture and then sociology and pedagogy at the University of Chicago. From 1901, while working at the Ethical Culture School, New York, he started to take an interest in photography as a demonstration and documentary tool. From 1905, he purposefully photographed immigrants and labour in factories, and a year later started to take documentary images of child labour. It was his images taken for the National Child Labor Committee that helped to introduce a law banning child labour. It was the first time that photography played the role of a social argument and the first time that photographs were used as a documentary tool in social science. Hine published his first book in 1908. Later he also documented photographically the relationships between the man and technology.

On the opposite side of efforts at depicting social aspects of life with a critical accent was a tendency to record contemporary lifestyle in a positive way, showing even admiration for civilisation values. The latter approach was popular especially among amateur photographers, who commented this way on the lifestyle of the time, on sports activities, leisure time and pastimes. Their images therefore represent an excellent documentation of contemporary lifestyle. The best known repre-

sentative of this movement was the already-mentioned Jacques-Henri Lartigue. Professional photographers focused on this approach mostly employed a positive view when documenting the lifestyle of the upper classes and the fascination with technical innovations of that time (hot air balloon flights, first cars...). A typical representative of this approach in the Czech lands was Rudolf Bruner-Dvořák.

5.2. Pigment processes and Pictorialist landscape photographers

Photography with higher artistic ambitions started to be called "art photography" (Kunstphotographie) towards the end of the nineteenth century. For the historical term "art photography" has a more general meaning at present, the term "Pictorialism" came into wide use. It is generally said that the term has its origin in the book "Pictorial Effect in Photography" by Henry Peach Robinson, published in London in 1869. Covering a longer period of time than the two decades preceding the World War One, however, the word Pictorialism is also used in a broader sense to mean efforts at employing painting principles in photography, that is, efforts to bring photography on a par with other art forms. That stage of Pictorialism, in which the use of pigment processes dominated, can be called "Art Nouveau Pictorialism".

Art Nouveau Pictorialism was followed by an artistic movement, for which the use of soft-focus lenses, long focal length lenses, and close-up lenses for soft-focus images was typical. The purpose of making the images blurred deliberately was to capture mood, atmosphere, to give a sense of picturesqueness. Having a foggy, smooth, dispersed, blurred appearance, such photographs transfer the impression of atmosphere onto the viewer. It can be said that it was application of Impressionism in painting to photography. This stage of Pictorialism is called impressionist (or purist) Pictorialism, and this style of work was still frequent in the 1920s.

However, purely from the viewpoint of technology, photography experienced a contradiction around the year 1900, for in the instant that progress in photographic technology freed the photographer from his immediate dependance on technology, so that he no longer had to spend a lot of time preparing plates and was able to buy ready-to-use negatives, some photographers were enchanted with the laborious preparation of pigment prints. What also played a role in this trend was the persisting tradition of hand-made products. The negative became a mere input to be further processed, so each final positive was to a certain extent unique. Some processes (not all) allowed a great deal of manipulation and alteration of the positive by the photographer, including changes to tonal values and colours. What was valued was pictures with a sense of the artist’s "hand", the importance of which increased immensely. The traditional values of the author's personality came to the fore, especially originality and the price connected with it. For example works by the brothers Theodor and Oskar Hofmeister, amateur photographers in Hamburg, were so famous in their time that they were purchased at very high prices by both museums and individuals right after they were completed.

The term pigment processes is used in a broader sense and in a narrow sense. In a narrow sense, it means processes based on W. H. Fox Talbot's discov-

