Culture, Arts and Sciences 1815–1914

Willis Byrd

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Chapter 1

Concordat of 1801

The Concordat of 1801 was an agreement between Napoleon Bonaparte and Pope Pius VII, signed on 15 July 1801 in Paris. It remained in effect until 1905. It sought national reconciliation between revolutionaries and Catholics and solidified the Roman Catholic Church as the majority church of France, with most of its civil status restored. The hostility of devout French Catholics against the revolutionary state had then largely been resolved. It did not restore the vast church lands and endowments that had been seized upon during the revolution and sold off. Catholic clergy returned from exile, or from hiding, and resumed their traditional positions in their traditional churches. Very few parishes continued to employ the priests who had accepted the Civil Constitution of the Clergy of the Revolutionary regime. While the Concordat restored much power to the papacy, the balance of church-state relations tilted firmly in Napoleon's favour. He selected the bishops and supervised church finances.

Napoleon and the Pope both found the Concordat useful. Similar arrangements were made with the Church in territories controlled by Napoleon, especially Italy and Germany.

History

During the French Revolution, the National Assembly had taken Church properties and issued the Civil Constitution of the Clergy, which made the Church a department of the State,

effectively removing it from papal authority. At the time, the nationalized Gallican Church was the official church of France, but it was essentially Catholicism. The Civil Constitution caused hostility among the Vendeans towards the change in the relationship between the Catholic Church and the French government. Subsequent laws abolished the traditional Gregorian calendar and Christian holidays.

The Concordat was drawn up by a commission with three representatives from each party. Napoleon Bonaparte, who was First Consul of the French Republic at the time, appointed Joseph Bonaparte, his brother, Emmanuel Crétet, a counselor of state, and Étienne-Alexandre Bernier, a doctor in theology. Pope Pius VII appointed Cardinal ErcoleConsalvi, Cardinal Giuseppe Spina, archbishop of Corinth, and his theological adviser, Father Carlo Francesco Maria Caselli. The French bishops, whether still abroad or returned to their own country, had no part in the negotiations. The concordat as finally arranged practically ignored them.

While the Concordat restored some ties to the papacy, it was largely in favor of the state; it wielded greater power vis-à-vis the Pope than previous French regimes had, and church lands lost during the Revolution would not be returned. Napoleon understood the utility of religion as an important factor of social cohesion. His was a utilitarian approach. He could now win favor with French Catholics while also controlling Rome in a political sense. Napoleon once told his brother Lucien in April 1801, "Skillful conquerors have not got entangled with priests. They can both contain them and use them." As a part of the Concordat, he presented another set of laws called the Organic Articles.

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Napoleon looked for the recognition by the Church of the disposition of its property and geographical reorganization of bishoprics, while Rome sought the protection of Catholics and the recognition of a special status of the Catholic Church in the French State. The main terms of the Concordat of 1801 between France and Pope Pius VII included:

- A declaration that "Catholicism was the religion of the great majority of the French" but not the official state religion, thus maintaining religious freedom, in particular with respect to Protestants.
- The Church was to be free to exercise its worship in public in accordance with police regulations that the Government deems necessary for the public peace. The authority to determine if a public religious observance would violate the public peace, resided with each mayor who had the power to prohibit a public ceremony if he considered it a threat to peace in his commune.
- The Papacy had the right to depose bishops; the French government still, since the Concordat of Bologna in 1516, nominated them.
- The state would pay clerical salaries and the clergy swore an oath of allegiance to the state.
- The Catholic Church gave up all its claims to Church lands that were confiscated after 1790.
- Sunday was reestablished as a "festival", effective Easter Sunday, 18 April 1802. The rest of the French Republican Calendar, which had been abolished, was

not replaced by the traditional Gregorian Calendar until 1 January 1806.

According to Georges Goyau, the law known as "The Organic Articles", promulgated in April 1802, infringed in various ways on the spirit of the concordat. The document claimed Catholicism was "the religion of the majority of Frenchmen," and still gave state recognition to Protestants and Jews as well.

The Concordat was abrogated by the law of 1905 on the separation of Church and state. However, some provisions of the Concordat are still in effect in the Alsace-Lorraine region under the local law of Alsace-Moselle, as the region was controlled by the German Empire at the time of the 1905 law's passage.

Napoleon

Napoléon Bonaparte (15 August 1769 – 5 May 1821), usually referred to as simply **Napoleon** in English, was a French military and political leader who rose to prominence during the French Revolution and led several successful campaigns during the Revolutionary Wars. He was the *de facto* leader of the French Republic as First Consul from 1799 to 1804. As **Napoleon I**, he was Emperor of the French from 1804 until 1814 and again in 1815. Napoleon dominated European and global affairs for more than a decade while leading France against a series of coalitions in the Napoleonic Wars. He won most of these wars and the vast majority of his battles, building a large empire that ruled over continental Europe before its final collapse in 1815. One of the greatest

commanders in history, his wars and campaigns are studied at military schools worldwide. He remains one of the most celebrated and controversial political figures in human history.

Born **Napoleone di Buonaparte** on the island of Corsica not long after its annexation by the Kingdom of France, Napoleon's modest family descended from minor Italian nobility. He supported the French Revolution in 1789 while serving in the French army, and tried to spread its ideals to his native Corsica. He rose rapidly in the Army after he saved the governing French Directory by firing on royalist insurgents. In April 1796, he began his first military campaign against the Austrians and their Italian allies, scoring a series of decisive victories and becoming a national hero. Two years later, he led a military expedition to Egypt that served as a springboard to political power.

He engineered a coup in November 1799 and became *First Consul of the Republic*. Intractable differences with the British meant that the French were facing the War of the Third Coalition by 1805. Napoleon shattered this coalition with decisive victories in the Ulm Campaign, and a historic triumph at the Battle of Austerlitz, which led to the dissolving of the Holy Roman Empire. In 1806, the Fourth Coalition took up arms against him because Prussia became worried about growing French influence on the continent. Napoleon quickly knocked out Prussia at the battles of Jena and Auerstedt, then marched the Grande Armée deep into Eastern Europe, annihilating the Russians in June 1807 at Friedland, and forcing the defeated nations of the Fourth Coalition to accept the Treaties of Tilsit. Two years later, the Austrians challenged the French again during the War of the Fifth Coalition, but

Napoleon solidified his grip over Europe after triumphing at the Battle of Wagram.

Hoping to extend the Continental System (embargo of Britain), Napoleon invaded the Iberian Peninsula and declared his brother Joseph the King of Spain in 1808. The Spanish and the Portuguese revolted with British support. The Peninsular War lasted six years, featured brutal guerrilla warfare, and culminated in a defeat for Napoleon's marshals. Napoleon launched an invasion of Russia in the summer of 1812. The resulting campaign witnessed the catastrophic retreat of Napoleon's Grande Armée and encouraged his enemies. In 1813, Prussia and Austria joined Russian forces in a Sixth Coalition against France. A chaotic military campaign culminated in a large coalition army defeating Napoleon at the Battle of Leipzig in October 1813. The coalition invaded France and captured Paris, forcing Napoleon to abdicate in April 1814. Napoleon was exiled to the island of Elba, between Corsica and Italy. In France, the Bourbons were restored to power. However, Napoleon escaped from Elba in February 1815 and took control of France, "without spilling a drop of blood" as he wished. The Allies responded by forming a Seventh Coalition, which ultimately defeated Napoleon at the Battle of Waterloo in June 1815. The British exiled him to the remote island of Saint Helena in the South Atlantic, where he died in 1821 at the age of 51.

Napoleon had an extensive impact on the modern world, bringing liberal reforms to the numerous territories that he conquered and controlled, especially the Low Countries, Switzerland, and large parts of modern Italy and Germany. He implemented fundamental liberal policies in France and

throughout Western Europe. His lasting legal achievement, the Napoleonic Code, has been highly influential. Historian Andrew Roberts says, "The ideas that underpin our modern world—meritocracy, equality before the law, property rights, religious toleration, modern secular education, sound finances, and so on—were championed, consolidated, codified and geographically extended by Napoleon. To them he added a rational and efficient local administration, an end to rural banditry, the encouragement of science and the arts, the abolition of feudalism and the greatest codification of laws since the fall of the Roman Empire."

Early life

Napoleon's family was of Italian origin: his paternal ancestors, the Buonapartes, descended from a minor Tuscan noble family who emigrated to Corsica in the 16th century; while his maternal ancestors, the Ramolinos, descended from a minor Genoese noble family. The Buonapartes were also the relatives, by marriage and by birth, of the Pietrasentas, Costas, Paraviccinis, and Bonellis, all Corsican families of the interior. His parents Carlo Maria di Buonaparte and Maria LetiziaRamolino maintained an ancestral home called "Casa Buonaparte" in Ajaccio. It was there, at this home, that Napoleon was born, on 15 August 1769. He was the fourth child and third son of the family. He had an elder brother, Joseph, and younger siblings Lucien, Elisa, Louis, Pauline, Caroline, and Jérôme. Napoleon was baptised as a Catholic, under the name *Napoleone*. In his youth, his name was also spelled as *Nabulione*, *Nabulio*, *Napolionne*, and *Napulione*.

Napoleon was born in the same year that the Republic of Genoa (former Italian state) ceded the region of Corsica to France. The state sold sovereign rights a year before his birth and the island was conquered by France during the year of his birth. It was formally incorporated as a province in 1770, after 500 years under Genoese rule and 14 years of independence. Napoleon's parents joined the Corsican resistance and fought against the French to maintain independence, even when Maria was pregnant with him. His father was an attorney who went on to be named Corsica's representative to the court of Louis XVI in 1777.

The dominant influence of Napoleon's childhood was his mother, whose firm discipline restrained a rambunctious child. Later in life, Napoleon stated, "The future destiny of the child is always the work of the mother." Napoleon's maternal grandmother had married into the Swiss Fesch family in her second marriage, and Napoleon's uncle, the cardinal Joseph Fesch, would fulfill a role as protector of the Bonaparte family for some years. Napoleon's noble, moderately affluent background afforded him greater opportunities to study than were available to a typical Corsican of the time.

When he turned 9 years old, he moved to the French mainland and enrolled at a religious school in Autun in January 1779. In May, he transferred with a scholarship to a military academy at Brienne-le-Château. In his youth he was an outspoken Corsican nationalist and supported the state's independence from France. Like many Corsicans, Napoleon spoke and read Corsican (as his mother tongue) and Italian (as the official language of Corsica). He began learning French in school at around age 10. Although he became fluent in French, he spoke

with a distinctive Corsican accent and never learned how to spell French correctly. He was, however, not an isolated case, as it was estimated in 1790 that fewer than 3 million people, out of France's population of 28 million, were able to speak standard French, and those who could write it were even fewer.

Napoleon was routinely bullied by his peers for his accent, birthplace, short stature, mannerisms and inability to speak French quickly. Bonaparte became reserved and melancholy applying himself to reading. An examiner observed that Napoleon "has always been distinguished for his application in mathematics. He is fairly well acquainted with history and geography ... This boy would make an excellent sailor". In early adulthood, he briefly intended to become a writer; he authored a history of Corsica and a romantic novella.

On completion of his studies at Brienne in 1784, Napoleon was admitted to the *ÉcoleMilitaire* in Paris. He trained to become an artillery officer and, when his father's death reduced his income, was forced to complete the two-year course in one year. He was the first Corsican to graduate from the *ÉcoleMilitaire*. He was examined by the famed scientist Pierre-Simon Laplace.

Early career

Upon graduating in September 1785, Bonaparte was commissioned a second lieutenant in *La Fère* artillery regiment. He served in Valence and Auxonne until after the outbreak of the Revolution in 1789. The young man still was a fervent Corsican nationalist during this period and asked for leave to join his mentor Pasquale Paoli, when the latter was

allowed to return to Corsica by the National Assembly. Paoli had no sympathy for Napoleon however as he deemed his father a traitor for having deserted his cause for Corsican independence.

He spent the early years of the Revolution in Corsica, fighting in a complex three-way struggle among royalists, revolutionaries, and Corsican nationalists.

Napoleon, however, came to embrace the ideals of the Revolution, becoming a supporter of the Jacobins and joining the pro-French Corsican Republicans who opposed Paoli's policy and his aspirations of secession.

He was given command over a battalion of volunteers and was promoted to captain in the regular army in July 1792, despite exceeding his leave of absence and leading a riot against French troops.

When Corsica declared formal secession from France and requested the protection of the British government Napoleon and his commitment to the French Revolution came into conflict with Paoli, who had decided to sabotage the Corsican contribution to the *Expédition de Sardaigne*, by preventing a French assault on the Sardinian island of La Maddalena. Bonaparte and his family were compelled to flee to Toulon on the French mainland in June 1793 because of the split with Paoli.

Although he was born "Napoleone di Buonaparte", it was after this that Napoleon began styling himself "Napoléon Bonaparte" but his family did not drop the name Buonaparte until 1796.

The first known record of him signing his name as Bonaparte was at the age of 27 (in 1796).

Siege of Toulon

In July 1793, Bonaparte published a pro-republican pamphlet entitled *Le souper de Beaucaire* (Supper at Beaucaire) which gained him the support of Augustin Robespierre, younger brother of the Revolutionary leader Maximilien Robespierre. With the help of his fellow Corsican Antoine Christophe Saliceti, Bonaparte was appointed senior gunner and artillery commander of the republican forces which arrived on 8 September at Toulon. He adopted a plan to capture a hill where republican guns could dominate the city's harbour and force the British to evacuate. The assault on the position led to the capture of the city, but during it Bonaparte was wounded in the thigh on 16 December. Catching the attention of the Committee of Public Safety, he was put in charge of the artillery of France's Army of Italy. On 22 December he was on his way to his new post in Nice, promoted from the rank of colonel to brigadier general at the age of 24. He devised plans for attacking the Kingdom of Sardinia as part of France's campaign against the First Coalition.

The French army carried out Bonaparte's plan in the Battle of Saorgio in April 1794, and then advanced to seize Ormea in the mountains. From Ormea, they headed west to outflank the Austro-Sardinian positions around Saorge. After this campaign, Augustin Robespierre sent Bonaparte on a mission to the Republic of Genoa to determine that country's intentions towards France.

13 Vendémiaire

Some contemporaries alleged that Bonaparte was put under house arrest at Nice for his association with the Robespierres following their fall in the Thermidorian Reaction in July 1794, but Napoleon's secretary Bourrienne disputed the allegation in his memoirs. According to Bourrienne, jealousy was responsible, between the Army of the Alps and the Army of Italy (with whom Napoleon was seconded at the time). Bonaparte dispatched an impassioned defence in a letter to the commissar Saliceti, and he was subsequently acquitted of any wrongdoing. He was released within two weeks (on 20 August) and, due to his technical skills, was asked to draw up plans to attack Italian positions in the context of France's war with Austria. He also took part in an expedition to take back Corsica from the British, but the French were repulsed by the British Royal Navy.

By 1795, Bonaparte had become engaged to Désirée Clary, daughter of François Clary. Désirée's sister Julie Clary had married Bonaparte's elder brother Joseph. In April 1795, he was assigned to the Army of the West, which was engaged in the War in the Vendée—a civil war and royalist counter-revolution in Vendée, a region in west-central France on the Atlantic Ocean. As an infantry command, it was a demotion from artillery general—for which the army already had a full quota—and he pleaded poor health to avoid the posting.

He was moved to the Bureau of Topography of the Committee of Public Safety and sought unsuccessfully to be transferred to Constantinople in order to offer his services to the Sultan. During this period, he wrote the romantic novella

ClissonetEugénie, about a soldier and his lover, in a clear parallel to Bonaparte's own relationship with Désirée. On 15 September, Bonaparte was removed from the list of generals in regular service for his refusal to serve in the Vendée campaign. He faced a difficult financial situation and reduced career prospects.

On 3 October, royalists in Paris declared a rebellion against the National Convention. Paul Barras, a leader of the Thermidorian Reaction, knew of Bonaparte's military exploits at Toulon and gave him command of the improvised forces in defence of the convention in the Tuileries Palace.

Napoleon had seen the massacre of the King's Swiss Guard there three years earlier and realized that artillery would be the key to its defence.

He ordered a young cavalry officer named Joachim Murat to seize large cannons and used them to repel the attackers on 5 October 1795—*13 VendémiaireAn IV* in the French Republican Calendar; 1,400 royalists died and the rest fled. He had cleared the streets with "a whiff of grapeshot", according to 19th-century historian Thomas Carlyle in *The French Revolution: A History*.

The defeat of the royalist insurrection extinguished the threat to the Convention and earned Bonaparte sudden fame, wealth, and the patronage of the new government, the Directory. Murat married one of Napoleon's sisters, becoming his brother-in-law; he also served under Napoleon as one of his generals. Bonaparte was promoted to Commander of the Interior and given command of the Army of Italy.

Within weeks, he was romantically involved with Joséphine de Beauharnais, the former mistress of Barras. The couple married on 9 March 1796 in a civil ceremony.

First Italian campaign

Two days after the marriage, Bonaparte left Paris to take command of the Army of Italy. He immediately went on the offensive, hoping to defeat the forces of Piedmont before their Austrian allies could intervene. In a series of rapid victories during the Montenotte Campaign, he knocked Piedmont out of the war in two weeks. The French then focused on the Austrians for the remainder of the war, the highlight of which became the protracted struggle for Mantua. The Austrians launched a series of offensives against the French to break the siege, but Napoleon defeated every relief effort, scoring victories at the battles of Castiglione, Bassano, Arcole, and Rivoli. The decisive French triumph at Rivoli in January 1797 led to the collapse of the Austrian position in Italy. At Rivoli, the Austrians lost up to 14,000 men while the French lost about 5,000.

The next phase of the campaign featured the French invasion of the Habsburg heartlands. French forces in Southern Germany had been defeated by the Archduke Charles in 1796, but the Archduke withdrew his forces to protect Vienna after learning about Napoleon's assault. In the first encounter between the two commanders, Napoleon pushed back his opponent and advanced deep into Austrian territory after winning at the Battle of Tarvis in March 1797. The Austrians were alarmed by the French thrust that reached all the way to Leoben, about 100 km from Vienna, and finally decided to sue

for peace. The Treaty of Leoben, followed by the more comprehensive Treaty of Campo Formio, gave France control of most of northern Italy and the Low Countries, and a secret clause promised the Republic of Venice to Austria. Bonaparte marched on Venice and forced its surrender, ending 1,100 years of Venetian independence. He also authorized the French to loot treasures such as the Horses of Saint Mark. On the journey, Bonaparte conversed much about the warriors of antiquity, especially Alexander, Caesar, Scipio and Hannibal. He studied their strategy and combined it with his own. In a question from Bourrienne, asking whether he gave his preference to Alexander or Caesar, Napoleon said that he places Alexander the Great in the first rank, the main reason being his campaign on Asia.

His application of conventional military ideas to real-world situations enabled his military triumphs, such as creative use of artillery as a mobile force to support his infantry. He stated later in life: "I have fought sixty battles and I have learned nothing which I did not know at the beginning. Look at Caesar; he fought the first like the last".

Bonaparte could win battles by concealment of troop deployments and concentration of his forces on the "hinge" of an enemy's weakened front. If he could not use his favouriteenvelopment strategy, he would take up the central position and attack two co-operating forces at their hinge, swing round to fight one until it fled, then turn to face the other. In this Italian campaign, Bonaparte's army captured 150,000 prisoners, 540 cannons, and 170 standards. The French army fought 67 actions and won 18 pitched battles through superior artillery technology and Bonaparte's tactics.

During the campaign, Bonaparte became increasingly influential in French politics. He founded two newspapers: one for the troops in his army and another for circulation in France. The royalists attacked Bonaparte for looting Italy and warned that he might become a dictator. Napoleon's forces extracted an estimated $45 million in funds from Italy during their campaign there, another $12 million in precious metals and jewels. His forces also confiscated more than three-hundred priceless paintings and sculptures.

Bonaparte sent General Pierre Augereau to Paris to lead a *coup d'état* and purge the royalists on 4 September—Coup of 18 Fructidor. This left Barras and his Republican allies in control again but dependent on Bonaparte, who proceeded to peace negotiations with Austria. These negotiations resulted in the Treaty of Campo Formio, and Bonaparte returned to Paris in December as a hero. He met Talleyrand, France's new Foreign Minister—who served in the same capacity for Emperor Napoleon—and they began to prepare for an invasion of Britain.

Egyptian expedition

After two months of planning, Bonaparte decided that France's naval strength was not yet sufficient to confront the British Royal Navy. He decided on a military expedition to seize Egypt and thereby undermine Britain's access to its trade interests in India. Bonaparte wished to establish a French presence in the Middle East and join forces with Tipu Sultan, the Sultan of Mysore who was an enemy of the British. Napoleon assured the Directory that "as soon as he had conquered Egypt, he will establish relations with the Indian princes and, together with

them, attack the English in their possessions". The Directory agreed in order to secure a trade route to the Indian subcontinent.

In May 1798, Bonaparte was elected a member of the French Academy of Sciences. His Egyptian expedition included a group of 167 scientists, with mathematicians, naturalists, chemists, and geodesists among them. Their discoveries included the Rosetta Stone, and their work was published in the *Description de l'Égypte* in 1809.

En route to Egypt, Bonaparte reached Malta on 9 June 1798, then controlled by the Knights Hospitaller. Grand Master Ferdinand von HompeschzuBolheim surrendered after token resistance, and Bonaparte captured an important naval base with the loss of only three men.

Bonaparte and his expedition eluded pursuit by the Royal Navy and landed at Alexandria on 1 July. He fought the Battle of Shubra Khit against the Mamluks, Egypt's ruling military caste. This helped the French practise their defensive tactic for the Battle of the Pyramids, fought on 21 July, about 24 km (15 mi) from the pyramids. General Bonaparte's forces of 25,000 roughly equalled those of the Mamluks' Egyptian cavalry. Twenty-nine French and approximately 2,000 Egyptians were killed. The victory boosted the morale of the French army.

On 1 August 1798, the British fleet under Sir Horatio Nelson captured or destroyed all but two vessels of the French fleet in the Battle of the Nile, defeating Bonaparte's goal to strengthen the French position in the Mediterranean. His army had succeeded in a temporary increase of French power in Egypt,

though it faced repeated uprisings. In early 1799, he moved an army into the Ottoman province of Damascus (Syria and Galilee). Bonaparte led these 13,000 French soldiers in the conquest of the coastal towns of Arish, Gaza, Jaffa, and Haifa. The attack on Jaffa was particularly brutal. Bonaparte discovered that many of the defenders were former prisoners of war, ostensibly on parole, so he ordered the garrison and 1,400 prisoners to be executed by bayonet or drowning to save bullets. Men, women, and children were robbed and murdered for three days.

Bonaparte began with an army of 13,000 men; 1,500 were reported missing, 1,200 died in combat, and thousands perished from disease—mostly bubonic plague. He failed to reduce the fortress of Acre, so he marched his army back to Egypt in May. To speed up the retreat, Bonaparte ordered plague-stricken men to be poisoned with opium; the number who died remains disputed, ranging from a low of 30 to a high of 580. He also brought out 1,000 wounded men. Back in Egypt on 25 July, Bonaparte defeated an Ottoman amphibious invasion at Abukir.

Ruler of France

While in Egypt, Bonaparte stayed informed of European affairs. He learned that France had suffered a series of defeats in the War of the Second Coalition. On 24 August 1799, he took advantage of the temporary departure of British ships from French coastal ports and set sail for France, despite the fact that he had received no explicit orders from Paris. The army was left in the charge of Jean-Baptiste Kléber.

Unknown to Bonaparte, the Directory had sent him orders to return to ward off possible invasions of French soil, but poor lines of communication prevented the delivery of these messages. By the time that he reached Paris in October, France's situation had been improved by a series of victories. The Republic, however, was bankrupt and the ineffective Directory was unpopular with the French population. The Directory discussed Bonaparte's "desertion" but was too weak to punish him.

Despite the failures in Egypt, Napoleon returned to a hero's welcome. He drew together an alliance with director Emmanuel Joseph Sieyès, his brother Lucien, speaker of the Council of Five HundredRoger Ducos, director Joseph Fouché, and Talleyrand, and they overthrew the Directory by a coup d'état on 9 November 1799 ("the 18th Brumaire" according to the revolutionary calendar), closing down the Council of Five Hundred. Napoleon became "first consul" for ten years, with two consuls appointed by him who had consultative voices only. His power was confirmed by the new "Constitution of the Year VIII", originally devised by Sieyès to give Napoleon a minor role, but rewritten by Napoleon, and accepted by direct popular vote (3,000,000 in favour, 1,567 opposed). The constitution preserved the appearance of a republic but in reality, established a dictatorship.

French Consulate

Napoleon established a political system that historian Martyn Lyons called "dictatorship by plebiscite". Worried by the democratic forces unleashed by the Revolution, but unwilling to ignore them entirely, Napoleon resorted to regular electoral

consultations with the French people on his road to imperial power. He drafted the Constitution of the Year VIII and secured his own election as First Consul, taking up residence at the Tuileries. The constitution was approved in a rigged plebiscite held the following January, with 99.94 percent officially listed as voting "yes".

Napoleon's brother, Lucien, had falsified the returns to show that 3 million people had participated in the plebiscite. The real number was 1.5 million. Political observers at the time assumed the eligible French voting public numbered about 5 million people, so the regime artificially doubled the participation rate to indicate popular enthusiasm for the consulate. In the first few months of the consulate, with war in Europe still raging and internal instability still plaguing the country, Napoleon's grip on power remained very tenuous.

In the spring of 1800, Napoleon and his troops crossed the Swiss Alps into Italy, aiming to surprise the Austrian armies that had reoccupied the peninsula when Napoleon was still in Egypt. After a difficult crossing over the Alps, the French army entered the plains of Northern Italy virtually unopposed. While one French army approached from the north, the Austrians were busy with another stationed in Genoa, which was besieged by a substantial force. The fierce resistance of this French army, under André Masséna, gave the northern force some time to carry out their operations with little interference.

After spending several days looking for each other, the two armies collided at the Battle of Marengo on 14 June. General Melas had a numerical advantage, fielding about 30,000 Austrian soldiers while Napoleon commanded 24,000 French

troops. The battle began favourably for the Austrians as their initial attack surprised the French and gradually drove them back. Melas stated that he had won the battle and retired to his headquarters around 3 pm, leaving his subordinates in charge of pursuing the French. The French lines never broke during their tactical retreat. Napoleon constantly rode out among the troops urging them to stand and fight.

Late in the afternoon, a full division under Desaix arrived on the field and reversed the tide of the battle. A series of artillery barrages and cavalry charges decimated the Austrian army, which fled over the Bormida River back to Alessandria, leaving behind 14,000 casualties. The following day, the Austrian army agreed to abandon Northern Italy once more with the Convention of Alessandria, which granted them safe passage to friendly soil in exchange for their fortresses throughout the region.

Although critics have blamed Napoleon for several tactical mistakes preceding the battle, they have also praised his audacity for selecting a risky campaign strategy, choosing to invade the Italian peninsula from the north when the vast majority of French invasions came from the west, near or along the coastline.

As Chandler points out, Napoleon spent almost a year getting the Austrians out of Italy in his first campaign. In 1800, it took him only a month to achieve the same goal. German strategist and field marshal Alfred von Schlieffen concluded that "Bonaparte did not annihilate his enemy but eliminated him and rendered him harmless" while "[attaining] the object of the campaign: the conquest of North Italy".

Napoleon's triumph at Marengo secured his political authority and boosted his popularity back home, but it did not lead to an immediate peace. Bonaparte's brother, Joseph, led the complex negotiations in Lunéville and reported that Austria, emboldened by British support, would not acknowledge the new territory that France had acquired. As negotiations became increasingly fractious, Bonaparte gave orders to his general Moreau to strike Austria once more. Moreau and the French swept through Bavaria and scored an overwhelming victory at Hohenlinden in December 1800. As a result, the Austrians capitulated and signed the Treaty of Lunéville in February 1801. The treaty reaffirmed and expanded earlier French gains at Campo Formio.

Temporary peace in Europe

After a decade of constant warfare, France and Britain signed the Treaty of Amiens in March 1802, bringing the Revolutionary Wars to an end. Amiens called for the withdrawal of British troops from recently conquered colonial territories as well as for assurances to curtail the expansionary goals of the French Republic. With Europe at peace and the economy recovering, Napoleon's popularity soared to its highest levels under the consulate, both domestically and abroad. In a new plebiscite during the spring of 1802, the French public came out in huge numbers to approve a constitution that made the Consulate permanent, essentially elevating Napoleon to dictator for life.

Whereas the plebiscite two years earlier had brought out 1.5 million people to the polls, the new referendum enticed 3.6 million to go and vote (72 percent of all eligible voters).

There was no secret ballot in 1802 and few people wanted to openly defy the regime. The constitution gained approval with over 99% of the vote. His broad powers were spelled out in the new constitution: *Article 1. The French people name, and the Senate proclaims Napoleon-Bonaparte First Consul for Life.* After 1802, he was generally referred to as Napoleon rather than Bonaparte.

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- The 1803 Louisiana Purchasetotalled 2,144,480 square kilometres (827,987 square miles), doubling the size of the United States.

The brief peace in Europe allowed Napoleon to focus on French colonies abroad. Saint-Domingue had managed to acquire a high level of political autonomy during the Revolutionary Wars, with Toussaint L'Ouverture installing himself as de facto dictator by 1801. Napoleon saw a chance to reestablish control over the colony when he signed the Treaty of Amiens. In the 18th century, Saint-Domingue had been France's most profitable colony, producing more sugar than all the British West Indies colonies combined. However, during the Revolution, the National Convention voted to abolish slavery in February 1794. Aware of the expenses required to fund his wars in Europe, Napoleon made the decision to reinstate slavery in all French Caribbean colonies. The 1794 decree had

only affected the colonies of Saint-Domingue, Guadeloupe and Guiana, and did not take effect in Mauritius, Reunion and Martinique, the last of which had been captured by the British and as such remained unaffected by French law.

In Guadeloupe, slavery had been abolished and (violently enforced) by Victor Hugues against opposition from slaveholders thanks to the 1794 law. However, when slavery was reinstated in 1802, a slave revolt broke out under the leadership Louis Delgres. The resulting Law of 20 May had the express purpose of reinstating slavery in Saint-Domingue, Guadeloupe and French Guiana, and restored slavery throughout most of the French colonial empire (excluding Saint-Domingue) for another half a century, while the French transatlantic slave trade continued for another twenty years.

Napoleon sent an expedition under his brother-in-law General Leclerc to reassert control over Saint-Domingue. Although the French managed to capture Toussaint Louverture, the expedition failed when high rates of disease crippled the French army, and Jean-Jacques Dessalines won a string of victories, first against Leclerc, and when he died from yellow fever, then against Donatien-Marie-Joseph de Vimeur, vicomte de Rochambeau, whom Napoleon sent to relieve Leclerc with another 20,000 men. In May 1803, Napoleon acknowledged defeat, and the last 8,000 French troops left the island and the slaves proclaimed an independent republic that they called Haiti in 1804. In the process, Dessalines became arguably the most successful military commander in the struggle against Napoleonic France. Seeing the failure of his efforts in Haiti, Napoleon decided in 1803 to sell the Louisiana Territory to the United States, instantly doubling the size of the U.S. The

selling price in the Louisiana Purchase was less than three cents per acre, a total of $15 million.

