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**Changes in Society during and after the Industrial  
Revolution in Great Britain**

**BACHELOR WORK**

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**Změny ve společnosti během a po průmyslové revoluci ve  
Velké Británii**

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## ZADÁNÍ BAKALÁŘSKÉ PRÁCE

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Zásady pro zpracování:

Student se ve své bakalářské práci zaměří nejprve na obecnou charakteristiku 18. století v Británii se zvláštním důrazem na počátky a vývoj průmyslové revoluce a její vliv na sociální stratifikaci společnosti a důvody pro vznik výrazných sociálních rozdílů. Student se bude věnovat vývoji masové výroby a souvisejícím společenským změnám v průběhu 18. století a dalším souvisejícím změnám společenských skupin ve století 19.. Analytická část práce bude spočívat ve zkoumání změn tradičně zemědělské kultury Velké Británie na průmyslovou velmoc a dopadů této proměny na sociální složení společnosti.

Student bude využívat zejména kulturní analýzy založené na výzkumu sekundárních zdrojů.

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Jozef Kišantal

Průmyslová revoluce byla jedním z nejdůležitějších okamžiků nejen britské, ale i evropské historie. Tato práce se soustřeďuje na tuto epochu a na vše, čeho se týká. Detailněji se zabývá obdobím, bezprostředně předcházející této periodě, tedy první polovinou 18. století. Podává charakteristiku příčin vzniku hospodářského rozmachu a osobností tehdejší vládnoucí a politické reprezentace. Snaží se o pohled na samotný hospodářský rozmach, od geografických změn a s tím souvisejícím společenským změnám až po rozvoj velkovýroby na úkor domácích řemeslníků včetně příkladů významných objevitelů nových strojů. Podstatná část je věnována pracovním a životním podmínkám pracujících, mezi které patřily také děti. Snaží se o popsání okolností předcházejících a následujících jak Velkou francouzskou revoluci, která měla vliv i na Británii, tak parlamentní reformu, které se týká také vznik hnutí bojujících za zkvalitnění společenského života lidí, na které bylo v předešlých letech zapomínáno. V závěru se tato práce pokusí shrnout nejpodstatnější důsledky průmyslové revoluce.

The Industrial Revolution has been one of the most important moments not only British but also European history. This work concentrates on this period and everything related to it. It deals in detail with the epoch immediately preceding the Revolution, the first half of the 18<sup>th</sup> century. It focuses on causes of economic boom and personalities of ruling and political representation in those days. It tries to look at the industrial growth, geographical changes, social changes and the development of large-scale production to the prejudice of craftsmen including the examples of significant inventors of new machines. The constituent part of the work is devoted to work and life conditions of workers including small children. It seeks to describe the circumstances preceding and following both the French Revolution and the Parliamentary Revolution related to the rise of movement struggling for improvement of social life of people being forgot in previous years. The conclusion of the work tries to summarize the most significant consequences of the Industrial Revolution.

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# **1. Introduction**

When the Industrial Revolution started in Britain in the 18<sup>th</sup> century, nobody knew of its future consequences. Nobody knew that the Revolution would become the main technologic, social, economic and culture change in the 18<sup>th</sup> and 19<sup>th</sup> centuries. The changes beginning in Britain caused the reduction of manufacture replaced by machines. “The Industrial Revolution required machines which not only replaced hand labour but compelled the concentration of production in factories” (Mokyr, 121). An activity made by several people in the past was now carried out by machines, driven by steam – an energy that became one of symbols of the Industrial Revolution. Although it was later replaced by other types of energy, it became very useful and important part of industrial growth. Its role is undisputable.

A period, during which the royal authority was reduced, preceded the Industrial Revolution. On the contrary, Parliament was becoming more powerful. However, the influence of Hannoverian dynasty was important because the wars being in progress for a great deal of the 18<sup>th</sup> century influenced the Industrial Revolution.

In the 18<sup>th</sup> century, the religious wars were not important any more, on the contrary – fights between two political parties became more important. The parties were providing personalities that influenced both Britain and Europe. The Industrial revolution was in progress during a period of wars in the colonies that influenced the Revolution. Besides the enormous growth, the Industrial Revolution also gave rise to geographical and social changes in the society. New social classes emerged – the middle class and the working class. One of them was happy – it almost had everything they could; however, the second one consisted of mainly factory workers with almost no independence in their work.

On one hand, during the Industrial Revolution, cities were growing rapidly and roads, canals, bridges and rails, were built. On the other hand, great riots and protests emerged during this period. That is the reason why the Revolution is not easy to identify.

## **2. Beginning of 18<sup>th</sup> century**

### **2.1. War of the Spanish Succession**

The power conflicts taking place in the 17<sup>th</sup> century did not end at the beginning of the 18<sup>th</sup> century. Those who were expecting that there would be at least a partial peace after peace negotiations in Ryswijck, were wrong. As Maurois writes, the peace was broken and malice of things won over wisdom of people (Maurois, 309). The biggest armed conflict in the 18<sup>th</sup> century was about to start in Europe. It was caused by a dispute about the accession to the Spanish throne after “feeble-minded” (Maurois, 309) Spanish king Charles II died heirless in 1700. Thus, the question was - who would replace him.

In 1698, William III, an English king and Louis XIV, a French king made a contract accepted by Charles II. According to it, Joseph Ferdinand of Bavaria would become a Spanish heir to the throne. However, he died several months after that and Charles II issued his will ensuring the Spanish throne to Philip d’Anjou, a Louis XIV’s grandson. However, this document was impeached by many people, so the war was about to begin in Europe. According to Kolář, pacific moods left Britain as well (Kolář, 127). In addition to it, Louis XIV turned out to support the Stuarts again. “In addition to it, when Louis XIV acknowledged James Francis Edward as a new English king after his father’s death in September 1701, the British entrance into the war was without any doubts” (Kolář, 128).

An unexpected event happened at the beginning of year 1702. William III died accidentally one year after his father-in-law’s death.

“England that was standing on the threshold of war lost a ruler who – although in spite of himself – contributed to another step from an absolute to parliamentary monarchy and to an active engagement in European politics. While Londoners saw his political inheritance especially in an apparent securing of Protestant succession, an old continent lost the most decisive fighter against the expansive politics of the French king Louis XIV and the most uncompromising advocate of maintaining a power balance during the period when it needed it like never before” (Kolář, 128).

After William’s death, Anna Stuart, a James II’s daughter, became an English ruler until 1714.

In the meantime, however, the continent continued to approach the war. “In foreign policy, Anna’s accession to the throne did not bring any significant breakthrough in comparison with the William’ era. The war against France was inevitable” (Kolář, 133). The wars of the Spanish Succession involved all of the major powers except for Sweden and Russia. The countries involved in the conflict were forming up as follows: one side, so called French coalition, contained France, a part of Spain, Savoy and Bavaria. On the other side, there were England, Holland, Holy Roman Empire and countries of the Austrian Habsburgs. Later, Portugal joined the coalition against France.

The war had begun well for France but after that, the coalition against France began to do better and won several battles. According to Maurois, the reason was that France had been exhausted from fifty years of continuous fight and that France was not lord of the sea any more (Maurois, 312). As Maurois mentions, both sides suffered terrible losses after throes (Maurois, 312). In 1713, both sides came to an agreement that was undoubtedly advantageous for Britain. Beside others, England gained large territories in Canada, and also Gibraltar including the access to Spanish colonies. As Maurois mentions, England used up these Spanish colonies for import of slaves (Maurois, 313). “Since this agreement, the dominant position of England in Europe dates” (Maurois, 313).

As already mentioned above, the first years of new century, a period of war conflicts in Europe, Anne Stuart was an English ruler. According to Kolář, the Queen Anne was often presented as a weak woman with bitter experience and who was in the power of her friends and advisors (Kolář, 129). According to Maurois, Anne was even regarded to be stupid (Maurois, 310). However, the truth is that she was a strong and purposeful sovereign. “In relation to politicians the queen managed to be strict and unyielding if she considered it necessary, indulgent and generous, if she could afford it” (Kolář, 129).

It was a question, who would lead armed forces after the death of William III of Orange during the war with an oncoming enemy, France. One of targets Anne set was to ensure her husband a corresponding position (Maurois, 310). “Queen Anne was secretly

hoping, that her husband would become commander-in-chief in sea forces” (Churchill, 41). However, he never held an important office in the army.

Queen itself was spending lots of time with two women; the first one was Lady Sarah, the second one became later Abigail Hill, Lady Masham. Queen had very good relationships with both of the Ladies and the first one “leads” us to John Churchill, Lady Sarah’s husband. He later also thanks to his wife’s relationship to Queen became commander-in-chief in the army. However, Marlborough could not have become one of the most powerful politicians in England just because of patronage. As Kolář describes, Marlborough had exceptional skills because he maintained his position even after Anne’s breaking up with Sarah and coming to already mentioned Abigail Hill (Kolář, 130). Thus, Marlborough could help England to rise during Anne’s reign, as Churchill writes:

“Queen Anne’s reign is quite rightly regarded to be a period with a biggest manifestation of power. Marlborough’s genius on battlegrounds, his astuteness in Privy Council enabled the growing of strength of the nation to gain ground on the European political scene. Confidential and long-term friendship of personalities within the vicinity of Queen now found its identity in the smallest but the most efficient cabinet England had by the time. Sarah dominated Queen, Marlborough lead the war and Godolphin directed Parliament” (Churchill, 39).

