

Sketch for an Historical Picture of the Advances of the Human Mind

Nicolas de Condorcet

1795

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[Brackets] enclose editorial explanations. Small ·dots· enclose material that has been added, but can be read as though it were part of the original text. Occasional •bullets, and also indenting of passages that are not quotations, are meant as aids to grasping the structure of a sentence or a thought. Every four-point ellipsis indicates the omission of a brief passage that seems to present more difficulty than it is worth. Longer omissions are reported between brackets in normal-sized type.—The author’s frequent first-person plural (‘We shall show. . .’) is replaced through out by the singular. In the work’s final paragraph he refers to himself only as ‘the philosopher’.—The many quiet switches from a past tense to the present tense (e.g. in the long paragraph on page 3) all occur in the French.—The A-B-C section-headings in two of the chapters are added. So are cross-headings in small capitals; each of these marks the place where a substantial new theme is launched, but there is no special indication of where it ends.—The title indicates that this was to be a preliminary sketch for a fuller picture, referred to as ‘the work itself’ on pages 7, 105 and 109, which explains the author’s frequent mentions of what he *will* show.—His full name was Marie-Jean-Antoine-Nicolas Caritat, Marquis de Condorcet.

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Glossary

advance: Translates *progrès* in the many places—including the work's title—where *progrès* is used as a plural noun. Its singular occurrences are translated by 'progress'.

alter: To be understood in the same sense as the French *altérer*, which it everywhere translates. The French means 'change for the worse'; we have no English word with that meaning; hence this note, which also applies to 'alteration'.

anathema: A formal act of consigning someone to damnation.

arbitrary: In early modern uses, this means 'chosen', resulting from someone's decision, or the like, with no implication (as there is in today's usage) that there weren't good reasons for the choice. On pages 16 and 69 the emphasis is on contrasting what happens because of what •some powerful person decides and what happens because of what •the law says.

art: Any practical activity that is governed by rules and (same thing?) requires skill. Portraiture, sculpting, farming, carpentry, weaving, . . .

caste: This translates *caste*. As used on pages 18–22 the word refers to cults, cliques, self-proclaimed 'professions', or the like. The meaning is vague but definitely derisive.

Christ: Condorcet uses this in its original meaning, as a general term meaning the same as 'messiah'. He gives both terms initial capitals but does not mean them as proper names. The hyphenated phrase on page 58 should be thought of as 'Jesus, the Christ'.

'civilised': In quotation marks (on pages 12–13 and 53) this word translates *politicés*, which means 'gentler, less rough' or the like.

deism: A deist is someone who believes there is a god (opposite of 'atheist'), but whose theology is *thin* compared with Christianity—e.g. the deist doesn't think of God as intervening in the world.

elysium: The home of the blessed after death in Greek mythology. In the last sentence of this work it occurs translating *élycée*, which was also the name of a royal palace in Paris.

era: Translates *époque*. 'A period of history characterised by a particular state of affairs, series of events, etc.' (OED). That isn't quite what 'epoch' means today, but it was and is the meaning of *époque*.

faculty: *faculté* This means 'basic ability', 'fundamental capacity'—an ability that a man is born with, or possesses in such a way that we can't investigate how or through what mechanism he has it.

irritability: High responsiveness to stimuli.

magistrate: Here, as elsewhere in early modern writings, a 'magistrate' is anyone with an official role in government. The magistracy is the set of all such officials, thought of as a single body.

mœurs: The *mœurs* of a people include their morality, their basic customs, their attitudes and expectations about how people will behave, their ideas about what is decent. . . and so on. This word—rhyming roughly with 'worse'—is left untranslated because it has no English equivalent. Good *English* dictionaries include it, for the same reason they have for including *Schadenfreude*.

nation: This always translates the French *nation*, though

in Condorcet's day a *nation* could be quite small, really no more than a tribe.

observation: In a good many places this translates *observation* in its sense of 'controlled, purposeful, disciplined collection of facts'. That explains why 'observations' are sometimes treated as additional to 'facts' in contexts where clearly *observed* facts are the topic. See for example page 93.

opinion: The six occurrences of this word on page 69 and one each on pages 16, 17, 55 and 79 translate the French *opinion* in a sense that doesn't correspond to any one English word. It's not **an** *opinion* or **the** *opinion* of. . . , but just *opinion*. The definition of it in the Petit Robert dictionary equates it with 'set of mental attitudes dominant in a society'.