ery of 1852 that bichromated gelatin exposed to light does not swell in cold water and becomes insoluble in warm water. Shortly afterwards it was discovered that the same happens with bichromated gum arabic. When exposed to sunlight (or other source of light containing ultraviolet rays), the respective parts of bichromated gelatin harden, or more precisely lose their ability to absorb water, with the degree of hardening directly proportional to the amount of light absorbed. Copying a negative or a positive gives an image composed of hardened bichromated gelatin, which however has to be made visible by suitably colouring this layer. Individual pigment prints (in a narrow sense) then can be distinguished based on how this colouring is done, whether areas exposed to light (that means hardened) or those not exposed to light (not hardened) are coloured and whether the colouring is done on the surface or is contained in the whole bichromated colloid layer. In some cases (collotype), the image obtained on a plate can be used as a printing master to produce multiple prints. Pigment prints in a narrow sense therefore include - ranked by popularity - oil prints, gum bichromate process, bromoil process, carbon process, and carbro process. From the viewpoint of technology, connected with the above-mentioned processes are the rarely used pinatype and the hydrotype process. Pigment processes in a broader sense include palladiotype, ozobrome process, cyanotype, and platinotype, for example. Platinotype, however, was not a dye-based process; what formed the image was chemically separated platinum metal. The platinum image was remarkable for its beautiful rich velvety-black tones, but also because it was the most permanent of all photographic materials. What also played a certain role in the popularity of pigment prints among collectors was the fact that they were much more stable and resistant over time than conventional silver-based materials.

Pictorialist photographers brought to the society a new feeling about images, like the Impressionists did in painting. Instead of a descriptive and documentary character and faithfulness, it was atmosphere and impressions what was highlighted. Landscape photography was the key theme for the amateur photographic movement, which came into existence at the turn of the 1880s and the 1890, along with the emerging Art Nouveau movement. And most Art Nouveau Pictorialists used pigment processes. Belgium's Léonard Misonne was regarded as the "king of landscape photographers". Another outstanding landscape photographer was Alfred Horsley Hinton, also known for his books. The most appreciated Pictorialists, the brothers Theodor and Oskar Hofmeister of Hamburg, produced many atmospheric landscape photographs as well. Specific results - not much known in Europe - were achieved by Russian Pictorialist photographers, who purposefully drew inspiration from landscape paintings. The most outstanding Russian Pictorialist, Yuri Petrovich Yeromin, originally studied landscape painting in Moscow. Many photographs by Nikolai Platonovich Andreev resemble Corot's paintings. Central Europe was dominated by the "Vienna trio", three Pictorialists, Hans Watzek, Hugo Henneberg and Heinrich Kühn, who had their first joint exhibition in Vienna in 1896. Like with the avant-garde that came later, works by photographers and painters became

interwoven in the Pictorialism era. Photography started to be perceived as an art form, including the financial point of view.

5.3. Portraiture in the era of Art Nouveau Pictorialism

As the emancipation movement progressed and sentiments changed in the society, in particular female portraiture underwent significant changes towards the end of the nineteenth century in the area of portrait photography. Women started to be photographed in the role of symbols much more frequently. On the other hand, a group of photographers began to take interest in an artistic depiction of female beauty, which represented a completely new element in art photography. There was definitely a whole range of reasons behind artists' new approach to the subject of womanhood; the role of women in the Art Nouveau iconography is a comparable example. However, signs of a changed attitude to the subject of women in photographs had already appeared before, especially with portraits by female photographers. A beautiful example of this is images by Julia Margaret Cameron, who can be described as the most outstanding female photographer of the nineteenth century. Typical for her images is a special dreamy and nostalgic mood, emphasized by girls often wearing white robes and by a strange fixed look caused by long exposure times. Sometimes this India-born Englishwoman employed traditional composition laws and even quoted works by some painters, at other times she broke courageously the usual composition and technical rules, acting in a very unconventional way. It can be said that many of the elements she presented in her photographs around 1870 can be found with a number of authors connected with the beginning of the Art Nouveau movement twenty years later.

Gertrude Käsebier, who operated a successful portrait studio in 1896 - 1926, had a special position among female American photographers. What attracted her was in particular the depicting of relationships between the woman and her children, and portraits of young girls. Her images were published frequently and even used to illustrate several popular novels. Adelaide Hanscom, a talented miniature painter, became known for her photographic illustrations of books as well. She mostly used her children as her sitters and employed a lot of painting in her images which often involved strong mysticism elements.