Anne’s reign was distinguished by a decrease of royal power for the benefit of political parties even though Anne as well as her predecessors sought just the opposite, which means to maximize the independence of Crown to Parliament. Tory and Whig rivalry that continued also during “reign” of their successors reflected both in Westminster, as well as outside; also society, including press in the capital city was divided by political parties and their supporters who fought hard between themselves. “Members with the supporters of the parties, recognizing the importance of its message and the enormous possibilities of the time, fought fiercely against each other for control of nation’s government power share” (Churchill, 40).

Queen Anne, who, as Maurois describes, was nigglingly Anglican and dreadfully conservative (Maurois, 310), was a patron of Tories as well as her predecessor William III. “All of William III’s Whig ministers were deprived of power” (Churchill, 43). Tories, who were looking critically at, among others, high taxes on land, however

criticized also the war with France, whilst Whigs agreed with it. This is the reason why they gradually came in for her favour. Greater superiority, however, had their opponents, not only for Queen. “A crushing defeat, suffered in the elections to the House of Commons in 1710, however, clearly indicated that the majority of support of English this time had Tories” (Kolář, 132).

Some politicians, such as Marlborough, judged that in the time it is particularly important to maintain the power of monarchy. Nobody wanted to allow old country hostility of England and Scotland to be boosted, which would threaten if a dynasty, different from that in England, acceded to the Scotch throne after Anne’s reign. The result of the negotiations that were discussed since the beginning of Anne’s government was the fact that the two countries satisfied each other. Scotland, among others, agreed with the accession of Hannoverian dynasty to the English throne. In May 1707 Act of Union came into being and thus the United Kingdom. We can say that, the law was accepted by most people, in the process the satisfaction was gradually increasing because as Churchill claims, the longer the Union existed, the strongest it was (Churchill, 59).

Approximately one year after the War of the Spanish Succession ended, the reign of Anne Stuart ended. In the summer of 1714 Anne died. “Queen suffered a stroke attack after an argument between her and Lord Halifax when Anne wanted him to give her back a silver mace and badge of power” (Maurois, 314). The rule of Stuarts was ended with Anne’s death.

### **3. Hannoverian dynasty**

#### **3.1. Walpole’s age**

As previously agreed, a Hannoverian elector George, Anne Stuart’s cousin, was about to accede to the throne. It was so and in the summer of 1714, Britain had a new monarch. George himself, however, regarded the rule on the island as “the necessary evil” and looked at it as something good to serve his interests on the continent. “This

German prince could not even say an English word and regarded his new kingdom with resentment. He felt that when he adopted the throne of the United Kingdom, he did his subject of a favour” (Churchill, 87). According to Maurois, if George I had to choose, he would give precedence to Hannoverian electorate over the English Kingdom (Maurois, 315). Some historians describe the new king as a not very strong ruler, Maurois in connection with Hannoverian electors, talks about a mediocrity (Maurois, 315); on the contrary, Kolář evaluates him in a more positive way. In fact, George I was a capable and strong ruler” (Kolář, 144).

The changes on the political scene continued after the George’s I arrival to the island. As mentioned above, king who did not speak English and did not know the English constitution and laws, gave up taking part in Council of Ministers. Thus, a new government was originating, a government responsible to House of Commons. “In the years of 1714-1742, during the reign of George I and George II, a transition to parliamentary monarchy in Britain was rounded off” (Kolář, 142). However, Tories were not more influential than Whigs any more. According to Kolář, Tories were not able to get rid of their “label” of supporters of Jacobitism, which created a gap between Crown and them (Kolář, 143).

Whigs also had stronger personalities than Tories. There was Robert Walpole among them as well who gained an important position in Government during Anne Stuart’s reign. Although minister had no official degree in that time, Walpole began to preside over Council of Ministers, because George I was not able to perform his function because of his language skills.

Walpole, as a Whig leader, was undoubtedly a significant personality. There is no doubt about his merits, for which most of historians value him in a positive way. “Robert Walpole is ‘the biggest political talent in the first half of the 18<sup>th</sup> century’” (Kolář, 137). Also, Winston Churchill praises him and adds that he managed to become the biggest personality in his generation (Churchill, 94).

However, Sir Robert did not have only strong points. “He believed in bribery with enthusiasm and intensity to the extent other people bring into religion” (Johnson, 171). However, we should accept the fact that there was no choice in the period and the corruption was nothing new in English history. During long-lasting wars with France thousands of new working position emerged in the army, customs and tax offices. As Johnson describes, number of new working position falling within ministers’ cognizance was increasing and therefore more and more people can capitalize on state finances (Johnson, 171). “There was enough of pasture to feed all the cattle” (Johnson, 171). However, the important thing were the Walpole’s and “his” Whigs’ results.

Robert Walpole differed from George I in one view. As already mentioned above, besides British interests George I focused his effort also on the continent being a Hannoverian elector there. He also committed maritime forces there to ensure the Hannoverian objectives in the Baltic. However, Walpole, unlike George I, was against high war spending. Maurois when talking about Walpole uses words like a big pacifist (Maurois, 320). He held this position also because of War of the Spanish Succession.

Besides another threats of Jacobites, the “old pretender” supporters, Walpole had to encounter another problems in that time, which was, according to Kolář, the most serious crisis of the “early Hannoverian regime” (Kolář, 151). In 1720, he had to cope with financial crisis concerning South Sea Company. The Government communicated it in an effort to eliminate high debt. A buying spree involving the public emerged. Morgan describes the causes of the crisis:

“Directors of the company, and in particular the internal group who initiated the project had to create substantial profits, not only for themselves but also for the amount of eunuchs, ministers and members of Parliament, whose support was politically necessary to ensure that their proposals will be accepted. Such aid is purchased for a high price in the form of shares on favourable terms, or shares granted as undisguised bribes. In short, many of those who took part in South Sea Company leadership had a strong interest in quick profits that can be achieved only by the Company’s potential, driven well above the channels for investment offered by competitors” (Morgan, 326-327).

Some people, who saw the purchase of shares in a large profit, sold all its assets to invest. For instance, they were getting rid of their lands and rights to receive pensions. However, the shares started to decline with decline of trust, the South Sea Bubble was here and people dropped their money in their shares. “Thousands of speculators came to poverty savings of both solid and affluent families literally ‘melted’ over night and suicides were rampant” (Kolář, 152).

After a year, Walpole was appointed the first Lord Chancellor and Treasure Chancellor, which essentially meant that he became together with Townshend, who was appointed Secretary of State, the de facto leader of the Government. A relative resting stage occurred for him. He was dealing with expansion of his adherents, by which he consolidated his position in the political scene. He was determined to continue to hold the Crown under the authority of Parliament. “He knew that with the new German monarchy this was more possible than it had been before” (McDowall, 108).

It was ‘Cabinet’ what “oversaw” the king. It was responsible for political decisions and when a minister fundamentally disagreed with other ministers in something, it was assumed that he would resign at his office. However, ministers were being appointed by king and even in the present time the British Government is called “Her Majesty’s Government”.

In the summer of 1727, George I suffered a stroke attack and died during his annual visit of his native Hannoveria. “By all accounts Walpole seemed to fall into disgrace” (Maurois, 319). Sir Robert was not popular with new king George II., therefore he was removed from his office for a short term. However, opposition’s inability to establish a new cabinet was the reason why Walpole came back to his function.

“Greedy, penny-pinching, pettifogging, every evening he was awaiting the time with watches in his hands, because he wanted to be with her exactly at nine o’clock. During his life he demonstrated a specific physical courage, but according to Walpole, he was the biggest political coward who wore the royal crown on his head” (Maurois, 319).



Walpole and the new king apparently did not understand one another. However, king married Caroline. According to Maurois, she was intelligent, educated, stoical and mainly patient (Maurois, 319). This woman, who had a significant influence on her husband, was supporting Walpole protected him.

However, in 1737 Caroline died, which meant the loss of the most faithful supporter for Walpole.

### **3.2. International disputes**

Gradually increasing territorial claims of French, English and Spaniards led to competition in this field. Daniel Defoe responded concisely to trading: “Trade is the wealth of the world. Trade makes the difference between rich and poor, between one nation and another” (McDowall, 109). These wars were not sporadic in the 18<sup>th</sup> century. “In fact a new Century War began with William III’s accession to the throne” (Maurois, 330).

One of the conflicts was the crisis concerning the so-called war on “Jenkins’ ear” in 1738. “Under the guise of a contract giving England the right to import slaves into Spanish colonies and send there one ship with goods a year, a great contraband business was organizing” (Maurois, 320). Instead of one ship, the entire fleet sailed into the port under the pretext of supplying food and loaded new goods. This, of course, the Spanish coast guard in the West India did not like, which British businessmen complained about in the House of Commons. In 1731, he had a famous performance, when he showed the Representatives his ear in a glass container that Spaniards deprived him of. This raised the excitement to which the opposition responded by attacking Walpole for his “inaction” and little emphasis.

Walpole’s ministers wished a war with Spain to get colonies. However, Sir Robert had the opposite view and therefore he made a contract with Spain.

In October 1739, however, against the will of the first minister, United Kingdom went to war with Spain, which wanted the public in addition to the opposition.

Therefore, Walpole did not take a pleasure in the war with Spain. However, Walpole enjoyed Bolingbroke's permanently leaving to France after his lost elections in 1734. The party lost an important politician. "According to some historians, viscount Bolingbroke was the most brilliant politician of his generation who did not obtain a significant place in history just due to adversity" (Kolář, 158).