Philosophe: As used on page 49 this is a standard French label (and sometimes an English one) for the public intellectuals of the Enlightenment in the 18th century; not necessarily philosophers.

picture: Translates *tableau*, which can also mean 'view' or 'chart' (see page 108).

popular: In early modern times this means 'of the people' or 'accessible to the people'; not (usually) 'liked by the people'.

positive: A positive law (or right) is one that has been made by men; it always stands in contrast with 'natural law (or right)', which is supposed to be inherent in nature and not an upshot of anything humans have done.

prejudice: In Condorcet's time, a *préjugé* could be any preconceived opinion; he mainly uses the word unfavourably, but not as narrowly as we do today in using 'prejudice' to refer to something pre-judged concerning race, sex, etc.

pyrrhonism: The doctrine of Pyrrho, the founder of ancient Greek scepticism, who held that nothing can be known.

speculative: This means 'having to do with non-moral propositions'. Chemistry is a 'speculative' discipline; ethics is a 'practical' one (and so is carpentry; on page 6 and elsewhere speculative/practical is aligned with science/art).

subtleties: *subtilités* When used in the plural in this work, it means 'hair-splitting', 'logic-chopping', or the like. Definitely dyslogistic.

theurgy: A system of white magic, originally practised by the Egyptian Neoplatonists, performed by the invocation and employment of beneficent spirits (Shorter OED).

tribe: This translates both *peuplade* and *tribu*. Condorcet uses *peuplade* when writing about the first three eras and the tenth; and uses *tribu* when writing about the second, third (page 15) and sixth (pages 42 and 47) eras. On page 11 the first 'tribe' is *peuplade* and the other five are *tribu*. If there's a shade of difference in their intended meanings, the present translator can't find it.

vulgar: Applied to people who have no social rank, are not much educated, and (the suggestion often is) not very intelligent.

Sixth era

Decline of learning up to its restoration at about the time of the crusades

[The crusades spread across most of the 12th and 13th centuries. They are mentioned early in the next chapter (on the seventh era); Condorcet's line between the sixth and seventh eras is notably vague.]

In this disastrous era we shall see the human mind rapidly descending from the height to which it had raised itself, while ignorance brings with it

ferocity here, refined cruelty there, corruption and treachery everywhere.

Some glimmerings of talent, some faint sparks of magnanimity or goodness, barely show through this dark night. Men's intellects are given over to theological day-dreams and superstitious fraud, and their only morality consists in religious intolerance. Europe, crushed between priestly tyranny and military despotism, awaits in blood and in tears the moment when new enlightenment will restore it to liberty, humanity and the virtues.

I shall divide the picture into two distinct parts. The first will cover the West, where the decline was faster and more complete, but where the light of reason would later re-appear, never again to be extinguished. The second will cover the East, where the decline was slower and for a long time less total, but which *still* hasn't experienced the moment where reason can enlighten it and break its chains. [We'll see in due course that he divided it into *three* distinct parts.]

[A] In the West

Christian piety had scarcely overthrown the altar of victory when the West became the prey of barbarians. They embraced the new religion, but didn't adopt the language

of the vanquished [i.e. didn't adopt Latin]. Only the priests retained it; but because of their ignorance and contempt for literature, what might have been expected from the reading of Latin books—which only they could read—didn't make its appearance.

·THE END OF SLAVERY·

The ignorance and barbarous *mœurs* of the conquerors are well enough known; yet this dull-witted ferocity led to the abolition of domestic slavery—a slavery that had disgraced the best days of learned, free Greece. ·There were three reasons for this·.

(i) The serfs of the fields cultivated the conquerors' lands. This oppressed class supplied their houses with domestics, whose dependent situation answered all the purposes of the conquerors' pride and their caprices. Accordingly, the object of their wars was not slaves but land and people to work it.

(ii) Also, a high proportion of the slaves the victors found in the territories they invaded were either prisoners taken from tribes of their own victorious nation or else the children of such prisoners. At the moment of conquest many of these slaves ran away or enlisted in the conquering army.

(iii) Lastly, the principles of universal brotherhood—which were a part of christian morality—condemned slavery; the priests had no political reason to contradict on this topic maxims that did honour to their cause; so their sermons contributed to a downfall ·of slavery· that events and *mœurs* would certainly have brought about anyway.