The peace with Britain proved to be uneasy and controversial. Britain did not evacuate Malta as promised and protested against Bonaparte's annexation of Piedmont and his Act of Mediation, which established a new Swiss Confederation. Neither of these territories were covered by Amiens, but they inflamed tensions significantly. The dispute culminated in a declaration of war by Britain in May 1803; Napoleon responded by reassembling the invasion camp at Boulogne.

French Empire

During the consulate, Napoleon faced several royalist and Jacobin assassination plots, including the *Conspiration des poignards* (Dagger plot) in October 1800 and the Plot of the Rue Saint-Nicaise (also known as the *Infernal Machine*) two months later. In January 1804, his police uncovered an assassination plot against him that involved Moreau and which was ostensibly sponsored by the Bourbon family, the former rulers of France. On the advice of Talleyrand, Napoleon ordered the kidnapping of the Duke of Enghien, violating the sovereignty of Baden. The Duke was quickly executed after a secret military trial, even though he had not been involved in the plot. Enghien's execution infuriated royal courts throughout Europe, becoming one of the contributing political factors for the outbreak of the Napoleonic Wars.

To expand his power, Napoleon used these assassination plots to justify the creation of an imperial system based on the Roman model. He believed that a Bourbon restoration would be

more difficult if his family's succession was entrenched in the constitution. Launching yet another referendum, Napoleon was elected as *Emperor of the French* by a tally exceeding 99%. As with the Life Consulate two years earlier, this referendum produced heavy participation, bringing out almost 3.6 million voters to the polls.

A keen observer of Bonaparte's rise to absolute power, Madame de Rémusat, explains that "men worn out by the turmoil of the Revolution [...] looked for the domination of an able ruler" and that "people believed quite sincerely that Bonaparte, whether as consul or emperor, would exert his authority and save [them] from the perils of anarchy."

Napoleon's coronation, at which Pope Pius VII officiated, took place at Notre Dame de Paris, on 2 December 1804. Two separate crowns were brought for the ceremony: a golden laurel wreath recalling the Roman Empire and a replica of Charlemagne's crown. Napoleon entered the ceremony wearing the laurel wreath and kept it on his head throughout the proceedings. For the official coronation, he raised the Charlemagne crown over his own head in a symbolic gesture, but never placed it on top because he was already wearing the golden wreath. Instead he placed the crown on Josephine's head, the event commemorated in the officially sanctioned painting by Jacques-Louis David. Napoleon was also crowned King of Italy, with the Iron Crown of Lombardy, at the Cathedral of Milan on 26 May 1805. He created eighteen Marshals of the Empire from among his top generals to secure the allegiance of the army on 18 May 1804, the official start of the Empire.

War of the Third Coalition

Great Britain had broken the Peace of Amiens by declaring war on France in May 1803. In December 1804, an Anglo-Swedish agreement became the first step towards the creation of the Third Coalition. By April 1805, Britain had also signed an alliance with Russia. Austria had been defeated by France twice in recent memory and wanted revenge, so it joined the coalition a few months later.

Before the formation of the Third Coalition, Napoleon had assembled an invasion force, the *Arméed'Angleterre*, around six camps at Boulogne in Northern France. He intended to use this invasion force to strike at England. They never invaded, but Napoleon's troops received careful and invaluable training for future military operations. The men at Boulogne formed the core for what Napoleon later called *La Grande Armée*. At the start, this French army had about 200,000 men organized into seven corps, which were large field units that contained 36–40 cannons each and were capable of independent action until other corps could come to the rescue.

A single corps properly situated in a strong defensive position could survive at least a day without support, giving the *Grande Armée* countless strategic and tactical options on every campaign. On top of these forces, Napoleon created a cavalry reserve of 22,000 organized into two cuirassierdivisions, four mounted dragoon divisions, one division of dismounted dragoons, and one of light cavalry, all supported by 24 artillery pieces. By 1805, the *Grande Armée* had grown to a force of 350,000 men, who were well equipped, well trained, and led by competent officers.

Napoleon knew that the French fleet could not defeat the Royal Navy in a head-to-head battle, so he planned to lure it away from the English Channel through diversionary tactics. The main strategic idea involved the French Navy escaping from the British blockades of Toulon and Brest and threatening to attack the West Indies. In the face of this attack, it was hoped, the British would weaken their defence of the Western Approaches by sending ships to the Caribbean, allowing a combined Franco-Spanish fleet to take control of the channel long enough for French armies to cross and invade. However, the plan unravelled after the British victory at the Battle of Cape Finisterre in July 1805. French Admiral Villeneuve then retreated to Cádiz instead of linking up with French naval forces at Brest for an attack on the English Channel.

By August 1805, Napoleon had realized that the strategic situation had changed fundamentally. Facing a potential invasion from his continental enemies, he decided to strike first and turned his army's sights from the English Channel to the Rhine. His basic objective was to destroy the isolated Austrian armies in Southern Germany before their Russian allies could arrive. On 25 September, after great secrecy and feverish marching, 200,000 French troops began to cross the Rhine on a front of 260 km (160 mi).

Austrian commander Karl Mack had gathered the greater part of the Austrian army at the fortress of Ulm in Swabia. Napoleon swung his forces to the southeast and the *Grande Armée* performed an elaborate wheeling movement that outflanked the Austrian positions. The Ulm Maneuver completely surprised General Mack, who belatedly understood that his army had been cut off. After some minor engagements

that culminated in the Battle of Ulm, Mack finally surrendered after realizing that there was no way to break out of the French encirclement. For just 2,000 French casualties, Napoleon had managed to capture a total of 60,000 Austrian soldiers through his army's rapid marching.

The Ulm Campaign is generally regarded as a strategic masterpiece and was influential in the development of the Schlieffen Plan in the late 19th century. For the French, this spectacular victory on land was soured by the decisive victory that the Royal Navy attained at the Battle of Trafalgar on 21 October. After Trafalgar, the Royal Navy was never again seriously challenged by a French fleet in a large-scale engagement for the duration of the Napoleonic Wars.

Following the Ulm Campaign, French forces managed to capture Vienna in November. The fall of Vienna provided the French a huge bounty as they captured 100,000 muskets, 500 cannons, and the intact bridges across the Danube. At this critical juncture, both Tsar Alexander I and Holy Roman Emperor Francis II decided to engage Napoleon in battle, despite reservations from some of their subordinates. Napoleon sent his army north in pursuit of the Allies but then ordered his forces to retreat so that he could feign a grave weakness.

Desperate to lure the Allies into battle, Napoleon gave every indication in the days preceding the engagement that the French army was in a pitiful state, even abandoning the dominant Pratzen Heights near the village of Austerlitz. At the Battle of Austerlitz, in Moravia on 2 December, he deployed the French army below the Pratzen Heights and deliberately weakened his right flank, enticing the Allies to launch a major

assault there in the hopes of rolling up the whole French line. A forced march from Vienna by Marshal Davout and his III Corps plugged the gap left by Napoleon just in time.

Meanwhile, the heavy Allied deployment against the French right flank weakened their center on the Pratzen Heights, which was viciously attacked by the IV Corps of Marshal Soult. With the Allied center demolished, the French swept through both enemy flanks and sent the Allies fleeing chaotically, capturing thousands of prisoners in the process. The battle is often seen as a tactical masterpiece because of the near-perfect execution of a calibrated but dangerous plan—of the same stature as Cannae, the celebrated triumph by Hannibal some 2,000 years before.

The Allied disaster at Austerlitz significantly shook the faith of Emperor Francis in the British-led war effort. France and Austria agreed to an armistice immediately and the Treaty of Pressburg followed shortly after on 26 December. Pressburg took Austria out of both the war and the Coalition while reinforcing the earlier treaties of Campo Formio and of Lunéville between the two powers.

The treaty confirmed the Austrian loss of lands to France in Italy and Bavaria, and lands in Germany to Napoleon's German allies. It also imposed an indemnity of 40 million francs on the defeated Habsburgs and allowed the fleeing Russian troops free passage through hostile territories and back to their home soil. Napoleon went on to say, "The battle of Austerlitz is the finest of all I have fought". Frank McLynn suggests that Napoleon was so successful at Austerlitz that he lost touch with reality, and what used to be French foreign policy became a "personal

Napoleonic one". Vincent Cronin disagrees, stating that Napoleon was not overly ambitious for himself, "he embodied the ambitions of thirty million Frenchmen".

Middle-Eastern alliances

Napoleon continued to entertain a grand scheme to establish a French presence in the Middle East in order to put pressure on Britain and Russia, and perhaps form an alliance with the Ottoman Empire. In February 1806, Ottoman Emperor Selim IIIrecognised Napoleon as *Emperor*. He also opted for an alliance with France, calling France "our sincere and natural ally". That decision brought the Ottoman Empire into a losing war against Russia and Britain. A Franco-Persian alliance was also formed between Napoleon and the Persian Empire of Fat'h-Ali Shah Qajar. It collapsed in 1807 when France and Russia themselves formed an unexpected alliance. In the end, Napoleon had made no effective alliances in the Middle East.

War of the Fourth Coalition and Tilsit

- After Austerlitz, Napoleon established the Confederation of the Rhine in 1806. A collection of German states intended to serve as a buffer zone between France and Central Europe, the creation of the Confederation spelled the end of the Holy Roman Empire and significantly alarmed the Prussians. The brazen reorganization of German territory by the French risked threatening Prussian influence in the region, if not eliminating it outright. War fever in Berlin rose steadily throughout the summer of 1806. At the insistence of his court, especially his wife

> Queen Louise, Frederick William III decided to challenge the French domination of Central Europe by going to war.

The initial military manoeuvres began in September 1806. In a letter to Marshal Soult detailing the plan for the campaign, Napoleon described the essential features of Napoleonic warfare and introduced the phrase *le bataillon-carré* ("square battalion"). In the *bataillon-carré* system, the various corps of the *Grande Armée* would march uniformly together in close supporting distance. If any single corps was attacked, the others could quickly spring into action and arrive to help.

Napoleon invaded Prussia with 180,000 troops, rapidly marching on the right bank of the River Saale. As in previous campaigns, his fundamental objective was to destroy one opponent before reinforcements from another could tip the balance of the war. Upon learning the whereabouts of the Prussian army, the French swung westwards and crossed the Saale with overwhelming force. At the twin battles of Jena and Auerstedt, fought on 14 October, the French convincingly defeated the Prussians and inflicted heavy casualties. With several major commanders dead or incapacitated, the Prussian king proved incapable of effectively commanding the army, which began to quickly disintegrate.

In a vaunted pursuit that epitomized the "peak of Napoleonic warfare", according to historian Richard Brooks, the French managed to capture 140,000 soldiers, over 2,000 cannons and hundreds of ammunition wagons, all in a single month. Historian David Chandler wrote of the Prussian forces: "Never has the morale of any army been more completely shattered".

Despite their overwhelming defeat, the Prussians refused to negotiate with the French until the Russians had an opportunity to enter the fight.

Following his triumph, Napoleon imposed the first elements of the Continental System through the Berlin Decree issued in November 1806. The Continental System, which prohibited European nations from trading with Britain, was widely violated throughout his reign. In the next few months, Napoleon marched against the advancing Russian armies through Poland and was involved in the bloody stalemate at the Battle of Eylau in February 1807. After a period of rest and consolidation on both sides, the war restarted in June with an initial struggle at Heilsberg that proved indecisive.

On 14 June Napoleon obtained an overwhelming victory over the Russians at the Battle of Friedland, wiping out the majority of the Russian army in a very bloody struggle. The scale of their defeat convinced the Russians to make peace with the French. On 19 June, Tsar Alexander sent an envoy to seek an armistice with Napoleon. The latter assured the envoy that the Vistula River represented the natural borders between French and Russian influence in Europe. On that basis, the two emperors began peace negotiations at the town of Tilsit after meeting on an iconic raft on the River Niemen. The very first thing Alexander said to Napoleon was probably well-calibrated: "I hate the English as much as you do".

Alexander faced pressure from his brother, Duke Constantine, to make peace with Napoleon. Given the victory he had just achieved, the French emperor offered the Russians relatively lenient terms—demanding that Russia join the Continental

System, withdraw its forces from Wallachia and Moldavia, and hand over the Ionian Islands to France. By contrast, Napoleon dictated very harsh peace terms for Prussia, despite the ceaseless exhortations of Queen Louise. Wiping out half of Prussian territories from the map, Napoleon created a new kingdom of 2,800 square kilometres (1,100 sq mi) called Westphalia and appointed his young brother Jérôme as its monarch. Prussia's humiliating treatment at Tilsit caused a deep and bitter antagonism that festered as the Napoleonic eraprogressed. Moreover, Alexander's pretensions at friendship with Napoleon led the latter to seriously misjudge the true intentions of his Russian counterpart, who would violate numerous provisions of the treaty in the next few years. Despite these problems, the Treaties of Tilsit at last gave Napoleon a respite from war and allowed him to return to France, which he had not seen in over 300 days.

Peninsular War and Erfurt

- The settlements at Tilsit gave Napoleon time to organize his empire. One of his major objectives became enforcing the Continental System against the British forces. He decided to focus his attention on the Kingdom of Portugal, which consistently violated his trade prohibitions. After defeat in the War of the Oranges in 1801, Portugal adopted a double-sided policy. At first, John VI agreed to close his ports to British trade. The situation changed dramatically after the Franco-Spanish defeat at Trafalgar; John grew bolder and officially resumed diplomatic and trade relations with Britain.

Unhappy with this change of policy by the Portuguese government, Napoleon negotiated a secret treaty with Charles IV of Spain and sent an army to invade Portugal. On 17 October 1807, 24,000 French troops under General Junot crossed the Pyrenees with Spanish cooperation and headed towards Portugal to enforce Napoleon's orders. This attack was the first step in what would eventually become the Peninsular War, a six-year struggle that significantly sapped French strength. Throughout the winter of 1808, French agents became increasingly involved in Spanish internal affairs, attempting to incite discord between members of the Spanish royal family. On 16 February 1808, secret French machinations finally materialized when Napoleon announced that he would intervene to mediate between the rival political factions in the country.

Marshal Murat led 120,000 troops into Spain. The French arrived in Madrid on 24 March, where wild riots against the occupation erupted just a few weeks later. Napoleon appointed his brother, Joseph Bonaparte, as the new King of Spain in the summer of 1808. The appointment enraged a heavily religious and conservative Spanish population. Resistance to French aggression soon spread throughout Spain. The shocking French defeats at the Battle of Bailén and the Battle of Vimiero gave hope to Napoleon's enemies and partly persuaded the French emperor to intervene in person.

Before going to Iberia, Napoleon decided to address several lingering issues with the Russians. At the Congress of Erfurt in October 1808, Napoleon hoped to keep Russia on his side during the upcoming struggle in Spain and during any potential conflict against Austria. The two sides reached an

agreement, the Erfurt Convention, that called upon Britain to cease its war against France, that recognized the Russian conquest of Finland from Sweden and made it an autonomous Grand Duchy, and that affirmed Russian support for France in a possible war against Austria "to the best of its ability".

Napoleon then returned to France and prepared for war. The *Grande Armée*, under the Emperor's personal command, rapidly crossed the Ebro River in November 1808 and inflicted a series of crushing defeats against the Spanish forces. After clearing the last Spanish force guarding the capital at Somosierra, Napoleon entered Madrid on 4 December with 80,000 troops. He then unleashed his soldiers against Moore and the British forces. The British were swiftly driven to the coast, and they withdrew from Spain entirely after a last stand at the Battle of Corunna in January 1809.

Napoleon would end up leaving Iberia in order to deal with the Austrians in Central Europe, but the Peninsular War continued on long after his absence. He never returned to Spain after the 1808 campaign. Several months after Corunna, the British sent another army to the peninsula under the future Duke of Wellington. The war then settled into a complex and asymmetric strategic deadlock where all sides struggled to gain the upper hand. The highlight of the conflict became the brutal *guerrilla warfare* that engulfed much of the Spanish countryside. Both sides committed the worst atrocities of the Napoleonic Wars during this phase of the conflict.

The vicious guerrilla fighting in Spain, largely absent from the French campaigns in Central Europe, severely disrupted the French lines of supply and communication. Although France

maintained roughly 300,000 troops in Iberia during the Peninsular War, the vast majority were tied down to garrison duty and to intelligence operations. The French were never able to concentrate all of their forces effectively, prolonging the war until events elsewhere in Europe finally turned the tide in favour of the Allies. After the invasion of Russia in 1812, the number of French troops in Spain vastly declined as Napoleon needed reinforcements to conserve his strategic position in Europe. By 1814, after scores of battles and sieges throughout Iberia, the Allies had managed to push the French out of the peninsula.

The impact of the Napoleonic invasion of Spain and ousting of the Spanish Bourbon monarchy in favour of his brother Joseph had an enormous impact on the Spanish empire. In Spanish America many local elites formed juntas and set up mechanisms to rule in the name of Ferdinand VII of Spain, whom they considered the legitimate Spanish monarch. The outbreak of the Spanish American wars of independence in most of the empire was a result of Napoleon's destabilizing actions in Spain and led to the rise of strongmen in the wake of these wars.

War of the Fifth Coalition and Marie Louise

After four years on the sidelines, Austria sought another war with France to avenge its recent defeats. Austria could not count on Russian support because the latter was at war with Britain, Sweden, and the Ottoman Empire in 1809. Frederick William of Prussia initially promised to help the Austrians but reneged before conflict began. A report from the Austrian finance minister suggested that the treasury would run out of

money by the middle of 1809 if the large army that the Austrians had formed since the Third Coalition remained mobilized. Although Archduke Charles warned that the Austrians were not ready for another showdown with Napoleon, a stance that landed him in the so-called "peace party", he did not want to see the army demobilized either. On 8 February 1809, the advocates for war finally succeeded when the Imperial Government secretly decided on another confrontation against the French.

In the early morning of 10 April, leading elements of the Austrian army crossed the Inn River and invaded Bavaria. The early Austrian attack surprised the French; Napoleon himself was still in Paris when he heard about the invasion. He arrived at Donauwörth on the 17th to find the *Grande Armée* in a dangerous position, with its two wings separated by 120 km (75 mi) and joined by a thin cordon of Bavarian troops. Charles pressed the left wing of the French army and hurled his men towards the III Corps of Marshal Davout. In response, Napoleon came up with a plan to cut off the Austrians in the celebrated *Landshut Maneuver*. He realigned the axis of his army and marched his soldiers towards the town of Eckmühl. The French scored a convincing win in the resulting Battle of Eckmühl, forcing Charles to withdraw his forces over the Danube and into Bohemia. On 13 May, Vienna fell for the second time in four years, although the war continued since most of the Austrian army had survived the initial engagements in Southern Germany.

By 17 May, the main Austrian army under Charles had arrived on the Marchfeld. Charles kept the bulk of his troops several kilometres away from the river bank in hopes of concentrating

them at the point where Napoleon decided to cross. On 21 May, the French made their first major effort to cross the Danube, precipitating the Battle of Aspern-Essling. The Austrians enjoyed a comfortable numerical superiority over the French throughout the battle. On the first day, Charles disposed of 110,000 soldiers against only 31,000 commanded by Napoleon. By the second day, reinforcements had boosted French numbers up to 70,000.

The battle was characterized by a vicious back-and-forth struggle for the two villages of Aspern and Essling, the focal points of the French bridgehead. By the end of the fighting, the French had lost Aspern but still controlled Essling. A sustained Austrian artillery bombardment eventually convinced Napoleon to withdraw his forces back onto Lobau Island. Both sides inflicted about 23,000 casualties on each other. It was the first defeat Napoleon suffered in a major set-piece battle, and it caused excitement throughout many parts of Europe because it proved that he could be beaten on the battlefield.

After the setback at Aspern-Essling, Napoleon took more than six weeks in planning and preparing for contingencies before he made another attempt at crossing the Danube. From 30 June to the early days of July, the French recrossed the Danube in strength, with more than 180,000 troops marching across the Marchfeld towards the Austrians. Charles received the French with 150,000 of his own men. In the ensuing Battle of Wagram, which also lasted two days, Napoleon commanded his forces in what was the largest battle of his career up until then. Napoleon finished off the battle with a concentrated central thrust that punctured a hole in the Austrian army and forced Charles to retreat. Austrian losses were very heavy,

reaching well over 40,000 casualties. The French were too exhausted to pursue the Austrians immediately, but Napoleon eventually caught up with Charles at Znaim and the latter signed an armistice on 12 July.

In the Kingdom of Holland, the British launched the Walcheren Campaign to open up a second front in the war and to relieve the pressure on the Austrians. The British army only landed at Walcheren on 30 July, by which point the Austrians had already been defeated. The Walcheren Campaign was characterized by little fighting but heavy casualties thanks to the popularly dubbed "Walcheren Fever". Over 4000 British troops were lost in a bungled campaign, and the rest withdrew in December 1809. The main strategic result from the campaign became the delayed political settlement between the French and the Austrians. Emperor Francis wanted to wait and see how the British performed in their theatre before entering into negotiations with Napoleon. Once it became apparent that the British were going nowhere, the Austrians agreed to peace talks.

The resulting Treaty of Schönbrunn in October 1809 was the harshest that France had imposed on Austria in recent memory. Metternich and Archduke Charles had the preservation of the Habsburg Empire as their fundamental goal, and to this end, they succeeded by making Napoleon seek more modest goals in return for promises of friendship between the two powers. Nevertheless, while most of the hereditary lands remained a part of the Habsburg realm, France received Carinthia, Carniola, and the Adriatic ports, while Galicia was given to the Poles and the Salzburg area of the Tyrol went to the Bavarians. Austria lost over three million subjects, about

one-fifth of her total population, as a result of these territorial changes. Although fighting in Iberia continued, the War of the Fifth Coalition would be the last major conflict on the European continent for the next three years.

Napoleon turned his focus to domestic affairs after the war. Empress Joséphine had still not given birth to a child from Napoleon, who became worried about the future of his empire following his death. Desperate for a legitimate heir, Napoleon divorced Joséphine on 10 January 1810 and started looking for a new wife. Hoping to cement the recent alliance with Austria through a family connection, Napoleon married the Marie Louise, Duchess of Parma, daughter of Francis II, who was 18 years old at the time. On 20 March 1811, Marie Louise gave birth to a baby boy, whom Napoleon made heir apparent and bestowed the title of *King of Rome*. His son never actually ruled the empire, but given his brief titular rule and cousin Louis-Napoléon's subsequent naming himself Napoléon III, historians often refer to him as *Napoleon II*.

Invasion of Russia

- In 1808, Napoleon and Tsar Alexander met at the Congress of Erfurt to preserve the Russo-French alliance. The leaders had a friendly personal relationship after their first meeting at Tilsit in 1807. By 1811, however, tensions had increased and Alexander was under pressure from the Russian nobility to break off the alliance. A major strain on the relationship between the two nations became the regular violations of the Continental System by the Russians, which led Napoleon to threaten Alexander

with serious consequences if he formed an alliance with Britain.

By 1812, advisers to Alexander suggested the possibility of an invasion of the French Empire and the recapture of Poland. On receipt of intelligence reports on Russia's war preparations, Napoleon expanded his *Grande Armée* to more than 450,000 men. He ignored repeated advice against an invasion of the Russian heartland and prepared for an offensive campaign; on 24 June 1812 the invasion commenced.

In an attempt to gain increased support from Polish nationalists and patriots, Napoleon termed the war the *Second Polish War*—the *First Polish War* had been the Bar Confederation uprising by Polish nobles against Russia in 1768. Polish patriots wanted the Russian part of Poland to be joined with the Duchy of Warsaw and an independent Poland created. This was rejected by Napoleon, who stated he had promised his ally Austria this would not happen. Napoleon refused to manumit the Russian serfs because of concerns this might provoke a reaction in his army's rear. The serfs later committed atrocities against French soldiers during France's retreat.

The Russians avoided Napoleon's objective of a decisive engagement and instead retreated deeper into Russia. A brief attempt at resistance was made at Smolensk in August; the Russians were defeated in a series of battles, and Napoleon resumed his advance. The Russians again avoided battle, although in a few cases this was only achieved because Napoleon uncharacteristically hesitated to attack when the opportunity arose. Owing to the Russian army's scorched earth

tactics, the French found it increasingly difficult to forage food for themselves and their horses.

The Russians eventually offered battle outside Moscow on 7 September: the Battle of Borodino resulted in approximately 44,000 Russian and 35,000 French dead, wounded or captured, and may have been the bloodiest day of battle in history up to that point in time. Although the French had won, the Russian army had accepted, and withstood, the major battle Napoleon had hoped would be decisive. Napoleon's own account was: "The most terrible of all my battles was the one before Moscow. The French showed themselves to be worthy of victory, but the Russians showed themselves worthy of being invincible".

The Russian army withdrew and retreated past Moscow. Napoleon entered the city, assuming its fall would end the war and Alexander would negotiate peace. However, on orders of the city's governor Feodor Rostopchin, rather than capitulation, Moscow was burned. After five weeks, Napoleon and his army left. In early November Napoleon became concerned about the loss of control back in France after the Malet coup of 1812. His army walked through snow up to their knees, and nearly 10,000 men and horses froze to death on the night of 8/9 November alone. After the Battle of Berezina Napoleon managed to escape but had to abandon much of the remaining artillery and baggage train. On 5 December, shortly before arriving in Vilnius, Napoleon left the army in a sledge.

The French suffered in the course of a ruinous retreat, including from the harshness of the Russian Winter. The Armée had begun as over 400,000 frontline troops, with fewer

than 40,000 crossing the Berezina River in November 1812. The Russians had lost 150,000 soldiers in battle and hundreds of thousands of civilians.

War of the Sixth Coalition

There was a lull in fighting over the winter of 1812–13 while both the Russians and the French rebuilt their forces; Napoleon was able to field 350,000 troops. Heartened by France's loss in Russia, Prussia joined with Austria, Sweden, Russia, Great Britain, Spain, and Portugal in a new coalition. Napoleon assumed command in Germany and inflicted a series of defeats on the Coalition culminating in the Battle of Dresden in August 1813.

Despite these successes, the numbers continued to mount against Napoleon, and the French army was pinned down by a force twice its size and lost at the Battle of Leipzig. This was by far the largest battle of the Napoleonic Wars and cost more than 90,000 casualties in total.

The Allies offered peace terms in the Frankfurt proposals in November 1813. Napoleon would remain as Emperor of the French, but it would be reduced to its "natural frontiers". That meant that France could retain control of Belgium, Savoy and the Rhineland (the west bank of the Rhine River), while giving up control of all the rest, including all of Spain and the Netherlands, and most of Italy and Germany. Metternich told Napoleon these were the best terms the Allies were likely to offer; after further victories, the terms would be harsher and harsher. Metternich's motivation was to maintain France as a

balance against Russian threats while ending the highly destabilizing series of wars.

Napoleon, expecting to win the war, delayed too long and lost this opportunity; by December the Allies had withdrawn the offer. When his back was to the wall in 1814 he tried to reopen peace negotiations on the basis of accepting the Frankfurt proposals. The Allies now had new, harsher terms that included the retreat of France to its 1791 boundaries, which meant the loss of Belgium. Napoleon would remain Emperor, however, he rejected the term. The British wanted Napoleon permanently removed, and they prevailed, but Napoleon adamantly refused.

Napoleon withdrew into France, his army reduced to 70,000 soldiers and little cavalry; he faced more than three times as many Allied troops. Joseph Bonaparte, Napoleon's older brother, abdicated as king of Spain on the 13th of December 1813 and assumed the title of lieutenant general to save the collapsing empire. The French were surrounded: British armies pressed from the south, and other Coalition forces positioned to attack from the German states. By the middle of January 1814, the Coalition had already entered France's borders and launched a two-pronged attack on Paris, with Prussia entering from the north, and Austria from the East, marching out of the capitulated Swiss confederation. The French Empire, however, would not go down so easily. Napoleon launched a series of victories in the Six Days' Campaign. While they repulsed the coalition forces and delayed the capture of Paris by at least a full month, these were not significant enough to turn the tide. The coalitionaries camped on the outskirts of the capital on the 29th of March. A day later, they advanced onto the

demoralised soldiers protecting the city. Joseph Bonaparte led a final battle at the gates of Paris. They were greatly outnumbered, as 30,000 French soldiers were pitted against a combined coalition force that was 5 times greater than theirs. They were defeated, and Joseph retreated out of the city. The leaders of Paris surrendered to the Coalition on the last day of March 1814. On 1 April, Alexander addressed the Sénatconservateur. Long docile to Napoleon, under Talleyrand's prodding it had turned against him. Alexander told the Sénat that the Allies were fighting against Napoleon, not France, and they were prepared to offer honourable peace terms if Napoleon were removed from power. The next day, the Sénat passed the Acte de déchéance de l'Empereur ("Emperor's Demise Act"), which declared Napoleon deposed.

Napoleon had advanced as far as Fontainebleau when he learned that Paris had fallen. When Napoleon proposed the army march on the capital, his senior officers and marshals mutinied. On 4 April, led by Ney, the senior officers confronted Napoleon. When Napoleon asserted the army would follow him, Ney replied the army would follow its generals. While the ordinary soldiers and regimental officers wanted to fight on, the senior commanders were unwilling to continue. Without any senior officers or marshals, any prospective invasion of Paris would have been impossible. Bowing to the inevitable, on 4 April Napoleon abdicated in favour of his son, with Marie Louise as regent. However, the Allies refused to accept this under prodding from Alexander, who feared that Napoleon might find an excuse to retake the throne. Napoleon was then forced to announce his unconditional abdication only two days later.

Exile to Elba

The Allied Powers having declared that Emperor Napoleon was the sole obstacle to the restoration of peace in Europe, Emperor Napoleon, faithful to his oath, declares that he renounces, for himself and his heirs, the thrones of France and Italy, and that there is no personal sacrifice, even that of his life, which he is not ready to make in the interests of France. Done in the palace of Fontainebleau, 11 April 1814.

- *— Act of abdication of Napoleon*

In the Treaty of Fontainebleau, the Allies exiled Napoleon to Elba, an island of 12,000 inhabitants in the Mediterranean, 20 km (12 mi) off the Tuscan coast. They gave him sovereignty over the island and allowed him to retain the title of *Emperor*. Napoleon attempted suicide with a pill he had carried after nearly being captured by the Russians during the retreat from Moscow. Its potency had weakened with age, however, and he survived to be exiled, while his wife and son took refuge in Austria.

He was conveyed to the island on HMS *Undaunted* by Captain Thomas Ussher, and he arrived at Portoferraio on 30 May 1814. In the first few months on Elba he created a small navy and army, developed the iron mines, oversaw the construction of new roads, issued decrees on modern agricultural methods, and overhauled the island's legal and educational system.

A few months into his exile, Napoleon learned that his ex-wife Josephine had died in France. He was devastated by the news, locking himself in his room and refusing to leave for two days.

Hundred Days

Separated from his wife and son, who had returned to Austria, cut off from the allowance guaranteed to him by the Treaty of Fontainebleau, and aware of rumours he was about to be banished to a remote island in the Atlantic Ocean, Napoleon escaped from Elba in the brig*Inconstant* on 26 February 1815 with 700 men. Two days later, he landed on the French mainland at Golfe-Juan and started heading north.