Thus, one talent finished, however, another one was coming. The opposition also joined William Pitt, another promising personality who was together with Grenvill and Lyttelton called boy patriots. "However, there is no need to look at boy patriots with contempt, which Walpole was doing. William Pitt soon surprised his colleagues with his amazing volubility that was sometimes theatrical but also convincing. "There is need to put down the terrible flag bearer!" (Maurois, 331). Pitt, unlike Walpole, did not like bribes. "His honesty surprised" (Maurois, 331). According to many, he was incorruptible and when he became a main disbursing agent, he paid all the money to state.

As already mentioned, trade with colonies became the foundation stone of the industrial growth in the second half of the 18<sup>th</sup> century. Therefore, William Pitt "appreciated" these overseas possessions and was determined to defend them at any cost. According to Pitt's own words, Government, unlike himself, missed the determination.

"This is not the Government, trying to topple the burden on one another. One of them says: 'I am the General!' State Treasury whispers: 'I am Admiral!' And admiralty answers: 'I am not the minister!' One, two, three, four, five Lords meet and are not able to negotiate. 'Ah!', they say, 'let's meet on Saturday again!' 'No', says another one, 'I cannot be in the town that day', the results of such meetings of independent powers and people without a common view can only be zero" (Maurois, 332).

Pitt did not consider activities on the continent to be important, which of course the ruler did not like. While his opponents were getting bogged down in disputes of England, Spain and France about positions in Europe, Pitt saw the future of the country in ownership of large colonies in America and Asia. He especially minded the Spanish competition in the trade with America. This opinion of course had a very positive

response among traders and eventually led to Walpole's fall in 1742, although he managed to keep himself away from European conflicts.

## **4. Industrial revolution**

### **4.1. Industrial growth**

The Industrial Revolution, as well as the term "Industrial Revolution" itself is not easy to identify, define and characterize."Although the phrase 'Industrial Revolution' is widely used in all of the works about industrialization but its content, the determination what it involves, is more difficult than the concept of industrialization" (Paulinyi, 22). Some historians "have done" several Industrial Revolutions.

"Jürgen Kuczynski relying on J. Nef's research had done in Britain industrial revolutions, the first one in the 17<sup>th</sup> century and the second one in the 18-19<sup>th</sup> century. On the basis of this, he called the electrical revolution at the end of the 19<sup>th</sup> century as the third one and the scientific and technological revolution as the fourth industrial revolution" (Paulinyi, 23).

According to Paulinyi, Kuczynski was not the first who "split" the Industrial Revolution in this way. Alfred Weber had done several Industrial Revolutions (Paulinyi, 23). As Paulinyi continues, besides a Steam Revolution an Electricity Revolution took place at the end of the 19<sup>th</sup> century and an Atomic Energy Revolution in the 1950's (Paulinyi, 23). It is important to realize that the Industrial Revolution is not only a process of introducing technical innovations.

"According to my conception the Industrial Revolution means the development of an industrial and capitalist system in Great Britain between the years 1760 and 1850 and all associated changes – not only in economy and technology but also in the structure of society, residential forms (urbanisation), social relations in works, in the lifestyle, in the political system etc. The Industrial Revolution during which the foundations of industrial, capitalist, economic and social system were laid, was a complex technical, economic and social revolutionary system. Therefore, the Industrial Revolution does not represent the industrialization and growth at all but only a period of industrialization and modern economic growth. Only in this interpretation is, in my opinion, the concept of Industrial Revolution. By identification with industrialization at all

and use of the term “industrial revolution” for any significant technical innovation of industrial capitalism the industrial revolution will become a fashionable word and eventually the empty formula” (Paulinyi, 24).

## **4.2. Background**

The English (British) Industrial Revolution meant the transition from the craft and manufacturing production to factory production, whereas new machines and new sources of propulsion power, steam and electricity were being used which replaced human and animal power. “Industrial society did not originate suddenly nor quickly, it was long-term and gradual process” (Čapek, 60). Most historians agree that the process lasted approximately from the 1750’s to the first half of the 19<sup>th</sup> century. According to Čapek, the industrialization process had two stages: “In the first one, roughly from the middle of the 18<sup>th</sup> century to the middle of the 19<sup>th</sup> century Britain got the lead in development and became a ‘workshop of the world’. During the second stage, from the middle of the 19<sup>th</sup> century to till the outbreak of the First World War, the United States and Western Europe including Germany became advanced and high-tech industrial countries with leading positions in the world” (Čapek, 60). The first hundred years of industrial development are known as the industrial revolution, the second period as the second industrial revolution or technical and scientific revolution. This work deals with the first stage, its causes, course and consequences. What caused the process that triggered such amount of changes in manufacturing, living and social conditions in the period?

## **4.3. British Empire**

### **4.3.1. Beginning of expansion**

As the industrial development or Industrial Revolution is connected with new machines and technologies, there was need for capital that would allow this. For accumulation of capital, the external colonies cooperating with English traders were used. The

development of cooperation and relations between homeland and colonies lasted many decades.

The British Empire was the largest colonial empire in history. England had always sought to expand its influence on adjacent territories, which once began with expansion into Ireland, Wales and Scotland. During the expansions, England was not using only military forces but also tactical marriage policy by which England got areas in France. Although Britain lost these territories later, it continued in expansions. Foundations of British maritime empire were laid by maritime policy of Henry VII in the 15<sup>th</sup> and the 16<sup>th</sup> century. He supported the overseas shipping; he had been inspired achievements of Spain and Portugal and expanded the British merchant navy, playing an important role during the emergence of trading companies. They were later an important part of British expansion.

The foundations of modern royal navy laid Henry VIII. He helped to build the foundations of royal navy. Besides the increasing number of ships, the first warships were built.

Queen Elizabeth I's rule, the last monarch of Tudor line, accelerated this process. After the first establishing of the English colony in Newfoundland in 1583 and English continuing influence growth outside the Europe, a war with Spain paused other plans at the of the 16<sup>th</sup> century and at the beginning of the 17<sup>th</sup> century. A peace with Spain and establishment of other villages in North America and the Caribbean came after. These areas were attracting British colonists not only with sugar cane, tobacco and other "lucrative commodities"; America was later becoming a refuge for people fleeing from religious persecutions in Britain. Colonies then expanded to the west into the interior in order to acquire new agricultural land.

Slaves were a prerequisite for the development of colonies in America. By 1807, when slavery was banned millions of them were imported into these territories. The business with African slaves was very profitable.

The expansion into North America is sometimes called the first British Empire. It disappeared until the emergence of the United States of America.

The second British Empire was engendering in Asia, Oceania and later in Africa. Colonization of Australia began with the establishment of a prison colony in 1788. “Undesirable persons” were deported here. At the end of the 16<sup>th</sup> century, the English and Dutch began to undermine the Portuguese monopoly on trade in spices. An establishment of the English (later British) East Company in 1600 and the Dutch East Company two years later was a significant moment. A rivalry between the two countries of course led to mutual conflicts but ended with William III’s accession to the English throne.

However, not only England was making claims to North America but also other European countries. Among countries that went through the most, except for England, belong France, Spain and Holland. Spaniards started this colonization first and derived advantage from their control over large areas in the remainder of the American continent. They controlled Florida and other areas in the south of today’s United States of America in 1750.

The Dutch managed to colonize especially the area of today’s New York and New Jersey but at the second half of the 17<sup>th</sup> century, it lost these areas because of their lack of military support.

France began with exploration of North America already in the middle of the 16<sup>th</sup> century and initially got the biggest territory especially areas around the Great Lakes and the river Mississippi. Although this area in comparison with other states’ colonies was the largest, it was sparsely populated.

England began the colonization of North America at the end of the 16<sup>th</sup> century; they were seeking to explore and colonize the east coast of today’s United States, which they finally managed. In 1606, the first successful colony named Jamestown was established. Other colonies were named for example Plymouth or Boston.

### **4.3.2. Triangular trade**

In connection with already mentioned trade with slaves one important fact is linked – the fact that it was a part of so-called triangular trade. It was taking place for a long time, from the 17<sup>th</sup> to 19<sup>th</sup> century with the greatest intensity in the 18<sup>th</sup> century. It was being carried out among Europe, Africa and America. Especially British (but also French) were setting off the Europe to Gulf of Guinea in Africa with guns bought cheap, textile, jewellery and alcohol, which was exchanged for slaves who were then loaded on ships and transported in inhuman conditions across the ocean to the island in the Caribbean, to Brazil or the southern parts of North America. Then the slaves were being sold to owners of plantations with high profits, where they, under the threat of violence, had to work on plantation of sugar cane, tobacco and cotton. Afterwards, very cheap sugar, tobacco, cotton, gold and silver were bought for the money from the sale of slaves and the businessmen left for Britain after that. After their arrival at home, the goods were being sold all over the Europe with high profits, whereupon they bought cheap goods and left for Africa again. The triangle was now closed and continued so for not only decades but centuries.

Europe was being profiled as a producer of finished products, the operator of trade and a place of final accumulation of profit and shaped Africa a source of cheap labour and America the primary supplier of raw materials. The trade between the mother country and territory was profitable only for one side. It generated huge profits for British traders and home country, which reflected in an investing in business. An economic growth, that has a background in trading in the 20's and 30's of the 18<sup>th</sup> century, has started in this way. In the 1720's, Voltaire wrote in Letters on England: "The trade that brought wealth to citizens of England helped them to freedom and the freedom promoted the trade afterwards. This is the basis of the size of the state" (Johnson, 186).