This change—the downfall of slavery—has been the seed of a revolution in the destinies of mankind; it has enabled

men to know true liberty. But its influence on the lives of individuals was at first hardly noticeable. We would have a very false idea of slavery among the ancients if we likened it to that of our Blacks. The Spartans, the nobles in Rome, and the local governors in the East were indeed barbarous masters and comparable with today's owners of African slaves. The full cruelty of greed drove the work of slaves in the mines. But they were an exception. Almost everywhere the masters' self-interest had softened the state of slavery in individual families. . . . The serf was almost as dependent as the slave had been, but didn't have the compensation of the care and support received by the slave. He was less continuously under the eye of his master than the slave had been, but was treated with a more lordly arrogance. The slave was a man whom bad luck had reduced to a condition to which the fortunes of war might one day reduce his master. The serf belonged to a lower, degraded class.

In thinking about this annihilation of domestic slavery, we must therefore look mainly to its remote consequences rather than to what it was like *then* for the liberated slaves.

These barbarian nations all had pretty much the same form of government:

- a common chief, called 'king', who with a council pronounced judgments and gave decisions that couldn't safely be delayed;
- an assembly of special chieftains, consulted on all resolutions that had some importance; and lastly
- an assembly of the people, for the discussion of measures that concerned the people as a whole.

Where governments differed, it was mainly in how much authority they gave to each of these three powers. The three were marked off not by the nature of their functions but by nature of the affairs they dealt with, and especially by how those affairs affected the interests of the mass of the citizens.

[In this paragraph, the 'peoples' in question are the conquerors, not the conquered.] With agricultural peoples—and especially those who had already established a settlement on a foreign territory—these constitutions had taken more regular and more solid form than with pastoral peoples. Also, the agricultural people were scattered across the territory rather than clumped into encampments of various sizes. So the king didn't always have an army assembled around him; and conquest couldn't lead almost immediately to despotism, as it did in the upheavals in Asia.

Thus the vanquished nation was not enslaved [taking *victorieuse* to be a slip for *vaincue*]. At the same time, these conquerors preserved the towns but didn't themselves live in them. Not being constrained by an armed force, because much of the time there wasn't one, these towns acquired a sort of power; and this was a rallying point [French: **point d'appui**] for the liberty of the conquered nation.

•THE SPECIAL CASE OF ITALY•

Italy was often invaded by the barbarians; but they couldn't settle down there because Italy's wealth kept arousing the greed of new conquerors, and because for a long time the Greeks hoped to bring Italy into *their* empire. It was never completely or permanently subdued by any people. Latin (the only language of the people there) degenerated more slowly, ignorance was less complete, superstition less stupid, than elsewhere in the West.

Rome, which acknowledged masters only to change them, retained a sort of independence. It was the residence of the head of the religion, the pope. Accordingly, whereas

• in the East, where there was a single ruler at any one time, the clergy, sometimes governing the emperors and sometimes conspiring against them, supported despotism even when resisting the despot; and preferred steering the

whole power of an absolute master so that it served their purposes to •quarrelling with him in an attempt to get some of it for themselves;

•in the West we see the priests, united under a common head, setting up a power to rival the power of the kings, and forming in these divided states a single independent monarchy of a certain kind.

·THE VERY SPECIAL CASE OF ROME·

I shall exhibit this overbearing city trying out on the world the chains of a new kind of tyranny, in which its popes

- preyed on credulity by crudely forged documents;
- mixed religion into all the transactions of everyday civil life, so as to make them better serve their greed or their pride;
- punished by anathemas [see Glossary], from which the people shrank with horror, the least opposition to their laws, the least resistance to their crazy claims;
- had in each State an army of lying monks who were always ready to intensify the terrors of superstition so as to increase the power of fanaticism;
- tried to stir up civil unrest by depriving nations of their worship, of the ceremonies that their religious hopes relied on;
- disturbed everything in order to dominate everything;
- commanded treason and treachery, assassination and parricide, all in the name of God;
- brought it about that kings and warriors were sometimes the instruments and sometimes the victims of papal revenge;
- directed the uses of force but never *had* any;
- were terrible to their enemies but trembled before their own defenders;
- were all-powerful throughout Europe, yet insulted

with impunity right at the foot of their altars;

- found in heaven the fulcrum [French: **point d'appui**] for the lever to move the world, but couldn't find on earth any regulator with which they could direct its motion;
- erected a colossus with feet of clay which oppressed Europe and then for a long time wearied the continent with the weight of its debris.

·FEUDAL ANARCHY·

Conquest had inflicted on the West a tumultuous anarchy in which the people groaned under the triple tyranny of kings, warrior generals and priests; but this anarchy carried in its womb the seeds of liberty. We have to include in this portion of Europe the countries that the Romans had never penetrated. Caught up in the general commotion, alternating between conquering and conquered, and having the same origin and *mœurs* as the conquerors of the empire, these peoples were hardly distinguishable from those of the conquerors. Their political state was bound to undergo the same changes and follow a similar route.