The 5th Regiment was sent to intercept him and made contact just south of Grenoble on 7 March 1815. Napoleon approached the regiment alone, dismounted his horse and, when he was within gunshot range, shouted to the soldiers, "Here I am. Kill your Emperor, if you wish." The soldiers quickly responded with, "Vive L'Empereur!" Ney, who had boasted to the restored Bourbon king, Louis XVIII, that he would bring Napoleon to Paris in an iron cage, affectionately kissed his former emperor and forgot his oath of allegiance to the Bourbon monarch. The two then marched together toward Paris with a growing army. The unpopular Louis XVIII fled to Belgium after realizing that he had little political support. On 13 March, the powers at the Congress of Vienna declared Napoleon an outlaw. Four days later, Great Britain, Russia, Austria, and Prussia each pledged to put 150,000 men into the field to end his rule.

Napoleon arrived in Paris on 20 March and governed for a period now called the Hundred Days. By the start of June, the armed forces available to him had reached 200,000, and he decided to go on the offensive to attempt to drive a wedge between the oncoming British and Prussian armies. The French

Army of the North crossed the frontier into the United Kingdom of the Netherlands, in modern-day Belgium.

Napoleon's forces fought two Coalition armies, commanded by the British Duke of Wellington and the Prussian Prince Blücher, at the Battle of Waterloo on 18 June 1815. Wellington's army withstood repeated attacks by the French and drove them from the field while the Prussians arrived in force and broke through Napoleon's right flank.

Napoleon returned to Paris and found that both the legislature and the people had turned against him. Realizing that his position was untenable, he abdicated on 22 June in favour of his son. He left Paris three days later and settled at Josephine's former palace in Malmaison (on the western bank of the Seine about 17 kilometres (11 mi) west of Paris). Even as Napoleon travelled to Paris, the Coalition forces swept through France (arriving in the vicinity of Paris on 29 June), with the stated intent of restoring Louis XVIII to the French throne.

When Napoleon heard that Prussian troops had orders to capture him dead or alive, he fled to Rochefort, considering an escape to the United States. British ships were blocking every port. Napoleon surrendered to Captain Frederick Maitland on HMS *Bellerophon* on 15 July 1815.

Exile on Saint Helena

The British kept Napoleon on the island of Saint Helena in the Atlantic Ocean, 1,870 km (1,162 mi) from the west coast of Africa. They also took the precaution of sending a small garrison of soldiers to both Saint Helena and the uninhabited

Ascension Island, which lay between St. Helena and Europe to prevent any escape from the island.

Napoleon was moved to Longwood House on Saint Helena in December 1815; it had fallen into disrepair, and the location was damp, windswept and unhealthy. *The Times* published articles insinuating the British government was trying to hasten his death. Napoleon often complained of the living conditions of Longwood House in letters to the island's governor and his custodian, Hudson Lowe, while his attendants complained of "colds, catarrhs, damp floors and poor provisions." Modern scientists have speculated that his later illness may have arisen from arsenic poisoning caused by copper arsenite in the wallpaper at Longwood House.

With a small cadre of followers, Napoleon dictated his memoirs and grumbled about the living conditions. Lowe cut Napoleon's expenditure, ruled that no gifts were allowed if they mentioned his imperial status, and made his supporters sign a guarantee they would stay with the prisoner indefinitely. When he held a dinner party, men were expected to wear military dress and "women [appeared] in evening gowns and gems. It was an explicit denial of the circumstances of his captivity".

While in exile, Napoleon wrote a book about Julius Caesar, one of his great heroes. He also studied English under the tutelage of Count Emmanuel de Las Cases with the main aim of being able to read English newspapers and books, as access to French newspapers and books was heavily restricted to him on Saint Helena.

There were rumours of plots and even of his escape from Saint Helena, but in reality, no serious attempts were ever made. For

English poet Lord Byron, Napoleon was the epitome of the Romantic hero, the persecuted, lonely, and flawed genius.

Death

Napoleon's personal physician, Barry O'Meara, warned London that his declining state of health was mainly caused by the harsh treatment. During the last few years of his life, Napoleon confined himself for months on end in his damp, mold-infested and wretched habitation of Longwood.

In February 1821, Napoleon's health began to deteriorate rapidly, and he reconciled with the Catholic Church. He died on 5 May 1821 at Longwood House at age 51, after making his last confession, Extreme Unction and Viaticum in the presence of Father Ange Vignali from his deathbed. His last words were, *France, l'armée, tête d'armée, Joséphine* ("France, the army, head of the army, Joséphine").

Shortly after his death, an autopsy was conducted and Francesco Antommarchi, the doctor conducting the autopsy, cut off several of Napoleon's body parts, including his penis. Napoleon's original death mask was created around 6 May, although it is not clear which doctor created it. In his will, he had asked to be buried on the banks of the Seine, but the British governor said he should be buried on Saint Helena, in the Valley of the Willows.

In 1840, Louis Philippe I obtained permission from the British government to return Napoleon's remains to France. His casket was opened to confirm that it still contained the former emperor. Despite being dead for nearly two decades, Napoleon had been very well preserved and not decomposed at all. On 15

December 1840, a state funeral was held. The horse-drawn hearse proceeded from the Arc de Triomphe down the Champs-Élysées, across the Place de la Concorde to the Esplanade des Invalides and then to the cupola in St Jérôme's Chapel, where it remained until the tomb designed by Louis Visconti was completed.

In 1861, Napoleon's remains were entombed in a sarcophagus of red quartzite from Russia (often mistaken for porphyry) in the crypt under the dome at Les Invalides.

Cause of death

The cause of Napoleon's death has been debated. His physician, François Carlo Antommarchi, led the autopsy, which found the cause of death to be stomach cancer. Antommarchi did not sign the official report. Napoleon's father had died of stomach cancer, although this was apparently unknown at the time of the autopsy. Antommarchi found evidence of a stomach ulcer; this was the most convenient explanation for the British, who wanted to avoid criticism over their care of Napoleon.

In 1955, the diaries of Napoleon's valet, Louis Marchand, were published. His description of Napoleon in the months before his death led StenForshufvud in a 1961 paper in *Nature* to put forward other causes for his death, including deliberate arsenic poisoning. Arsenic was used as a poison during the era because it was undetectable when administered over a long period. Furthermore, in a 1978 book with Ben Weider, Forshufvud noted that Napoleon's body was found to be well preserved when moved in 1840. Arsenic is a strong preservative, and therefore this supported the poisoning

hypothesis. Forshufvud and Weider observed that Napoleon had attempted to quench abnormal thirst by drinking large amounts of orgeat syrup that contained cyanide compounds in the almonds used for flavouring. They maintained that the potassium tartrate used in his treatment prevented his stomach from expelling these compounds and that his thirst was a symptom of the poison. Their hypothesis was that the calomel given to Napoleon became an overdose, which killed him and left extensive tissue damage behind. According to a 2007 article, the type of arsenic found in Napoleon's hair shafts was mineral, the most toxic, and according to toxicologist Patrick Kintz, this supported the conclusion that he was murdered.

There have been modern studies that have supported the original autopsy finding. In a 2008 study, researchers analysed samples of Napoleon's hair from throughout his life, as well as samples from his family and other contemporaries. All samples had high levels of arsenic, approximately 100 times higher than the current average. According to these researchers, Napoleon's body was already heavily contaminated with arsenic as a boy, and the high arsenic concentration in his hair was not caused by intentional poisoning; people were constantly exposed to arsenic from glues and dyes throughout their lives. Studies published in 2007 and 2008 dismissed evidence of arsenic poisoning, suggesting peptic ulcer and gastric cancer as the cause of death.

Religion

Napoleon was baptised in Ajaccio on 21 July 1771. He was raised as a Catholic but never developed much faith, though he

recalled the day of his First Communion in the Catholic Church to be the happiest day of his life. As an adult, Napoleon was a deist, believing in an absent and distant God. However, he had a keen appreciation of the power of organized religion in social and political affairs, and he paid a great deal of attention to bending it to his purposes. He noted the influence of Catholicism's rituals and splendors.

Napoleon had a civil marriage with Joséphine de Beauharnais, without religious ceremony. Napoleon was crowned Emperor on 2 December 1804 at Notre-Dame de Paris in a ceremony presided over by Pope Pius VII. On the eve of the coronation ceremony, and at the insistence of Pope Pius VII, a private religious wedding ceremony of Napoleon and Joséphine was celebrated. Cardinal Fesch performed the wedding. This marriage was annulled by tribunals under Napoleon's control in January 1810. On 1 April 1810, Napoleon married the Austrian princess Marie Louise in a Catholic ceremony. Napoleon was excommunicated by the Pope through the bull *Quum memoranda* in 1809, but later reconciled with the Catholic Church before his death in 1821. While in exile in Saint Helena he is recorded to have said "I know men; and I tell you that Jesus Christ is not a man." He also defended Muhammad ("a great man") against Voltaire's *Mahomet*.

Concordat

Seeking national reconciliation between revolutionaries and Catholics, Napoleon and Pope Pius VII signed the Concordat of 1801 on 15 July 1801. It solidified the Roman Catholic Church as the majority church of France and brought back most of its civil status. The hostility of devout Catholics against the state

had now largely been resolved. The Concordat did not restore the vast church lands and endowments that had been seized during the revolution and sold off. As a part of the Concordat, Napoleon presented another set of laws called the Organic Articles.

While the Concordat restored much power to the papacy, the balance of church–state relations had tilted firmly in Napoleon's favour.

He selected the bishops and supervised church finances. Napoleon and the Pope both found the Concordat useful. Similar arrangements were made with the Church in territories controlled by Napoleon, especially Italy and Germany. Now, Napoleon could win favour with the Catholics while also controlling Rome in a political sense. Napoleon said in April 1801, "Skillful conquerors have not got entangled with priests. They can both contain them and use them". French children were issued a catechism that taught them to love and respect Napoleon.

Arrest of Pope Pius VII

In 1809, under Napoleon's orders, Pope Pius VII was placed under arrest in Italy, and in 1812 the prisoner Pontiff was transferred to France, being held in the Palace of Fontainebleau. Because the arrest was made in a clandestine manner, some sources describe it as a kidnapping. In January 1813, Napoleon personally forced the Pope to sign a humiliating "Concordat of Fontainebleau" which was later repudiated by the Pontiff. The Pope was not released until 1814, when the Coalition invaded France.

Religious emancipation

Napoleon emancipated Jews, as well as Protestants in Catholic countries and Catholics in Protestant countries, from laws which restricted them to ghettos, and he expanded their rights to property, worship, and careers. Despite the antisemitic reaction to Napoleon's policies from foreign governments and within France, he believed emancipation would benefit France by attracting Jews to the country given the restrictions they faced elsewhere.

In 1806 an assembly of Jewish notables was gathered by Napoleon to discuss 12 questions broadly dealing with the relations between Jews and Christians, as well as other issues dealing with the Jewish ability to integrate into French society. Later, after the questions were answered in a satisfactory way according to the Emperor, a "great Sanhedrin" was brought together to transform the answers into decisions that would form the basis of the future status of the Jews in France and the rest of the empire Napoleon was building.

He stated, "I will never accept any proposals that will obligate the Jewish people to leave France, because to me the Jews are the same as any other citizen in our country. It takes weakness to chase them out of the country, but it takes strength to assimilate them". He was seen as so favourable to the Jews that the Russian Orthodox Church formally condemned him as "Antichrist and the Enemy of God".

One year after the final meeting of the Sanhedrin, on 17 March 1808, Napoleon placed the Jews on probation. Several new laws restricting the citizenship the Jews had been offered 17

years previously were instituted at that time. However, despite pressure from leaders of a number of Christian communities to refrain from granting Jews emancipation, within one year of the issue of the new restrictions, they were once again lifted in response to the appeal of Jews from all over France.

Freemasonry

It is not known for certain if Napoleon was initiated into Freemasonry. As Emperor, he appointed his brothers to Masonic offices under his jurisdiction: Louis was given the title of Deputy Grand Master in 1805; Jerome the title of Grand Master of the Grand Orient of Westphalia; Joseph was appointed Grand Master of the Grand Orient de France; and finally Lucien was a member of the Grand Orient of France.

Back from the siege of Dantzig, general Rapp who wanted to speak to Napoleon, entered his study uninvited only to find the Emperor lost in deep thoughts. Immediately Napoleon took the general by the arm and pointing to the stars, asked him repeatedly if he saw something, "What !replied Napoleon, you cannot see it !; it is my star; it is shining before you; it has never abandoned me; I see it on all great occasions; it orders me to go forward; it is a constant sign of great fortune !."

- — *Napoleon Bonaparte*

Personality

Historians emphasize the strength of the ambition that took Napoleon from an obscure village to rule over most of Europe. In-depth academic studies about his early life conclude that up

until age 2, he had a "gentle disposition". His older brother, Joseph, frequently received their mother's attention which made Napoleon more assertive and approval-driven. During his early schooling years, he would be harshly bullied by classmates for his Corsican identity and limited command of the French language. To withstand the stress he became domineering, eventually developing an inferiority complex.

George F. E. Rudé stresses his "rare combination of will, intellect and physical vigour". In one-on-one situations he typically had a hypnotic effect on people, seemingly bending the strongest leaders to his will. He understood military technology, but was not an innovator in that regard. He was an innovator in using the financial, bureaucratic, and diplomatic resources of France. He could rapidly dictate a series of complex commands to his subordinates, keeping in mind where major units were expected to be at each future point, and like a chess master, "seeing" the best plays moves ahead.

Napoleon maintained strict, efficient work habits, prioritizing what needed to be done. He cheated at cards, but repaid the losses; he had to win at everything he attempted. He kept relays of staff and secretaries at work. Unlike many generals, Napoleon did not examine history to ask what Hannibal or Alexander or anyone else did in a similar situation. Critics said he won many battles simply because of luck; Napoleon responded, "Give me lucky generals", arguing that "luck" comes to leaders who recognize opportunity, and seize it. Dwyer states that Napoleon's victories at Austerlitz and Jena in 1805–06 heightened his sense of self-grandiosity, leaving him even more certain of his destiny and invincibility. "I am of the race

that founds empires" he once boasted, deeming himself an heir to the Ancient Romans.

In terms of influence on events, it was more than Napoleon's personality that took effect. He reorganized France itself to supply the men and money needed for wars. He inspired his men—the Duke of Wellington said his presence on the battlefield was worth 40,000 soldiers, for he inspired confidence from privates to field marshals. The force of his personality neutralized material difficulties as his soldiers fought with the confidence that with Napoleon in charge they would surely win.

Image

Napoleon has become a worldwide cultural icon who symbolizes military genius and political power. Martin van Creveld described him as "the most competent human being who ever lived". Since his death, many towns, streets, ships, and even cartoon characters have been named after him. He has been portrayed in hundreds of films and discussed in hundreds of thousands of books and articles.

When met in person, many of his contemporaries were surprised by his apparently unremarkable physical appearance in contrast to his significant deeds and reputation, especially in his youth, when he was consistently described as small and thin. Joseph Farington, who observed Napoleon personally in 1802, commented that "Samuel Rogers stood a little way from me and ... seemed to be disappointed in the look of [Napoleon's] countenance [face] and said it was that of a little Italian." Farington said Napoleon's eyes were "lighter, and more

of a grey, than I should have expected from his complexion", that "His person is below middle size", and that "his general aspect was milder than I had before thought it."

A personal friend of Napoleon's said that when he first met him in Brienne-le-Château as a young man, Napoleon was only notable "for the dark color of his complexion, for his piercing and scrutinising glance, and for the style of his conversation"; he also said that Napoleon was personally a serious and somber man: "his conversation bore the appearance of ill-humor, and he was certainly not very amiable." Johann Ludwig Wurstemberger, who accompanied Napoleon from Camp Fornio in 1797 and on the Swiss campaign of 1798, noted that "Bonaparte was rather slight and emaciated-looking; his face, too, was very thin, with a dark complexion ... his black, unpowdered hair hung down evenly over both shoulders", but that, despite his slight and unkempt appearance, "His looks and expression were earnest and powerful."

Denis Davydov met him personally and considered him remarkably average in appearance: "His face was slightly swarthy, with regular features. His nose was not very large, but straight, with a slight, hardly noticeable bend. The hair on his head was dark reddish-blond; his eyebrows and eyelashes were much darker than the colour of his hair, and his blue eyes, set off by the almost black lashes, gave him a most pleasing expression ... The man I saw was of short stature, just over five feet tall, rather heavy although he was only 37 years old."

During the Napoleonic Wars he was taken seriously by the British press as a dangerous tyrant, poised to invade.

Napoleon was mocked in British newspapers as a short tempered small man and he was nicknamed "Little Boney in a strong fit". A nursery rhyme warned children that Bonaparte ravenously ate naughty people; the "bogeyman". At 1.57 metres (5 ft 2 in), he was the height of an average French male but short for an aristocrat or officer (part of why he was assigned to the artillery, since at the time the infantry and cavalry required more commanding figures). It is possible he was taller at 1.70 m (5 ft 7 in) due to the difference in the French measurement of inches.

Some historians believe the reason for the mistake about his size at death came from the use of an obsolete old French yardstick (a French foot equals 33 cm, while an English foot equals 30.47 cm). Napoleon was a champion of the metric system and had no use for the old yardsticks. It is more likely that he was 1.57 m (5 ft 2 in), the height he was measured at on St. Helena (a British island), since he would have most likely been measured with an English yardstick rather than a yardstick of the Old French Regime. Napoleon surrounded himself with tall bodyguards and was affectionately nicknamed *le petit caporal* (the little corporal), reflecting his reported camaraderie with his soldiers rather than his height.

When he became First Consul and later Emperor, Napoleon eschewed his general's uniform and habitually wore the green colonel uniform (non-Hussar) of a colonel of the Chasseur à Cheval of the Imperial Guard, the regiment that served as his personal escort many times, with a large bicorne. He also habitually wore (usually on Sundays) the blue uniform of a colonel of the Imperial Guard Foot Grenadiers (blue with white facings and red cuffs). He also wore his Légiond'honneur star,

medal and ribbon, and the Order of the Iron Crown decorations, white French-style culottes and white stockings. This was in contrast to the complex uniforms with many decorations of his marshals and those around him.

In his later years he gained quite a bit of weight and had a complexion considered pale or sallow, something contemporaries took note of. Novelist Paul de Kock, who saw him in 1811 on the balcony of the Tuileries, called Napoleon "yellow, obese, and bloated". A British captain who met him in 1815 stated "I felt very much disappointed, as I believe everyone else did, in his appearance ... He is fat, rather what we call pot-bellied, and although his leg is well shaped, it is rather clumsy ... He is very sallow, with light grey eyes, and rather thin, greasy-looking brown hair, and altogether a very nasty, priestlike-looking fellow."

The stock character of Napoleon is a comically short "petty tyrant" and this has become a cliché in popular culture. He is often portrayed wearing a large bicorne hat—sideways—with a hand-in-waistcoat gesture—a reference to the painting produced in 1812 by Jacques-Louis David. In 1908 Alfred Adler, a psychologist, cited Napoleon to describe an inferiority complex in which short people adopt an over-aggressive behaviour to compensate for lack of height; this inspired the term *Napoleon complex*.

Reforms

Napoleon instituted various reforms, such as higher education, a tax code, road and sewer systems, and established the Banque de France, the first central bank in French history. He

negotiated the Concordat of 1801 with the Catholic Church, which sought to reconcile the mostly Catholic population to his regime. It was presented alongside the Organic Articles, which regulated public worship in France. He dissolved the Holy Roman Empire prior to German Unification later in the 19th century. The sale of the Louisiana Territory to the United States doubled the size of the United States.

In May 1802, he instituted the Legion of Honour, a substitute for the old royalist decorations and orders of chivalry, to encourage civilian and military achievements; the order is still the highest decoration in France.

Napoleonic Code

Napoleon's set of civil laws, the *Code Civil*—now often known as the Napoleonic Code—was prepared by committees of legal experts under the supervision of Jean Jacques Régis de Cambacérès, the *Second Consul*. Napoleon participated actively in the sessions of the Council of State that revised the drafts. The development of the code was a fundamental change in the nature of the civil law legal system with its stress on clearly written and accessible law. Other codes ("Les cinq codes") were commissioned by Napoleon to codify criminal and commerce law; a Code of Criminal Instruction was published, which enacted rules of due process.

The Napoleonic code was adopted throughout much of Continental Europe, though only in the lands he conquered, and remained in force after Napoleon's defeat. Napoleon said: "My true glory is not to have won forty battles ... Waterloo will erase the memory of so many victories. ... But ... what will live

forever, is my Civil Code". The Code influences a quarter of the world's jurisdictions such as those in Continental Europe, the Americas, and Africa.

Dieter Langewiesche described the code as a "revolutionary project" that spurred the development of bourgeois society in Germany by the extension of the right to own property and an acceleration towards the end of feudalism. Napoleon reorganized what had been the Holy Roman Empire, made up of about three hundred *Kleinstaaterei*, into a more streamlined forty-state Confederation of the Rhine; this helped promote the German Confederation and the unification of Germany in 1871.

The movement toward Italian unification was similarly precipitated by Napoleonic rule. These changes contributed to the development of nationalism and the nation state.

Napoleon implemented a wide array of liberal reforms in France and across Continental Europe, especially in Italy and Germany, as summarized by British historian Andrew Roberts:

The ideas that underpin our modern world—meritocracy, equality before the law, property rights, religious toleration, modern secular education, sound finances, and so on—were championed, consolidated, codified and geographically extended by Napoleon. To them he added a rational and efficient local administration, an end to rural banditry, the encouragement of science and the arts, the abolition of feudalism and the greatest codification of laws since the fall of the Roman Empire.

Napoleon directly overthrew remnants of feudalism in much of western Continental Europe. He liberalized property laws,

ended seigneurial dues, abolished the guild of merchants and craftsmen to facilitate entrepreneurship, legalized divorce, closed the Jewish ghettos and made Jews equal to everyone else. The Inquisition ended as did the Holy Roman Empire. The power of church courts and religious authority was sharply reduced and equality under the law was proclaimed for all men.

Warfare

In the field of military organization, Napoleon borrowed from previous theorists such as Jacques Antoine Hippolyte, Comte de Guibert, and from the reforms of preceding French governments, and then developed much of what was already in place. He continued the policy, which emerged from the Revolution, of promotion based primarily on merit.

Corps replaced divisions as the largest army units, mobile artillery was integrated into reserve batteries, the staff system became more fluid and cavalry returned as an important formation in French military doctrine. These methods are now referred to as essential features of Napoleonic warfare. Though he consolidated the practice of modern conscription introduced by the Directory, one of the restored monarchy's first acts was to end it.

His opponents learned from Napoleon's innovations. The increased importance of artillery after 1807 stemmed from his creation of a highly mobile artillery force, the growth in artillery numbers, and changes in artillery practices. As a result of these factors, Napoleon, rather than relying on infantry to wear away the enemy's defences, now could use

massed artillery as a spearhead to pound a break in the enemy's line that was then exploited by supporting infantry and cavalry. McConachy rejects the alternative theory that growing reliance on artillery by the French army beginning in 1807 was an outgrowth of the declining quality of the French infantry and, later, France's inferiority in cavalry numbers. Weapons and other kinds of military technology remained static through the Revolutionary and Napoleonic eras, but 18th-century operational mobility underwent change.

Napoleon's biggest influence was in the conduct of warfare. Antoine-Henri Jomini explained Napoleon's methods in a widely used textbook that influenced all European and American armies. Napoleon was regarded by the influential military theorist Carl von Clausewitz as a genius in the operational art of war, and historians rank him as a great military commander. Wellington, when asked who was the greatest general of the day, answered: "In this age, in past ages, in any age, Napoleon". Under Napoleon, a new emphasis towards the destruction, not just outmaneuvering, of enemy armies emerged. Invasions of enemy territory occurred over broader fronts which made wars costlier and more decisive. The political effect of war increased; defeat for a European power meant more than the loss of isolated enclaves. Near-Carthaginian peacesintertwined whole national efforts, intensifying the Revolutionary phenomenon of total war.

Metric system

The official introduction of the metric system in September 1799 was unpopular in large sections of French society. Napoleon's rule greatly aided adoption of the new standard not

only across France but also across the French sphere of influence. Napoleon took a retrograde step in 1812 when he passed legislation to introduce the *mesuresusuelles* (traditional units of measurement) for retail trade, a system of measure that resembled the pre-revolutionary units but were based on the kilogram and the metre; for example, the *livre metrique* (metric pound) was 500 g, in contrast to the value of the *livre du roi* (the king's pound), 489.5 g. Other units of measure were rounded in a similar manner prior to the definitive introduction of the metric system across parts of Europe in the middle of the 19th century.

Education

Napoleon's educational reforms laid the foundation of a modern system of education in France and throughout much of Europe. Napoleon synthesized the best academic elements from the *Ancien Régime*, The Enlightenment, and the Revolution, with the aim of establishing a stable, well-educated and prosperous society. He made French the only official language. He left some primary education in the hands of religious orders, but he offered public support to secondary education. Napoleon founded a number of state secondary schools (*lycées*) designed to produce a standardized education that was uniform across France.

All students were taught the sciences along with modern and classical languages. Unlike the system during the *Ancien Régime*, religious topics did not dominate the curriculum, although they were present with the teachers from the clergy. Napoleon hoped to use religion to produce social stability. He gave special attention to the advanced centers, such as the

ÉcolePolytechnique, that provided both military expertise and state-of-the-art research in science. Napoleon made some of the first efforts at establishing a system of secular and public education. The system featured scholarships and strict discipline, with the result being a French educational system that outperformed its European counterparts, many of which borrowed from the French system.

Memory and evaluation

Criticism

In the political realm, historians debate whether Napoleon was "an enlightened despot who laid the foundations of modern Europe" or "a megalomaniac who wrought greater misery than any man before the coming of Hitler".

Many historians have concluded that he had grandiose foreign policy ambitions. The Continental powers as late as 1808 were willing to give him nearly all of his gains and titles, but some scholars maintain he was overly aggressive and pushed for too much, until his empire collapsed.

He was considered a tyrant and usurper by his opponents at the time and ever since. His critics charge that he was not troubled when faced with the prospect of war and death for thousands, turned his search for undisputed rule into a series of conflicts throughout Europe and ignored treaties and conventions alike. His role in the Haitian Revolution and decision to reinstate slavery in France's overseas colonies are controversial and affect his reputation.

Napoleon institutionalized plunder of conquered territories: French museums contain art stolen by Napoleon's forces from across Europe. Artefacts were brought to the Musée du Louvre for a grand central museum; an example which would later be followed by others.

He was compared to Adolf Hitler by the historian Pieter Geyl in 1947, and Claude Ribbe in 2005. David G. Chandler, a historian of Napoleonic warfare, wrote in 1973 that, "Nothing could be more degrading to the former [Napoleon] and more flattering to the latter [Hitler]. The comparison is odious. On the whole Napoleon was inspired by a noble dream, wholly dissimilar from Hitler's ... Napoleon left great and lasting testimonies to his genius—in codes of law and national identities which survive to the present day. Adolf Hitler left nothing but destruction."

Critics argue Napoleon's true legacy must reflect the loss of status for France and needless deaths brought by his rule: historian Victor Davis Hanson writes, "After all, the military record is unquestioned—17 years of wars, perhaps six million Europeans dead, France bankrupt, her overseas colonies lost." McLynn states that, "He can be viewed as the man who set back European economic life for a generation by the dislocating impact of his wars." Vincent Cronin replies that such criticism relies on the flawed premise that Napoleon was responsible for the wars which bear his name, when in fact France was the victim of a series of coalitions that aimed to destroy the ideals of the Revolution.

British military historian Correlli Barnett calls him "a social misfit" who exploited France for his personal megalomaniac

goals. He says Napoleon's reputation is exaggerated. French scholar Jean Tulard provided an influential account of his image as a saviour. Louis Bergeron has praised the numerous changes he made to French society, especially regarding the law as well as education. His greatest failure was the Russian invasion. Many historians have blamed Napoleon's poor planning, but Russian scholars instead emphasize the Russian response, noting the notorious winter weather was just as hard on the defenders.

The large and growing historiography in French, English, Russian, Spanish and other languages has been summarized and evaluated by numerous scholars.

Propaganda and memory

- Napoleon's use of propaganda contributed to his rise to power, legitimated his régime, and established his image for posterity. Strict censorship, controlling aspects of the press, books, theatre, and art were part of his propaganda scheme, aimed at portraying him as bringing desperately wanted peace and stability to France. The propagandistic rhetoric changed in relation to events and to the atmosphere of Napoleon's reign, focusing first on his role as a general in the army and identification as a soldier, and moving to his role as emperor and a civil leader. Specifically targeting his civilian audience, Napoleon fostered a relationship with the contemporary art community, taking an active role in commissioning and controlling different forms of art production to suit his propaganda goals.

In England, Russia and across Europe—though not in France—Napoleon was a popular topic of caricature.

Hazareesingh (2004) explores how Napoleon's image and memory are best understood. They played a key role in collective political defiance of the Bourbon restoration monarchy in 1815–1830. People from different walks of life and areas of France, particularly Napoleonic veterans, drew on the Napoleonic legacy and its connections with the ideals of the 1789 Revolution.

Widespread rumours of Napoleon's return from St. Helena and Napoleon as an inspiration for patriotism, individual and collective liberties, and political mobilization manifested themselves in seditious materials, displaying the tricolor and rosettes.

There were also subversive activities celebrating anniversaries of Napoleon's life and reign and disrupting royal celebrations—they demonstrated the prevailing and successful goal of the varied supporters of Napoleon to constantly destabilize the Bourbon regime.

Datta (2005) shows that, following the collapse of militaristic Boulangism in the late 1880s, the Napoleonic legend was divorced from party politics and revived in popular culture. Concentrating on two plays and two novels from the period—Victorien Sardou's *Madame Sans-Gêne* (1893), Maurice Barrès's*Les Déracinés* (1897), Edmond Rostand's *L'Aiglon* (1900), and André de Lorde and Gyp's *Napoléonette* (1913)—Datta examines how writers and critics of the *Belle Époque* exploited the Napoleonic legend for diverse political and cultural ends.

Reduced to a minor character, the new fictional Napoleon became not a world historical figure but an intimate one, fashioned by individuals' needs and consumed as popular entertainment. In their attempts to represent the emperor as a figure of national unity, proponents and detractors of the Third Republic used the legend as a vehicle for exploring anxieties about gender and fears about the processes of democratization that accompanied this new era of mass politics and culture.

International Napoleonic Congresses take place regularly, with participation by members of the French and American military, French politicians and scholars from different countries. In January 2012, the mayor of Montereau-Fault-Yonne, near Paris—the site of a late victory of Napoleon—proposed development of Napoleon's Bivouac, a commemorative theme park at a projected cost of 200 million euros.

Long-term influence outside France

Napoleon was responsible for spreading the values of the French Revolution to other countries, especially in legal reform. Napoleon did not touch serfdom in Russia.

After the fall of Napoleon, not only was the Napoleonic Code retained by conquered countries including the Netherlands, Belgium, parts of Italy and Germany, but has been used as the basis of certain parts of law outside Europe including the Dominican Republic, the US state of Louisiana and the Canadian province of Quebec. The code was also used as a model in many parts of Latin America.