In the 18<sup>th</sup> century, the triangular trade formed one third of British and one quarter of French foreign trade turnover and disputes about the control over it were the causes of a series of military conflicts.

#### **4.4. Agriculture**

The English agriculture was changing during the 18<sup>th</sup> century as well as an English village. Especially two circumstances caused it - one of them is a considerable increase of population. At the end of the 17<sup>th</sup> century England had approximately 5.5 million people and in 1821 the number already was 14 million.

“This extraordinary increase had several reasons. The rapid development of industry that provided children the employment, unfortunately even the youngest, was encouraging poor families to multiply; a great migration from rural to urban concentrating workers in too small and overcrowded houses, which significantly weakened the traditional feelings of shame and restraint. While the number of births was rising rapidly, the progress in medical science was rapidly reducing the number of deaths. This was the end of great epidemics, that swept a whole one third of population at the time. There was a better care for mothers and children in childbirths and in most big cities, the hospitals were being opened. Larger population needed more food” (Maurois, 352).

Prices rose after the year 1750 entrepreneurial people were looking for ways to streamline the farm work and thus make more profit and wealth. Previous progression in England resulting in the Industrial Revolution accumulated enough of experience and the society became enough free for good conditions for business to develop.

At the beginning of the 18<sup>th</sup> century two thirds of arable lands were still in an old system of open fields with narrow strips of wheat, barley, oats seeded alternately with fallow lands. Tools have been only slightly improved and the method of hand sowing was inherited unchanged from the Middle Ages. From time immemorial, the villagers have had a right to the use of common pastures and fallow land. The old system represented the considerable waste of land because the third field remained fallow each year. However, time and work were being wasted field lanes of farms were mostly very scattered, very far apart, and it was not possible to apply new methods of work. “A careless peasant who did not destroy weeds was depreciating the work of others. A pheasant spent his life with running over from one field to another” (Maurois, 353). It was not possible to grow high-quality cattle and extend herd because there was lack of food in the winter. Therefore, a greater quantity of cattle was being slaughtered in the



autumn and the meat was preserved with salting after that. The equipment of farms was limited, which exacted cooperation of farms during tillage and harvest time. The grazing of livestock on stubbles after the harvest avoided the usage of combination with the feed ripening later than grain.

The new system of agriculture insisted in conclusion of fields, which was taking place in Britain for centuries but reached its peak in years from 1760 to 1820. By concluding or fencing the fields, integrated manors were emerging. “The cultivated agricultural land distinctively extended and its majority was concentrated in large and profitable units” (Polišenský, 136). Conclusions initially were carried out by a private agreement, at the end of the 18<sup>th</sup> century the special parliamentary permits were used. In 1801, the whole process accelerated by issuing a law ordering the conclusions of land. Proposals for integrations were being filed by Landlords, large landowners. Poor farmers cannot stand up against these integrations, they either sold their land or had to compete with landlords’ modern agricultural methods. “In this period the integration of lands did not lead to disappearance of villages but to its transformation, because farming in a large scale – introduction of new techniques and machines, fertilization with soil conditioners, rotation of sowing and scientific stock raising was enabled” (Polišenský, 136).

Integration meant the displacement of land ownership – large farms emerged, which was more suitable for more effective food production. “In Britain the land integration and the growing agriculture reduced the homesteads and opened up the way to building factories that need water, steam or systematized production” (Morgan, 374).

Townshend, who resigned in the Walpole’s “era” because he did not reconcile with the foreign policy, left the political life and became peasant. In Holland, where he was as an ambassador, gained lots of valuable experience and put it in practice on his farm. “They did not leave their fields fallow for three years, they seeded them alternately with root vegetables (kohlrabi, turnip and sugar beet), grain and noble feed and ensured they fodder supply for their cattle in the winter” (Maurois, 353). Therefore a rotating seeding was spreading. However, according to Maurois, peasants were skeptical about this (Maurois, 353).

Instead of a three-year rotation of wheat, barley, oat and a fallow land, a four-year rotation without fallow lands – wheat, barley, oat and shamrock. A fallow land was a part of three-land system, on which no agricultural crops were grown either during all the vegetation period or a part of it. The three-land system insisted in separating the land in to three parts – one of them was seeded in the spring, the second one in the summer and the third part stayed as a fallow land. This was rotating and each year other part was a fallow land.

The turnip and shamrock were used as the feed for cattle during the winter. The quality of herds was improved, they could expand and fresh meat was at disposal for all the winter.

Thomas Coke was also a well-known farmer, his farm in Norfolk a school for those who were interested in new farming. “The famous peasant from Norfolk was attracting travelers from all over the Europe and thanks to a wise use of fertilizers he managed to grow grain even on infertile soils” (Maurois, 353). The Norfolk rotation of crops was a pioneering process of a rotating farming in the time. This revolutionary process enabled growing of all of the most important crops without a use of fallow land even with a small number of virgates. After the sugar beet or potatoes, the wheat was seeded in the spring, after that alfalfa or shamrock followed, next was winter wheat following sugar beet again. All this repeated by which the soil fertility was improved without the use fallow lands. This process was an important turning in the time.

King George II itself was also an owner of his own farm that he was proud of. However, neither Thomas Coke nor Townshend were the only ones interested in agriculture. “Bakewell was upgrading breeds of farm animals, goats and sheep. As he understood, that the meat consumption will rise with the increasing number of population, instead of development of animals with long leg having been suitable when England was full of swamps he was seeking to breed breeds with greater weight. This period, eager to know everything, was very interested in such experiments. Growing and stock-raising were the real fashion for all of the 18<sup>th</sup> century” (Maurois, 354).

Villages changed. There were almost only big landowners, tenants and agricultural workers. Previously strong middle peasant class almost disappeared. Many of small peasants left for towns, dealt with trade and became pioneers of a successful industrial growth. However, others were not that successful so they became labourers in cities. Others who did not want to leave the countryside became agricultural workers with one of the lowest salaries. Fencing increased social disparities in villages, a middle peasant having been given less fertile land by fencing was not a competitor for big landowners. Starving crowd of the landless was often reliant only upon public charity.

The English land aristocracy composed approximately of 400 sects. Although the aristocracy was the least numerous in Europe, it was the wealthiest. Their land revenues were far higher than those ones of continental noblemen. Besides overseas trades, the earnings were increasing also from the agriculture. Although the field fencing caused the less wealthy become poorer, salaries of agricultural workers have always been higher, than those ones on the continent. English peasants invested lots of money to improve the quality of farms, which indicated their devotion to the landowner. The agricultural progress depended to a certain extent on both tenants' capital and their talent and imagination. It was the lack of active, thoughtful and well-prosperous tenants, who contributed to a gradual stagnancy of the French and Italian agriculture. Landowners there raised rents to such a high level that it was not possible for local tenants to invest enough money to develop their farms. French Government also acted in a different way from the English Parliament – it supported rather poorer classes against closing the fields and did not legitimize fencing. French peasants were rather buyers than sellers on the grain markets. While England was moving on to industrialization, in France small owner had priority over a modern economy.

#### **4.5. Industrial production**

Besides the development of agriculture, the industries were developing as well, by which the production of agricultural machineries and tools for example a steam plow, mower and others were enabled. However, the beginnings of the Industrial Revolution were connected rather with the light industry, especially textile industry. “The revolution in the methods of production is perhaps best illustrated by the textile trade” (Beard, 24). The textile industry determined the level of all the non-agricultural production, heavy industry and mechanical production came at a late stage of the Industrial Revolution and necessitated heavy investment.

The development of the textile industry according to Paulinyi the most important sector of consumer industries (Paulinyi, 49) assisted new inventions of machines. In quick sequence the first spinner and weaving machines were invented, the first one was co-called high-speed (flying) swivel. After John Kay had invented this machine in 1733, the weavers’ performance was doubled. “By the time those who were spinning the wool at their homes were weavers’ wives and daughters” (Maurois, 356). Consequently, there was more and more need for yarn so after the invention of high-speed swivel, its price rapidly increased. The solution brought multiple spinner wheel “spinning jenny” invented by Hargreaves in 1764. However, this machine driven by human power, named after his daughter Jenny, produced very thin yarn that often tore. The improvement brought a spinning machine water-frame driven by a water wheel by Higs in 1767. “The principles of both the spinning jenny and the water-frame derived from the spinning machine patented in 1738” (Smelser, 86). Yarns became fixed but still too rough. Finally, Samuel Crompton built on previous knowledge and managed to combine the advantages of jenny and water-frame. His mule was producing fine and enough strong yarn. “Hargreaves, Arkwright and Crompton, to satisfy the need for yarn, achieved that a single worker using spinners was able to operate ten and later one hundred spindles. Therefore, laundry was working faster than weaving mill” (Maurois, 356). As Musson states, Hargreaves, Arkwright, Crompton and Cartwright gave rise to an equally rapid development of mechanical engineering (Musson, 428).

“In the 18<sup>th</sup> century the leading department of the textile industry was the wool industry with a rich tradition of processing sheep’s wool into yarn and woven fabrics, based on internal and foreign markets” (Paulinyi, 49). Cotton industry flourished because it was possible to process it by machines and the slave labour in the U.S. allowed the South to increase its import.