While pigment processes became popular with European Pictorialists, Pictorialists in the USA rather tended to express their moods and feelings by means of "soft lenses". The "American way of Pictorialist expression" started to settle in European countries only after 1910. A certain exception when it comes to the use of pigment prints among American photographers was Edward J. Steichen, who had close ties with Europe and who is one of the most outstanding figures ever in the history of photography. Few photographers managed to be so universal and, at the same time, always with an individual style. Among Steichen's most popular topics was portraiture and ladies fashion, which was in fact a new genre in photography because drawings were used in fashion magazines in the whole nineteenth century. In 1923 Steichen became the chief photographer at Condé Nast Publications,

which published the well-known periodicals "Vanity Fair" and "Vogue". Photographs for these magazines were also supplied by Adolf de Meyer (renamed Gayne de Meyer), who lived both in the USA and Europe. For his sense of lightening the scene in impressionist style he was described as "the Debussy of photography".

Robert Demachy was a leading French Pictorialist, who also perfected some of the pigment processes. Originally a bank clerk who amused himself in his leisure time with painting, reading and music, Demachy wanted to make his works similar to paintings. So did his contemporary Émile Joachim Constant Puyo, an artillery officer and amateur photographer. His knowledge of optics made it easier for him to produce a special soft-focus lens. The special artistic environment of Paris was an inspiration for the work of outstanding Art Nouveau artist Alfons Mucha, who used photography mainly as a sketchbook. It is Mucha's photographs, the poses of his sitters and the draperies and costumes he used, that reflect perhaps the most clearly the atmosphere of what was called in Europe the "belle époque".

Among outstanding Pictorialist portrait photographers in Germany were in particular Hugo Erfurth, who opened a studio in Dresden in 1906, and Nikolaus Perscheid, whose Berlin studio was opened a year earlier. Erfurth's portraits of personalities looked almost like paintings, giving the impression of timelessness of the artistic artefact. Rudolf Dührkoo had an interest, besides portraiture, in theatre photography and especially images of ballet. The decorative portraits by Franz Grainer, who ran a studio in Munich from 1900, were very successful as well.

5.4. Pictorialists in the Czech lands

At the end of the nineteenth century, all external manifestations of the life of the Czech society were a proof of its strengthening self-confidence and a desire to become a full member of the family of European nations. Prague wanted to quickly rise to the level of Europe's leading cities. That is why it resorted to redevelopment and held big national exhibitions. Young artists no longer looked for role models and inspiration in Vienna and Munich, but mainly in Paris, a city they perceived as a centre of modern art. What confirmed their focus was the life stories of Alfons Mucha, Luděk Marold and František Kupka. It was thanks to this orientation that exhibitions of outstanding foreign artists were held in Prague: Auguste Rodin (1902), Edvard Munch (1905), Antoine Bourdelle (1909), and the exposition of French Impressionists in 1907. Also the works of Picasso and Braque gained recognition quickly in the Czech lands especially thanks to art and literary critic F. X. Šalda and to Vincenc Kramář's collecting interest.

Around the turn of the century, Czech painting, sculpture, graphics, architecture and literature therefore succeeded relatively quickly in overcoming the barrier of provincialism and in making a distinctive contribution to European art. It cannot be said, however, that artists in the Czech lands perceived their activity as restricted to the narrow area of their nation. The multi-national monarchy basically strengthened the awareness of being part of a supranational unit, and a cosmopolitan character prevailed in the central European environment. After all, the whole