The memory of Napoleon in Poland is favorable, for his support for independence and opposition to Russia, his legal code, the

abolition of serfdom, and the introduction of modern middle class bureaucracies. Napoleon could be considered one of the founders of modern Germany.

After dissolving the Holy Roman Empire, he reduced the number of German states from about 300 to fewer than 50, prior to German Unification. A byproduct of the French occupation was a strong development in German nationalism which eventually turned the German Confederation into the German Empire after a series of conflicts and other political developments.

Napoleon indirectly began the process of Latin American independence when he invaded Spain in 1808. The abdication of King Charles IV and renunciation of his son, Ferdinand VII created a power vacuum that was filled by native born political leaders such as Simón Bolívar and José de San Martín. Such leaders embraced nationalistic sentiments influenced by French nationalism and led successful independence movements in Latin America.

Napoleon also significantly aided the United States when he agreed to sell the territory of Louisiana for 15 million dollars during the presidency of Thomas Jefferson. That territory almost doubled the size of the United States, adding the equivalent of 13 states to the Union.

From 1796 to 2020, at least 95 major ships were named for him. In the 21st century, at least 18 Napoleon ships are operated under the flag of France, as well as Indonesia, Germany, Italy, Australia, Argentina, India, Netherlands, and the United Kingdom.

Wives, mistresses, and children

Napoleon married Joséphine (*née* Marie Josèphe Rose Tascher de La Pagerie) in 1796, when he was 26; she was a 32-year-old widow whose first husband, Alexandre de Beauharnais, had been executed during the Reign of Terror. Five days after Alexandre de Beauharnais' death, the Reign of Terror initiator Maximilien de Robespierrewas overthrown and executed, and, with the help of high-placed friends, Joséphine was freed. Until she met Bonaparte, she had been known as "Rose", a name which he disliked. He called her "Joséphine" instead, and she went by this name henceforth. Bonaparte often sent her love letters while on his campaigns. He formally adopted her son Eugène and second cousin (via marriage) Stéphanie and arranged dynastic marriages for them. Joséphine had her daughter Hortense marry Napoleon's brother Louis.

Joséphine had lovers, such as Lieutenant Hippolyte Charles, during Napoleon's Italian campaign. Napoleon learnt of that affair and a letter he wrote about it was intercepted by the British and published widely, to embarrass Napoleon. Napoleon had his own affairs too: during the Egyptian campaign he took Pauline BellisleFourès, the wife of a junior officer, as his mistress. She became known as "Cleopatra".

While Napoleon's mistresses had children by him, Joséphine did not produce an heir, possibly because of either the stresses of her imprisonment during the Reign of Terror or an abortion she may have had in her twenties. Napoleon chose divorce so he could remarry in search of an heir. Despite his divorce from Josephine, Napoleon showed his dedication to her for the rest of his life. When he heard the news of her death while on exile

in Elba, he locked himself in his room and would not come out for two full days. Her name would also be his final word on his deathbed in 1821.

On 11 March 1810 by proxy, he married the 19-year-old Marie Louise, Archduchess of Austria, and a great-niece of Marie Antoinette. Thus he had married into a German royal and imperial family. Louise was less than happy with the arrangement, at least at first, stating: "Just to see the man would be the worst form of torture".

Her great-aunt had been executed in France, while Napoleon had fought numerous campaigns against Austria all throughout his military career. However, she seemed to warm up to him over time. After her wedding, she wrote to her father: "He loves me very much. I respond to his love sincerely. There is something very fetching and very eager about him that is impossible to resist".

Napoleon and Marie Louise remained married until his death, though she did not join him in exile on Elba and thereafter never saw her husband again. The couple had one child, Napoleon Francis Joseph Charles (1811–1832), known from birth as the King of Rome. He became Napoleon II in 1814 and reigned for only two weeks. He was awarded the title of the Duke of Reichstadt in 1818 and died of tuberculosis aged 21, with no children.

Napoleon acknowledged one illegitimate son: Charles Léon (1806–1881) by EléonoreDenuelle de La Plaigne. Alexandre Colonna-Walewski (1810–1868), the son of his mistress Maria Walewska, although acknowledged by Walewska's husband, was also widely known to be his child, and the DNA of his

direct male descendant has been used to help confirm Napoleon's Y-chromosome haplotype. He may have had further unacknowledged illegitimate offspring as well, such as Eugen Megerle von Mühlfeld [de] by Emilie Victoria Kraus von Wolfsberg [de] and Hélène Napoleone Bonaparte (1816–1907) by Albine de Montholon.

Pope Pius VII

Pope Pius VII (14 August 1742 – 20 August 1823), born **Barnaba Niccolò Maria Luigi Chiaramonti**, was head of the Catholic Church and ruler of the Papal States from 14 March 1800 to his death in 1823. Chiaramonti was also a monk of the Order of Saint Benedict in addition to being a well-known theologian and bishop throughout his life.

Chiaramonti was made Bishop of Tivoli in 1782, and resigned that position upon his appointment as Bishop of Imola in 1785. That same year, he was made a cardinal. In 1789, the French Revolution took place, and as a result a series of anti-clerical governments came into power in the country. In 1796, during the French Revolutionary Wars, French troops under Napoleon Bonaparte invaded Rome and captured Pope Pius VI, taking him as a prisoner to France, where he died in 1799. The following year, after a *sedevacante* period lasting approximately six months, Chiaramonti was elected to the papacy, taking the name Pius VII.

Pius at first attempted to take a cautious approach in dealing with Napoleon. With him he signed the Concordat of 1801, through which he succeeded in guaranteeing religious freedom for Catholics living in France, and was present at his

coronation as Emperor of the French in 1804. In 1809, however, during the Napoleonic Wars, Napoleon once again invaded the Papal States, resulting in his excommunication through the papal bull *Quum memoranda*. Pius VII was taken prisoner and transported to France. He remained there until 1814 when, after the French were defeated, he was permitted to return to Rome, where he was greeted warmly as a hero and defender of the faith.

Pius lived the remainder of his life in relative peace. His papacy saw a significant growth of the Catholic Church in the United States, where Pius established several new dioceses. Pius VII died in 1823 at age 81.

In 2007, Pope Benedict XVI began the process towards canonizing him as a saint, and he was granted the title Servant of God.

Biography

Early life

Barnaba Niccolò Maria Luigi Chiaramonti was born in Cesena in 1742, the youngest son of CountScipioneChiaramonti (30 April 1698 - 13 September 1750). His mother, Giovanna Coronata (d. 22 November 1777), was the daughter of the MarquessGhini; through her, the future Pope Pius VII was related to the Braschi family of Pope Pius VI after marriage on 10 November 1713. Though his family was of noble status, they were not wealthy but rather, were of middle-class stock.

His maternal grandparents were Barnaba EufrasioGhini and Isabella de' contiAguselli. His paternal grandparents were GiacintoChiaramonti (1673-1725) and Ottavia Maria Altini; his paternal great-grandparents were ScipioneChiaramonti (1642-1677) and Ottavia Maria Aldini. His paternal great-great grandparents were ChiaramonteChiaramonti and Polissena Marescalchi.

His siblings were Giacinto Ignazio (19 September 1731 - 7 June 1805), Tommaso (19 December 1732 - 8 December 1799) and Ottavia (1 June 1738 - 7 May 1814).

Like his brothers, he attended the Collegiodei Nobili in Ravenna but decided to join the Order of Saint Benedict at the age of 14 on 2 October 1756 as a novice at the Abbey of Santa Maria del Monte in Cesena. Two years after this on 20 August 1758, he became a professed member and assumed the name of *Gregorio*. He taught at Benedictine colleges in Parma and Rome, and was ordained a priest on 21 September 1765.

Episcopate and cardinalate

A series of promotions resulted after his relative, Giovanni Angelo Braschi, was elected Pope Pius VI (1775–99). A few years before this election occurred, in 1773, Chiaramonti became the personal confessor to Braschi. In 1776, Pius VI appointed the 34-year-old Dom Gregory, who had been teaching at the Monastery of Sant'Anselmo in Rome, as honorary abbot*in commendam* of his monastery. Although this was an ancient practice, it drew complaints from the monks of the community, as monastic communities generally felt it was not in keeping with the Rule of St. Benedict.

In December 1782, the pope appointed Dom Gregory as the Bishop of Tivoli, near Rome. Pius VI soon named him, in February 1785, the Cardinal-Priest of San Callisto, and as the Bishop of Imola, an office he held until 1816.

When the French Revolutionary Armyinvaded Italy in 1797, Cardinal Chiaramonti counseled temperance and submission to the newly created Cisalpine Republic. In a letter that he addressed to the people of his diocese,

Chiaramonti asked them to comply "... in the current circumstances of change of government (...)" to the authority of the victorious general Commander-in-Chief of the French army. In his Christmashomily that year, he asserted that there was no opposition between a democratic form of government and being a good Catholic: "Christian virtue makes men good democrats.... Equality is not an idea of philosophers but of Christ...and do not believe that the Catholic religion is against democracy."

Papacy

Election

Following the death of Pope Pius VI, by then virtually France's prisoner, at Valence in 1799, the conclave to elect his successor met on 30 November 1799 in the Benedictine Monastery of San Giorgio in Venice. There were three main candidates, two of whom proved to be unacceptable to the Habsburgs, whose candidate, Alessandro Mattei, could not secure sufficient votes. However, Carlo Bellisomi also was a candidate, though not favoured by Austrian cardinals; a

"virtual veto" was imposed against him in the name of Franz II and carried out by Cardinal FranziskusHerzan von Harras.

After several months of stalemate, Jean-Sifrein Maury proposed Chiaramonti as a compromise candidate. On 14 March 1800, Chiaramonti was elected pope, certainly not the choice of die-hard opponents of the French Revolution, and took as his pontifical name Pius VII in honour of his immediate predecessor. He was crowned on 21 March, in the adjacent monastery church, by means of a rather unusual ceremony, wearing a papier-mâchépapal tiara. The French had seized the tiaras held by the Holy See when occupying Rome and forcing Pius VI into exile. The new pope then left for Rome, sailing on a barely seaworthy Austrian ship, the *Bellona*, which lacked even a galley. The twelve-day voyage ended at Pesaro and he proceeded to Rome.

Negotiations and exile

One of Pius VII's first acts was appointing the minor clericErcoleConsalvi, who had performed so ably as secretary to the recent conclave, to the College of Cardinals and to the office of Cardinal Secretary of State. Consalvi immediately left for France, where he was able to negotiate the Concordat of 1801 with the First ConsulNapoleon. While not effecting a return to the old Christian order, the treaty did provide certain civil guarantees to the Church, acknowledging "the Catholic, Apostolic, and Roman religion" as that of the "majority of French citizens".

The main terms of the concordat between France and the pope included:

- A proclamation that "Catholicism was the religion of the great majority of the French" but was not the official religion, maintaining religious freedom, in particular with respect to Protestants.
- The Pope had the right to depose bishops.
- The state would pay clerical salaries and the clergy swore an oath of allegiance to the state.
- The church gave up all claims to church lands that were taken after 1790.
- Sunday was reestablished as a "festival", effective Easter Sunday, 18 April 1802.

As pope, he followed a policy of cooperation with the French-established Republic and Empire. He was present at the coronation of Napoleon I in 1804. He even participated in France's Continental Blockade of Great Britain, over the objections of his Secretary of State Consalvi, who was forced to resign. Despite this, France occupied and annexed the Papal States in 1809 and took Pius VII as their prisoner, exiling him to Savona. On 15 November 1809 Pius VII consecrated the church at La Voglina, Valenza Po, Piemonte with the intention of the villa La Voglina becoming his spiritual base whilst in exile. Unfortunately his residency was short lived once Napoleon became aware of his intentions of establishing a permanent base and he was soon exiled to France. Despite this, the pope continued to refer to Napoleon as "my dear son" but added that he was "a somewhat stubborn son, but a son still".

This exile ended only when Pius VII signed the Concordat of Fontainebleau in 1813. One result of this new treaty was the release of the exiled cardinals, including Consalvi, who, upon

re-joining the papal retinue, persuaded Pius VII to revoke the concessions he had made in it. This Pius VII began to do in March 1814, which led the French authorities to re-arrest many of the opposing prelates. Their confinement, however, lasted only a matter of weeks, as Napoleon abdicated on 11 April of that year. As soon as Pius VII returned to Rome, he immediately revived the Inquisition and the Index of Condemned Books.

Cardinal Bartolomeo Pacca, who was kidnapped along with Pope Pius VII, took the office of Pro-Secretary of State in 1808 and maintained his memoirs during his exile. His memoirs, written originally in Italian, have been translated into English (two volumes) and describe the ups and down of their exile and the triumphant return to Rome in 1814.

Pius VII's imprisonment did in fact come with one bright side for him. It gave him an aura that recognized him as a living martyr, so that when he arrived back in Rome in May 1814, he was greeted most warmly by the Italians as a hero.

Relationship with Napoleon I

From the time of his election as pope to the fall of Napoleon in 1815, Pius VII's reign was completely taken up in dealing with France. He and the Emperor were continually in conflict, often involving the French military leader's wishes for concessions to his demands. Pius VII wanted his own release from exile as well as the return of the Papal States, and, later on, the release of the 13 "Black Cardinals", i.e., the cardinals, including Consalvi, who had snubbed the marriage of Napoleon to Marie Louise, believing that his previous marriage was still

valid, and had been exiled and impoverished in consequence of their stand, along with several exiled or imprisoned prelates, priests, monks, nuns and other various supporters.

Restoration of the Jesuits

- On 7 March 1801, Pius VII issued the brief "Catholicaefidei" that approved the existence of the Society of Jesus in Russia and appointed its first superior general as Franciszek Kareu. This was the first step in the restoration of the order. On 31 July 1814, he signed the papal bull *Sollicitudo omnium ecclesiarum* which universally restored the Society of Jesus. He appointed Tadeusz Brzozowski as the Superior General of the order.

Opposition to slavery

Pius VII joined the declaration of the 1815 Congress of Vienna, represented by Cardinal Secretary of State ErcoleConsalvi, and urged the suppression of the slave trade.

This pertained particularly to places such as Spain and Portugal where slavery was economically very important. The pope wrote a letter to King Louis XVIII of France dated 20 September 1814 and to the King John VI of Portugal in 1823 to urge the end of slavery. He condemned the slave trade and defined the sale of people as an injustice to the dignity of the human person.

In his letter to the King of Portugal, he wrote: "the pope regrets that this trade in blacks, that he believed having ceased, is still exercised in some regions and even more cruel way. He

begs and begs the King of Portugal that it implement all its authority and wisdom to extirpate this unholy and abominable shame."

Reinstitution of Jewish Ghetto

Under Napoleonic rule, the Jewish Roman Ghetto had been abolished and Jews were free to live and move where they would. Following the restoration of Papal rule, Pius VII re-instituted the confinement of Jews to the Ghetto, having the doors closed at nighttime.

Other activities

Pius VII issued an encyclical "Diu satis" in order to advocate a return to the values of the Gospel and universalized the feast of Our Lady of Sorrows for 15 September.

He condemned Freemasonry and the movement of the Carbonari in the encyclical Ecclesiam a Jesu Christo in 1821. Pius VII asserted that Freemasons must be excommunicated and it linked them with the Carbonari, an anti-clerical revolutionary group in Italy. All members of the Carbonari were also excommunicated.

Pius VII was multilingual and had the ability to speak Italian, French, English and Latin.

Cultural innovations

Pius VII was a man of culture and attempted to reinvigorate Rome with archaeological excavations in Ostia which revealed ruins and icons from ancient times. He also had walls and

other buildings rebuilt and restored the Arch of Titus. He ordered the construction of fountains and piazzas and erected the obelisk at Monte Pincio.

The pope also made sure Rome was a place for artists and the leading artists of the time like Antonio Canova and Peter von Cornelius.

He also enriched the Vatican Library with numerous manuscripts and books. It was Pius VII who adopted the yellow and white flag of the Holy See as a response to the Napoleonic invasion of 1808.

Canonizations and beatifications

Throughout his pontificate, Pius VII canonized a total of five saints. On 24 May 1807, Pius VII canonized Angela Merici, Benedict the Moor, Colette Boylet, Francis Caracciolo and HyacinthaMariscotti. He beatified a total of 27 individuals including Joseph Oriol, BerardodeiMarsi, Giuseppe Maria Tomasi and Crispin of Viterbo.

Consistories

- Pius VII created 99 cardinals in nineteen consistories including notable ecclesial figures of that time such as ErcoleConsalvi, Bartolomeo Pacca, and Carlo Odescalchi. The pope also named his two immediate successors as cardinals: Annibaledella Genga and Francesco Saverio Castiglioni (the latter of whom it is said Pius VII and his successor would refer to as "Pius VIII").

he possible miracle of Pius VII

On 15 August 1811 - the Feast of the Assumption - it is recorded that the pope celebrated Mass and was said to have entered a trance and began to levitate in a manner that drew him to the altar.

This particular episode aroused great wonder and awe among attendants which included the French soldiers guarding him who were in disbelief of what had occurred.

Relationship with the United States

On the United States' undertaking of the First Barbary War to suppress the Muslim Barbary pirates along the southern Mediterranean coast, ending their kidnapping of Europeans for ransom and slavery,

Pius VII declared that the United States "had done more for the cause of Christianity than the most powerful nations of Christendom have done for ages."

For the United States, he established several new dioceses in 1808 for Boston, New York City, Philadelphia and Bardstown. In 1821, he also established the dioceses of Charleston, Richmond and Cincinnati.

Condemnation of heresy

On 3 June 1816, Pius VII condemned the works of Melkite bishop Germanos Adam. Adam's writings supported conciliarism, the view that the authority of ecumenical councils was greater than that of the papacy.

Death and burial

In 1822, Pius VII reached his 80th birthday and his health was visibly declining. On 6 July 1823, he fractured his hip in a fall in the papal apartments and was bedridden from that point onward. In his final weeks he would often lose consciousness and would mutter the names of the cities that he had been ferried away to by the French forces. With the Cardinal Secretary of StateErcoleConsalvi at his side, Pius VII died on 20 August at 5 a.m.

He was briefly interred in the Vatican grottoes but was later buried in a monument in Saint Peter's Basilica after his funeral on 25 August.

Beatification process

An application to commence beatification proceedings were lodged to the Holy See on 10 July 2006 and received the approval of Cardinal Camillo Ruini (Vicar of Rome) who transferred the request to the Congregation for the Causes of Saints. The Congregation - on 24 February 2007 - approved the opening of the cause responding to the call of the Ligurian bishops.

On 15 August 2007, the Holy See contacted the diocese of Savona-Noli with the news that Pope Benedict XVI had declared "nihil obstat" (nothing stands against) the cause of beatification of the late pontiff, thus opening the diocesan process for this pope's beatification. He now has the title of Servant of God. The official text declaring the opening of the cause was: "*Summus Pontifex Benedictus XVI declarat, ex parte*

Sanctae Sedis, nihil obstarequominus in Causa Beatificationis et CanonizationisServi Dei PiiBarnabaeGregorii VII Chiaramonti". Work on the cause commenced the following month in gathering documentation on the late pope.

He has since been elected as the patron of the Diocese of Savona and the patron of prisoners.

In late 2018 the Bishop of Savona announced that the cause for Pius VII would continue following the completion of initial preparation and investigation. The bishop named a new postulator and a diocesan tribunal which would begin work into the cause.

The first postulator for the cause was Father Giovanni Farris (2007–18) and the current postulator since 2018 is Fr. Giovanni Margara.

Monuments

Pope Pius VII's monument (1831) in St. Peter's Basilica, adorning his tomb, was created by the Danish sculptor Bertel Thorvaldsen.

Chapter 2

Congress of Vienna

The Congress of Vienna (French: *Congrès de Vienne*, German: *Wiener Kongress*) of 1814–1815 was an international diplomatic conference to reconstitute the European political order after the downfall of the French Emperor Napoleon I. It was a meeting of ambassadors of European states chaired by Austrian statesman Klemens von Metternich, and held in Vienna from November 1814 to June 1815.

The objective of the Congress was to provide a long-term peace plan for Europe by settling critical issues arising from the French Revolutionary Wars and the Napoleonic Wars. The goal was not simply to restore old boundaries but to resize the main powers so they could balance each other and remain at peace. More fundamentally, the conservative leaders of the Congress sought to restrain or eliminate the republicanism and revolution which had upended the constitutional order of the European old regime, and which continued to threaten it. In the settlement,

France lost all its recent conquests, while Prussia, Austria and Russia made major territorial gains. Prussia added smaller German states in the west, Swedish Pomerania, 60% of the Kingdom of Saxony, and the western part of the former Duchy of Warsaw; Austria gained Venice and much of northern Italy. Russia gained the central and eastern part of the Duchy of Warsaw. It ratified the new Kingdom of the Netherlands which had been created just months before from the formerly Austrian territory that in 1830 became Belgium.

The immediate background was Napoleonic France's defeat and surrender in May 1814, which brought an end to 23 years of nearly continuous war. Negotiations continued despite the outbreak of fighting triggered by Napoleon's dramatic return from exile and resumption of power in France during the Hundred Days of March to July 1815. The Congress's "final act" was signed nine days before his final defeat at Waterloo on 18 June 1815.

Historians have criticized the Congress for causing the subsequent suppression of the emerging national and liberal movements, and it has been seen as a reactionary movement for the benefit of traditional monarchs.

In a technical sense, the "Congress of Vienna" was not properly a congress: it never met in plenary session. Instead, most of the discussions occurred in informal, face-to-face sessions among the Great Powers of Austria, Britain, France, Russia, and sometimes Prussia, with limited or no participation by other delegates.

On the other hand, the Congress was the first occasion in history where, on a continental scale, national representatives came together to formulate treaties instead of relying mostly on messages among the several capitals. The Congress of Vienna settlement formed the framework for European international politics until the outbreak of the First World War in 1914.

Preliminaries

The Treaty of Chaumont in 1814 had reaffirmed decisions that had been made already and that would be ratified by the more

important Congress of Vienna of 1814–15. They included the establishment of a confederated Germany, the division of Italy into independent states, the restoration of the Bourbon kings of Spain, and the enlargement of the Netherlands to include what in 1830 became modern Belgium. The Treaty of Chaumont became the cornerstone of the European Alliance that formed the balance of power for decades.

Other partial settlements had already occurred at the Treaty of Paris between France and the Sixth Coalition, and the Treaty of Kiel that covered issues raised regarding Scandinavia.

The Treaty of Paris had determined that a "general congress" should be held in Vienna and that invitations would be issued to "all the Powers engaged on either side in the present war". The opening was scheduled for July 1814.

Participants

The Congress functioned through formal meetings such as working groups and official diplomatic functions; however, a large portion of the Congress was conducted informally at salons, banquets, and balls.

Four Great Powers and Bourbon France

The Four Great Powers had previously formed the core of the Sixth Coalition. On the verge of Napoleon's defeat they had outlined their common position in the Treaty of Chaumont (March 1814), and negotiated the Treaty of Paris (1814) with the Bourbons during their restoration:

- Austria was represented by Prince Metternich, the Foreign Minister, and by his deputy, Baron Johann von Wessenberg. As the Congress's sessions were in Vienna, Emperor Francis was kept closely informed.
- The United Kingdom was represented first by its Foreign Secretary, Viscount Castlereagh; then by the Duke of Wellington, after Castlereagh's return to England in February 1815. In the last weeks it was headed by the Earl of Clancarty, after Wellington left to face Napoleon during the Hundred Days.
- Tsar Alexander I controlled the Russian delegation which was formally led by the foreign minister, Count Karl Robert Nesselrode. The tsar had two main goals, to gain control of Poland and to promote the peaceful coexistence of European nations. He succeeded in forming the Holy Alliance (1815), based on monarchism and anti-secularism, and formed to combat any threat of revolution or republicanism.
- Prussia was represented by Prince Karl August von Hardenberg, the Chancellor, and the diplomat and scholar Wilhelm von Humboldt. King Frederick William III of Prussia was also in Vienna, playing his role behind the scenes.
- France, the "fifth" power, was represented by its foreign minister, Talleyrand, as well as the Minister Plenipotentiary the Duke of Dalberg. Talleyrand had already negotiated the Treaty of Paris (1814) for Louis XVIII of France; the king, however, distrusted him and was also secretly negotiating with Metternich, by mail.

Other signatories of the Treaty of Paris, 1814

These parties had not been part of the Chaumont agreement, but had joined the Treaty of Paris (1814):

- Spain – Marquis Pedro Gómez de Labrador
- Portugal – Plenipotentiaries: Pedro de Sousa Holstein, Count of Palmela; António de Saldanha da Gama, Count of Porto Santo; Joaquim Lobo da Silveira.
- Sweden – Count Carl Löwenhielm

Others

- Denmark – Count Niels Rosenkrantz, foreign minister. King Frederick VI was also present in Vienna.
- The Netherlands – Earl of Clancarty, the British Ambassador at the Dutch court, and Baron Hans von Gagern
- Switzerland – Every canton had its own delegation. Charles Pictet de Rochemont from Geneva played a prominent role.
- Kingdom of Sardinia – Marquis Filippo Antonio Asinari di San Marzano [it].
- The Papal States – Cardinal ErcoleConsalvi
- Republic of Genoa – Marquise Agostino Pareto, Senator of the Republic.
- Grand Duchy of Tuscany – NeriCorsini [it].
- On German issues,
- Bavaria – Maximilian Graf von Montgelas

- Württemberg – Georg Ernst Levin von Wintzingerode [de]
- Hanover, then in a personal union with the British crown – Ernst zuMünster. (King George III had refused to recognize the dissolution of the Holy Roman Empire in 1806 and maintained a separate diplomatic staff as Elector of Hanover to conduct the affairs of the family estate, the Duchy of Brunswick-Lüneburg, until the results of the Congress were concluded establishing the Kingdom of Hanover).
- Mecklenburg-Schwerin – Leopold von Plessen [de]

Virtually every state in Europe had a delegation in Vienna – more than 200 states and princely houses were represented at the Congress. In addition, there were representatives of cities, corporations, religious organizations (for instance, abbeys) and special interest groups – e.g., a delegation representing German publishers, demanding a copyright law and freedom of the press. The Congress was noted for its lavish entertainment: according to a famous joke it did not move, but danced.

Talleyrand's role

Initially, the representatives of the four victorious powers hoped to exclude the French from serious participation in the negotiations, but Talleyrand skillfully managed to insert himself into "her inner councils" in the first weeks of negotiations. He allied himself to a Committee of Eight lesser powers (including Spain, Sweden, and Portugal) to control the negotiations. Once Talleyrand was able to use this committee to make himself a part of the inner negotiations, he then left it, once again abandoning his allies.

The major Allies' indecision on how to conduct their affairs without provoking a united protest from the lesser powers led to the calling of a preliminary conference on the protocol, to which Talleyrand and the Marquis of Labrador, Spain's representative, were invited on 30 September 1814.

Congress Secretary Friedrich von Gentz reported, "The intervention of Talleyrand and Labrador has hopelessly upset all our plans. Talleyrand protested against the procedure we have adopted and soundly [be]rated us for two hours. It was a scene I shall never forget." The embarrassed representatives of the Allies replied that the document concerning the protocol they had arranged actually meant nothing. "If it means so little, why did you sign it?" snapped Labrador.

Talleyrand's policy, directed as much by national as personal ambitions, demanded the close but by no means amicable relationship he had with Labrador, whom Talleyrand regarded with disdain. Labrador later remarked of Talleyrand: "that cripple, unfortunately, is going to Vienna." Talleyrand skirted additional articles suggested by Labrador: he had no intention of handing over the 12,000 *afrancesados* – Spanish fugitives, sympathetic to France, who had sworn fealty to Joseph Bonaparte, nor the bulk of the documents, paintings, pieces of fine art, and books that had been looted from the archives, palaces, churches and cathedrals of Spain.

Polish-Saxon crisis

The most dangerous topic at the Congress was the Polish-Saxon Crisis. Russia wanted most of Poland, and Prussia wanted all of Saxony, whose king had allied with Napoleon. The

tsar would become king of Poland. Austria was fearful this would make Russia much too powerful, a view which was supported by Britain. The result was a deadlock, for which Talleyrand proposed a solution: admit France to the inner circle, and France would support Austria and Britain. The three nations signed a secret treaty on 3 January 1815, agreeing to go to war against Russia and Prussia, if necessary, to prevent the Russo-Prussian plan from coming to fruition.

When the Tsar heard of the secret treaty he agreed to a compromise that satisfied all parties on 24 October 1815. Russia received most of the Napoleonic Duchy of Warsaw as a "Kingdom of Poland" – called Congress Poland, with the tsar as a king ruling it independently of Russia. Russia, however, did not receive the majority of Greater Poland and Kuyavia nor the Chełmno Land, which were given to Prussia and mostly included within the newly formed Grand Duchy of Posen (Poznań), nor Kraków, which officially became a free city, but in fact was a shared protectorate of Austria, Prussia and Russia. Furthermore, the tsar was unable to unite the new domain with the parts of Poland that had been incorporated into Russia in the 1790s. Prussia received 60 percent of Saxony-later known as the Province of Saxony, with the remainder returned to King Frederick Augustus I as his Kingdom of Saxony.

Final Act

The Final Act, embodying all the separate treaties, was signed on 9 June 1815 (nine days before the Battle of Waterloo). Its provisions included:

- Russia received most of the Duchy of Warsaw (Poland) and retained Finland (which it had annexed from Sweden in 1809 and would hold until 1917, as the Grand Duchy of Finland).
- Prussia received three-fifths of Saxony, western parts of the Duchy of Warsaw (most of which became part of the newly formed Grand Duchy of Posen), Gdańsk (Danzig), the Grand Duchy of the Lower Rhine (merger of the former French departments of Rhin-et-Moselle, Sarre, and Roer (Province of Jülich-Cleves-Berg (merger itself of the former Prussian Guelders, Principality of Moers, and the Grand Duchy of Berg))
- A German Confederation of 39 states, under the presidency of the Austrian Emperor, formed from the previous 300 states of the Holy Roman Empire. Only portions of the territories of each of Austria and Prussia were included in the Confederation (roughly the same portions that had been within the Holy Roman Empire).
- The Netherlands and the Southern Netherlands (approximately modern-day Belgium) became a united monarchy, the United Kingdom of the Netherlands, with the House of Orange-Nassau providing the king (the Eight Articles of London).
- To compensate for Orange-Nassau's loss of the Nassau lands to Prussia, the United Kingdom of the Netherlands and the Grand Duchy of Luxembourg were to form a personal union under the House of Orange-Nassau, with Luxembourg (but not the Netherlands) inside the German Confederation.

