**HISTORY 4TH SEMESTER HIS 403 UNIT III: GERMANY**

**Industrial Revolution in Germany: A Brief Introduction**

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The 19th century saw the rise of an industrial Europe. New sources of energy were discovered and harnessed to power new machines. This led to the mechanization of industrial processes and the production of enormous quantities of goods. It saw an evolution in communication and transportation too, allowing once isolated areas to become connected with the nerve centres of national, and even international, economy. New, major, cities rose and flourished as production and transportation provided the wealth necessary for them to develop. Briefly, all this marked the transition from a medieval, feudal, subsistence, petty, agriculture-centric economy to a modern, capitalistic, market-oriented, large, industry-centric economy. It occurred first in England in the late 18th century, and then in Continental Europe at various points of time in the 19th century. The impact of such a phenomenon was felt outside of Europe too, especially in the United States and Japan. In Europe, Germany emerged as the most industrialized nation by the end of the 19th century. Germany surpassed the home of the industrial revolution – Great Britain. From a once divided nation, its political strength and economic potential was finally unleashed at the end of the 19th and the beginning of the 20th century.

Germany always had the natural resources required for an industrial revolution. Large coal reserves were located especially in Saar, Ruhr, Upper Silesia, and Saxony. There were huge iron deposits too, located especially in Erzgebirge, Harz Mountains, and Upper Silesia.

But Germany had problems too, after the Napoleonic War ended in 1815. Only the major ports of Bremen and Hamburg had clear and secure access to the North Sea, but even so, it lacked direct access to the buzzing Atlantic Ocean trade routes.   
Thich is why the Germans had always had to rely on other European nations for their share of international trade. Also, a large and an independent bourgeois class could not come into its own there, and neither was there an accumulation of capital necessary for an industrial revolution.

Many medieval institutions also remained in place hampering the growth of modern agriculture and industry. Feudalism returned and with it the institutional practices of serfdom, especially the obligation of peasants to provide a share of their harvest and labour to their landlords. Moreover, guilds controlled much of the industries and because with their monopolistic policies, establishing new and independent factories proved to be difficult and limited. Local German textile industries faced competition when the allies lifted the Continental System that blocked the entry of cheap British textile. The depression that followed in 1817 resulted in a drop in agricultural production, thereby driving food prices up.

The most significant challenge towards Germany’s industrial revolution was its political set-up. Germany, before 1871, was made up of numerous states, with Prussia being the largest. (At the end of the 18th century, there were over four hundred German states which Napoleon reduced to thirty-nine, which remained in existence in 1815). As a result of this fragmentation and attendant animosity, trade was difficult and limited and transport of raw materials to factories across regions was challenging. Only with the unification did Germany truly become an industrial powerhouse.

Among the German states, Prussia emerged as the economically the most powerful country in 1815. It controlled major manufacturing towns, coalfields, and trade routes. The Prussian government showed great enthusiasm towards economic progress, which it understood was vital to its status as an important political entity in the European arena.   
  
 In 1818, Prussia proceeded to immediately counter the problems arising in the post-Napoleonic era. In order to streamline its administration and end illegal trade across its borders, the state imposed a new tariff system. Many hailed the Prussian Tariff of 1818 as progressive and a great incentive for industrial growth. It removed duties on raw materials but imposed tariffs on imported manufactured goods and overseas colonial goods. It also removed the tolls or customs region system, allowing free trade among provinces, resulting to an easier and wider distribution of goods and services.   
  
 In order to get out of the depression that began in 1817 and control its war debts, the Prussian government borrowed from the Rothschild in 1818 and 1822. Eventually, the growth of Prussia as an industrial country progressed under the control of some of its officials. Finance Minister Adolf von Motz, who served from 1825 to 1830, launched reforms in tax system and improvements in revenue through selling of crown lands. Furthermore, he also stimulated the economy by improving infrastructure through public works.   
  
 Christian Peter Wilhelm Beuth also served Prussia well. As the head of the Department of Trade and Industry from 1830 to 1845, he organized a technical commission that monitored industrial development. He also established the Berlin Technical Institute that led to advancements in technology and skills. The state played an active role to the recovery and industrial growth of Prussia.