I shall present a picture of the ups and downs of this—to give it a name that pretty well describes it—feudal anarchy.

The legislation was incoherent and barbaric. Many of its laws were mild, but this apparent humaneness was merely a dangerous impunity [here = 'lack of any system of punishment']. Still, we see in those countries some valuable laws which, though they in fact defended only the rights of the oppressor classes and were therefore just one more assault on the rights of men, did at least preserve some feeble idea of human rights and were eventually going to serve as a guide to their recognition and restoration.

This legislation had two special features that are typical of the infancy of nations and the ignorance of the primitive ages. **(a)** A criminal could *buy* his way out of punishment

with a sum of money fixed by a law that priced a man's life according to his social rank or his birth. A crime was seen not as •a violation of the security and rights of citizens, to be prevented by the fear of punishment, but as •an assault on an individual, which he or his family were entitled to avenge but for which the law offered something more useful, namely reparation. **(b)** They had so little notion of *evidence* for a factual claim that they thought it simpler—whenever a 'guilty or innocent?' question had to be answered—to ask heaven for a miracle: the outcome of a superstitious trial •by ordeal• or the result of a duel were regarded as the surest means of finding and recognising the truth.

With men who confused independence with liberty, the quarrels arising among those who ruled over a portion of the territory (even a tiny portion) were bound to degenerate into private wars; and these wars between provinces, or villages, constantly exposed the whole surface of each country to all those horrors which in great invasions are •not constant but• only transient, and which in general wars ravage •not the whole country but• only the frontiers.

Whenever tyranny is trying to subject the mass of a people to the will of a few, it uses for this purpose the prejudices and ignorance of its victims. It also tries to make up for the relative smallness of its force—which must surely always be weaker than that of the great majority—by a concentrated and vigorous use of it. But what tyranny wants most but can seldom achieve is to establish a *real* difference between the masters and the slaves, making nature itself somewhat to blame for political inequality. [In that last sentence, 'slaves' (*esclaves*) must be casual rhetoric. On page 42 Condorcet has said that in this era the West had serfs but not slaves.]

That is what the eastern priests *did* achieve back in those times; they were at once kings, pontiffs, judges, astronomers, surveyors, artists and physicians. But what they owed to

their monopoly of intellectual powers the crude tyrants of our weak •western• ancestors obtained by their institutions and their warlike conduct.

- Clad in impenetrable armour,
- fighting only on horses as invulnerable as themselves,
- needing long and painful training to have the strength and skill for training and guiding their horses and for holding and wielding their weapons,

they could oppress with impunity and kill without risk •to themselves• any ordinary man who couldn't afford to buy this expensive weaponry and who never had a chance to devote himself to military training because he always had to work for a living.

Thus the tyranny of the few had acquired, through these military means, a real superiority of strength, which inevitably excluded any idea of resistance and for a long time made useless even the efforts of •the common man's• despair. In this way natural equality disappeared in face of a manufactured inequality of strength.

Morality, taught solely by the priests, included the universal principles that every sect has recognised; but it •also• created a host of purely religious duties and imaginary sins. These duties were more strongly insisted on than those of nature; and actions •that infringed them but were in fact• indifferent, lawful, in many cases even *virtuous*, were censured and punished more severely than actual crimes. Yet the gates of heaven were opened to the wicked by a momentary repentance consecrated by the absolution of a priest; and a life crammed with crimes could be made up for by gifts to the Church and the observance of certain practices flattering to its vanity. They went so far as to make a price-list for absolutions! They took care to include in the catalogue of sins everything from the most innocent indulgences of love—mere simple desires—through to the

most elaborate and excessively disgusting debauchery. It was understood that hardly anyone could escape censure by this standard, so that this was one of the most productive branches of priestly commerce. They even invented a hell of a limited duration; the priests could shorten someone's time in this or even excuse him from it altogether. They demanded payment for this favour, first from the person while he was alive and then after his death from relatives and friends. They sold n acres in heaven for n acres on earth; and they had the modesty not to charge a vendor's fee!

The *mœurs* of this miserable time were what you'd expect from such a deeply corrupt system.

As for this system itself—

- monks discovering old miracles and fabricating new ones, and nourishing with miracles and fables the people's stupid ignorance, deluding them in order to rob them;
- doctors of the Church using all their imagination to enrich their creed with new nonsense, going beyond what had been transmitted to them;
- priests compelling princes to consign to the flames
 - the men who presumed to doubt even one of their dogmas or suspect their impostures or be angry over their crimes,
 - those who departed for an instant from blind obedience, and even
 - theologians who let themselves to dream differently from their superiors in the Church

—these are the only brush-strokes that the *mœurs* of western Europe in this era could contribute to the picture of the human species.