- Swedish Pomerania, given to Denmark in January 1814 in return for The Kingdom of Norway, became part of Prussia. France received back Guadeloupe from Sweden, with yearly installments payable to the Swedish king.
- The neutrality of the 22 cantons of Switzerlandwas guaranteed and a federal pact was recommended to them in strong terms. Bienne and the Prince-Bishopric of Basel became part of the Canton of Bern. The Congress also suggested a number of compromises for resolving territorial disputes between cantons.
- The former Electorate of Hanover was expanded to a kingdom. It gave up the Duchy of Lauenburg to the Kingdom of Denmark, but gained former territories of the Bishop of Münster and of the formerly Prussian East Frisia.
- Most of the territorial gains of Bavaria, Württemberg, Baden, Hesse-Darmstadt, and Nassau under the mediatizations of 1801–1806 were recognized. Bavaria also gained control of the Rhenish Palatinate and of parts of the Napoleonic Duchy of Würzburg and Grand Duchy of Frankfurt. Hesse-Darmstadt, in exchange for giving up the Duchy of Westphalia to Prussia, received Rhenish Hesse with its capital at Mainz.
- Austria regained control of the Tyrol and Salzburg; of the former Illyrian Provinces; of Tarnopol district (from Russia); received Lombardy-Venetia in Italy and Ragusa in Dalmatia. Former Austrian territory in Southwest Germany remained under the control of

Württemberg and Baden; the Austrian Netherlands were also not recovered.

- Ferdinand III was restored as Grand Duke of Tuscany.
- Archduke Francis IV was acknowledged as the ruler of the Duchy of Modena, Reggio and Mirandola.
- The Papal States under the rule of the Pope were restored to their former extent, with the exception of Avignon and the ComtatVenaissin, which remained part of France.
- Britain retained control of the Cape Colony in Southern Africa; Tobago; Ceylon; and various other colonies in Africa and Asia. Other colonies, most notably the Dutch East Indies and Martinique, reverted to their previous overlords.
- The King of Sardinia, re-established in Piedmont, Nice, and Savoy, gained control of Genoa (putting an end to the brief proclamation of a restored Republic of Genoa).
- The Duchies of Parma, Piacenza and Guastalla were taken from the Queen of Etruria and given to Marie Louise for her lifetime.
- The Duchy of Lucca was established for the House of Bourbon-Parma, with reversionary rights to Parma after the death of Marie Louise.
- The slave trade was condemned.
- Freedom of navigation was guaranteed for many rivers, notably the Rhine and the Danube.

Representatives of Austria, France, Portugal, Prussia, Russia, Sweden-Norway, and Britain signed the Final Act. Spain did not sign, but ratified the outcome in 1817.

Subsequently, the Bourbon Ferdinand IV, King of Sicily, regained control of the Kingdom of Naples after Joachim Murat, the king installed by Bonaparte, supported Napoleon in the Hundred Days and started the 1815 Neapolitan War by attacking Austria.

Other changes

The Congress's principal results, apart from its confirmation of France's loss of the territories annexed between 1795 and 1810, which had already been settled by the Treaty of Paris, were the enlargement of Russia, (which gained most of the Duchy of Warsaw) and Prussia, which acquired the district of Poznań, Swedish Pomerania, Westphalia and the northern Rhineland.

The consolidation of Germany from the nearly 300 states of the Holy Roman Empire (dissolved in 1806) into a much less complex system of thirty-nine states (4 of which were free cities) was confirmed. These states formed a loose German Confederation under the leadership of Austria.

Representatives at the Congress agreed to numerous other territorial changes. By the Treaty of Kiel, Norway had been ceded by the king of Denmark-Norway to the king of Sweden. This sparked the nationalist movement which led to the establishment of the Kingdom of Norway on May 17, 1814 and the subsequent personal Union with Sweden. Austria gained Lombardy-Venetia in Northern Italy, while much of the rest of North-Central Italy went to Habsburg dynasties (the Grand Duchy of Tuscany, the Duchy of Modena, and the Duchy of Parma).

The Papal States were restored to the Pope. The Kingdom of Piedmont-Sardinia was restored to its mainland possessions, and also gained control of the Republic of Genoa. In Southern Italy, Napoleon's brother-in-law, Joachim Murat, was originally allowed to retain his Kingdom of Naples, but his support of Napoleon in the Hundred Days led to the restoration of the Bourbon Ferdinand IV to the throne.

A large United Kingdom of the Netherlands was formed for the Prince of Orange, including both the old United Provinces and the formerly Austrian-ruled territories in the Southern Netherlands. Other, less important, territorial adjustments included significant territorial gains for the German Kingdoms of Hanover (which gained East Frisia from Prussia and various other territories in Northwest Germany) and Bavaria (which gained the Rhenish Palatinate and territories in Franconia). The Duchy of Lauenburg was transferred from Hanover to Denmark, and Prussia annexed Swedish Pomerania. Switzerland was enlarged, and Swiss neutrality was established. Swiss mercenaries had played a significant role in European wars for a couple of hundred years: Congress intended to put a stop to these activities permanently.

During the wars, Portugal had lost its town of Olivenza to Spain and moved to have it restored. Portugal is historically Britain's oldest ally, and with British support succeeded in having the re-incorporation of Olivenza decreed in Article CV of the General Treaty of the Final Act, which stated that "The Powers, recognizing the justice of the claims of ... Portugal and the Brazils, upon the town of Olivenza, and the other territories ceded to Spain by the Treaty of Badajoz of 1801". Portugal ratified the Final Act in 1815 but Spain would not

sign, and this became the most important hold-out against the Congress of Vienna. Deciding in the end that it was better to become part of Europe than to stand alone, Spain finally accepted the Treaty on 7 May 1817; however, Olivenza and its surroundings were never returned to Portuguese control and this issue remains unresolved.

The United Kingdom received parts of the West Indies at the expense of the Netherlands and Spain and kept the former Dutch colonies of Ceylon and the Cape Colony as well as Malta and Heligoland. Under the Treaty of Paris (1814) Article VIII France ceded to Britain the islands of "Tobago and Saint Lucia, and of the Isle of France and its dependencies, especially Rodrigues and Les Seychelles", and under the Treaty between Great Britain and Austria, Prussia and Russia, respecting the Ionian Islands (signed in Paris on 5 November 1815), as one of the treaties signed during the Peace of Paris (1815), Britain obtained a protectorate over the United States of the Ionian Islands.

Later criticism

The Congress of Vienna has frequently been criticized by 19th century and more recent historians for ignoring national and liberal impulses, and for imposing a stifling reaction on the Continent. It was an integral part in what became known as the Conservative Order, in which the democracy and civil rights associated with the American and French Revolutions were de-emphasized.

In the 20th century, however, many historians came to admire the statesmen at the Congress, whose work prevented another

widespread European war for nearly 100 years (1815–1914). Among these is Henry Kissinger, who in 1954 wrote his doctoral dissertation, *A World Restored*, on it. Historian Mark Jarrett argues that the Congress of Vienna and the Congress System marked "the true beginning of our modern era". He says the Congress System was deliberate conflict management and was the first genuine attempt to create an international order based upon consensus rather than conflict. "Europe was ready," Jarrett states, "to accept an unprecedented degree of international cooperation in response to the French Revolution." Historian Paul Schroeder argues that the old formulae for "balance of power" were in fact highly destabilizing and predatory. He says the Congress of Vienna avoided them and instead set up rules that produced a stable and benign equilibrium. The Congress of Vienna was the first of a series of international meetings that came to be known as the Concert of Europe, which was an attempt to forge a peaceful balance of power in Europe. It served as a model for later organizations such as the League of Nations in 1919 and the United Nations in 1945.

Before the opening of the Paris peace conference of 1918, the British Foreign Office commissioned a history of the Congress of Vienna to serve as an example to its own delegates of how to achieve an equally successful peace. Besides, the main decisions of the Congress were made by the Four Great Powers and not all the countries of Europe could extend their rights at the Congress. The Italian peninsula became a mere "geographical expression" as divided into seven parts: Lombardy–Venetia, Modena, Naples–Sicily, Parma, Piedmont–Sardinia, Tuscany, and the Papal States under the control of different powers. Poland remained partitioned between Russia,

Prussia and Austria, with the largest part, the newly created Kingdom of Poland, remaining under Russian control.

The arrangements made by the Four Great Powers sought to ensure future disputes would be settled in a manner that would avoid the terrible wars of the previous 20 years. Although the Congress of Vienna preserved the balance of power in Europe, it could not check the spread of revolutionary movements across the continent some 30 years later.

Chapter 3

United Kingdom of Great Britain and Ireland

The United Kingdom of Great Britain and Ireland was a sovereign state that existed between 1801 and 1922. It was established by the Acts of Union 1800, which merged the kingdoms of Great Britain and Ireland into a unified state. The establishment of the Irish Free State in 1922 led to the remainder later being renamed the United Kingdom of Great Britain and Northern Ireland in 1927.

The United Kingdom, having financed the European coalition that defeated France during the Napoleonic Wars, developed a large Royal Navy that enabled the British Empire to become the foremost world power for the next century. The Crimean War with Russia was a relatively small operation in a century where Britain was largely at peace with the Great Powers. Rapid industrialisation that began in the decades prior to the state's formation continued up until the mid-19th century. The Great Irish Famine, exacerbated by government inaction in the mid-19th century, led to demographic collapse in much of Ireland and increased calls for Irish land reform.

The 19th century was an era of rapid economic modernisation and growth of industry, trade and finance, in which Britain largely dominated the world economy. Outward migration was heavy to the principal British overseas possessions and to the United States. The British Empire was expanded into most parts of Africa and much of South Asia. The Colonial Office

and India Office ruled through a small number of administrators who managed the units of the empire locally, while democratic institutions began to develop. British India, by far the most important overseas possession, saw a short-lived revolt in 1857. In overseas policy, the central policy was free trade, which enabled British and Irish financiers and merchants to operate successfully in many otherwise independent countries, as in South America. London formed no permanent military alliances until the early 20th century, when it began to cooperate with Japan, France and Russia, and moved closer to the United States.

Growing desire for Irish self-governance led to the Irish War of Independence, which resulted in most of Ireland seceding from the Union and forming the Irish Free State in 1922. Northern Ireland remained part of the Union, and the state was renamed the United Kingdom of Great Britain and Northern Ireland in 1927. The modern-day United Kingdom is the same country—a direct continuation of what remained after Ireland's secession—not an entirely new successor state.

1801 to 1820

Union of Great Britain and Ireland

A brief period of limited independence for Ireland came to an end following the Irish Rebellion of 1798, which occurred during the British war with revolutionary France. The British government's fear of an independent Ireland siding against them with the French resulted in the decision to unite the two countries. This was brought about by legislation in the

parliaments of both kingdoms and came into effect on 1 January 1801. The Irish had been led to believe by the British that their loss of legislative independence would be compensated with Catholic emancipation, that is, by the removal of civil disabilities placed upon Roman Catholics in both Great Britain and Ireland. However, King George III was bitterly opposed to any such Emancipation and succeeded in defeating his government's attempts to introduce it.

Napoleonic Wars

During the War of the Second Coalition (1799–1801), Britain occupied most of the French and Dutch overseas possessions, the Netherlands having become a satellite state of France in 1796, but tropical diseases claimed the lives of over 40,000 troops. When the Treaty of Amiens ended the war, Britain agreed to return most of the territories it had seized. The peace settlement was in effect only a ceasefire, and Napoleon continued to provoke the British by attempting a trade embargo on the country and by occupying the city of Hanover, capital of the Electorate, a German-speaking duchy which was in a personal union with the United Kingdom. In May 1803, war was declared again. Napoleon's plans to invade Great Britain failed, chiefly due to the inferiority of his navy, and in 1805 a Royal Navy fleet led by Nelson decisively defeated the French and Spanish at Trafalgar, which was the last significant naval action of the Napoleonic Wars.

In 1806, Napoleon issued the series of Berlin Decrees, which brought into effect the Continental System. This policy aimed to eliminate the threat from the British by closing French-controlled territory to foreign trade. The British Army remained

a minimal threat to France; it maintained a standing strength of just 220,000 men at the height of the Napoleonic Wars, whereas France's armies exceeded a million men—in addition to the armies of numerous allies and several hundred thousand national guardsmen that Napoleon could draft into the French armies when they were needed.

Although the Royal Navy effectively disrupted France's extra-continental trade—both by seizing and threatening French shipping and by seizing French colonial possessions—it could do nothing about France's trade with the major continental economies and posed little threat to French territory in Europe. France's population and agricultural capacity far outstripped that of the British Isles, but it was smaller in terms of industry, finance, mercantile marine and naval strength.

Napoleon expected that cutting Britain off from the European mainland would end its economic hegemony. On the contrary Britain possessed the greatest industrial capacity in the world, and its mastery of the seas allowed it to build up considerable economic strength through trade to its possessions and the United States. The Spanish uprising in 1808 at last permitted Britain to gain a foothold on the Continent. The Duke of Wellington gradually pushed the French out of Spain, and in early 1814, as Napoleon was being driven back in the east by the Prussians, Austrians and Russians, Wellington invaded southern France. After Napoleon's surrender and exile to the island of Elba, peace appeared to have returned. Napoleon suddenly reappeared in 1815. The Allies united and the armies of Wellington and Blücher defeated Napoleon once and for all at Waterloo.

War of 1812 with the United States

To defeat France, Britain put heavy pressure on the Americans, seizing merchant ships suspected of trading with France, and impressing sailors (conscription) born in Britain, regardless of their claimed American citizenship. British government agents armed Indian tribes in Canada that were raiding American settlements on the frontier. The Americans felt humiliated and demanded war to restore their honour, despite their complete unpreparedness. The War of 1812 was a minor sideshow to the British, but the American army performed very poorly, and was unable to successfully attack Canada. In 1813, the Americans took control of Lake Erie and thereby of western Ontario, knocking most of the Indian tribes out of the war. When Napoleon surrendered for the first time in 1814, three separate forces were sent to attack the Americans in upstate New York, along the Maryland coast (burning Washington but getting repulsed at Baltimore), and up the Mississippi River to a massive defeat at the Battle of New Orleans. Each operation proved a failure with the British commanding generals killed or in disgrace. The war was a stalemate without purpose. A negotiated peace was reached at the end of 1814 that restored the prewar boundaries. British Canada celebrated its deliverance from American rule, Americans celebrated victory in a "second war of independence," and Britain celebrated its defeat of Napoleon. The treaty opened up two centuries of peace and open borders.

Postwar reaction: 1815–1822

Britain emerged from the Napoleonic Wars a very different country than it had been in 1793. As industrialisation

progressed, society changed, becoming more urban. The postwar period saw an economic slump, and poor harvests and inflation caused widespread social unrest. British leadership was intensely conservative, ever watchful of signs of revolutionary activity of the sort that had so deeply affected France. Historians have found very few signs, noting that social movements such as Methodism strongly encouraged conservative support for the political and social status quo.

The major constitutional changes included a reform of Parliament, and a sharp decline in the power and prestige of the monarchy. The Prince regent, on becoming King George IV in 1820 asked Parliament to divorce his wife Queen Caroline of Brunswick so that he could marry his favourite lover. Public and elite opinion strongly favoured the Queen and ridiculed the king. The fiasco helped ruin the prestige of the monarchy and it recovered a fraction of the power wielded by King George III in his saner days. Historian Eugene Black says:

- the damage was irrevocable. The sovereign was increasingly a symbolic contradiction in his own age. Through madness, stupidity, and immorality Victoria's three predecessors lowered the stock of monarchy. Only thirty years of the narrow domestic virtues of Queen Victoria finely retrieved the symbolic luster of the sovereign.

Ultra Tories: Peterloo Massacre and the Six Acts

The Ultra-Tories were the leaders of reaction and seemed to dominate the Tory Party, which controlled the government. Every untoward event seemed to point to a conspiracy on the

left which necessitated more repression to head off another terror such as happened in the French Revolution in 1793. Historians find that the violent radical element was small and weak; there were a handful of small conspiracies involving men with few followers and careless security; they were quickly suppressed. Nevertheless, techniques of repression included the suspension of Habeas Corpus in 1817 (allowing the government to arrest and hold suspects without cause or trial). Sidmouth'sGagging Acts of 1817 heavily muzzled the opposition newspapers; the reformers switched to pamphlets and sold 50,000 a week.

In industrial districts in 1819, factory workers demanded better wages, and demonstrated. The most important event was the Peterloo Massacre in Manchester, on 16 August 1819, when a local militia unit composed of landowners charged into an orderly crowd of 60,000 which had gathered to demand the reform of parliamentary representation. The crowd panicked and eleven died and hundreds were injured. The government saw the event as an opening battle against revolutionaries. In reaction Liverpool's government passed the "Six Acts" in 1819. They prohibited drills and military exercises; facilitated warrants for the search for weapons; outlawed public meetings of more than 50 people, including meetings to organise petitions; put heavy penalties on blasphemous and seditious publications; imposing a fourpenny stamp act on many pamphlets to cut down the flow on news and criticism. Offenders could be harshly punished including exile in Australia. In practice the laws were designed to deter troublemakers and reassure conservatives; they were not often used.

One historian would write: "Peterloo was a blunder; it was hardly a massacre." It was a serious mistake by local authorities who did not understand what was happening. Nevertheless, it had a major impact on British opinion at the time and on history ever since as a symbol of officialdom brutally suppressing a peaceful demonstration thinking mistakenly that it was the start of an insurrection. By the end of the 1820s, along with a general economic recovery, many of the repressive laws of the 1810s were repealed and in 1828 new legislation guaranteed the civil rights of religious dissenters.

The Ultra-Tories peaked in strength about 1819–1822 then lost ground inside the Tory Party. They were defeated in important breakthroughs that took place in the late 1820s in terms of tolerating first dissenting Protestants. An even more decisive blow was the unexpected repeal of the many restrictions on Catholics, after widespread organised protest by the Catholic Association in Ireland under Daniel O'Connell, with support from Catholics in England. Robert Peel was alarmed at the strength of the Catholic Association, warning in 1824, "We cannot tamely sit by while the danger is hourly increasing, while a power co-ordinate with that of the Government is rising by its side, nay, daily counteracting its views." The Duke of Wellington, Britain's most famous war hero, told Peel, "If we cannot get rid of the Catholic Association, we must look to Civil War in Ireland sooner or later." Peel and Wellington agreed that to stop the momentum of the Catholic Association it was necessary to pass Catholic emancipation, which gave Catholics the vote and the right to sit in Parliament. That happened in 1829 using Whig support. Passage demonstrated that the veto power long held by the ultra-Tories no longer was

operational, and significant reforms were now possible across the board. The stage was set for the Age of Reform.

Age of Reform: 1820–1837

The era of reform came in a time of peace, guaranteed in considerable part by the overwhelming power of the Royal Navy. Britain engaged in only one serious war between 1815 and 1914, the Crimean war against Russia in the 1850s. That war was strictly limited in terms of scope and impact. The major result was the realisation that military medical services needed urgent reform, as advocated by the nursing leader Florence Nightingale. British diplomats, led by Lord Palmerston, promoted British nationalism, opposed reactionary regimes on the continent, helped the Spanish colonies to free themselves and worked to shut down the international slave trade.

It was a time of prosperity, population growth and better health, except in Ireland where over one million deaths were caused by a terrible famine when the potato crop failed in the 1840s. The Government did little to help the starving poor in Ireland. Along with the 1 million deaths, another 1 million would emigrate in a few short years, mostly to Britain and to the United States. The trend of emigration would continue in Ireland for decades and Ireland's population has never recovered to its pre-famine levels. The Irish language was almost wiped out. The failure of the British government to respond to the crisis in the eyes of the Irish public would lead to a growth in resentment of Britain and a rise in Irish nationalism. The Famine is remembered in Ireland to this day as oppression by the British Empire.

Industrial Revolution accelerated, with textile mills joined by iron and steel, coal mining, railroads and shipbuilding. The second British Empire, founded after the loss of the 13 American colonies in the 1770s, was dramatically expanded in India, other parts of Asia, and Africa. There was little friction with other colonial powers until the 1890s. British foreign policy avoided entangling alliances.

Britain from the 1820s to the 1860s experienced a turbulent and exciting "age of reform". The century started with 15 years of war against France, ending in Wellington's triumph against Napoleon in 1815 at Waterloo.

There followed 15 difficult years, in which the Tory Party, representing a small, rich landed aristocracy that was fearful of a popular revolution along the French model, employed severe repression. In the mid-1820s, however, as popular unrest increased, the government made a series of dramatic changes. The more liberal among the Tories rejected the ultraconservative "Ultra Tory" faction. The party split, key leaders switched sides, the Tories lost power, and the more liberally minded opposition Whigs took over. The Tory coalition fell apart, and it was reassembled under the banner of the Conservative Party. Numerous Tories, such as Palmerston, switched over to the Whig opposition, and it became the Liberal Party.

Constitutionally, the 1830s marks a watershed: the end of Crown control over the cabinet. King William IV in 1834 was obliged to accept a prime minister who had a majority in Parliament, and the Crown ever since has gone along with the majority.

The great Reform Act of 1832 came at a time of intense public and elite anxiety and broke the logjam. The parliamentary system, based on a very small electorate and large numbers of seats that were tightly controlled by a small elite, was radically reformed. For the first time the growing industrial cities had representation in Parliament. This opened the way for another decade of reform that culminated in the repeal of the Corn Lawsin 1846—ending the tariff on imported grain that kept prices high for the landed aristocracy.

Repeal was heavily promoted by the Anti-Corn Law League, grass roots activists led by Richard Cobden and based in the industrial cities; they demanded cheap food. There were a series of reforms of the electoral laws, expanding the number of male voters and reducing the level of corruption. The reactionary Tory element was closely linked to the Church of England, and expressed its strong hostility toward Catholics and nonconformist Protestants by restricting their political and civil rights.

The Catholic started to organise in Ireland, threatening instability or even civil war, and the moderates in Parliament emancipated them. The Nonconformists were similarly freed from their restrictions. In addition to reforms at the Parliamentary level, there was a reorganisation of the governmental system in the rapidly growing cities, putting a premium on modernisation and expertise, and large electorates as opposed to small ruling cliques. A rapidly growing middle class, as well as active intellectuals, broaden the scope of reform to include humanitarian activities such as a new poor law and factory laws to protect women and children workers.

Protestant Nonconformists

In the 1790–1815 period there was an improvement in morals caused by the religious efforts by evangelicals inside the Church of England, and Dissenters or Nonconformist Protestants as people:

became wiser, better, more frugal, more honest, more respectable, more virtuous, than they ever were before." Wickedness still flourished, but the good were getting better, as frivolous habits were discarded for more serious concerns. The leading moralist of the era, William Wilberforce, saw everywhere "new proofs presenting themselves of the diffusion of religion".

Nonconformists, including Presbyterians, Congregationalists, the Baptists and the rapidly-growing Methodist denomination, as well as Quakers, Unitarians and smaller groups. They were all outside the established Church of England (except in Scotland, where the established church was Presbyterian), They proclaimed a devotion to hard work, temperance, frugality and upward mobility, with which historians today largely agree. A major Unitarian magazine, the *Christian Monthly Repository* asserted in 1827:

- Throughout England a great part of the more active members of society, who have the most intercourse with the people have the most influence over them, are Protestant Dissenters. These are manufacturers, merchants and substantial tradesman, or persons who are in the enjoyment of a competency realised by trade, commerce and manufacturers, gentlemen of

> the professions of law and physic, and agriculturalists, of that class particularly who live upon their own freehold. The virtues of temperance, frugality, prudence and integrity promoted by religious Nonconformity...assist the temporal prosperity of these descriptions of persons, as they tend also to lift others to the same rank in society.

The Nonconformists suffered under a series of disabilities, some of which were symbolic and others were painful, and they were all deliberately imposed to weaken the dissenting challenge to Anglican orthodoxy. The Nonconformists allied with the Whigs to demand for civil and religious equality. Grievances included a 1753 law that to be legally recognised marriage had to take place in the Anglican parish church. The Anglican parish register was the only legally accepted birth documentation. The Anglican parish controlled the only religious. burial grounds. Oxford and Cambridge had to reject non-Anglican applicants. At the local level, everyone who lived in the boundaries of an Anglican church was required to pay taxes to support the parish. The Test and Corporation laws required all national and local government officials had to attend Anglican church services. In February 1828, Whig leader Lord John Russell, presented petitions assembled by the main Nonconformist pressure group, the United Committee, which represented Congregationalist, Baptists and Unitarians. Their demand was the immediate repeal of the hated laws. Wellington and Peel originally were opposed, but then tried to compromise. They finally gave, splitting the Tory party, and signaling that the once unstoppable power of the Anglican establishment was now unexpectedly fragile and vulnerable to challenge.

Foreign policy

Three men shaped British foreign policy from 1810 to 1860, with only a few interruptions, Viscount Castlereagh (especially 1812–1822). George Canning (especially 1807–1829) and Viscount Palmerston (especially 1830–1865). For complete list, see Secretary of State for Foreign and Commonwealth Affairs.

The coalition that defeated Napoleon was financed by Britain, and held together at the Congress of Vienna in 1814–1815. It successfully broke Napoleon's comeback attempt in 1815. Castlereagh played a central role at Vienna, along with Austrian leader Klemens von Metternich. While many Europeans wanted to punish France heavily, Castlereagh insisted on a mild peace, with France to pay 700 million livre in indemnities and lose the territory seized after 1791.

He realised that harsher terms would lead to a dangerous reaction in France, and now that the conservative old-fashioned Bourbons were back in power, they were no longer a threat to attempt to conquer all of Europe. Indeed, Castlereagh emphasised the need for a "balance of power", whereby no nation would be powerful enough to threaten the conquest of Europe the way Napoleon had. Vienna ushered in a century of peace, with no great wars and few important localised ones until the Crimean War (1853–1856). Prussia, Austria and Russia, as absolute monarchies, tried to suppress liberalism wherever it might occur. Britain first took a Reactionary position at the Congress of Vienna in 1815, but relented and broke ranks with the absolute monarchies by 1820. Britain intervened in Portugal in 1826 to defend a constitutional government there and recognising the independence of Spain's

American colonies in 1824. British merchants and financiers and, later, railway builders, played major roles in the economies of most Latin American nations.

Age of Reform

Main achievements

In the 1825 to 1867 era, widespread public demonstrations, some of them violent, escalated to demand reform. The ruling Tories were dead set against anything smacking of democracy or popular rule and favoured severe punishment of demonstrators, as exemplified by the Peterloo Massacre in Manchester in 1819. The Tory ranks were cracking, however, especially when Robert Peel (1788–1830) broke away on several critical issues. Nevertheless, the Whig party gets most of the credit. The middle classes, often led by nonconformist Protestants, turned against the Tories and scored the greatest gains. For example, symbolic restrictions on nonconformists called the Test Acts were abolished in 1828. Much more controversial was the repeal of severe discrimination against Roman Catholics after the Irish Catholics organised, and threatened rebellion, forcing major concessions in 1829.

Financial reform, led by William Huskisson and Peel, rationalised the tariff system, and culminated in the great repeal of the tariffs on imported grain in 1846, much to the dismay of grain farmers. The 1846 repeal of the Corn Laws established free trade as the basic principle by which British merchants came to dominate the globe, and brought cheap food to British workers. A depoliticised civil service based on merit replaced patronage policies rewarding jobs for partisan efforts.

Efficiency was a high priority in government, with the goal of low taxation. Overall, taxation was about 10%, the lowest in any modern nation.

Foreign policy became moralistic and hostile to the reactionary powers on the continent, teaming up with the United States to block European colonialism in the New World through the Monroe Doctrine of 1823. Slavery was abolished throughout the British Empire. The Royal Navy stepped up efforts to stop international trade in slaves.

Municipal reform was a necessity for the rapidly growing industrial cities still labouring under a hodgepodge of centuries-old laws and traditions. When Peel took over the Home Office, he abolished the espionage and cruel punishments, ended the death penalty for most crimes, and inaugurated the first system of professional police—who in London to this day are still called "Bobbies" in his honour. The Municipal Corporations Act 1835modernised urban government, which previously had been controlled by closed bodies dominated by Tories. Over 200 old corporations were abolished and replaced with 179 elected borough councils. Elections were to be based on registered voters, city finances had to be audited in a uniform fashion, and city officials were elected by the local taxpayers.

By far the most important of the reforms was the democratisation of Parliament, which began in a small but highly controversial fashion in 1832 with the Reform Act of 1832. The main impact was to drastically reduce the number of very small constituencies, with only a few dozen voters under the control of a local magnate. Industrial cities gained many of

the seats but were still significantly underrepresented in Parliament. The 1831–1832 battle over parliamentary reform was, "a year probably unmatched in English history for the sweep and intensity of its excitement." Every few years an incremental enlargement of the electorate was made by Parliament, reaching practically all male voters by the 1880s, and all the women by 1928. Both parties introduced paid professional organisers who supervised the mobilisation of all possible support in each constituency; about 80% of the men voted.

The Tories discovered that their conservatism had an appeal to skilled workers, and also to women, hundreds of thousands of whom were organised by the Primrose League. Women's suffrage was not on the agenda. The abolition of the House of Lords, while often discussed, was never necessary because the upper house repeatedly retreated in the face of determined House of Commons action. After defeating the first two versions of the Reform Act of 1832, the Whigs got the King to agree to appoint as many new peers as was necessary to change the outcome. He promised to do so, but convinced the Lords it would be much wiser for them to approve the law.

Political process

A weak ruler as regent (1811–1820) and king (1820–1830), George IV let his ministers take full charge of government affairs. He was a deeply unpopular playboy. When he tried to get Parliament to pass a law allowing him to divorce his wife Queen Caroline, public opinion strongly supported her. His younger brother William IV, who reigned 1830–1837, was little involved in politics.

After four decades of rule by Pittites and Tories the first breakthrough in reform came in the removal by a Tory government of restrictions on the careers of Protestant Nonconformists in the repeal in 1828 of the laws that required Anglican church membership for many academic and government positions. Much more intense was the long battle over the civil rights of Roman Catholics. Catholic emancipation came in 1829, which removed the most substantial restrictions on Roman Catholics in Great Britain and Ireland. The Duke of Wellington, as Tory prime minister, decided that the surging crisis in largely Catholic Ireland necessitated some relief for the Catholics, although he had long opposed the idea. The other main Tory leader was Robert Peel, who suddenly reversed himself on the Catholic issue and was roundly denounced and permanently distrusted by the Ultra Tory faction of die-hards.

Earl Grey, prime minister from 1830 to 1834, and his rejuvenated Whig Party enacted a series of major reforms: the poor law was updated, child labour restricted and, most important, the Reform Act 1832 refashioned the British electoral system. In 1832 Parliament abolished slavery in the Empire with the Slavery Abolition Act 1833. The government purchased all the slaves for £20,000,000 (the money went to rich plantation owners who mostly lived in England), and freed the slaves, most of whom were in the Caribbean sugar islands.

The Whigs became champions of Parliamentary reform by making the Reform Act of 1832 their signature measure. It sharply reduced the numbers of "rotten borough" and "pocket boroughs" (where elections were controlled by powerful families), and instead redistributed seats on the basis of population. It also broadened the franchise, adding 217,000

voters to an electorate of 435,000 in England and Wales. The main effect of the act was to weaken the power of the landed gentry, and enlarge the power of the professional and business middle-class, which now for the first time had a significant voice in Parliament. However, at this point the great majority of manual workers, clerks and farmers did not have enough property to qualify to vote. Many of them received the vote in 1867. The aristocracy continued to dominate the Church of England, the most prestigious military and naval posts, and high society, but not business, industry or finance. In terms of national governmental policy, the democratic wishes of the entire people had become decisive.