Other German states became active as well, due to Prussia’s influence. Many of them supported industries and promoted a self-reliant economy. They provided incentives and subsidies to entrepreneurs. The Zollverein, however, proved to be the greatest factor for the economic unity and development of the many German states.

The Zollverein grew from the Prussian Tariff of 1818 to a full-fledged customs union that became a catalyst for German unification. The Tariff of 1818 became the basis of Prussia in negotiating commercial treaties with neighbouring German states to form a customs union. For more than a decade, fearing Prussian dominance, many German states hesitated as to whether join it or to form their own customs unions. However, in 1834, Prussia formally created the Zollverein. It provided new opportunities for industries by opening a wider market and new sources of raw materials. Without the Zollverein an industrialized and unified Germany would not had been possible. Although not politically united and therefore economically cooperative, the German states could now at least use the customs union to their economic advantage.

Besides the Zollverin, financial institutions and cartels furthered industrial growth in Germany. Banks provided capital and investments to new companies. They also helped new companies to sell shares to earn capital. Cartels on the other hand provided protection and stability. In other countries, like Great Britain and the United States, cartels were viewed negatively for their anti-competitive attitude and unfair business practices, but in Germany, cartels were seen as providers of stability for growth for small industries. It spared them from sometimes unprofitable and self-destructing price wars. It also provided protection in cases of price fluctuations and entry of foreign competition. Thus, industrial development proceeded from adequate financial support from banks and stable markets from cartels.

Textile became the first to experience mechanization. The first spinning machine in Germany was built in Chemnitz in 1782. From then on, Chemnitz continued to build machines that made it into an engineering centre. In 1784, the first textile factory, built in Ratingen, Dusseldorf, copied the factory system in Cromford that Richard Arkwright had developed. British skills also contributed to the development of German textile industry. Cockerill Brothers, a British industry house, built mills in Brandenburg. English craftsmen also built power looms for the Maschinen Wollen-Weberei in Silesia. The growth of the textile industry led to the rise of textile centres like Aachen (famous for its yarn), Krefeld (famous for its silk), Saxony, and also Silesia.

The iron industry also developed rapidly. Much of this industry focused in the region of Silesia and it had received attention even during the reign of King Frederick II the Great. In 1796, the first coke-blast furnace began operation in Gleiwitz in Upper Silesia. A few years later, in 1802, another coke blast furnace began operation in Konigshutte. Later on, the number of blast furnaces using coke rose up to thirty by the mid-19th century.   
  
 In the early part of the 19th century, most especially after the establishment of the Zollverein in 1834, Silesia found competition in the Ruhr Region. Its iron deposits led to the growth of the industry in the area. In 1849, the first coke-smelting facility began operation in the Friedrich Wilhelm Ironworks in Mulheim, Ruhr. Moreover, the introduction of the puddling method of making iron by Friedrich Harkort and Dietrich Piepenstock resulted also in the increase in iron production.   
  
 Foreign investment accelerated development of the Ruhr Area. William Thomas Mulvany posed as one of the successful foreign investors in this area. An Irish by birth, he along with other investors opened mines in the Ruhr region and used the latest technology in mining. In 1866, with his mines and iron works, he founded the Preussische Bergwerkes und Hutten-aktiengesellschaft or the Prussian Mining and Ironworks Company. In the 1850s the regions of Westphalia, Rhineland, and Saar also experience growth in iron production. From 46,000 tons of iron produced in 1810, it rose to 529,000 tons by 1850.

Steam engines contributed significantly to the industrial development of Germany. Steam engines powered textile mills. They also pumped out water in the iron mines, thus making the extraction of the ore easier. This technology allowed the increase in the number of factories operating, most especially in Prussia. From only 419 in 1837, it grew to 1,444 in 1849. Besides factories and source of power, steam also changed trade. It allowed riverine tug boats to carry more load and transport goods faster. The Defiance, the first steam ship in the Germany, sailed in the River Rhine and followed by the launching of Caledonia in 1817. This type of ships also led an increase demand for coal that mining companies exploited to increase production and profit. Thus from 1 million tons produced in 1820, it swelled to 6 million tons only 30 years later. Regions like the Ruhr, Aachen, Saarland, Silesia, and Saxony also developed to become coal centres. It also allowed German ships access to the Atlantic trade. Steam powered the industrial revolution in Germany.