Capitalist trader, mostly cloth traders dominated the production of wool cloth and yarn in England. They purchased raw materials, got the wool cleaned and carded by wage earners in their own workshops. The workers were carrying out spinning and weaving casually by so-called putting-out system. Other operations carried out by wage workers took place in leased workshops or in businessmen’s workshops.

After inventions, the machines were spreading to other parts of the country. “The price went down due to competition – by two thirds in the period from 1784 to 1832 – and still it was possible to make high profit. The clever usage of patent rights brought Arkwright 200 000 pounds and the title of baronet” (Morgan, 377).

The boom of the textile industry led to stimulation in other industries, new inventions were encouraged. For example the old process of bleaching, when linen was soaked in sour milk and then hanged to dry for eight month, did not already oblige. A new procedure of a French chemist Berthollet, was welcomed with enthusiasm because the use of chlorine bleaching shortened to just a few days. Also the cylindrical machine for printing the fabric by Thomas Bell was quickly implemented in production after its invention in 1783.

Textile production not only increased the demand for fabrics but also for coal and iron. Metallurgy industry began to produce iron, using coke and the blast furnace allowed the iron production in large numbers. First attempts to use hard coal instead of wood coal had come already in the 17<sup>th</sup> century, but did not bring great success. However, in 1735 Abraham Darby was the first one to manage the iron melting exclusively only with the use of coal coke. The application of Darby’s methods led to a massive expansion of production and in particular the use of cast iron. The bridges were being constructed of it and cast iron served the constructions of buildings, guns, rails or pillars. “The

production of iron increased from 17 million tones 1740 to more than 125 million at the end of the century and Britain, that had been importing iron from Sweden and Russia, began to export it” (Polišenský, 138).

All this, however, required large amount of energy and as human power was not sufficient any more and the water wheel was very dependent on vagaries of nature, it was necessary to discover a new source of energy that would be able to supply large quantities of energy. James Watt became a constructor of a new source of energy – a steam engine – invented in 1765. However, he did not give up improving it. “James Watt had patented the self-cooled steam engine and its rotary version in 1781. Since 1800 it was being used in spinning mills as it reliably and tirelessly drove spinning machines” (Morgan, 378). According to Polišenský this was the end of home weavers and small-scale production as the implementation of machines required the capital (Polišenský, 138).

Watt’s machine removed the dependence on water energy, from this time people were able to build factories on previously inaccessible places. The steam engines were able to supply the energy to a large number of machines and therefore enabled the rampant growth of mass factory production. “Approximately in 1800 it was used in mines, steelworks, textile factories and breweries” (Polišenský, 138). All parts of the steam machine were made of metal and in view of the necessity to fit into each other, the production required a perfect working.

Thanks to the development in all of these sectors, there were high demands on infrastructure. Shipping developed before the locomotive as, according to Paulinyi, the river Severn, Thames or Trent were regulated since the 17<sup>th</sup> century (Paulinyi, 186). The arrangements were tailored to transport in consequence of the growth of agricultural production, wool industry and coal mining.

Afterwards, another rivers were being regulated and canals built that, as Paulinyi writes, were used mainly for the transport of coal (Paulinyi, 187). As some sectors of industry, especially textile, were situated in Midlands, in 1761a canal for transport of coal to Manchester was built. The price of coal suddenly dropped by half and this success led to build a net of canals linking Manchester with other towns and the seaside. After that,

the island was flooded with “canal fever”. “Approximately in 1760 the Great Britain had more than 1000 miles of navigable waterways” (Paulinyi, 187). This was another place where a steam engine - one of the most important inventions of the time and an omnipresent source of energy - was implemented. The application of the engine into the shipment was important because it helped to transform the sea transport. Although the first experiments of the use of the machine had been carried out in France, the first successful steamship in Europe became the ship *Cornet*, put into operation in 1812.

Water flows were not the only area of transport with innovations and investments to satisfy demanding requirements. The victory of the steam on rails and the beginning of rail transport are connected with the name George Stephenson. He built his first locomotive already in 1814 and in 1825, the regular rail service began between Stockton and Darlington. After five years, the rail transport between Liverpool and Manchester was opened. According to Albert, the contemporaries were surprised in the early years of railways in Britain (Albert, 64). Historians agree with the claim that the “era of rail transport” that continued to the First World War began.

The rail constructions became an important business since the 40’s and a great stimulus of heavy industry development and its gradual predominance over the light industry. In the mid-century Britain had more than one quarter of world’s rail network and almost as much as the rest of Europe altogether. The transportation became cheaper and faster and its safety improved. The isolation of separated areas was reduced which led to a faster transport of both people and goods. The factory production of goods in large numbers was implemented also in remote markets, which helped to remove the competition of crafts and cottage industry. The revolution in transport accelerated the organization of financial market, stock lending and development of banks.

The second section in which the steam was applied was the road locomotive. There is no technical reason to not to be as successful as the rail one but its development was limited by the impropriety of other users of roads. However, the steam tractor was nevertheless an important product of the steam technology in the 19<sup>th</sup> century.

The result of many innovations was the fact that the British iron and steel industry was no longer dependent on wood as wood-coal was a source and it was moving to large

coal mines. At the beginning of the Industrial Revolution, there was enough of cheap iron. There was cast iron to build bridges, skeletons of factories and other building purposes such as Thomas Telford's water-conduit bridges. As for construction works, the ground works still were carried out by human labour organized by master builders in this period. This was reduced by the usage of the gunpowder, the dynamite and the steam excavator at the end of the 19<sup>th</sup> century. Another ease of hard work came with the introduction of compressed air and hydraulic tools. These two inventions were important also in other areas, such as mining engineering and operation of lifts, lock gates and cranes. The use of tunnel shields enabling the construction of tunnels both in soft and insecure rock layers, was promoted by a French emigrant, Marc Brunel. He built the first tunnel under the river Thames in the period between 1825 and 1842.

As already mentioned, at the beginning of the Industrial Revolution there was enough of iron used for example the production of iron bridges. The British engineers Thomas Telford and Isambard Brunel and German and American engineer John Roebling improved the suspension bridge and developed the lattice bridge. The forged iron as building material was gradually replacing the cast iron. However, several bridges made of cast iron survived such as the bridge in Ironbridge in Shropshire built between 1777 and 1779 and often called "The Stonehenge of the Industrial Revolution". The bridge over the longest English river Severn was originally to be made not only of cast iron but also of stone, bricks and wood as approved by Parliament. Finally, the architect Pritchard and Darby won out and built the bridge of cast iron. It was the start of the iron cast and shear steel bridge constructions period. The Coalbrookdale surroundings was declared a monument of global importance by UNESCO. It is a well know tourist attraction now. The bridge, among others, gained its fame after the flooding in 1795. It was one of the few bridges surviving it without being swept away.

The bridge is also known as being the first important construction made of cast iron.

Methods of transformation in the period between 1750 and 1900 were so complicated that the transportation and the infrastructure can be considered as an example of a revolution in the context of the Industrial Revolution. As Morgan states, roads of early Georgian England were under the weight of freight transport of growing consumption



considered as national disgrace (Morgan, 336). Although the roads were important, their development was not considered to be so important because there already had been roads of a higher quality one hundred years earlier in the continental Europe. The road network with fortified surface was being built in France in the 17<sup>th</sup> century and at the beginning of the 18<sup>th</sup> century. The applicable parishes responsible for the roads in England are to blame.

The 30's of the 18<sup>th</sup> century for example witnessed the most obvious progress in the history of transport – the construction of a national system of roads with fees when using them. Before 1730, only a few road transport associations were founded. The burden of maintenance of most main roads including the Great North Road to Northampton and almost the whole part of the Great West Road was unfortunate for those parishes who had the bad luck that they had been founded near their immediate vicinity” (Morgan, 336).

Starting in 1760 some companies were given the right to levy tolls from passengers on certain roads (turnpikes), as well as today when entering highways, to cover maintenance costs. This brought good results but not before 1815, the skills to build them improved. In that time British engineers began to innovate methods of road and canals constructions; J.L. McAdam introduced inexpensive and durable compact impervious road surface, which significantly increased the speed of coaches, carriages and postal services. “Such a speed exhausted horses so their demand was enormous” (Maurois, 357). As Maurois mentions, the coaches experienced their biggest glory in 1831, afterwards, however, the rails began to spread at the expense of coaches (Maurois, 357).

The development of goods production and the possibility of a rapid transport were a turnover in the internal and foreign trade. The process of creating a single internal market was completed, its volume was increasing, the tariff barriers were being reduced and customs associations were emerging.

“In 1775, for example, Bohemia's and Austria's customs areas joined, in 1818 the customs in Prussia were cancelled, in 1827 the customs among all the non-Hungarian countries in Habsburg monarchy were cancelled, and in 1834 the German Customs Club was established” (Čapek, 66).

The world market was also growing to the width. It consisted especially of England in the first half of the 19<sup>th</sup> century. According to Poliškenský, mainly woolen-staff was exported in by the 18<sup>th</sup> century but after that, the production and export of cotton fabrics took the lead. The cotton fabrics were destroying Central European linen weavers by both price and quality (Poliškenský, 138). Dynamic export markets were more and more spreading outside the Europe, mainly to the United States but also in other part of the world. “The cotton fabrics from Manchester were driven to Liverpool and were an important subject of a barter trade with slaves in Africa” (Poliškenský, 138).