Most historians emphasise the central importance of the legislation of the 1830s–60s, although there was a dissenting minority of scholars in the 1960s and 1970s who argued against deep meanings of Whiggish progress because each of the reforms was relatively minor in itself. Historian Richard Davis concludes that the scholarship of the 1970s represented "a vindication of the main outlines of the old "Whig interpretation." That is, the Reform Act of 1832 was a response to mounting popular pressure. It was "the culmination of a long historical process, and an important turning point in the emergence of a more liberal and broadly based political system... it deserves its old designation of 'Great.'"

David Thompson has stressed the revolutionary nature of the entire package of reforms:

- In all these ways—the organization of the new police (by Peel as Home Secretary in the 1820s), the new Poor Law, and in the new municipal councils—the

> pattern of government in England was changed fundamentally within a single decade. In conjunction with the removal of religious disabilities, these reforms laid the structural foundation for a new kind of State in Britain: a State in which the electoral rights and civil rights of citizens were extended and given greater legal protection, but in which the ordinary citizen was subjected to a much greater degree of administrative interference, direction, and control from the centre. The most spectacular element in this whole process—the Reform Bill of 1832—ensured that the state should also be partially democratized at the centre. The full significance of 1832 in the history of the country is appreciated only if it is seen as the central change in this mini-sided transformation of an agricultural nation ruled by squires, parsons, and the wealthy landowners into an industrial nation dominated by the classes produced by industrial expansion and commercial enterprise.

Chartism

Chartism was a large-scale popular protest movement that emerged in response to the failure of the 1832 Reform Bill to give the vote to the working class. It lacked middle-class support, and it failed repeatedly. Activists denounced the "betrayal" of the working classes and the "sacrificing" of their "interests" by the "misconduct" of the government. In 1838, Chartists issued the People's Charter demanding manhood suffrage, equal-sized election districts, voting by ballots, payment of Members of Parliament (so that poor men could

serve), annual Parliaments, and abolition of property requirements. The ruling class saw the movement as dangerous. Multiple large peaceful meetings across England demanded change but the Chartists were unable to force serious constitutional debate.

In July 1839, however, the House of Commons rejected, by 235 votes to 46, a motion to debate the Chartists' national petition, bearing 1.3 million signatures. Historians see Chartism as both a continuation of the 18th century fight against corruption and as a new stage in demands for democracy in an industrial society.

Prime ministers

Prime ministers of the period included: William Pitt the Younger, Lord Grenville, Duke of Portland, Spencer Perceval, Lord Liverpool, George Canning, Lord Goderich, Duke of Wellington, Lord Grey, Lord Melbourne, Lord Palmerston and Robert Peel.

The aristocracy remained dominant: there were 200 hereditary peers in the House of Lords in 1860; by 1837 they numbered 428; in 1901, there were 592. The number rose to 622 by 1910. Reform legislation in 1832, 1867, 1884 and 1918 weakened the aristocracy in terms of its control of the House of Commons. However, it ran the government: of the ten prime ministers under Victoria, six were peers. The seventh was the son of a duke. Two (Peel and Gladstone) emerged from the business community and only one (Disraeli) was a self-made man. Of the 227 cabinet members between 1832 and 1905, 139 were sons of peers.

Field MarshalArthur Wellesley, 1st Duke of Wellington, who defeated Napoleon, served as the leader of the Conservative party in the House of Lords, 1828–1846. Some writers have belittled him as a befuddled reactionary, but a consensus reached in the late 20th century depicts him as a shrewd operator who hid his cleverness behind the facade of a poorly-informed old soldier. Wellington worked to transform the Lords from unstinting support of the Crown to an active player in political manoeuvring, with a commitment to the landed aristocracy. He used his London residence as a venue for intimate dinners and private consultations, together with extensive correspondence that kept him in close touch with party leaders in the Commons and with leading figures in the Lords. He gave public rhetorical support to Ultra-Tory anti-reform positions, but then deftly changed positions toward the party's centre, especially when Peel needed support from the upper house. Wellington's success was based on the 44 peers elected from Scotland and Ireland, whose election he controlled.

Charles Grey, 2nd Earl Grey had promoted reform of Parliament since the 1790s, always to be defeated by the Ultra-Tories. The breakthrough came in his success in passage of the Reform Act of 1832. He sought this as the final step of reform, rather than a first step in a long process, emphasising the urgent need in 1832 to settle the intense and growing political unrest across Britain. He believed that the respectable classes deserved to have their demands for greater representation met, but he refused to extend political power to the mass of the lower middle class and working class, saying that they were not ready to be trusted with it. He wanted to preserve the basic elements of the existing constitution by removing obvious

abuses, thinking that this would strengthen aristocratic leadership. He persuaded the king to promise to create enough new peers to force the bill through the House of Lords. The king made the promise while also advising the peers to stop blocking the bill. The Reform Act was Grey's principal achievement; it reflects his pragmatic, moderate and conservative character, as well as his parliamentary skills of timing and persuasion. His cabinet was a coalition of diverse interests, so in 1834 when it divided over the Irish church question he resigned.

Henry John Temple, 3rd Viscount Palmerston played the dominant role in shaping British foreign-policy as Foreign Secretary (1830-1834, 1835–1841 and 1846–1851) and as prime minister (1855–1858, 1859–1865). He served as Secretary at War in Tory governments for two decades, but switched over to the Whig coalition in 1830. The Tories despised him thereafter as a turncoat, and many of the more radical Whigs were distrustful of his basically conservative views that saw him fainthearted about or opposed to reform measures. He typically warned on the one hand against delays and on the other hand against excessive enthusiasm for reforms, preferring compromise. He was keenly sensitive to public opinion, and indeed often shapes it through his dealings with newspaper editors. When he sensed that public demand had reached an unstoppable momentum, he would work for a watered-down reform. He routinely gave the same advice to foreign governments. Diplomats across Europe took careful note of his move from the Tories to the Whigs, and suspected him of sympathy with the reform movements which were setting off upheavals in France, Belgium and elsewhere, and which frightened the reactionary governments of the major

powers Russia, Austria and Russia. In reality he drew his foreign policy ideals from Canning. His main goals were to promote British strategic and economic interests worldwide, remain aloof from European alliances, mediate peace in Europe and use British naval power sparingly as needed.

He worried most about France as an adversary, although he collaborated with them as in securing the independence of Belgium from the kingdom of the Netherlands. He much preferred liberal and reform-oriented nations to reactionary powers. He placed a high priority on building up British strength in India, He spoke often of pride in British nationalism, which found favour in public opinion and gave him a strong basis of support outside Parliament.

Reformers

Jeremy Bentham (1748–1832) was an intellectual who focused on reforming English law. He was a leading promoter of utilitarianism as a working philosophy of action. The "greatest happiness principle", or the principle of utility, forms the cornerstone of Bentham's thought.

By "happiness", he understood a predominance of "pleasure" over "pain". He is best known for his inspiration of the radical forces, helping them define those reforms that were most urgently needed and how they could be implemented. His intellectual leadership helped achieve many of the key legal, political, economic and social reforms of the 1830s and 1840s. He especially influenced the reform of education, prisons, poor laws, legal procedures and Parliamentary representation.

John Bright (1811–1889) built on his middle-class Quaker heritage and his collaboration with Richard Cobden to promote all varieties of humanitarian and parliamentary reform. They started with a successful campaign against the Corn Laws. These were tariffs on imported food that kept up the price of grain to placate Tory landowners.

The major factor in the cost of living was the price of food, and the Corn Laws kept the price high. Bright was a powerful speaker, which boosted him to election to parliament in 1843. His radical program included extension of the suffrage, land reform and reduction of taxation. He opposed factory reforms, labour unions and controls on hours For workers, women and children, arguing that government intervention in economic life was always mistaken.

He opposed wars and imperialism. His unremitting hostility to the Crimean war led to his defeat for reelection in 1857. He was soon reelected from Birmingham, leading a national campaign for parliamentary reform to enlarge the suffrage to reach the working man. He was intensely moralistic and distrusted the integrity of his opponents. He loathed the aristocracy that continued to rule Britain. He held a few minor cabinet positions, but his reputation rests on his organising skills and his rhetorical leadership for reform.

One historian summarised Bright's achievements:

- John Bright was the greatest of all parliamentary orators. He had many political successes. Along with Richard Cobden, he conducted the campaign which led to the repeal of the Corn Laws. He did more than any other man to prevent the intervention of this

country (Britain) on the side of the South during the American Civil War, and he headed the reform agitation in 1867 which brought the industrial working class within the pale of the constitution. It was Bright who made possible the Liberal party of Gladstone, Asquith and Lloyd George, and the alliance between middle-class idealism and trade unionism, which he promoted, still lives in the present-day Labour Party.

Victorian era

The Victorian era was the period of Queen Victoria's rule between 1837 and 1901 which signified the height of the British Industrial Revolution and the apex of the British Empire. Scholars debate whether the Victorian period—as defined by a variety of sensibilities and political concerns that have come to be associated with the Victorians—actually begins with the passage of the Reform Act 1832. The era was preceded by the Regency era and succeeded by the Edwardian period. Victoria became queen in 1837 at age 18. Her long reign saw Britain reach the zenith of its economic and political power, with the introduction of steam ships, railways, photography and the telegraph. Britain again remained mostly inactive in Continental politics.

The Queen played a small role in politics, but became the iconic symbol of the nation, the empire and proper, restrained behaviour. Her success as ruler was due to the power of the self-images she successively portrayed of innocent young woman, devoted wife and mother, suffering and patient widow, and grandmotherly matriarch.

Foreign policy

Free trade imperialism

After the defeat of France in the Revolutionary and Napoleonic Wars (1792–1815), the UK emerged as the principal naval and imperial power of the 19th century (with London the largest city in the world from about 1830). Unchallenged at sea, British dominance was later described as *Pax Britannica* ("British Peace"), a period of relative peace in Europe and the world (1815–1914). By the time of the Great Exhibition of 1851, Britain was described as the "workshop of the world". Using the imperial tools of free trade and financial investment, it exerted major influence on many countries outside Europe and the empire, especially in Latin America and Asia. Thus Britain had both a formal Empire based on British rule as well as an informal one based on the British pound.

Russia, France and the Ottoman Empire

One nagging fear was the possible collapse of the Ottoman Empire. It was well understood that a collapse of that country would set off a scramble for its territory and possibly plunge Britain into war. To head that off Britain sought to keep the Russians from occupying Constantinople and taking over the Bosphorus Strait, as well as from threatening India via Afghanistan. In 1853, Britain and France intervened in the Crimean War against Russia. Despite mediocre generalship, they managed to capture the Russian port of Sevastopol, compelling Tsar Nicholas I to ask for peace. The next Russo-Ottoman war in 1877 led to another European intervention, although this time at the negotiating table. The Congress of

Berlin blocked Russia from imposing the harsh Treaty of San Stefano on the Ottoman Empire. Despite its alliance with the French in the Crimean War, Britain viewed the Second Empire of Napoleon III with some distrust, especially as the emperor built up his navy, expanded his empire and took up a more active foreign policy.

American Civil War

During the American Civil War (1861–1865), British leaders favoured the Confederate states, a major source of cotton for textile mills. Prince Albert was effective in defusing a war scare in late 1861.

The British people, however, generally favoured the Union. What little cotton was available came from New York, as the blockade by the US Navy shut down 95% of Southern exports to Britain. Trade flourished with the Union and many young men crossed the Atlantic to join the Union Army.

In September 1862, President Abraham Lincoln announced the Emancipation Proclamation would be issued in 90 days, thus making abolition of slavery a war goal.

Britain was long opposed to slavery, itself having abolished it some three decades earlier, and any possibility of its intervention on behalf of the Confederacy ended. British companies built and operated fast blockade runners to ship arms into the Confederacy at considerable profit. London ignored American complaints that it allowed the building of warships for the Confederacy. The warships caused a major diplomatic row that was resolved in the Alabama Claims in 1872, in the Americans' favour by payment of reparations.

Empire expands

Starting in 1867, Britain united most of its North American colonies as the Dominion of Canada, giving it self-government and responsibility for its own defence, Canada did not have an independent foreign policy until 1931. The second half of the 19th century saw a scramble for Africa among the European powers. There was talk of war with France over the Fashoda Incident of 1898.

The rise of the German Empire after 1871 posed a new challenge, for it (along with the United States), threatened to usurp Britain's place as the world's foremost industrial power. Germany acquired a number of colonies in Africa and the Pacific, but Chancellor Otto von Bismarck succeeded in achieving general peace through his balance of power strategy. When William II became emperor in 1888, he discarded Bismarck, began using bellicose language, and planned to build a navy to rival Britain's. Britain realised its isolation policy was useless as large-scale alliances emerged. It restored good relations with France and the United States, and ended tensions with Russia, while the confrontation with Germany became a naval race.

Ever since Britain had wrested control of the Cape Colony from the Netherlands during the Napoleonic Wars, it had co-existed with Dutch settlers who had migrated further away from the Cape and created two republics of their own. The British imperial vision called for control over these new countries, and the Dutch-speaking "Boers" (or "Afrikaners") fought back in the War in 1899–1902. Outgunned by a mighty empire, the Boers waged a guerrilla war (which certain other British territories

would later employ to attain independence). This gave the British troops a difficult fight, but their weight of numbers, superior equipment and often brutal tactics, eventually brought about a British victory. The war had been costly in human rights and was widely criticised by Liberals in Britain and worldwide. However, the United States gave London its support. The Boer republics were merged with Cape Colony and Natal into the Union of South Africa in 1910; this had internal self-government, but its foreign policy was controlled by London and it was an integral part of the British Empire.

Leadership

Prime ministers of the period included: Lord Melbourne, Robert Peel, Lord John Russell, Lord Derby, Lord Aberdeen, Lord Palmerston, Benjamin Disraeli, William Ewart Gladstone, Lord Salisbury and Lord Rosebery.

Disraeli and Gladstone dominated the politics of the late 19th century, Britain's golden age of parliamentary government. They long were idolised, but historians in recent decades have become much more critical, especially regarding Disraeli.

Disraeli

Benjamin Disraeli, prime minister in 1868 and 1874–80, remains an iconic hero of the Conservative Party. He was typical of the generation of British leaders who matured in the 1830s and 1840s. He was concerned with threats to established political, social and religious values and elites; he emphasised the need for national leadership in response to radicalism, uncertainty and materialism. Disraeli was

especially noted for his enthusiastic support for expanding and strengthening the British Empire, in contrast to Gladstone's negative attitude toward imperialism. Gladstone denounced Disraeli's policies of territorial aggrandisement, military pomp and imperial symbolism (such as making the Queen Empress of India), saying it did not fit a modern commercial and Christian nation. However, Gladstone himself did not turn down attractive opportunities to expand the empire in Egypt.

Disraeli drummed up support by warnings of a supposed Russian threat to India that sank deep into the Conservative mindset. His reputation as the "Tory democrat" and promoter of the welfare state fell away as historians showed that Disraeli had few proposals for social legislation in 1874–1880, and that the 1867 Reform Act did not reflect a vision of Conservatism for the unenfranchised working man. However, he did work to reduce class anatagonism, for as Perry notes, "When confronted with specific problems, he sought to reduce tension between town and country, landlords and farmers, capital and labour, and warring religious sects in Britain and Ireland—in other words, to create a unifying synthesis."

In the popular culture, Disraeli was a great political hero, a status that persisted for decades after his death. For British music hall patrons in the 1880s and 1890s, "xenophobia and pride in empire" were reflected in the halls' most popular political heroes: all were Conservatives and Disraeli stood out above all, even decades after his death, while Gladstone was used as a villain. After 1920, historical films helped maintain the political status quo by sustaining an establishment viewpoint that emphasised the greatness of monarchy, empire and tradition as they created "a facsimile world where existing

values were invariably validated by events in the film and where all discord could be turned into harmony by an acceptance of the status quo." Disraeli was an especially popular film hero: "historical dramas favoured Disraeli over Gladstone and, more substantively, promulgated an essentially deferential view of democratic leadership." Stage and screen actor George Arliss (1868–1946) was famous for his portrayals of Disraeli, winning the Oscar as best actor for 1929's *Disraeli*. Arliss "personified the kind of paternalistic, kindly, homely statesmanship that appealed to a significant proportion of the cinema audience... Even workers attending Labour party meetings deferred to leaders with an elevated social background who showed they cared.".

Gladstone

William Ewart Gladstone was the Liberal counterpart to Disraeli, serving as prime minister four times (1868–1874, 1880–1885, 1886 and 1892–1894). His financial policies, based on the notion of balanced budgets, low taxes and laissez-faire, were suited to a developing capitalist society but could not respond effectively as economic and social conditions changed. Called the "Grand Old Man" later in life, he was always a dynamic popular orator who appealed strongly to British workers and the lower middle class. The deeply religious Gladstone brought a new moral tone to politics with his evangelical sensibility. His moralism often angered his upper-class opponents (including Queen Victoria, who strongly favoured Disraeli), and his heavy-handed control split the Liberal party. His foreign policy goal was to create a European order based on cooperation rather than conflict and mutual trust instead of rivalry and suspicion; the rule of law was to

supplant the reign of force and self-interest. This Gladstonian concept of a harmonious Concert of Europe was opposed to and ultimately defeated by the Germans with a Bismarckian system of manipulated alliances and antagonisms.

Salisbury

Conservative Prime Minister Lord Salisbury was a "talented leader who was an icon of traditional, aristocratic conservatism". Salisbury was "a great foreign minister, [but] essentially negative, indeed reactionary in home affairs". Another historian's estimate is more favourable; he portrays Salisbury as a leader who "held back the popular tide for twenty years." "[I]nto the 'progressive' strain of modern Conservatism he simply will not fit." One historian pointed to "the narrow cynicism of Salisbury". One admirer of Salisburyagrees that Salisbury found the democracy born of the 1867 and 1884 Reform Acts as "perhaps less objectionable than he had expected—succeeding, through his public persona, in mitigating some part of its nastiness."

Morality

The Victorian era is famous for the Victorian standards of personal morality. Historians generally agree that the middle classes held high personal moral standards (and usually followed them), but have debated whether the working classes followed suit. Moralists in the late 19th century such as Henry Mayhew decried the slums for their supposed high levels of cohabitation without marriage and illegitimate births. However, new research using computerised matching of data files shows

that the rates of cohabitation then were quite low—under 5%—for the working class and the poor.

Early 20th century

Prime ministers from 1900 to 1923: Marquess of Salisbury, Arthur Balfour, Henry Campbell-Bannerman, H. H. Asquith, David Lloyd George, Bonar Law.

Edwardian era: 1901–1914

Queen Victoria died in 1901 and her son Edward VII became king, inaugurating the Edwardian era, which was characterised by great and ostentatious displays of wealth in contrast to the sombre Victorian Era. With the advent of the 20th century, things such as motion pictures, automobiles and aeroplanes were coming into use. The new century was characterised by a feeling of great optimism. The social reforms of the last century continued into the 20th with the Labour Party being formed in 1900. Edward died in 1910, to be succeeded by George V, who reigned 1910–1936. Scandal-free, hard working and popular, George V was the British monarch who, with Queen Mary, established the modern pattern of exemplary conduct for British royalty, based on middle-class values and virtues. He understood the overseas Empire better than any of his prime ministers and used his exceptional memory for figures and details, whether of uniforms, politics, or relations, to good effect in reaching out in conversation with his subjects.

The era was prosperous but political crises were escalating out of control. Multiple crises hit simultaneously in 1910–1914 with serious social and political instability arising from the

Irish crisis, labour unrest, the women's suffrage movements, and partisan and constitutional struggles in Parliament. At one point it even seemed the Army might refuse orders dealing with Ireland. No solution appeared in sight when the unexpected outbreak of the Great War in 1914 put domestic issues on hold. The political party system of the Edwardian era was in delicate balance on the eve of the war in 1914. The Liberals were in power with a progressive alliance of Labour and, off and on, Irish nationalists. The coalition was committed to free trade (as opposed to the high tariffs the Conservatives sought), free collective bargaining for trades unions (which Conservatives opposed), an active social policy that was forging the welfare state, and constitutional reform to reduce the power of the House of Lords. The coalition lacked a long-term plan, because it was cobbled together from leftovers from the 1890s. The sociological basis was non-Anglicanism and non-English ethnicity rather than the emerging class conflict emphasised by the Labour Party.

Great War

After a rough start Britain under David Lloyd George successfully mobilised its manpower, industry, finances, empire and diplomacy, in league with the French and Americans, to defeat the Central Powers. The economy grew by about 14% from 1914 to 1918 despite the absence of so many men in the services; by contrast the German economy shrank 27%. The Great War saw a decline in civilian consumption, with a major reallocation to munitions. The government share of GDP soared from 8% in 1913 to 38% in 1918 (compared to 50% in 1943). The war forced Britain to use up its financial reserves and borrow large sums from the U.S.

Britain entered the war to protect Belgium from German aggression, and quickly assumed the role of fighting the Germans on the Western Front, and dismantling the overseas German Empire. The romantic notions of warfare that everyone had expected faded as the fighting in France bogged down into trench warfare.

Along the Western Front the British and French launched repeated assaults on the German trench lines in 1915–1917, which killed and wounded hundreds of thousands, but made only limited gains. By early 1916, with number of volunteers falling off, the government imposed conscription in Britain (but was not able to do so in Ireland where nationalists of all stripes militantly opposed it) in order to keep up the strength of the army. Industry turned out munitions in large quantities, with many women taking factory jobs. The Asquith government proved ineffective but when David Lloyd George replaced him in December 1916 Britain gained a powerful and successful wartime leader.

The Navy continued to dominate the seas, fighting the German fleet to a draw in the only great battle, the Battle of Jutland in 1916. Germany was blockaded and was increasingly short of food. It tried to fight back with submarines, despite the risk of war by the powerful neutral power the United States. The waters around Britain were declared a war zone where any ship, neutral or otherwise, was a target. After the liner *Lusitania* was sunk in May 1915, drowning over 100 American passengers, protests by the United States led Germany to abandon unrestricted submarine warfare. In spring 1917 it resumed the sinking of all merchant ships without warning. The United States entered the war alongside the Allies in 1917,

and provided the needed manpower, money and supplies to keep them going. On other fronts, the British, French, Australians and Japanese occupied Germany's colonies. Britain fought the Ottoman Empire, suffering defeats in the Gallipoli Campaign and (initially) in Mesopotamia, while arousing the Arabs who helped expel the Turks from Mesopotamia and Palestine. Exhaustion and war-weariness were growing worse in 1917, as the fighting in France continued with no end in sight. With Russia collapsing in 1917 Germany now calculated it could finally have numerical superiority on the Western Front. The massive German spring offensives of 1918 failed, and with arrival of a million of the American Expeditionary Forces at the rate of 10,000 a day by May 1918, the Germans realised they were being overwhelmed. Germany gave up, agreeing to an Armistice on 11 November 1918. It was actually tantamount almost to a surrender with Germany handing over her fleet and heavy weapons, and her army retreating behind the river Rhine.

By 1918, there were about five million people in the army and the fledgling Royal Air Force, newly formed from the Royal Naval Air Service (RNAS) and the Royal Flying Corps (RFC), was about the same size of the pre-war army. The almost three million casualties were known as the "lost generation," and such numbers inevitably left society scarred; but even so, some people felt their sacrifice was little regarded in Britain, with poems like Siegfried Sassoon's *Blighters*criticising the war as a human failure. The literary legacy focused on mass death, mechanised slaughter, fallacious propaganda and deep disillusionment, thereby annihilating long-standing romanticised images of the glories of war.

Postwar

The war had been won by Britain and its allies, but at a terrible human and financial cost, creating a sentiment that wars should never be fought again. The League of Nations was founded with the idea that nations could resolve their differences peacefully, but these hopes were unfounded. Following the war, Britain gained the German colony of Tanganyika and part of Togoland in Africa. Britain was granted League of Nations mandates over Palestine, which was turned into a homeland for Jewish settlers, and Iraq, created from the three Ottoman provinces in Mesopotamia; the latter of which became fully independent in 1932. Egypt, which had been occupied by Britain since 1882, and a British protectorate since 1914, became independent in 1922, although British troops remained stationed there until 1956. In domestic affairs the Housing Act of 1919 led to affordable council housing which allowed people to move out of decrepit inner-city slums. The slums remained for several more years, with trams being electrified long before many houses. The Representation of the People Act 1918 gave women householders the vote, but it would not be until 1928 that full equal suffrage was achieved. Labour displaced the Liberal Party for second place and achieved major success with the 1922 general election.

Ireland

Campaign for Irish Home Rule

Part of the agreement which led to the 1800 Act of Union stipulated that the Penal Laws in Ireland were to be repealed

and Catholic emancipation granted. However, King George III blocked emancipation, arguing that to grant it would break his coronation oath to defend the Anglican Church. A campaign by the lawyer Daniel O'Connell, and the death of George III, led to the concession of Catholic Emancipation in 1829, allowing Roman Catholics to sit in the Parliament of the United Kingdom of Great Britain and Ireland. But Catholic Emancipation was not O'Connell's ultimate goal, which was Repeal of the Act of Union with Great Britain. On 1 January 1843 O'Connell confidently, but wrongly, declared that Repeal would be achieved that year. When potato blight hit the island in 1846, much of the rural population, especially in Catholic districts, began to starve.

While government funds were supplemented by private individuals and charities, and aid from the United States, it was not enough to avert a major catastrophe. Cottiers (or farm labourers) were largely wiped out during what is known in Ireland as the "Great Hunger". A significant minority elected Unionists, who championed the Union. A Church of Ireland (Anglican) barrister Isaac Butt, built a new moderate nationalist movement, the Home Rule League, in the 1870s. After Butt's death the Home Rule Movement, or the Irish Parliamentary Party as it had become known, was turned into a major political force under the guidance of William Shaw and a radical young Protestant landowner, Charles Stewart Parnell.

Parnell's movement campaigned for "Home Rule", by which they meant that Ireland would govern itself as a region within the United Kingdom. Two Home Rule Bills (1886 and 1893) were introduced by Liberal Prime Minister William Ewart Gladstone, but neither became law, mainly due to opposition from the

Conservative Party and the House of Lords. The issue was a source of contention throughout Ireland, as a significant majority of Unionists (largely but not exclusively based in Ulster), opposed Home Rule, fearing that a Catholic Nationalist ("Rome Rule") Parliament in Dublin would discriminate or retaliate against them, impose Roman Catholic doctrine, and impose tariffs on industry. While most of Ireland was primarily agricultural, six of the counties in Ulster were the location of heavy industry and would be affected by any tariff barriers imposed.

Irish demands ranged from the "repeal" of O'Connell, the "federal scheme" of William Sharman Crawford (actually devolution, not federalism as such), to the Home Rule League of Isaac Butt. Ireland was no closer to home rule by the mid-19th century, and rebellions in 1848 and 1867 failed.

O'Connell's campaign was hampered by the limited scope of the franchise in Ireland. The wider the franchise was expanded, the better anti-Union parties were able to do in Ireland. Running on a platform that advocated something like the self-rule successfully enacted in Canada under the British North America Act, 1867, Home Rulers won a majority of both county and borough seats in Ireland in 1874. By 1882, leadership of the home rule movement had passed to Charles Stewart Parnell of the Irish Parliamentary Party.

A wider franchise also changed the ideological mix among non-Irish MPs, making them more receptive to Irish demands. The 1885 election resulted in a hung parliament in which the Irish Parliamentary Party held the balance of power. They initially supported the Conservatives in a minority government, but

when news leaked that Liberal Party leader Gladstone was considering Home Rule, the IPP ousted the Conservatives and brought the Liberals into office.

Gladstone's First Home Rule Bill was closely modelled on the self-government given Canada in 1867. Irish MPs would no longer vote in Westminster but would have their own separate Dublin parliament, which would control domestic issues. Foreign policy and military affairs would remain with London. Gladstone's proposals did not go as far as most Irish nationalists desired, but were still too radical for both Irish unionists and British unionists: his First Home Rule Bill was defeated in the House of Commons following a split in his own party. Liberal leader Joseph Chamberlain led the battle against Home Rule in Parliament. He broke with Gladstone and in 1886 formed a new party, the Liberal Unionist Party. It helped defeat Home Rule and eventually merged with the Conservative party. Chamberlain used anti-Catholicism to built a base for the new party among "Orange" Nonconformist Protestant elements in Britain and Ireland. Liberal Unionist John Bright coined the party's catchy slogan, "Home rule means Rome rule."

Gladstone took the issue to the people in the 1886 election, but the unionists (Conservatives plus Liberal Unionists) won a majority. In 1890 a divorce case showed Parnell was an adulterer; he was forced from power, and died in 1891. Gladstone introduced a Second Home Rule Bill in 1893, which this time was passed by the Commons, but was defeated in the Conservative-dominated House of Lords. The Conservatives came to power until 1906 and Home Rule was a dead issue, but the subsidised sale of farm land greatly reduced the Protestant presence in Ireland south of Ulster. Having been rejected by

the Conservatives, the Irish nationalist forces had little choice but to support the minority Liberal Party. New groups split off and they finally all merged in 1900 into the Irish Parliamentary Party led by John Redmond.

The Conservative government also felt that the demands in Ireland could be satisfied by helping the Catholics purchase their farms from Protestant owners. A solution by money not force was called "killing home rule with kindness". Reforms passed as a result included the Local Government (Ireland) Act 1898 and the Land Purchase (Ireland) Act 1903. Between 1868 and 1908: spending on Ireland was generally increased, huge tracts of land were purchased from landlords and redistributed to smallholders, local government was democratised, and the franchise widely extended. Ireland remained calm until the eve of the First World War, when the Liberal government passed the Third Home Rule Act and Protestants in Ulster mobilised to oppose it by force.

Ulster Protestants began to arm and form militias ready to fight; senior leaders of the British Army indicated they would not move to suppress the Protestants (the Curragh incident). Suddenly war with Germany broke out and home rule was suspended for the duration. Military service was optional; there was no conscription in Ireland. Large numbers of both Protestant and Catholic young men volunteered to fight Germany.

Irish independence

The Easter Rising of 1916, using arms supplied by Germany was badly organised. The British army suppressed it after a

week of fighting but the quick executions of 15 leaders alienated nationalist opinion. Overnight there was a movement away from home rule and toward Irish independence. The Cabinet decided that the 1914 Act should be brought into operation immediately and a Government established in Dublin. Negotiations were stalemated as Ulster mobilised. London made a second attempt to implement Home Rule in 1917, with the calling of the Irish Convention. Prime Minister Lloyd George sought a *dual policy* in April 1918 that attempted to link implementing Home Rule with extending conscription to Ireland. Irish nationalists rejected conscription and a wave of anti-conscription demonstrationssignalled growing support for the demand for total independence. The old Irish Party collapsed and a new political force, Sinn Féin which called for force to achieve its goals, united Irish nationalists. Sinn Féin won the 1918 general elections in Ireland and in keeping with their policy of abstention did not send its elected MPs to Westminster, deciding to set up its own separatist parliament in Dublin; DáilÉireann. The British government attempted to suppress this parliament and the Irish War of Independence followed. London's attempted solution was the establishment of two Irish parliaments to pave the way for the Fourth Home Rule Bill, enacted as the Government of Ireland Act 1920 while also attempting to defeat Sinn Féin and the Irish Republican Army (1919–1922) which by this time was operating under the remit of DáilÉireann. In mid 1921 a truce was agreed between the British government and Sinn Féin and this resulted in the Anglo-Irish Treaty. On 6 December 1922, Ireland formed a new dominion named the Irish Free State. As expected, "Northern Ireland" (six counties in Ulster), immediately exercised its right under the Anglo-Irish Treaty to opt out of the new state. This treaty created a division in Irish nationalism and resulted in

the Irish Civil War. The union of Great Britain with most of Ulster was renamed the United Kingdom of Great Britain and Northern Ireland, and is known by this name to the present time.