central Europe represented a broader cultural unit, with photographers in Vienna, Munich, Prague, Dresden and Budapest influencing one another. For example the works of the most outstanding Czech Pictorialist, František Drtikol, were influenced considerably by his studies at an art school in Munich. Drtikol, who opened a Prague studio in 1911, after a failure in the small town of Příbram, became famous in particular for his portraits and photographs of nude figures in motion. Mutual exchange of experience in the field of art was a natural and fast process. Those born in Bohemia, Moravia and Silesia migrated to other countries to work in photographic studios there, some of them settling abroad permanently. For instance Dresden's famous photographer Franz Fiedler came from a family photographic studio in Prostějov, central Moravia. In his Pictorialist period, Fiedler won fame especially for his nude photographs. Imperial councillor and court photographer Hermann Clemens Kosel, a native of the Czech Krkonoše mountains, opened his "Anstalt für Gummidruck und moderne Photographie" in Vienna in 1905. Vladimír Jindřich Bufka, the second most outstanding Czech Pictorialist behind Drtikol, studied photography with Kosel. Czech photographer Karel Novák worked in many studios in Germany and, from 1910, in Vienna's educational and experimental graphic institute Lehr- und Versuchsanstalt für Photographie und Reproduktionsverfahren, before settling in Prague and founding the Graphic School Prague in 1919. Universally talented Vienna artist Josef Anton Trčka was of Czech origin as well and was in close touch with the Czech lands.

Besides this natural (and basically compulsory) process of gaining experience abroad after being trained as a photographer, what also formed a major bridge between nations was the amateur photographic movement, through which Art Nouveau Pictorialism trends got to the Czech lands first. The tendency towards Pictorialism was stronger with German photographic clubs based in the Czech lands than with clubs of Czech amateur photographs, with some of the latter inclined purposefully to themes involving national geography and history. Amateur photographers found a lot of information about the works of European Pictorialists at international exhibitions and in foreign magazines (in particular Das Atelier des Photographen) that photographic clubs in the Czech lands subscribed to. This way they learnt about the works of German authors, but also about those of Vienna's Camera Club, a society dominated by the so-called "Vienna trio": Heinrich Kühn, Hugo Henneberg and Hans Watzek, a native of the north Bohemian town of Bílina. Ludwig David, a leading figure of the Austrian Pictorialist circles, was a member of Club der Amateur-Photographen in Budweis (in the south Bohemian city of České Budějovice). The Brünner Camera-Club had especially close ties with Vienna as well. Photographs from the French-speaking environment were also widely known, especially pictures by R. Demachy and C. Puyo, even though the Czech photographic press commented on some of them with some reservation. The amateur photographic movement had a favourable effect on the somewhat monotonous portrait production by commercial photographers.

After the first generation of Art Nouveau Pictorialists in the Czech lands, which includes especially Otto Šetele, Rudolf Špillar and Ludvík Pinka, other successful

Czech authors using pigment processes were the already-mentioned František Drtikol and the prematurely deceased and extraordinarily talented Vladimír Jindřich Bufka. Preserved pictorial photographs by some lesser-known figures also indicate that their authors were extraordinary personalities, which is true especially for amateur photographer Josef Binko. Many amateur photographers as well as some professional photographers resorted to pigment processes only occasionally, but these efforts sometimes gave valuable results (Jaroslav Feyfar, Karel Kruis, Josef Šechtl, Viktor Meisner II., Otto Schlosser, Jindřich Vaněk, Emanuel Kimla).

The popularity of pigment processes continued even after the First World War, so it cannot be said that, in terms of style, 1918 was any milestone in the development of photography. However, it was a major political milestone; the way people lived and photographed changed after 1918 as a result of the shock of the war as well as of a certain intoxication with the newly acquired independence. The Austrian-Hungarian period was condemned and ridiculed. Even the Art Nouveau style itself had to wait for renewed interest for a few decades.

5.5. Early colour photography

Most of the contemporary multi-layer colour photographic materials are based on the idea of subtractive colour synthesis. This principle was first used in practice by French researcher Louis Ducos du Hauron as early as 1862. In 1868 he patented his invention of colour photography consisting of three partial black-and-white images taken through yellow, red and blue filters. From these three negatives he produced three partial slides using transparent supports covered with sensitive layers, with each slide dyed the colour corresponding to the filter used for exposure. Combining all the three partial images, carefully superimposed, gave a colour image during projection or when observed against the light.