In large cities, the first big department stores began to emerge in the middle of the 19<sup>th</sup> century. In 1791, the first industrial exhibition in history took place in Prague. However, it was not only an industrial exhibition like as well as other ones of this kind in the 19<sup>th</sup> century. Besides the models of machines, examples of new materials and their processing there were also to be seen craft products, agricultural products and works of art crafts and fine arts. Typical for these shows was the domination of aesthetics of the shown goods. Afterwards, the shows in the 1920s and 1930s followed and in 1951, the English Queen Victoria, having been inspired, opened the first exhibition in Crystal Palace. There were 6 thousand exhibits from all over the world were to be seen there. It was a demonstration of the last century’s progress.

## **5. Consequences of Industrial Revolution**

The Consequences of the Revolution are not easy to mark. “Many people argued about the effects of the Industrial Revolution” (Ross, 34). It is often marked as one of the most important period in people’s history during which the labour productivity immensely increased and the capitalism was developing. The manufacturing process involved the new inventions and techniques that allowed the production of a large number of unified products. For example, the work that needed two hundred workers in 1770, was managed by a single worker in 1812. As a result of gathering the production, the costs are being pressed down as well as the final price. Many people see the only consequence in improvement of technique, the final product and fastening of

everything. However, if we look at the capitalism, we can see not only the bright side but also the downside.

The development of cities was one of consequences of the Industrial Revolution. “Villages went down, the cities were going up” (Maurois, 357). The people from the time who could remember the reign of Queen Anne and who lived to the last quarter of the 18<sup>th</sup> century, were recalling the 1760s and 1770s as a period of remarkable changes a improvement of the material life of big cities and also the small ones to a certain extent. Their development was related to the period when traders and administrative managers started to deal with the way to win out over France and consequently be able to use the American colonies. “Georgian London was quickly growing; it had already ensured the position of the biggest and most dynamic city of the western world for a long time. In fact, however, it already was not so important” (Morgan, 337). The reason was that the trade, taking place among Europe and overseas colonies went to new and growing harbours on west of the country, especially Liverpool, Bristol and Glasgow. Therefore, the industrial basis was moving from the south and east toward the north and the middle of England. According to Morgan, these cities put emphasis on hygiene, order and on space; meandering housings of older centers with narrow streets and wooden houses were out of date (Morgan, 338). Both housings and the number of inhabitants were increasing. Approximately in 1700, England is estimated to have 5.5 million people, the number was increasing slowly by 1750, but by 1821, the number more than doubled. However, it is important to say, as Morgan states, that the census in the middle of the 18<sup>th</sup> century did not succeed, therefore the number of inhabitants are without a proof (Morgan, 337). The census in 1801 was more successful.

“The first official census in 1801 revealed that 8.3 million people lived in England, 1.63 million in Scotland, 587 000 in Wales and 5.22 million in Ireland. This closed the discussion about population: since 1750 probably increased by 25 per cent. Such a growth was 50 per cent higher than elsewhere in Europe” (Morgan, 374).

The number of inhabitants in particular cities was growing as well. “Liverpool having had 4 000 inhabitants in 1685 grew to 40 000 in 1760, to 517 000 in 1891 and to 803 000 in 1936, Manchester having had only 6 000 inhabitants in 1685 grew to 40 000

in 1760, to 93 000 in 1801, to 505 000 in 1891 and finally to 800 600 in 1936” (Maurois, 357). This extraordinary increase had several reasons. The rapid development of industry that provided employment even to the youngest children was encouraging poor families to multiply. The great migration from rural to urban concentrated the workers in too small and overcrowded houses, where it was common to lose sense of shame and restraint. While the number of births was rising, the progress in medical science was quickly reducing the number of deaths.

The Industrial Revolution has changed the social structure in England and later in Europe. “The accelerating tempo of the material growth inevitably marked the nature of English society” (Morgan, 339). This change included many individual cases and events: the factory owner deciding on rules of his factory, a pedlar finding out that he is no more able to sell his product by doorstep selling but rather in a permanent shop or a worker learning the factory pipes’ sound. All the participants of the industrialization process had to cope with the new work system, the emergence of new trades and new routine of the period. According to Morgan, as for the social structure, the social hierarchy stretched (Morgan, 339). Before the industrialization, the highest status in the society had the landowning aristocracy. There was a relatively weak middle class standing behind it including traders, lawyers and churchmen. Another part of the society was trained workers, craftsmen and a considerable number of small farmers and agricultural workers. During the 19<sup>th</sup> century, the middle class increased its strength, beginning to compete with landowning aristocracy with property and power. The richest and most powerful members of the new middle class, bourgeoisie, were the factory and mine owners, bankers and merchants. To this group belonged managers, small company owners as well as the intelligence such as doctors, lawyers and technicians. To the lower group of the class belonged artists, businessmen and officials. The rich people from the middle class were often attempting to take aristocracy’s habits, which means that they were equipping their grand estates and castles luxuriously and did sport such as racing or yachting. According to Morgan, the middle classes held the mode and customs of those who were above them socially (Morgan, 348). However, some people had other worries.

“The development of the big industry creates two new classes – a class of rich factory owners whose property increasing proportionately with the growth of new markets, is already equalizing the land magnates’ property, so their members begin to call for share of profits and power. The latter one is a class of city workers who differ from an old rural craftsman in all counts and who are more accessible to the politic agitation because they form larger units and are prepared to struggle for the politic power with their awareness of power. The modern economy set the least crossable borders between the ‘two nations’” (Maurois, 357).

Thereupon a new social group was originating, namely the workpeople or in other words a modern proletariat that was, according to Hudson, divided into English proletarians and Irish proletarians (Hudson, 213). It was the lowest group in the social structure. “Owing to the extensive use of machinery and to division of labour, the work of the proletarians has lost all individual character, and, consequently, all charm for the workman“ (King, 13). “As wealth was distributed so unevenly and the highness and nature of taxes advocated so little the redistribution of the wealth, real living standards grew much faster in the middle and on top of the social scale than at its bottom” (Maurois, 339). It should be noted that this process was changing in the long-term after the development of agriculture during the 16<sup>th</sup> and 17<sup>th</sup> century, when big capitalist farmers rented the land and all under them became lacklands. However, these changes accelerated in the 18<sup>th</sup> century. Hundreds of thousands of people were isolated out of their way of life in the village, they changed jobs, habits, friends and life rhythm. They came on the ground and went to cities, where they started to work in factories owned by rich capitalists.

### **5.1. Discipline**

These capitalists started to be called “the exploiters”. The conversion to a factory system realized first in the textile industry stood both businessmen and worker to a new situation. Depending on the size of a company, the investments in building and work machines were various. If there should be a profit, in which their owner were interested the most, the operation equipment had to be fully occupied and every waiting time was money losing. The essential prerequisite were regular working hours and as many businessman thought, as long work day as possible, ideally continuous service.

The owners had relatively low labour costs because could count with women and children workforce. “The factory work brought fixed and extended weekly and daily work hours (six days a week, daily minimum of 12 hours of working time, weekly working hours between 60-80 hours0” (Paulinyi, 228). To the difference of the past, the working intensity and rhythm were given by work machines and all the pauses were fixed in the order. In view of worker’s duty to repeat a physically demanding move it confirms that the workers definitely did not have good working conditions.

“Nevertheless, it is wrong to say that the working intensity or even working hours were determined by technique. They were determined by economic objectives of its introduction. Although there was a minimum speed of circulating of spindles that had to be reached, when producing the yarn and not a ball, but everything that was optimized over it was not technical pressure, but the introduction of technical means to optimize the costs, the benefit and the maximum of profit” (Paulinyi, 228).

We can only guess by what the factory owners were explaining the necessity of such work to “their” workers and whether they were explaining something at all.

In the first phase of the Revolution, the working hours were lengthened first to 12 and later to 14 or 16 hours daily and six days weekly which until 1847 when Ten Hours Act came into effect. However, this lengthening of working hours in one day was “compensated” with initiating 14 hours long single-shifts instead of 12 hours long double-shifts in spinning mills by some factory owners. The owners launched this with the vision of reducing costs and increasing profits. The workers that had come to factories from agriculture, house works and crafts were not used to it but had to comply with the discipline, obedience and subordination. This obedience had ultimately to aim at the maximum level of utilization of the capacity of the machines in the factories. Although new factories were growing like mushrooms after rain, the growing increase of the number of inhabitants ensured them enough of work force. Therefore, the factory owners and businessmen were satisfied.

The already mentioned “change-over” and adaptation of former peasants and other people in factories were not easy. However, the factory owners did not fidget it and set the rules. “The disciplinary measures set in factory regulations by the owners proceeded from principle that the employees selling their work force submitted to factory owners for all the working hours” (Paulinyi, 230). As Paulinyi adds, the measures had to “help” the workers to adopt the principle “time is money” which meant for newcomers consisting of workers, female workers and even children to get rid of their bad and undesirable work habits” (Paulinyi, 230).

The physical demands on workers necessary for work were increasing as well.

“While the automatic process was in progress on the first of the mules, on the second one the spinner had to make a winding entrance and then do the same activity on the first of the mules. The spinning and winding lasted approximately 20 seconds – that at a 12 hours long shift meant approximately from 4 300 to 4 800 times to carry a cart of 800 kilograms, to serve the winding wire by the left hand and to drive the spindles by the right hand” (Paulinyi, 79-80).