List of monarchs

Until 1927, the monarch's royal title included the words "of the United Kingdom of Great Britain and Ireland". In 1927, the words "United Kingdom" were removed from the royal title so that the monarch was instead styled as "King/Queen of Great Britain, Ireland...[and other places]". The words "United Kingdom" were restored to the monarch's title in 1953 with the reference to "Ireland" replaced with a reference to "Northern Ireland".

- George III (1801–1820; monarch from 1760)
- George IV (1820–1830)
- William IV (1830–1837)
- Victoria (1837–1901)
- Edward VII (1901–1910)
- George V (1910–1922; title used until 1927 but remained monarch until his death in 1936)

Chapter 4

Louis Pasteur

- Louis PasteurForMemRS(27 December 1822 – 28 September 1895) was a French chemist and microbiologist renowned for his discoveries of the principles of vaccination, microbial fermentation, and pasteurization. His research in chemistry led to remarkable breakthroughs in the understanding of the causes and preventions of diseases, which laid down the foundations of hygiene, public health and much of modern medicine. His works are credited to saving millions of lives through the developments of vaccines for rabies and anthrax. He is regarded as one of the founders of modern bacteriology and has been honoured as the "father of bacteriology" and as the "father of microbiology" (together with Robert Koch, and the latter epithet also attributed to Antonie van Leeuwenhoek).

Pasteur was responsible for disproving the doctrine of spontaneous generation. Under the auspices of the French Academy of Sciences, his experiment demonstrated that in sterilized and sealed flasks, nothing ever developed; and, conversely, in sterilized but open flasks, microorganisms could grow. For this experiment, the academy awarded him the Alhumbert Prize carrying 2,500 francs in 1862.

Pasteur is also regarded as one of the fathers of germ theory of diseases, which was a minor medical concept at the time. His many experiments showed that diseases could be prevented by

killing or stopping germs, thereby directly supporting the germ theory and its application in clinical medicine. He is best known to the general public for his invention of the technique of treating milk and wine to stop bacterial contamination, a process now called pasteurization. Pasteur also made significant discoveries in chemistry, most notably on the molecular basis for the asymmetry of certain crystals and racemization. Early in his career, his investigation of tartaric acid resulted in the first resolution of what is now called optical isomers. His work led the way to the current understanding of a fundamental principle in the structure of organic compounds.

He was the director of the Pasteur Institute, established in 1887, until his death, and his body was interred in a vault beneath the institute. Although Pasteur made groundbreaking experiments, his reputation became associated with various controversies. Historical reassessment of his notebook revealed that he practiced deception to overcome his rivals.

Education and early life

Louis Pasteur was born on December 27, 1822, in Dole, Jura, France, to a Catholic family of a poor tanner. He was the third child of Jean-Joseph Pasteur and Jeanne-EtiennetteRoqui. The family moved to Marnoz in 1826 and then to Arbois in 1827. Pasteur entered primary school in 1831.

He was an average student in his early years, and not particularly academic, as his interests were fishing and sketching. He drew many pastels and portraits of his parents, friends and neighbors. Pasteur attended secondary school at

the Collèged'Arbois. In October 1838, he left for Paris to join the Pension Barbet, but became homesick and returned in November.

In 1839, he entered the Collège Royal at Besançon to study philosophy and earned his Bachelor of Letters degree in 1840. He was appointed a tutor at the Besançoncollege while continuing a degree science course with special mathematics. He failed his first examination in 1841. He managed to pass the *baccalauréatscientifique* (general science) degree in 1842 from Dijon but with a mediocre grade in chemistry.

Later in 1842, Pasteur took the entrance test for the ÉcoleNormaleSupérieure. He passed the first set of tests, but because his ranking was low, Pasteur decided not to continue and try again next year. He went back to the Pension Barbet to prepare for the test. He also attended classes at the Lycée Saint-Louis and lectures of Jean-Baptiste Dumas at the Sorbonne. In 1843, he passed the test with a high ranking and entered the ÉcoleNormaleSupérieure. In 1845 he received the *licenciéès sciences* degree. In 1846, he was appointed professor of physics at the Collège de Tournon (now called Lycée Gabriel-Faure) in Ardèche. But the chemist Antoine JérômeBalard wanted him back at the *ÉcoleNormaleSupérieure* as a graduate laboratory assistant (*agrégépréparateur*). He joined Balard and simultaneously started his research in crystallography and in 1847, he submitted his two thesis, one in chemistry and the other in physics.

After serving briefly as professor of physics at the Dijon Lycée in 1848, he became professor of chemistry at the University of Strasbourg, where he met and courted Marie Laurent, daughter

of the university's rector in 1849. They were married on May 29, 1849, and together had five children, only two of whom survived to adulthood; the other three died of typhoid.

Career

Pasteur was appointed professor of chemistry at the University of Strasbourg in 1848, and became the chair of chemistry in 1852. In 1854, he was named dean of the new faculty of sciences at University of Lille, where he began his studies on fermentation. It was on this occasion that Pasteur uttered his oft-quoted remark: "*dans les champs de l'observation, le hasard ne favorise que les espritspréparés*" ("In the field of observation, chance favors only the prepared mind").

In 1857, he moved to Paris as the director of scientific studies at the *ÉcoleNormaleSupérieure* where he took control from 1858 to 1867 and introduced a series of reforms to improve the standard of scientific work. The examinations became more rigid, which led to better results, greater competition, and increased prestige. Many of his decrees, however, were rigid and authoritarian, leading to two serious student revolts. During "the bean revolt" he decreed that a mutton stew, which students had refused to eat, would be served and eaten every Monday. On another occasion he threatened to expel any student caught smoking, and 73 of the 80 students in the school resigned.

In 1863, he was appointed professor of geology, physics, and chemistry at the *Écolenationalesupérieure des Beaux-Arts*, a position he held until his resignation in 1867. In 1867, he became the chair of organic chemistry at the Sorbonne, but he

later gave up the position because of poor health. In 1867, the ÉcoleNormale's laboratory of physiological chemistry was created at Pasteur's request, and he was the laboratory's director from 1867 to 1888. In Paris, he established the Pasteur Institute in 1887, in which he was its director for the rest of his life.

Research

Molecular asymmetry

In Pasteur's early work as a chemist, beginning at the *ÉcoleNormaleSupérieure*, and continuing at Strasbourg and Lille, he examined the chemical, optical and crystallographic properties of a group of compounds known as tartrates.

He resolved a problem concerning the nature of tartaric acid in 1848. A solution of this compound derived from living things rotated the plane of polarization of light passing through it. The problem was that tartaric acid derived by chemical synthesis had no such effect, even though its chemical reactions were identical and its elemental composition was the same.

Pasteur noticed that crystals of tartrates had small faces. Then he observed that, in racemic mixtures of tartrates, half of the crystals were right-handed and half were left-handed. In solution, the right-handed compound was dextrorotatory, and the left-handed one was levorotatory. Pasteur determined that optical activity related to the shape of the crystals, and that an asymmetric internal arrangement of the molecules of the compound was responsible for twisting the light. The (2*R*,3*R*)-

and (2S,3S)- tartrates were isometric, non-superposable mirror images of each other. This was the first time anyone had demonstrated molecular chirality, and also the first explanation of isomerism.

Some historians consider Pasteur's work in this area to be his "most profound and most original contributions to science", and his "greatest scientific discovery."

Fermentation and germ theory of diseases

Pasteur was motivated to investigate fermentation while working at Lille. In 1856 a local wine manufacturer, M. Bigot, whose son was one of Pasteur's students, sought for his advice on the problems of making beetroot alcohol and souring.

According to his son-in-law, René Vallery-Radot, in August 1857 Pasteur sent a paper about lactic acid fermentation to the Société des Sciences de Lille, but the paper was read three months later. A memoire was subsequently published on November 30, 1857. In the memoir, he developed his ideas stating that: "I intend to establish that, just as there is an alcoholic ferment, the yeast of beer, which is found everywhere that sugar is decomposed into alcohol and carbonic acid, so also there is a particular ferment, a lactic yeast, always present when sugar becomes lactic acid."

Pasteur also wrote about alcoholic fermentation. It was published in full form in 1858. Jöns Jacob Berzelius and Justus von Liebig had proposed the theory that fermentation was caused by decomposition. Pasteur demonstrated that this theory was incorrect, and that yeast was responsible for fermentation to produce alcohol from sugar. He also

demonstrated that, when a different microorganism contaminated the wine, lactic acid was produced, making the wine sour. In 1861, Pasteur observed that less sugar fermented per part of yeast when the yeast was exposed to air. The lower rate of fermentation aerobically became known as the Pasteur effect.

Pasteur's research also showed that the growth of micro-organisms was responsible for spoiling beverages, such as beer, wine and milk. With this established, he invented a process in which liquids such as milk were heated to a temperature between 60 and 100 °C. This killed most bacteria and moulds already present within them. Pasteur and Claude Bernard completed tests on blood and urine on April 20, 1862. Pasteur patented the process, to fight the "diseases" of wine, in 1865. The method became known as pasteurization, and was soon applied to beer and milk.

Beverage contamination led Pasteur to the idea that micro-organisms infecting animals and humans cause disease. He proposed preventing the entry of micro-organisms into the human body, leading Joseph Lister to develop antiseptic methods in surgery.

In 1866, Pasteur published *Etudes sur le Vin*, about the diseases of wine, and he published *Etudes sur la Bière* in 1876, concerning the diseases of beer.

In the early 19th century, Agostino Bassi had shown that muscardine was caused by a fungus that infected silkworms. Since 1853, two diseases called *pébrine* and *flacherie* had been infecting great numbers of silkworms in southern France, and

by 1865 they were causing huge losses to farmers. In 1865, Pasteur went to Alès and worked for five years until 1870.

Silkworms with pébrine were covered in corpuscles. In the first three years, Pasteur thought that the corpuscles were a symptom of the disease. In 1870, he concluded that the corpuscles were the cause of pébrine (it is now known that the cause is a microsporidian). Pasteur also showed that the disease was hereditary. Pasteur developed a system to prevent pébrine: after the female moths laid their eggs, the moths were turned into a pulp. The pulp was examined with a microscope, and if corpuscles were observed, the eggs were destroyed. Pasteur concluded that bacteria caused flacherie. The primary cause is currently thought to be viruses. The spread of flacherie could be accidental or hereditary. Hygiene could be used to prevent accidental flacherie. Moths whose digestive cavities did not contain the microorganisms causing flacherie were used to lay eggs, preventing hereditary flacherie.

Spontaneous generation

Following his fermentation experiments, Pasteur demonstrated that the skin of grapes was the natural source of yeasts, and that sterilized grapes and grape juice never fermented. He drew grape juice from under the skin with sterilized needles, and also covered grapes with sterilized cloth. Both experiments could not produce wine in sterilized containers.

His findings and ideas were against the prevailing notion of spontaneous generation. He received a particularly stern criticism from Félix ArchimèdePouchet, who was director of the Rouen Museum of Natural History. To settle the debate

between the eminent scientists, the French Academy of Sciences offered the Alhumbert Prize carrying 2,500 francs to whoever could experimentally demonstrate for or against the doctrine.

Pouchet stated that air everywhere could cause spontaneous generation of living organisms in liquids. In the late 1850s, he performed experiments and claimed that they were evidence of spontaneous generation. Francesco Redi and Lazzaro Spallanzani had provided some evidence against spontaneous generation in the 17th and 18th centuries, respectively. Spallanzani's experiments in 1765 suggested that air contaminated broths with bacteria. In the 1860s, Pasteur repeated Spallanzani's experiments, but Pouchet reported a different result using a different broth.

Pasteur performed several experiments to disprove spontaneous generation. He placed boiled liquid in a flask and let hot air enter the flask. Then he closed the flask, and no organisms grew in it. In another experiment, when he opened flasks containing boiled liquid, dust entered the flasks, causing organisms to grow in some of them. The number of flasks in which organisms grew was lower at higher altitudes, showing that air at high altitudes contained less dust and fewer organisms. Pasteur also used swan neck flasks containing a fermentable liquid. Air was allowed to enter the flask via a long curving tube that made dust particles stick to it. Nothing grew in the broths unless the flasks were tilted, making the liquid touch the contaminated walls of the neck. This showed that the living organisms that grew in such broths came from outside, on dust, rather than spontaneously generating within the liquid or from the action of pure air.

These were some of the most important experiments disproving the theory of spontaneous generation. Pasteur gave a series of five presentations of his findings before the French Academy of Sciences in 1881, which were published in 1882 as *MémoireSur les corpusculesorganisés qui existent dansl'atmosphère: Examen de la doctrine des générationsspontanées* (*Account of Organized Corpuscles Existing in the Atmosphere: Examining the Doctrine of Spontaneous Generation*). Pasteur won the Alhumbert Prize in 1862. He concluded that:

Never will the doctrine of spontaneous generation recover from the mortal blow of this simple experiment. There is no known circumstance in which it can be confirmed that microscopic beings came into the world without germs, without parents similar to themselves.

Immunology and vaccination

Chicken cholera

Pasteur's first work on vaccine development was on chicken cholera. He received the bacteria samples (later called *Pasteurellamultocida* after him) from Henry Toussaint. He started the study in 1877, and by the next year, was able to maintain a stable culture using broths. After another year of continuous culturing, he found that the bacteria were less pathogenic. Some of his culture samples could no longer induce the disease in healthy chickens. In 1879, Pasteur, planning for holiday, instructed his assistant, Charles Chamberland to inoculate the chickens with fresh bacteria culture. Chamberland forgot and went on holiday himself. On his return, he injected the month-old cultures to healthy

chickens. The chickens showed some symptoms of infection, but instead of the infections being fatal, as they usually were, the chickens recovered completely. Chamberland assumed an error had been made, and wanted to discard the apparently faulty culture, but Pasteur stopped him. Pasteur injected the freshly recovered chickens with fresh bacteria (that normally would kill other chickens), the chickens no longer showed any sign of infection. It was clear to him that the weakened bacteria had caused the chickens to become immune to the disease.

In December 1880, Pasteur presented his results to the French Academy of Sciences as "*Sur les maladies virulentes et enparticulier sur la maladieappeléevulgairementcholéra des poules* (On virulent diseases, and in particular on the disease commonly called chicken cholera)" and published it in the academy's journal (*Comptes-Rendushebdomadaires des séances de l'Académie des Sciences*). He attributed that the bacteria were weakened by contact with oxygen. He explained that bacteria kept in sealed containers never lost their virulence, and only those exposed to air in culture media could be used as vaccine. Pasteur introduced the term "attenuation" for this weakening of virulence as he presented before the academy, saying:

We can diminish the microbe's virulence by changing the mode of culturing. This is the crucial point of my subject. I ask the Academy not to criticize, for the time being, the confidence of my proceedings that permit me to determine the microbe's attenuation, in order to save the independence of my studies and to better assure their progress... [In conclusion] I would like to point out to the Academy two main consequences to the

facts presented: the hope to culture all microbes and to find a vaccine for all infectious diseases that have repeatedly afflicted humanity, and are a major burden on agriculture and breeding of domestic animals.

Anthrax

In the 1870s, he applied this immunization method to anthrax, which affected cattle, and aroused interest in combating other diseases. Pasteur cultivated bacteria from the blood of animals infected with anthrax. When he inoculated animals with the bacteria, anthrax occurred, proving that the bacteria was the cause of the disease. Many cattle were dying of anthrax in "cursed fields". Pasteur was told that sheep that died from anthrax were buried in the field. Pasteur thought that earthworms might have brought the bacteria to the surface. He found anthrax bacteria in earthworms' excrement, showing that he was correct. He told the farmers not to bury dead animals in the fields. Pasteur had been trying to develop the anthrax vaccine since 1877, soon after Robert Koch's discovery of the bacterium.

On 12 July 1880, Henri Bouley read before the French Academy of Sciences a report from Henry Toussaint, a veterinary surgeon, who was not member of the academy. Toussaint had developed anthrax vaccine by killing the bacilli by heating at 55°C for 10 minutes. He tested on eight dogs and 11 sheep, half of which died after inoculation. It was not a great success. Upon hearing the news, Pasteur immediately wrote to the academy that he could not believe that dead vaccine would work and that Toussaint's claim "overturns all the ideas I had on viruses, vaccines, etc." Following Pasteur's

criticism, Toussaint switched to carbolic acid to kill anthrax bacilli and tested the vaccine on sheep in August 1880. Pasteur thought that this type of killed vaccine should not work because he believed that attenuated bacteria used up nutrients that the bacteria needed to grow. He thought oxidizing bacteria made them less virulent.

But Pasteur found that anthrax bacillus was not easily weakened by culturing in air as it formed spores – unlike chicken cholera bacillus. In early 1881, he discovered that growing anthrax bacilli at about 42 °C made them unable to produce spores, and he described this method in a speech to the French Academy of Sciences on February 28. On 21 March, he announced successful vaccination of sheep. To this news, veterinarian Hippolyte Rossignol proposed that the Sociétéd'agriculture de Melun organize an experiment to test Pasteur's vaccine. Pasteur signed agreement of the challenge on 28 April. A public experiment was conducted in May at Pouilly-le-Fort. 58 sheep, 2 goats and 10 cattle were used, half of which were given the vaccine on 5 and 17 May; while the other half was untreated. All the animals were injected with the fresh virulent culture of anthrax bacillus on 31 May. The official result was observed and analysed on 2 June in the presence of over 200 spectators. All cattle survived, vaccinated or not, as Pasteur had bravely had predicted: "I hypothesized that the six vaccinated cows would not become very ill, while the four unvaccinated cows would perish or at least become very ill." On the other hand, all vaccinated sheep and goats survived, while the unvaccinated one either had died or were dying before the viewers. His report to the French Academy of Sciences on 13 June condludes:

[By] looking at everything from the scientific point of view, the development of a vaccination against anthrax constitutes significant progress beyond the first vaccine developed by Jenner, since the latter had never been obtained experimentally.

Pasteur did not directly disclose how he prepared the vaccines used at Pouilly-le-Fort. Although his report indicated it as a "live vaccine", his laboratory notebooks show that he actually used potassium dichromate-killed vaccine, as developed by Chamberland, quite similar to Toussaint's method.

The notion of a weak form of a disease causing immunity to the virulent version was not new; this had been known for a long time for smallpox. Inoculation with smallpox (variolation) was known to result in a much less severe disease, and greatly reduced mortality, in comparison with the naturally acquired disease. Edward Jenner had also studied vaccination using cowpox (*vaccinia*) to give cross-immunity to smallpox in the late 1790s, and by the early 1800s vaccination had spread to most of Europe.

The difference between smallpox vaccination and anthrax or chicken cholera vaccination was that the latter two disease organisms had been artificially weakened, so a naturally weak form of the disease organism did not need to be found. This discovery revolutionized work in infectious diseases, and Pasteur gave these artificially weakened diseases the generic name of "vaccines", in honour of Jenner's discovery.

- Main article: Koch–Pasteur rivalry

In 1876, Robert Koch had shown that *Bacillus anthracis* caused anthrax. In his papers published between 1878 and 1880, Pasteur only mentioned Koch's work in a footnote.

Koch met Pasteur at the Seventh International Medical Congress in 1881. A few months later, Koch wrote that Pasteur had used impure cultures and made errors. In 1882, Pasteur replied to Koch in a speech, to which Koch responded aggressively. Koch stated that Pasteur tested his vaccine on unsuitable animals and that Pasteur's research was not properly scientific.

In 1882, Koch wrote "On the Anthrax Inoculation", in which he refuted several of Pasteur's conclusions about anthrax and criticized Pasteur for keeping his methods secret, jumping to conclusions, and being imprecise. In 1883, Pasteur wrote that he used cultures prepared in a similar way to his successful fermentation experiments and that Koch misinterpreted statistics and ignored Pasteur's work on silkworms.

Swine erysipelas

In 1882, Pasteur sent his assistant Louis Thuillier to southern France because of an epizootic of swine erysipelas. Thuillier identified the bacillus that caused the disease in March 1883. Pasteur and Thuillier increased the bacillus's virulence after passing it through pigeons. Then they passed the bacillus through rabbits, weakening it and obtaining a vaccine. Pasteur and Thuillier incorrectly described the bacterium as a figure-eight shape. Roux described the bacterium as stick-shaped in 1884.

Rabies

Pasteur produced the first vaccine for rabies by growing the virus in rabbits, and then weakening it by drying the affected nerve tissue. The rabies vaccine was initially created by Emile Roux, a French doctor and a colleague of Pasteur, who had produced a killed vaccine using this method. The vaccine had been tested in 50 dogs before its first human trial. This vaccine was used on 9-year-old Joseph Meister, on July 6, 1885, after the boy was badly mauled by a rabid dog. This was done at some personal risk for Pasteur, since he was not a licensed physician and could have faced prosecution for treating the boy. After consulting with physicians, he decided to go ahead with the treatment.

Over 11 days, Meister received 13 inoculations, each inoculation using viruses that had been weakened for a shorter period of time. Three months later he examined Meister and found that he was in good health. Pasteur was hailed as a hero and the legal matter was not pursued. Analysis of his laboratory notebooks shows that Pasteur had treated two people before his vaccination of Meister.

One survived but may not actually have had rabies, and the other died of rabies. Pasteur began treatment of Jean-Baptiste Jupille on October 20, 1885, and the treatment was successful. Later in 1885, people, including four children from the United States, went to Pasteur's laboratory to be inoculated. In 1886, he treated 350 people, of which only one developed rabies. The treatment's success laid the foundations for the manufacture of many other vaccines. The first of the Pasteur Institutes was also built on the basis of this achievement.

In *The Story of San Michele*, Axel Munthe writes of some risks Pasteur undertook in the rabies vaccine research:

Pasteur himself was absolutely fearless. Anxious to secure a sample of saliva straight from the jaws of a rabid dog, I once saw him with the glass tube held between his lips draw a few drops of the deadly saliva from the mouth of a rabid bull-dog, held on the table by two assistants, their hands protected by leather gloves.

Because of his study in germs, Pasteur encouraged doctors to sanitize their hands and equipment before surgery. Prior to this, few doctors or their assistants practiced these procedures. Ignaz Semmelweis and Joseph Lister was however earlier with the idea of the importance to sanitize the hands in medical contexts, and after Lister doctors had started doing so in the 1870s.

Controversies

A French national hero at age 55, in 1878 Pasteur discreetly told his family never to reveal his laboratory notebooks to anyone. His family obeyed, and all his documents were held and inherited in secrecy. Finally, in 1964 Pasteur's grandson and last surviving male descendant, Pasteur Vallery-Radot, donated the papers to the French national library. Yet the papers were restricted for historical studies until the death of Vallery-Radot in 1971. The documents were given a catalogue number only in 1985.

In 1995, the centennial of the death of Louis Pasteur, a historian of science Gerald L. Geison published an analysis of

Pasteur's private notebooks in his *The Private Science of Louis Pasteur*, and declared that Pasteur had given several misleading accounts and played deceptions in his most important discoveries. Max Perutz published a defense of Pasteur in *The New York Review of Books*. Based on further examinations of Pasteur's documents, French immunologist Patrice Debré concluded in his book *Louis Pasteur* (1998) that, in spite of his genius, Pasteur had some faults. A book review states that Debré "sometimes finds him unfair, combative, arrogant, unattractive in attitude, inflexible and even dogmatic".

Fermentation

Scientists before Pasteur had studied fermentation. In the 1830s, Charles Cagniard-Latour, Friedrich TraugottKützing and Theodor Schwann used microscopes to study yeasts and concluded that yeasts were living organisms. In 1839, Justus von Liebig, Friedrich Wöhler and Jöns Jacob Berzelius stated that yeast was not an organism and was produced when air acted on plant juice.

In 1855, Antoine Béchamp, Professor of Chemistry at the University of Montpellier, conducted experiments with sucrose solutions and concluded that water was the factor for fermentation. He changed his conclusion in 1858, stating that fermentation was directly related to the growth of moulds, which required air for growth. He regarded himself as the first to show the role of microorganisms in fermentation.

Pasteur started his experiments in 1857 and published his findings in 1858 (April issue of *ComptesRendusChimie*,

Béchamp's paper appeared in January issue). Béchamp noted that Pasteur did not bring any novel idea or experiments. On the other hand, Béchamp was probably aware of Pasteur's 1857 preliminary works. With both scientists claiming priority on the discovery, a dispute, extending to several areas, lasted throughout their lives.

However, Béchamp was on the losing side, as the *BMJ* obituary remarked: His name was "associated with bygone controversies as to priority which it would be unprofitable to recall". Béchamp proposed the incorrect theory of microzymes. According to K. L. Manchester, anti-vivisectionists and proponents of alternative medicine promoted Béchamp and microzymes, unjustifiably claiming that Pasteur plagiarized Béchamp.

Pasteur thought that succinic acid inverted sucrose. In 1860, Marcellin Berthelot isolated invertase and showed that succinic acid did not invert sucrose. Pasteur believed that fermentation was only due to living cells. He and Berthelot engaged in a long argument subject of vitalism, in which Berthelot was vehemently opposed to any idea of vitalism. Hans Buchner discovered that zymase catalyzed fermentation, showing that fermentation was catalyzed by enzymes within cells. Eduard Buchner also discovered that fermentation could take place outside living cells.

Anthrax vaccine

Pasteur publicly claimed his success in developing the anthrax vaccine in 1881. However, his admirer-turned-rival Henry Toussaint was the one who developed the first vaccine.

Toussaint isolated the bacteria that caused chicken cholera (later named *Pasteurella* in honour of Pasteur) in 1879 and gave samples to Pasteur who used them for his own works. On July 12, 1880, Toussaint presented his successful result to the French Academy of Sciences, using an attenuated vaccine against anthrax in dogs and sheep. Pasteur on grounds of jealousy contested the discovery by publicly displaying his vaccination method at Pouilly-le-Fort on May 5, 1881. Pasteur then gave a misleading account of the preparation of the anthrax vaccine used in the experiment. He claimed that he made "live vaccine", but used potassium dichromate to kill the vaccine, a method similar to Toussaint's. The promotional experiment was a success and helped Pasteur sell his products, getting the benefits and glory.

Experimental ethics

Pasteur experiments are often cited as against medical ethics, especially on his vaccination of Meister. He did not have any experience in medical practice, and more importantly, lacked a medical license. This is often cited as a serious threat to his professional and personal reputation. His closest partner Émile Roux, who had medical qualifications, refused to participate in the clinical trial, likely because he considered it unjust. However, Pasteur executed vaccination of the boy under the close watch of practising physicians Jacques-Joseph Grancher, head of the Paris Children's Hospital's paediatric clinic, and Alfred Vulpian, a member of the Commission on Rabies. He was not allowed to hold the syringe, although the inoculations were entirely under his supervision. It was Grancher who was responsible for the injections, and he defended Pasteur before the French National Academy of Medicine in the issue.

Pasteur has also been criticized for keeping secrecy of his procedure and not giving proper pre-clinical trials on animals. Pasteur stated that he kept his procedure secret in order to control its quality. He later disclosed his procedures to a small group of scientists. Pasteur wrote that he had successfully vaccinated 50 rabid dogs before using it on Meister. According to Geison, Pasteur's laboratory notebooks show that he had vaccinated only 11 dogs.

Meister never showed any symptoms of rabies, but the vaccination has not been proved to be the reason. One source estimates the probability of Meister contracting rabies at 10%.

Awards and honours

Pasteur was awarded 1,500 francs in 1853 by the Pharmaceutical Society for the synthesis of racemic acid. In 1856 the Royal Society of London presented him the Rumford Medal for his discovery of the nature of racemic acid and its relations to polarized light, and the Copley Medal in 1874 for his work on fermentation. He was elected a Foreign Member of the Royal Society (ForMemRS) in 1869.

The French Academy of Sciences awarded Pasteur the 1859 Montyon Prize for experimental physiology in 1860, and the Jecker Prize in 1861 and the Alhumbert Prize in 1862 for his experimental refutation of spontaneous generation. Though he lost elections in 1857 and 1861 for membership to the French Academy of Sciences, he won the 1862 election for membership to the mineralogy section. He was elected to permanent secretary of the physical science section of the academy in 1887 and held the position until 1889.

In 1873 Pasteur was elected to the AcadémieNationale de Médecine and was made the commander in the Brazilian Order of the Rose. In 1881 he was elected to a seat at the Académiefrançaise left vacant by ÉmileLittré. Pasteur received the Albert Medal from the Royal Society of Arts in 1882. In 1883 he became foreign member of the Royal Netherlands Academy of Arts and Sciences. In 1885, he was elected as a member to the American Philosophical Society. On June 8, 1886, the Ottoman Sultan Abdul Hamid II awarded Pasteur with the Order of the Medjidie (I Class) and 10000 Ottoman liras. He was awarded the Cameron Prize for Therapeutics of the University of Edinburgh in 1889. Pasteur won the Leeuwenhoek Medal from the Royal Netherlands Academy of Arts and Sciences for his contributions to microbiology in 1895.

Pasteur was made a Chevalier of the Legion of Honour in 1853, promoted to Officer in 1863, to Commander in 1868, to Grand Officer in 1878 and made a Grand Cross of the Legion of Honor in 1881.

Legacy

In many localities worldwide, streets are named in his honor. For example, in the US: Palo Alto and Irvine, California, Boston and Polk, Florida, adjacent to the University of Texas Health Science Center at San Antonio; Jonquière, Québec; San Salvador de Jujuy and Buenos Aires (Argentina), Great Yarmouth in Norfolk, in the United Kingdom, Jericho and Wulguru in Queensland, (Australia); Phnom Penh in Cambodia; Ho Chi Minh City and Da Nang, Vietnam; Batna in Algeria; Bandung in Indonesia, Tehran in Iran, near the central campus

of the Warsaw University in Warsaw, Poland; adjacent to the Odessa State Medical University in Odessa, Ukraine; Milan in Italy and Bucharest, Cluj-Napoca and Timişoara in Romania. The Avenue Pasteur in Saigon, Vietnam, is one of the few streets in that city to retain its French name. *Avenue Louis Pasteur* in the Longwood Medical and Academic Area in Boston, Massachusetts was named in his honor in the French manner with "Avenue" preceding the name of the dedicatee.

Both the Institut Pasteur and Université Louis Pasteur were named after Pasteur. The schools Lycée Pasteur in Neuilly-sur-Seine, France, and Lycée Louis Pasteur in Calgary, Alberta, Canada, are named after him. In South Africa, the Louis Pasteur Private Hospital in Pretoria, and Life Louis Pasteur Private Hospital, Bloemfontein, are named after him. Louis Pasteur University Hospital in Košice, Slovakia is also named after Pasteur.

A statue of Pasteur is erected at San Rafael High School in San Rafael, California. A bronze bust of him resides on the French Campus of Kaiser Permanente's San Francisco Medical Center in San Francisco. The sculpture was designed by Harriet G. Moore and cast in 1984 by Artworks Foundry.