Shortly before du Hauron's invention, a different method was used in 1861 by James Clerk Maxwell, who produced three slides of a tartan ribbon through red, green and blue filters. He then projected these slides simultaneously from three projectors through the same colour filters, which gave an image with faithfully reproduced colours. This method, based on the "adding together" of three colour images during projection on the screen, is called additive colour mixing.

The Lippmann process can be regarded as the first practical method of colour photography (though it was used only rarely). It is a brilliant method of recording full-colour images by means of interference among wavelengths of light, without the use of pigments or other colorants. Gabriel Lippmann, a professor of physics at the Sorbonne, first introduced it in 1891 (the method and his contributions to colour photography later won Lippmann a Nobel Prize). It is the first direct colour photographic process and one of few methods of objective colour reproduction, which records complete information about the spectrum of colours contained in the original. Lippmann's photographic method made it possible to obtain good-quality and permanent colour photographs in a black-and-white silver-halide emulsion, and the idea served as the base for the development of holography. Even though aids for

the Lippmann process were advertised in catalogues, the method was used mainly by scientists and experimenters.

The first colour photographic material manufactured commercially, which came into wide use between 1907 and 1932, was the autochrome that was based on the additive colour synthesis by means of a random-dot screen. The first report on the autochrome process was published on 30 May 1904 by Louis Lumiére in the magazine La Nature, but it took a further three years to resolve the technical aspects of the manufacturing process. The most serious competitor to the autochrome in technical terms was the screen materials Agfa-Farbenplatten, launched onto the market in 1916. A similar system was also developed in 1909 by the Paris-based company R. Guilleminot, Boespflug & Cie., which started to sell its product under the name "Dufay-Dioptichrome" in 1909. To obtain copies from autochrome plates it was possible from 1911 to use the positive materials "Utocolor", based on the knowledge that certain dyes were bleached out from the light-sensitive layer when exposed to certain wavelengths.

The complicated nature of the earliest colour photographic processes caused that the authors of the earliest colour photographs were largely the inventors of these processes. Among them, the most outstanding works (still life and landscape images) are those by Louis Ducos du Hauron. A major contributor to the spreading of colour photography was after 1900 the use of pigment processes, some of which made it possible to superimpose three colour separations to form a full-colour positive. As early as the 1880s it was also possible to obtain print reproductions of colour images relatively easily from three colour separations. As a result, among the outstanding authors of colour photographs were many Art Nouveau Pictorialists who often used colour in a moderate and cultivated way (Hans Watzek, Hugo Henneberg, Nikolaus Perscheid, Hugo Erfurth, Arthur Benda, Arnold Genthe). Using the autochrome process, remarkable nude images were produced by Edmond Goldschmidt, while Antonin A. Personnaz and Ferdinand Cuville took excellent landscape photographs resembling impressionist paintings. Among the biggest promoters of the autochrome process in the Czech lands was Vladimír Jindřich Bufka. From among Czech photographers, Karel Šmirous left the largest number of autochromes that have been preserved until the present time.

As colour photography was spreading, two basic approaches to it gradually emerged: a painting approach, based on the painting tradition, and a photographic one, where colour was used to achieve a specific expression or to document a certain scientific finding, thus enriching scientific and documentary photography. The "photographic approach" is represented in particular by the Lumiére brothers who produced an extensive series of autochromes. Adolf Miethe was an outstanding photographer-traveller, who published a book of photographs of Egypt (Unter der Sonne Oberägyptens -1909), for which images were produced using the method of three colour separations. The largest number of surviving negatives of this method of three-colour photography is by Russian photographer Sergei Mikhailovich Prokudin-Gorskii (deposited in the Library of Congress). G. Lippmann and profes-

sor Richard Neuhaus can be described as representatives of scientific colour photography.

The specific possibilities and the language of colour photography were still searched for before the World War One. Among autochromes, the specifics of colour arrangement and colour contrast were taken into account in composition in only few images. Photographers were rather impressed by the very possibility to depict the world in colour, so they often aimed to have many colours in their images rather than reducing the colours with respect to composition.