Moreover, the speed of working was increasing. “In mule spinning the number of motion that had to be completed in a minute more than trebled between 1814 and 1841” (Foster, 91). Although the spinning on hand wheels was carried mainly by women before the Industrial Revolution, the semi-spinner machines were able to be spinned only by strong men. This physically demanding activity was nothing unusual, it was almost the same physically demanding a slave’s work. “We can imagine a typical British worker from the 19<sup>th</sup> century as a poor factory slave or a starving weaver” (Morgan, 402).

For workers the factory system, where the production is concentrated to one place, was the separation from his place of residence. The factory work also represented for workers the loss of the setting of their own rhythm of work, work intensity, the length also the course of his working day and week. The factory owners carefully watched over the workers’ discipline and if something was not according to them, the workers’ wages were reduced, the workers were released if they were physically punished including children. “The process of discipline started by strict presence supervision at factory gates. It continued in the workplace and if an employee lived near the factory, it continued even in the privacy” (Polišenský, 230).

## **5.2 Work of women and children**

Life of women and children during the Industrial Revolution differs from the today's life a lot. At the beginning of the Revolution there was no legislation dealing with work conditions, simply because there was no need. However, after the factories, mills and mines began to emerge, the need for the number of employees, to whom the factory owners were not willing to pay high salaries. Therefore, women and children were ideal employees. The reason is that especially children were not sufficiently "educated" to complain; another reason is their "advantage" of their small figures allowing them to among machines more easily.

Although the children's work was there already before the Industrial Revolution, unlike their former work on fields or home workshops beside their parents, in the period of early capitalism they were working outside their family. "Although in 1851 the two thirds of work force consisted of mainly men, the children's and women's work is a significant feature of the Industrial Revolution in various branches of industry until the ban in 1842" (Paulinyi, 230-231). The most women and children were working in the textile industry, in cotton industry in the concrete, where children were working often continually in double-shifts as sweepers or binders at spinning machines.

However, from this point of view other branches of industry did not "lag behind". For example, in mines in the north children held 41 per cent of all employees in England.

"Not before the Factory Act in 1833 limiting the work hours for children between 14 and 18 years of age to 12 hours and children of age between 9 and 13 to 9 hours and introducing an effective monitoring of the textile factories by independent inspector, was the children's work gradually reduced" (Paulinyi, 231).

Some people may ask how it is possible that children were not at school instead of working in factories. The simple reason is that school was not compulsory at the beginning of the 19<sup>th</sup> century and in addition to it, in most cases the schools were too expensive for families in the working class to afford it. As for the age, the number of working hours, before the Factory act, there were no restrictions of employees. In



addition to it, the children, although they received only a small amount of money in comparison with adult men, they could give at least a little help to their families' budget. Therefore, their families were willing to send their children to factories. In addition to it, children did not work on attractive positions, as well as women. "The common feature of unskilled work of women and children was that they were underpaid, and also they were carrying quickly learned tradeless activities at machines or other physically demanding handworks in the production sections" (Paulinyi, 231). On the contrary, the positions such as supervisors or instructors were practised only by men. The reason is, as Paulinyi claims, that women did not have the required heartlessness and brutality to force children to work constantly for 12 hours (Paulinyi, 232).

Although women were not allowed to work on leading positions, not all the women worked in factories and mines. The happier ones could work as maids in rich families, other ones as governesses of their children. These women's children were often being looked after by their relatives, as it was common that women had sometimes 10 children having no time for them because of their work. O'Brien talks about one positive aspect of women's working in the factories: "Among the major beneficial long-term consequences of the Industrial Revolution was its positive contribution to the emancipation of women" (O'Brien, 31).

## **6. Protests**

While in Britain the industrial growth was high, also the continent did not lag behind. However, from the Britain's point of view, it was a problem. During the wars against Napoleonic France, the British industry was looking for the compensation for European trades, especially in the Spanish colonies and in America. However, after the war the British industrialists found out that during the years of the continental blockade the competing iron industry, mine industry and also textile industry was forming near coal and ore seams. "Today's Belgium, Germany and some parts of France represented a new element in the European industrial life. As a result of this, the unemployment and

the number of social conflicts increase in Britain when the release soldiers returned from the war” (Polišenský, 140). In addition to it, as they were not able to compete the machines producing far more quickly, their dissatisfaction was increasing. “For enterprisers representing the most effectual driving power of the expansion of the new technique, its introduction was a means to an economical success and to their own profit” (Paulinyi, 244). However, workers were not interested in this, so they began to protect themselves against the industrialization by organizing and destroying machines at the end of the 18<sup>th</sup> century. According to Polišenský, they mistakenly regarded the machines as the cause of their poverty (Polišenský, 140). The workers were destroying them because, thanks to new technologies, only a small group of people grew rich and a large group of people had no control over their lives. They believed that the use of machines leads to depreciates people’s value. These people were called Luddites according to alleged Ned Ludd. Although there is no proof proving his real existence, his followers considered him to have been their leader.

This resistance against the spinning machines blazed up in the seventies of the 18<sup>th</sup> century. “The major resistance against the introduction of new technique took place in branches of industry where people sustained the most, which was the textile industry” (Paulinyi, 245). The major protests were in progress in the groups of home-workers or craftsmen, not the factory workers. The highest intensity had the resistance in the second decade of the 19<sup>th</sup> century and according to Paulinyi, the leading positions were held by cloth cutters, stocking weavers and hand weavers (Paulinyi, 245). “It was a fight for the preservation of their own identity and existence. The destruction of production means was not the goal but the last means of pressure to enforce their own requirements ensuring their existence” (Paulinyi, 245). This movement, that slowed down the introduction only a little, because the enterprisers ignored the protests, did not last for a long time. As Paulinyi mentions, the Luddites were defeated by all means of state resources, which means executions, because the demolition of machines was heinous crime punished with the death penalty since 1812 (Paulinyi, 246).

Tory government did not express itself helpfully during this period of unrest and dissatisfaction. Therefore, it was not popular either with people or the opposite Whigs

who was against the violence. For example in 1817 a law sentencing the caught poachers to deportation to colonies, especially to Australia, was passed. Also the civil liberties were restricted as well as the right to gather, which, according to Morgan, was a consequence of the workers' awareness of their industrial status after 1800 (Morgan, 388). Undoubtedly, this also was a consequence of the French Revolution between 1789 and 1799. According to many historians, this revolution having begun with the fall of the Bastille, represented the turning point in the European continental history because it signified the pass over from absolutism to "establishing" all the people as the main political power.

The above mentioned "awareness" and the law against gathering had its summit in 1819, often called as one of the greatest demonstration of the social crisis.

"The situation culminated in Manchester on August 16, 1819, when "Peterloo" took place. The local justice of peace ordered the yeomanry to arrest the speakers on a great but calm demonstration in St. Peter's Fields. The soldiers attacked the crowd and killed 11 people. Another convulsions in the next year – the rebellion of weavers in Scotland and a 'Catostreet conspiracy' aiming at the murdering of London's cabinet ministers – were evoked both by radicals' lust for revenge and the infiltration of the radical movement by government spies and *agent provocateurs*. The repressions – the gallowses and deportations – were cruel, merciless and effectual, but strengthened the aversion to the Constitution in the long term and discredited the Government indefinitely" (Morgan, 389).

The result of this militia's incursion or yeomanry was the death of 11 and injury of 400 people including women.

## **6.1. Parliamentary reform**

The way of parliamentary elections and limited electorship were not corresponding to the development of the industrial and political situation in Britain since the middle of the 18<sup>th</sup> century. The whole system being reformed only in details, was outdated and did not take into account, among others, the geographical changes during the Industrial Revolution. In other words, the changes representing the mass moving of inhabitants from rural to rapidly growing cities, were not being reflected. Small towns, quickly losing their importance, were still delegating its representatives to Parliament to the

difference of great industrial resorts. The parliamentary law changed this in 1832. According to Poliškenský, the Tories were against it as they were looking at it as a means to destroy the present order (Poliškenský, 146).

“The law was voted through by the Whig majority in the House of Commons already in 1831. To come into operation the parliamentary law had to be confirmed by the House of Lords and signed by king. However, the House of Lords refused the bill. The mass demonstrations in Birmingham, London, Derby and Bristol followed. Especially the ‘Bristol conflicts’, three days being encircled for three days, gave affright to the Lords, so they did not dare to refuse it in June 1831” (Poliškenský, 146).

The contemporaries probably expected too much democratic measures leading to the decrease of agriculture aristocracy influence from the reform. “The students believe that the memorizing of Latin verses will be abolished and the cakes will be almost for free. The corporals and the policemen are sure of getting their pays twice and dunderheads will be disappointed in their trusts as ever” (Maurois, 378). This electoral reform did not bring anything fundamental, although it was so requesting by people and so refusing by the ruling class. As Maurois claims, after the excitement ended after the victorious battle because no miracles took place as expected (Maurois, 379). The ruling classes turned out to still be in power.

It is worth mentioning the law passed in 1833, the Factory Law. The politicians were seeking to restrict child labour by law but the factory owners defended against it. They claimed that they had been helping the poor by providing their children the possibility to make money and increase their families’ budget. Some of them simply appreciated the cheap labour. The law outlawing the employment of children younger than 9 years and restricting the children younger than 18 years to work more than 12 hours a day. The night shifts for children were outlawed as well. To control these regulations, the inspectors were called on. However, the laws were not adhered to very carefully.