The UNESCO/Institut Pasteur Medal was created on the centenary of Pasteur's death, and is given every two years in his name, "in recognition of outstanding research contributing to a beneficial impact on human health".

Pasteur Institute

After developing the rabies vaccine, Pasteur proposed an institute for the vaccine. In 1887, fundraising for the Pasteur

Institute began, with donations from many countries. The official statute was registered in 1887, stating that the institute's purposes were "the treatment of rabies according to the method developed by M. Pasteur" and "the study of virulent and contagious diseases". The institute was inaugurated on November 14, 1888. He brought together scientists with various specialties. The first five departments were directed by two graduates of the *ÉcoleNormaleSupérieure*: ÉmileDuclaux (general microbiology research) and Charles Chamberland (microbe research applied to hygiene), as well as a biologist, Élie Metchnikoff (morphological microbe research) and two physicians, Jacques-Joseph Grancher (rabies) and Émile Roux (technical microbe research). One year after the inauguration of the institute, Roux set up the first course of microbiology ever taught in the world, then entitled *Cours de Microbie Technique* (Course of microbe research techniques). Since 1891 the Pasteur Institute had been extended to different countries, and currently there are 32 institutes in 29 countries in various parts of the world.

Personal life

Pasteur married Louise Pasteur (néé Laurent) in 1849. She was the daughter of the rector of the University of Strasbourg, and was Pasteur's scientific assistant. They had five children together, only three of whom survived until adulthood.

Faith and spirituality

His grandson, Louis Pasteur Vallery-Radot, wrote that Pasteur had kept from his Catholic background only a spiritualism

without religious practice. However, Catholic observers often said that Pasteur remained an ardent Christian throughout his whole life, and his son-in-law wrote, in a biography of him:

Absolute faith in God and in Eternity, and a conviction that the power for good given to us in this world will be continued beyond it, were feelings which pervaded his whole life; the virtues of the gospel had ever been present to him. Full of respect for the form of religion which had been that of his forefathers, he came simply to it and naturally for spiritual help in these last weeks of his life.

The *Literary Digest* of 18 October 1902 gives this statement from Pasteur that he prayed while he worked:

Posterity will one day laugh at the foolishness of modern materialistic philosophers. The more I study nature, the more I stand amazed at the work of the Creator. I pray while I am engaged at my work in the laboratory.

Maurice Vallery-Radot, grandson of the brother of the son-in-law of Pasteur and outspoken Catholic, also holds that Pasteur fundamentally remained Catholic. According to both Pasteur Vallery-Radot and Maurice Vallery-Radot, the following well-known quotation attributed to Pasteur is apocryphal: "The more I know, the more nearly is my faith that of the Breton peasant. Could I but know all I would have the faith of a Breton peasant's wife". According to Maurice Vallery-Radot, the false quotation appeared for the first time shortly after the death of Pasteur. However, despite his belief in God, it has been said that his views were that of a freethinker rather than a Catholic, a spiritual more than a religious man. He was also against mixing science with religion.

Death

In 1868, Pasteur suffered a severe brain stroke that paralysed the left side of his body, but he recovered. A stroke or uremia in 1894 severely impaired his health. Failing to fully recover, he died on September 28, 1895, near Paris. He was given a state funeral and was buried in the Cathedral of Notre Dame, but his remains were reinterred in the Pasteur Institute in Paris, in a vault covered in depictions of his accomplishments in Byzantine mosaics.

Chapter 5

Joseph Lister

Joseph Lister, Baron Lister of Lyme RegisOM,PC, PRS, FRCSE, FFPS (5 April 1827 – 10 February 1912), was a British surgeon, experimental pathologist and a pioneer of antiseptic surgery.

From a technical viewpoint, Lord Lister was not an exceptional surgeon, but his research into bacteriology and infection in wounds raised his operative technique to a new plane where his observations, deductions and practices revolutionised surgery throughout the world.

Lister promoted the idea of sterile surgery while working at the Glasgow Royal Infirmary. Lister successfully introduced carbolic acid (now known as phenol) to sterilise surgical instruments and to clean wounds.

Applying Louis Pasteur's advances in microbiology, Lister championed the use of carbolic acid as an antiseptic, so that it became the first widely used antiseptic in surgery. He first suspected it would prove an adequate disinfectant because it was used to ease the stench from fields irrigated with sewage waste. He presumed it was safe because fields treated with carbolic acid produced no apparent ill-effects on the livestock that later grazed upon them.

Lister's work led to a reduction in post-operative infections and made surgery safer for patients, distinguishing him as the "father of modern surgery".

Early life

- Lister was born to a prosperous, educated Quaker family in the village of Upton, West Ham, Essex, then near but now in London, England. He was the second son of six siblings to gentleman scientist and port wine merchant Joseph Jackson Lister who was in partnership with Thomas Barton Beck, of Tokenhouse Yard, the grandfather of Marcus Beck. Lister's mother was Isabella Lister née Harris. Isabella was the youngest daughter of master mariner Anthony Harris. Before she was married in July 1818, Isabella worked at the Ackworth School, a Quaker school for the poor, assisting her widowed mother who was the superintendent of the school.

His father was a pioneer in the design of achromatic object lenses for use in compound microscopes He spent 30 years perfecting the microscope, and in the process, discovered the Law of Aplanatic Foci, building a microscope where the image point of one lens coincided with the focal point of another. Up until that point, the best higher magnification lenses produced an excessive secondary aberration known as a coma which interfered with normal use.

It was considered a great technical advance that enabled the future development of bacteriology. His work, built a reputation sufficient to enable his being elected to the Royal Society in 1832.

The eldest daughter of Joseph and Isabella Lister was Mary Lister (1820–1894), elder sister to Joseph Lister. In 21 August

1851, she married the barrister, Rickman Godlee of Lincoln's Inn and the Middle Temple, who belonged to the friends meeting house in Plaistow. The couple had six children.

Education

A young Joseph Lister attended Benjamin Abbott's Isaac Brown Academy, a private, Quaker school in Hitchin in Hertfordshire. When Lister was older he attended Grove House School in Tottenham, also a private Quaker School, studying mathematics, natural science, and languages. His father was insistent that Lister received a good grounding in French and German, in the knowledge he would learn Latin. From an early age, Lister was encouraged by his father. He became interested in natural history that led to dissections of small animals, fish and osteology, that were examined using his father's microscope and then be drawn using the camera lucida technique that his father had taught him or sketched. His father's interests in microscopical research, developed in Lister the determination to become a surgeon and prepared him for a life of scientific research.

Lister left school in the spring of 1844 when he was seventeen. He was unable to attend either Oxford or the University of Cambridge owing to the religious tests that effectively barred him. Lister decided to attend the non-sectarian University College LondonMedical School, one of only a few institutions which accepted Quakers at that time. He initially studied arts, graduating with a Bachelor of Arts degree with honours in classics and botany in 1847. While he was studying, Lister suffered from a bout of smallpox, a year after his elder brother died of the disease. The bereavement combined with the stress

of his classes led to a nervous breakdown. Lister decided to take a long holiday in Ireland, to recuperate and this delayed the start of his medical studies at the university. In October 1848, Lister registered as a medical student. While a student, Lister developed a lifelong interest in histology and experimental physiology. During his studies, Lister was active in the University Debating Society and the Hospital Medical Society. His main lecturers were John Lindley, Thomas Graham, Robert Edmond Grant, George Viner Ellis and William Benjamin Carpenter but although Lister often spoke about Lindley and Graham in his writings, it was Wharton Jones and William Sharpey who exercised the greatest influence on Lister. As part of his studies, Lister trained first as an intern and then house physician to Walter HayleWalshe. Then in 1851, in his second year, Lister became a house surgeon, i.e., a dresser, to John Eric Erichsen. It was while Lister worked for Erichsen that his interest in the healing of wounds began.

Lister's first operation

In 2014, medical historian Ruth Richardson and orthopaedic surgeon Bryan Rhodes discovered that on 27 June 1851, Lister conducted his first operation, on a woman, Julia Sulivan, who had been stabbed by her husband. Lister found the woman with a coil of intestine about eight inches long protruding from her lower abdomen. After cleaning them with blood-warm water, they were placed back in the body and the patient was administered opium to induce constipation, to enable the intestines to recover, which she did.

He graduated with honours as a Bachelor of Medicine in 1852. In the same year, Lister passed the examination for the

fellowship of the Royal College of Surgeons, bringing to a close nine years of education. With his medical education completed, Sharpey advised Lister to spend a month at the medical practice of James Syme in Edinburgh and then visit medical schools in Europe for a longer period. Sharpey himself had been taught in Edinburgh and knew Syme, a teacher of clinical surgery, who was widely considered the best surgeon in the United Kingdom pioneering simpler surgical procedures and who made a name for himself by first performing an amputation of the hip-joint. However, Lister who anxious about his first appointment, decided to settle in Edinburgh after meeting Syme Lister found that Scottish medical schools were founded on scholarly tradition and taught medicine using a scientific discipline developed from the work of John Hunter. Lister modelled his approach on Hunter.

Edinburgh 1853–1860

Lister moved to Edinburgh in September 1853 to work as an assistant to James Syme at the University of Edinburgh and the Edinburgh Royal Infirmary. On his first meeting with Syme, Lister was invited to his house, *Millbank*, in Morningside (now part of Astley Ainslie Hospital), where he met, amongst others, Agnes Syme, Syme's daughter by another marriage and granddaughter of the physician Robert Willis. While Lister thought that Agnes was not conventionally pretty, he admired her quickness of mind, her familiarity with medical practice, and her warmth. Lister became a frequent visitor to Millbank and met a much wider group of eminent people than he would have in London. By October 1853, Lister decided to spend the winter in Edinburgh. Syme was so impressed by Lister, that

after a month Lister became Syme's supernumerary house surgeon at The Royal Infirmary and his assistant in his private hospital at Minto House in Chambers Street. As house surgeon, he assisted Syme during every operation, taking notes. It was a much coveted position and gave Lister the option of choosing which of the ordinary cases he would operate on. During this period, Lister presented a paper at the Royal Edinburgh Medico-Chirurgical Society on the structure of cancellous exostoses that had been removed by Syme, demonstrating that the method of ossification of these growths was the same as that which occurs in epiphyseal cartilage.

In October 1855, Lister was appointed a lecturer after the death of Richard James Mackenzie. Mackenzie, a noted infirmary surgeon and surgical lecturer at the Edinburgh Extramural School, had contracted cholera in Balbec in Scutari, while on a four month volunteer stint as field surgeon to the 79th Highlanders in the Crimean War. It had been assumed that Mackenzie would eventually take Syme's position. Lister took advantage of the situation and settled in Edinburgh, renting a lecture room at 4 High School Yards. On 21 April 1855, Lister was elected a Fellow of the Royal College of Surgeons of Edinburgh and two days later, rented new rooms at 3 Rutland Square for living. In June 1855, Lister made a hurried trip to Paris to take a course on operative surgery on the dead body and returned in June.

Marriage

In August 1855, Lister became engaged to Agnes Syme. During that time, when a Quaker married a person of another denomination, it would be considered as marrying *out of the*

society. After sending a letter to his parents, Lister made up his mind and subsequently left the Quakers and later joined the Saint Paul's Episcopal Church, in Jeffrey Street, Edinburgh. On 23 April 1856, Lister married Agnes Syme in the drawing room of Millbank, Syme's house in Morningside. Only the Syme family were present.

On their honeymoon, the couple spent a month at Upton and the Lake District, followed by several months on a tour of the leading medical institutes in France, Germany, Switzerland, and Italy returning in October 1856. By this time, Agnes was enamoured of medical research and was Lister's partner in the laboratory for the rest of her life. When they returned to Edinburgh, the couple moved into a rented house at 11 Rutland Street in Edinburgh.

Lecturing

On 7 November 1855, Lister gave his first lecture, "Principles and Practice of Surgery", in a lecture theatre at 4 High School Yards. His first lecture was read from twenty-one pages of foolscap folio. Lister's first lectures were based on notes, either read or spoken, but over time he used them less and less.

Physiological experiments

While he was in Edinburgh, Lister conducted a series of physiological experiments between the years 1853 and 1859. His approach was rigorous and meticulous in both measurement and description. Lister was clearly aware of the latest advances of physiological research in France, Germany, and other European countries and maintained an on-going

discussion of his observations and results with other leading physicians in his peer group including Albert von Kölliker, Wilhelm von Wittich, Theodor Schwann, and Rudolf Virchow and ensured he correctly cited their work.

These experiments resulted in the publication of 11 papers between 1857 and 1859. They included the study of the nervous control of arteries, the earliest stages of inflammation, the structure of nerve fibres, and the study of the nervous control of the gut with reference to sympathetic nerves. He continued the experiments for three years, until he was appointed Regius Professor of Systematic Surgery at the University of Glasgow. Throughout his life, Lister believed that the papers on microscopy and physiology of inflammation that he read to the Royal Society in 1857, were his most important.

Lister wrote his first paper in 1853, "Observations on the Contractile Tissue of the Iris", that advanced the work of Albert von Kölliker, demonstrating the existence of two distinct muscles, the dilator and sphincter in the iris, that corrected the convictions of previous researchers that there was no dilator pupillae muscle. It was published in *Quarterly Journal of Microscopical Science*. His next paper was a similar work, "Observations on the Muscular Tissue of the Skin", published on 1 June 1853. Lister was able to confirm Kölliker's studies that in humans the smooth muscle fibres are responsible for the erectile function of hair, in contrast to other mammals in which large tactile hairs are associated with striated muscle. Lister's microscopy skills were so advanced that he was able to correct the observations of German histologist, Friedrich Gustav Henle, who mistook small blood vessels for muscle fibres.

In a letter of 16 December 1855, Lister recorded the beginnings of his research to trace the process of inflammation. He describes an experiment on the artery of a frog viewed under his microscope, which was subjected to a water droplet of differing temperatures, to determine the early stage of inflammation. He initially applied a water droplet at 80 °F which caused the artery to contract for a second and the flow ceased, then dilated and the area turned red and the flow of blood increased. He progressively increased the temperature until it was 200 °F. The blood slowed down then coagulated. He continued the experiment on the wing of chloroformed bat to widen his research focus.

Lister's third paper, "On the minute structure of involuntary muscle fibre", published in 1858 in the same journal, was read before the Royal Society of Edinburgh on 1 December 1856. It was research into the histology and function of the minute structures of involuntary muscle fibres. The experiment was designed to confirm Kölliker's observations on the structure of individual fibres. Lister proved conclusively that the muscle fibres of blood vessels, described by Lister as slightly flattened elongated elements, were similar to those found in pig intestine, thatKölliker observed. His next paper, "On the flow of the lacteal fluid in the mesentery of the mouse", was a short report, based on observations that he made in 1853. The paper published in 1858, also in the *Quarterly Journal of Microscopical Science* was an experiment by Lister to prove two goals: specifically to determine the character of the flow of chyle in the lymphatics and to determine if the Lacteals in the gastrointestinal wall could absorb solid matter, in the form of granules, from the lumen. For the first experiment a mouse fed beforehand on bread and milk was chloroformed, its abdomen

opened and a length of intestine placed on glass under a microscope. Lister repeated the experiment several times and each time saw mesenteric lymph flowing in a steady stream, without visible contractions of the lymph vessels.

For the second experiment Lister dyed some bread with indigo dye and fed it to a mouse with the result that no indigo particles were ever seen in the chyle.

In 1858, Lister published seven papers on physiological experiments he conducted on the origin and mechanism of inflammation.

Two of these papers were research into the nervous control of blood vessels, "An Inquiry Regarding the Parts of the Nervous System Which Regulate the Contractions of the Arteries" and the principal paper in the series "On the Early Stages of Inflammation" which extended the work of Wharton Jones. Both papers were read to the Royal Society of London on 18 June 1857.

Lister had come to the conclusion that accurate knowledge of the functioning of inflammation could not be obtained by researching the more advanced stages that were subject to secondary processes. The paper was divided into four sections:

- The aggregation of red blood cells when removed from the body, i.e., which occurs during coagulation.
- The structure and function of blood vessels.
- The effects of irritants on blood vessels, e.g., hot water.
- The effects of irritants on tissue.

Glasgow 1860–1869

On the 1 August 1859, Lister wrote to his father to inform him of the ill-health of James A. Lawrie, Regius Professor of Surgery at the University of Glasgow, believing he was close to death. Lister stated that Syme believed he should become a candidate for the position. He went on to discuss the merits of the post; a higher salary, being able to undertake more surgery and being able to create a bigger private practice. Lawrie passed away on the 23 November 1859. In the following month, Lister received a private communication, although baseless, that confirmed he had received the appointment. However, it was clear the matter was not settled when a letter appeared in the Glasgow Herald on 18 January 1860 that discussed a rumour that the decision had been handed over to the Lord Advocate and officials in Edinburgh. It also drew attention to a circular that had been delivered to physicians at the university. It been written by Walter Buchanan (MP) and Robert Dalglish (MP) asking who was best qualified. The letter annoyed the members of the governing body of Glasgow University, the SenatusAcademicus. The matter was taken up by the Vice-Chancellor Thomas Barclay in a meeting with the home secretary George Cornewall Lewis and the Rector James Bruce that tipped the decision in favour of Lister. On the 28 January 1860, Lister's appointment was confirmed.

Before Lister's studies of surgery, many people believed that chemical damage from exposure to "bad air", or *miasma*, was responsible for infections in wounds. Hospital wards were occasionally aired out at midday as a precaution against the spread of infection via miasma, but facilities for washing hands

or a patient's wounds were not available. A surgeon was not required to wash his hands before seeing a patient; in the absence of any theory of bacterial infection, such practices were not considered necessary. Despite the work of Ignaz Semmelweis and Oliver Wendell Holmes Sr., hospitals practised surgery under unsanitary conditions. Surgeons of the time referred to the "good old surgical stink" and took pride in the stains on their unwashed operating gowns as a display of their experience.

While he was a professor of surgery at the University of Glasgow, Lister became aware of a paper published by the French chemist, Louis Pasteur, showing that food spoilage could occur under anaerobic conditions if micro-organisms were present. Pasteur suggested three methods to eliminate the micro-organisms responsible: filtration, exposure to heat, or exposure to solution/chemical solutions. Lister confirmed Pasteur's conclusions with his own experiments and decided to use his findings to develop antiseptic techniques for wounds. As the first two methods suggested by Pasteur were unsuitable for the treatment of human tissue, Lister experimented with the third idea.

In 1834, Friedlieb Ferdinand Runge discovered phenol, also known as carbolic acid, which he derived in an impure form from coal tar. At that time, there was uncertainty between the substance of creosote – a chemical that had been used to treat wood used for railway ties and ships since it protected the wood from rotting – and carbolic acid. Upon hearing that creosote had been used for treating sewage, Lister began to test the efficacy of carbolic acid when applied directly to wounds.

Therefore, Lister tested the results of spraying instruments, the surgical incisions, and dressings with a solution of carbolic acid. Lister found that the solution swabbed on wounds remarkably reduced the incidence of gangrene. In the spring of 1865, Lister read about Louis Pasteur's discovery of living things causing fermentation and putrefaction in the journal *Comptesrendushebdomadaires* of the French Academy of Sciences, that was given to him by his friend, the chemist Thomas Anderson.

The antiseptic system

On 12 August 1865, Lister achieved success for the first time when he used full-strength carbolic acid to disinfect a compound fracture. He applied a piece of lint dipped in carbolic acid solution onto the wound of a eleven year-old boy, James Greenlees, who had sustained a compound fracture after a cart wheel had passed over his leg. After four days, he renewed the pad and discovered that no infection had developed, and after a total of six weeks he was amazed to discover that the boy's bones had fused back together, without suppuration. He subsequently published his results in *The Lancet* in a series of six articles, running from March through July 1867.

He instructed surgeons under his responsibility to wear clean gloves and wash their hands before and after operations with five per cent carbolic acid solutions. Instruments were also washed in the same solution and assistants sprayed the solution in the operating theatre. One of his additional suggestions was to stop using porous natural materials in manufacturing the handles of medical instruments.

Lister left Glasgow University in 1869 and was succeeded by George Husband Baird MacLeod. Lister then returned to Edinburgh as successor to Syme as Professor of Surgery at the University of Edinburgh and continued to develop improved methods of antisepsis and asepsis. Amongst those he worked with there, who helped him and his work, was the senior apothecary and later MD, Alexander Gunn. Lister's fame had spread by then, and audiences of 400 often came to hear him lecture. As the germ theory of disease became more understood, it was realised that infection could be better avoided by preventing bacteria from getting into wounds in the first place. This led to the rise of aseptic surgery. On the hundredth anniversary of his death, in 2012, Lister was considered by most in the medical field as "the father of modern surgery".

Diffusion of Listerism

Although Lister was so roundly honoured in later life, his ideas about the transmission of infection and the use of antiseptics were widely criticised in his early career. In 1869, at the meetings of the British Association at Leeds, Lister's ideas were mocked; and again, in 1873, the medical journal *The Lancet* warned the entire medical profession against his progressive ideas. However, Lister did have some supporters including Marcus Beck, a consultant surgeon at University College Hospital, who not only practiced Lister's antiseptic technique, but included it in the next edition of one of the main surgical textbooks of the time.

Lister's use of carbolic acid proved problematic, and he eventually repudiated it for superior methods. The spray

irritated eyes and respiratory tracts, and the soaked bandages were suspected of damaging tissue, so his teachings and methods were not always adopted in their entirety. Because his ideas were based on germ theory, which was in its infancy, their adoption was slow. General criticism of his methods was exacerbated by the fact that he found it hard to express himself adequately in writing, so they seemed complicated, unorganised, and impractical.

London 1877–1900

On 10 February 1877, Scottish surgeon, Sir William Fergusson Chair of Systematic Surgery at King's College Hospital, died. On 18 February, in reply to a proposal of employment from a representative of Kings College, Lister stated that he would be willing to accept the Chair of Clinical Surgery, on the proviso that he could radically reform the teaching there. However, British surgeon John Wood was originally next in line and was elected to the chair. Wood was hostile to Lister obtaining the chair.

On 8 March 1877, in a private letter to an associate, Lister contrasted their differing teaching methods and stated in no uncertain terms his opinion of Ferguson, "The mere fact of Fergusson having held the clinical chair is surely a matter of no great moment". In a comment to another colleague, Lister stated that his goal in taking the appointment was "the thorough working of the antiseptic system with a view to its diffusion in the Metropolis". At a memorial held by his students to persuade him to remain, Lister criticised London teaching. It was published by a *Lancet* reporter, who happened to be at the memorial. This jeopardised Lister's position.

However, negotiations were renewed in May and he was finally elected on 18 June 1877 to an newly created Chair of Clinical Surgery. The second Clinical Surgery Chair was created specifically for Lister, as the hospital feared the negative publicity that would have resulted should Lister not been elected.

On the 11 September 1877, Joseph and Aggie moved to London and the couple found a house at 12 Park Crescent, Regent's Park. Lister began teaching on the first day of October. The hospital made it mandatory that all students should attend Lister's lecturers. Attendance was small compared to the four hundred who would regularly attend his classes in Edinburgh. Lister's conditions of employment were met, but he was only provided with 24 beds, instead of the 60 beds that he was used to in Edinburgh. Lister stipulated that he should be able to bring from Edinburgh four people who would constitute the core of his new staff at the hospital. These were Watson Cheyne who became his assistant surgeon, John Stewart, an anatomical artist and senior assistant, along with W.H. Dobie and James Altham who were Lister's dressers (surgical assistants who dressed wounds). There was considerable friction at Lister's first lecture, both from students who heckled him and staff. Even the nurses were hostile. This was clearly illustrated in October 1877 when a patient, Lizzie Thomas, who travelled from Edinburgh Royal Infirmary to be treated for a Psoas abscess, was not admitted due to not having the correct paperwork. Lister could hardly believe that such a lack of sympathy from imperious nurses could exist. More so, such a state of mind was a real danger to his patients, as it depended on loyal staff to carry out the preparations required for antiseptic surgery.

On 1 October 1877, Lister held a customary introductory address and choose the subject, "The nature of fermentation". Lister described the fermentation of milk and explained how putrefaction was caused by fermentation of blood and, in the process, tried to prove that all fermentation was due to microorganisms. The address was badly received. In defence, John Stewart described it as: "...a brilliant and most hopeful beginning of what we regarded as a campaign in the enemy's country... There seemed to be a colossal apathy, an inconceivable indifference to the light which, to our minds, shone so brightly, a monstrous inertia to the force of new ideas."

In October 1877, Lister performed an operation on a patient, Francis Smith, that wasn't considered life-threatening. The open operation on a broken patella (kneecap), in front of 200 students involved wiring the two fragments together.

In 1881 Lister was elected President of the Clinical Society of London.

He also developed a method of repairing kneecaps with metal wire and improved the technique of mastectomy. He was also known for being the first surgeon to use catgut ligatures, sutures, and rubber drains, and developing an aortic tourniquet. He also introduced a diluted spray of carbolic acid combined with its surgical use, however he abandoned the carbolic acid sprays in the late 1890s after he saw it provided no beneficial change in the outcomes of the surgeries performed with the carbolic acid spray. The only reported reactions were minor symptoms that did not affect the surgical outcome as a whole, like coughing, irritation of the eye, and

minor tissue damage among his patients who were exposed to the carbolic acid sprays during the surgery.

Later life

In 1893, four days into their spring holiday in Rapallo, Italy, Agnes, Baroness Lister, died from acute pneumonia. While still responsible for the wards at Kings College Hospital, Lister's private practice ceased along with an appetite for experimental work. Social gatherings were severely curtailed. Studying and writing lost appeal for him and he sank into religiousmelancholy. On 31 July 1895, Lister retired from Kings College Hospital. Lister was presented with a portrait painted by Scottish artist John Henry Lorimer, in a small presentation, held in recognition of the affection and esteem that felt by his colleagues.

Despite suffering a stroke, he still came into the public light from time to time. He had for several years been a Surgeon Extraordinary to Queen Victoria, and from March 1900 was appointed the Serjeant Surgeon to the Queen, thus becoming the senior surgeon in the Medical Household of the Royal Household of the sovereign. After her death the following year, he was re-appointed as such to her successor, King Edward VII.

On 24 June 1902, with a 10-day history of appendicitis with a distinct mass on the right lower quadrant was operated on by Sir Frederick Treves two days before his scheduled coronation. Like all internal surgery at the time, the appendectomy needed by the King still posed an extremely high risk of death by post-operational infection, and surgeons did not dare operate

without consulting Britain's leading surgical authority. Lister obligingly advised them in the latest antiseptic surgical methods (which they followed to the letter), and the King survived, later telling Lister, "I know that if it had not been for you and your work, I wouldn't be sitting here today."

Death

Lord Lister died on 10 February 1912 at his country home in Walmer, Kent, at the age of 84. After a large public funeral service at Westminster Abbey, his body was buried at Hampstead Cemetery in London in a plot to the south-east of central chapel. In the north transept of Westminster Abbey, there is a marble medallion of Lister that sits alongside four other noted men of science, Darwin, Stokes, Adams, and Watt.

Awards and honours

In 1877, Lister was awarded the Cothenius Medal of the German Society of Naturalists.

In 1883 Queen Victoria created him a Baronet, of Park Crescent in the Parish of St Marylebone in the County of Middlesex. In 1897 he was further honoured when Her Majesty raised him to the peerage as Baron Lister, of Lyme Regis in the County of Dorset. In the 1902 Coronation Honours list published on 26 June 1902 (the original day of King Edward VII's coronation), Lord Lister was appointed a Privy Counsellor and one of the original members of the new Order of Merit (OM). He received the order from the King on 8 August 1902, and was sworn a member of the council at Buckingham Palace on 11 August 1902.

In 1885 he was awarded the PrussianPour le Mérite, their highest order of merit. The order was restricted to 30 living Germans and same of foreigners.

In May 1890, Lister was awarded the Cameron Prize for Therapeutics of the University of Edinburgh, that included the delivery of a short *oration* or lecture, that was held at the Synod Hall in Edinburgh. In December 1902, the King of Denmark bestowed upon Lister the Knight of the Grand Cross of the Order of the Dannebrog, an honour that gave him more pleasure than any of his later honours.

Academic societies

Lister was a member of the Royal College of Surgeons of England between 1880 and 1888. In 1886, he was elected Vice President of the college, but declined the nomination for office of president. In 1887, Lister presented the Bradshaw lecture with a lecture titled "On the Present Position of Antiseptic Treatment in Surgery". In 1897, Lister was awarded the College Gold Medal, their highest honour.

Lister was elected to the Royal Society in 1860. In 1863, Lister presented the Croonian Lecture at the society, "On the Coagulation of the Blood".

He served as a trustee on the Royal Society council between 1881 and 1883. Ten years later, in November 1893 Lister was elected for two years, to the position of foreign secretary of the society, succeeding the Scottish geologist Sir Archibald Geikie. In 1895 he was elected president of the Royal Society succeeding Lord Kelvin. He held the position until 1900.

In March 1893, Lister received a telegram from Pasteur, Félix Guyon and Charles Bouchard that informed him he had been elected an associate of the Academie des Sciences.

Following his death, the Lord Lister Memorial Fund was established, a public subscription to raise monies for the public good in honour of Lord Lister. It led to the founding of the Lister Medal, considered the most prestigious prize that can be awarded to a surgeon.

Monuments and legacy

In 1903, the British Institute of Preventive Medicine was renamed Lister Institute of Preventive Medicine in honour of Lister. The building, along with another adjacent building, forms what is now the Lister Hospital in Chelsea, which opened in 1985. The building at Glasgow Royal Infirmary which houses the cytopathology, microbiology, and pathology departments was named in Lister's honour to recognise his work at the hospital. The Lister Hospital in Stevenage, Hertfordshire is named after him.

Lister's name is one of twenty-three names featured on the frieze of the London School of Hygiene & Tropical Medicine – although the committee which chose the names to include on the frieze did not provide documentation about why certain names were chosen and others were not.

Lister is one of only two surgeons in the United Kingdom who have the honour of having a public monument in London, Lister and John Hunter. The statue of Lister, created by Thomas Brock in bronze in 1924, stands at the north end of Portland Place. There is a bronze statue of Lister, mounted on

a granite base in Kelvingrove Park, Glasgow that was sculpted by George Henry Paulin in 1924. It sits next to the statue of Lord Kelvin.

The *Discovery* Expedition of 1901–1904 named the highest point in the Royal Society Range, Antarctica, Mount Lister.

In 1879, Listerine antiseptic (developed as a surgical antiseptic but nowadays best known as a mouthwash) was named by its American inventor, Joseph Lawrence, to honour Lister.

Microorganisms named in his honour include the pathogenic bacterial genus *Listeria* named by J. H. H. Pirie, typified by the food-borne pathogen *Listeria monocytogenes*, as well as the slime mould genus *Listerella*, first described by Eduard Adolf Wilhelm Jahn in 1906.

Lister is depicted in the Academy Award-winning 1936 film *The Story of Louis Pasteur*, by Halliwell Hobbes. In the film, Lister is one of the beleaguered microbiologist's most noted supporters in the otherwise largely hostile medical community, and is the key speaker in the ceremony in his honour.

Two postage stamps were issued in September 1965 to honour Lister on the centenary of his antiseptic surgery at the Glasgow Royal Infirmary of Greenlees, the first ever recorded instance of such treatment.