Railways served Germany well in its industrial revolution and also in its political unification. Indeed, railways made real the possibilities posed by the Zollverein. The first railway line opened on December 1835 and ran between Nuremberg and Furth. In 1839, another lined opened that connected Dresden and Leipzig. Initially, the private sector took the initiative in constructing railways. But due to lack of private capital, the administration had to intervene and in some German states, went to the extent of nationalizing the industry. Where private enterprise was willing, the state provided land, stocks, financial aid, and “guaranteed” minimum profit to railway companies to boost this essential mode of modern transport.  
  
 In Prussia, the government helped private railway companies. In 1842, the Prussian government created the Railway Fund meant to finance railway construction projects. At first, Germans imported locomotives from Britain or Belgium, but later on they began to manufacture their own. Berlin and Munich became centres of locomotive production. Borsig became one of the successful firms in Berlin. By the 1840s major cities in Germany had been connected by railway. In Prussia, Berlin became a centre of the railroad network. In 1948, the railway line that connected Cologne and Minden contributed to the development of the Ruhr Industrial region. Railways connected the members of the Zollverein, thereby further stimulating commerce. Following railways, communication and travel became faster and organized. This mode of transportation brought huge benefits to the Prussian Army. Mobilization became easier and faster and used during Prussian wars against Austria during the Seven Week’s War and later against France during the Franco-Prussian War. From 3,638 miles in 1850, Germany had built 11,600 miles in 1870.

In 1871, Prussia finally united Germany. This marked a new phase of Germany’s industrial revolution; for, Germany could now direct its economy centrally. Bismarck, the central force behind German unification, now utilised private enterprise and capital to build up a politically strong state. For instance, there was finally a large “national” market, a colonial empire, a nationalized railway network, all which were aids to the national economy. In addition, the provinces of Alsace and Lorraine that Germany took from France gave Germany even more natural resources needed for industrialization.

Heavy industry grew and developed further after the German unification. Steel production rose. In the early 1800s, steel had been produced expensively but in very little quantities. Alfred Krupp made a living out of producing steel. When the Bessemer process made possible the mass production of steel in cheaper price, Krupp and Hoesch used the process to their advantage. In 1879, steel became a booming industry after the Thomas-Gilchrist method allowed the use of phosphoric iron in making steel. Weapons-manufacturing and ship-building followed the steel boom. Krupp for example became a well-known firm for its artillery.

With the dawn of the so-called Second Industrial Revolution, Germany surpassed Britain as the most industrialized country and competed with the United States too. In electricals, Germany could boast of companies like Siemens under Werner von Siemens and Emil Rathenau’s General Electric Company or Allegemeine Elektricitats-Gesellschaft or AEG. In chemicals, Germany showed its scientific skills and led the production of potassium salt, dyes, pharmaceutical products, and synthetics. It led to rise of agricultural production, thanks to its increasing production of chemical fertilizers. Germany also controlled 90% of dye production worldwide at the time. Companies like Bayer and Hoescht led the chemical industry of Germany. Germany also became a leader in the automobile industry. The first cars were made in Germany. Daimler and Benz became the most popular brands of automobile in Germany and the world.

Factors that led to Germany’s boom in the Second Industrial Revolution included its education and government support. Germany imposed new high tariffs against imports and protected local industries and allowed them to flourish. It also provided government subsidies to private businesses. Education too played a key role. For decades Prussia and other German States had invested in education. Technical schools produced great minds and inventors. Eventually, by the time of the Second Industrial Revolution, Germany had a huge supply of talented and skilled population.

*References:*

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*Questions (probable):*

1. Show how the Zollverein and the railways helped change the economic situation in the German states in the 1830s-1840s and contributed to the industrial development in the 1850s-1860s. (8 marks)
2. What were the elements of “backwardness” in the German states in 1815? (2 marks)
3. What policies did Bismarck adopt to push forward German industrial growth after 1871? (4 marks)

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