## **6.2. Charters and movements**

The Fall of Bastille and the whole French Revolution had a “response” in British craftsmen who wanted to simulate the events on the continent. They were disappointed with cessation of the above mentioned enthusiasm, so few years after the electoral reform they mobilized to another revolutionary program. They managed to pick up plenty of signatures especially from workers, who, according to Morgan, still were not content and felt sorry for their lost revolution (Morgan, 379). It is hardly necessary to say that the middle class did not take pleasure in them. The chartists demanded in their revolutionary program the universal suffrage, election by ballot, fixed election districts, one-year Parliament, salaries for all the parliamentarians and the abolition of provision according to which the members of the Parliament must have their own assets.

According to Morgan, the People’s Charter had the same effect as the French Revolution, but the scattered Chartist movement was unified only superficially and for a short term (Morgan, 392). The six points signed by 1.2 million people, were submitted to the Parliament. “In July 1838 the bill or the First Charter was delivered to the Parliament, but it refused it and ordered to disperse the great protest gathering in Birmingham” (Polišenský, 156). After the arrested chartists’ release in 1840, the movement came back to life and the National Charter Association was established. This, according to Polišenský, first modern political party (Polišenský, 157) provided the text of the Second Charter with new proposals such as higher salaries and shorter working hours. However, in May 1842 the Parliament ignored the 3 million signatures and refused the petition.

The workers, especially in the fightable north, were horrified, which corresponded their reaction. “The conference of trade unions in Manchester recommended in August the call of a strike ‘until the Charter becomes law’” (Polišenský, 157). Although the south was according to Polišenský calm (Polišenský, 157) in comparison with the north as some people were even against the strike, there was a revolutionary disposition in the north. However, the army was sent out against them again, so everybody had to return to their works. “In 1848 the third and the last petition was provided, collecting 2 million

signatures more. In the House of Commons, one single member voted for it” (Polišenský, 157). Afterwards, the chartists were dispersed in London again.

However, the discontents did not yield according to Maurois, the last violent dispersion did not signify the end of the Chartism (Maurois, 157). The workers preferred more and more the trade unions to Chartism. After the Chartism was slowly dying out, some chartists emigrated and, according to Morgan, some of them went to province press (Morgan, 394). The best-known journals were Northern Star and Poor Man’s Guardian.

The period in which the Chartism was, according to Morgan, already dead (Morgan 393) is connected with the slow going off of the Industrial Revolution, according to Maurois, the most difficult period of the British history (Maurois, 366). During this period a new process providing even greater industrial growth than the period being dealt in this work, was starting. The boom was not slowing down but accelerating. “The period between 1848 and 1870 was the golden age of British capitalism. Development of production and the increase of profits reached the summit in this period” (Maurois, 159). Britain’s economics was prospering very much during the reign of Queen Victoria, at least until the 70s. However, this does not mean the prosperity for workers – their working hours, hygiene and housing still were enviable. Although their salaries were increasing slowly, these workers paid the highest tax. This was one of few positive attributes of their life, that was undoubtedly hard and “long”. “The salaries were growing in this period, since the beginning of the 50s they increased by 56 per cent. Undoubtedly, this signified the progress of the standard of living, especially for unionized industrial workers” (Polišenský, 162).

## **7. Conclusion**

The Industrial Revolution is not the same as other revolutions. It is a special type of revolution because most of other revolutions are easily identifiable and have a clear impact. In most cases it is undoubtedly easier to determinate the period and meaning of wars, coups and important inventions. Most revolutions also do not last for a long time, often only one decade. However, the Industrial Revolution in England lasted

approximately one hundred years and its consequences are perceptible even today – capitalism, so important for the Western world, was developing. However, there are countries disapproving it. Here belonged countries of Eastern bloc. Capitalism was not important here as it is now and there were not such gaps between people as it is today.

Considerations whether it is better to support mainly great traders or to aim at a real “fairness” are contradictory. When the economics goes well people are more willing to spend money – to buy more goods and when buying, they impeach also on the quality not only on the price. Therefore, the profits of traders increase which increases also their possession. It can insist benefits for their employees because their possession is also increasing. The trader is able to employ other people as well, the potential employees. However, it is important to realize that this is not a rule. Notional scissors began to open even faster because for example factory owners grew rich enormously which rather harmed other people, especially workers.

The industrial growth is connected to the growth of the competition, which means that it is not easy to achieve. Therefore, employers had to reduce costs and make the production to be more effective to be profitable. Inasmuch as there were no laws to “help” people, the growing rich of factory owners made trouble to the poorest. Although their conditions slightly improved by passing some laws, the workers lived almost as slaves by that time. Although the slaves did not have their freedom, the workers did not often have a choice and had to conform themselves.

When talking about the Industrial Revolution, words like growth, expansion, new, faster and efficient are often used. Dean adds another word: “The age is running mad after innovation” (Deane, 123). All this represents the positive about the Industrial Revolution that undoubtedly had positive consequences as well. However, it had also negative consequences for example work conditions of workers, female-workers and even children. Although they were a part of a huge development, they did not profit as those “above them”. The rich enjoyed their richness – they were going to exhibitions in the 19<sup>th</sup> century but those from the working class did not have such a beautiful life. If they did not conform, they would die of hunger.

Although new technologies were beneficial, workers did not care at all – they had other fish to fry, for example how to make money because the tax they paid for the industrial growth was enormous.



Tato práce popisuje probíhající průmyslovou revoluci v 18. a 19. století na základě historických studií. Úvod se zabývá představením této doby, v níž došlo ke změnám, které se navždy zapsaly do britských i evropských dějin. Další kapitola je věnována charakteristice období, ve kterém došlo k politickým změnám, ovlivňujících přímo či nepřímo předpoklady pro průmyslový rozvoj i samotnou revoluci. Jsou zde popisovány významné osobnosti této doby, včetně hannoverské dynastie, která vládla téměř od začátku 18. století, a jsou zmiňovány aspekty následků revoluce, která probíhala před koncem 17. století. Následující kapitola se zaměřuje na předpoklady pro dosud nevídaný průmyslový rozvoj, který následoval, včetně samotného průběhu rozvoje velkovýroby a geografických a sociálních změn. V další kapitole je podávána charakteristika zemědělských změn, jež byly podníceny předchozím vývojem a měly vliv na sociální důsledky revoluce. V následující kapitole jsou probírány přímé důsledky revoluce a politických změn během ní, včetně vzniku chartismu. V závěru jsou shrnuty charakteristiky předpokladů, průběhu a důsledků průmyslové revoluce.

## **Bibliography**

- Kolář, Martin; Stanislav Tumis: *Zrození Velmocí*, první vydání, TRITON Praha, 2007
- Beard, Charles Austin: *The Industrial Revolution*. Taylor & Francis, London, 2006
- Paulinyi, Ákoš: *Průmyslová revoluce, O původu moderní techniky*. ISV nakladatelství, Praha, 2002
- Polišenský, Josef: *Dějiny Británie*. Vydání I., Svoboda, Praha, 1982
- Deane, Phyllis: *The first industrial revolution*. Edition 2, Cambridge University Press, 1979
- Mokyr, Joel: *The Economics of the Industrial Revolution*. Rowman & Littlefield, 1985
- Foster, John; Hobsbawm, Eric John: *Class Struggle and the Industrial Revolution: Early Industrial Capitalism in Three English Towns*. Routledge, 1977
- Maurois, André: *Dějiny Anglie. Doplněné o novější období Michelem Mohrtem*. Nakladatelství Lidové noviny, Praha, 2000
- Churchill, Winston S.: *Dějiny anglicky mluvících národů*. Vydání první. Český spisovatel, Praha, 1999
- Johnson, Paul: *Dějiny anglického národa*. Vydání první, Rozmluvy, Řevnice, 1992
- Deane, Phyllis: *The first industrial revolution*. Edition 2, Cambridge University Press, 1979
- Mokyr, Joel: *The Economics of the Industrial Revolution*. Rowman & Littlefield, 1985
- Foster, John; Hobsbawm, Eric John: *Class Struggle and the Industrial Revolution: Early Industrial Capitalism in Three English Towns*. Routledge, 1977
- Morgan, Kenneth O.; Kolektiv: *Dějiny Británie*. Nakladatelství Lidové noviny, Praha, 2002
- McDowall, David: *An illustrated history of Britain*. Fifteenth impression, Longman Group UK Limited, Harlow, 2001
- Čapek, Vratislav: *Světové dějiny II. dějiny lidských civilizací od poloviny 17. Století po současnost*. Fortuna, 1993
- Hudson, Pat: *The Industrial Revolution*. Oxford University Press US, London, 1996
- King, Steven; Timmins, Geoffrey: *Making Sense of the Industrial Revolution*. Manchester University Press, Manchester, 2001)
- Smelser, Neil J.: *Social Change in the Industrial Revolution: An Application of Theory to the British Cotton Industry*. Taylor & Francis, 2006

O'Brien, Patrick Karl; Roland, E.: *The Industrial revolution and British society*. Cambridge University Press, 1993

Albert, Bill; Aldcroft, Derek Howard; Michael, J.: *Transport in the Industrial Revolution*. Manchester University Press ND, 1983

Musson, Albert Edward: *Science and Technology in the Industrial Revolution*. Manchester University Press ND, 1969

Ross, Stewart: *The Industrial Revolution*. Evan Brothers, 2008