[B] In the East

In the East, united under a single despot, we'll see a slower decline following the gradual weakening of the empire; the ignorance and corruption of each century going a few degrees further than the ignorance and corruption of the preceding one; while riches diminished, the frontiers of the empire were pushed in ever closer to the capital, revolutions were more frequent, and tyranny became more cowardly and more cruel.

In following the history of this empire, in reading the books that each age has produced, even the least trained and least attentive observer can't avoid being struck by this correspondence between the empire's gradual failure and the decline in the people's *mœurs*.

In the East the populace engaged more in theological disputes. These played a larger role in in the history of the eastern empire—having a greater influence on political events there—than such disputes did in the West, and priests' day-dreams there had a subtlety that the competitive West wasn't yet capable of. Religious intolerance is just as oppressive there, but less ferocious.

However, the works of Photius show us that the taste for rational study was not extinct. A few emperors, princes, and even some princesses didn't settle for the honour of performing brilliantly in theological controversy but condescended to cultivate literature.

Roman legislation was altered only slowly in the East, by the mish-mash of bad laws that •greed and tyranny pushed the emperors into or that •superstition extorted from their weakness. The Greek language lost its purity and its character, but it retained its richness, its forms and its grammar; the inhabitants of Constantinople could still read Homer and Sophocles, Thucydides and Plato. Anthemius

explained the construction of Archimedes' burning glasses, which Proclus used with success in the defence of the capital. When the empire fell ·1000 years later·, some of Constantinople's inhabitants took refuge in Italy, and their learning was useful to the progress of enlightenment there. Thus, even in this era the East hadn't reached the ultimate stage of barbarism; but nor were there any signs of its pulling itself up again. It became the prey of barbarians; the feeble remains of intellectual cultivation disappeared; and the earlier genius of Greece *still* awaits the hand of a deliverer in the East.

[C] The Arabs

At the extremities of Asia, and on the borders of Africa, there existed a people which escaped the conquests of the Persians, of Alexander and of the Romans—because of its geographical location and its courage. Some of its many tribes lived by agriculture while others retained the pastoral way of life; all engaged in trade, and some in robbery. United by a shared origin, language and some religious practices, they formed a great nation, though its various parts weren't held together by any political tie.

·MAHOMET·

Suddenly there arose among them a man endowed with ardent enthusiasm and profound astuteness, born with the talents of a poet and of a warrior. He conceives the bold project of uniting the Arabian tribes into one body, and has the courage to make this happen. To impose leadership on a nation that has hitherto been untamed, he begins by building a more refined religion on the debris of the previous worship. Legislator, prophet, chief priest, judge and army general—he has all the means of subjugating men in his

hands, and he knows how to employ them skillfully but also in the grand manner.

He passes out a rag-bag of fables that he says he has received from heaven; but he also wins battles. He divides his ·spare· time between prayer and the pleasures of love. After enjoying limitless power for twenty years—something of which there's no other example—he announces that if he has done anything unjust, he is ready to make reparation for it. Silence! except for one woman who ventures to claim a small sum of money. He dies; and the *enthousiasme* [which could mean either 'fanaticism' or merely 'enthusiasm' in our sense] that he has communicated to his people will change the face of three regions of the world.

·THE HEIGHT OF ARAB CIVILISATION·

The *mœurs* of the Arabs were mild and dignified; they loved poetry and cultivated it; and when they reigned over the finest countries of Asia, and time had cooled the fever of religious fanaticism, a taste for literature and the sciences came to be mixed in with their zeal for spreading the faith, and cooled their ardour for conquests.

They studied Aristotle, whose works they translated. They cultivated astronomy, optics and all branches of medicine, and enriched these sciences with some new truths. To them we owe the application of algebra to far more than the single class of questions to which the Greeks had confined it. Their chemical researches were tainted by their vain search for a way of transforming metals (·e.g. turning lead into gold·) and for a drink that would confer immortality; but they were the restorers, indeed they were really the *inventors*, of chemistry, which until then hadn't been properly distinguished from pharmacy or the study of the processes of the arts. It was with the Arabs that chemistry made its first appearance •as the analysis of bodies so as to make known what their

constituents are, •as the theory of the combinations of those constituents and of the laws governing those combinations.

The sciences were free there, which is why •the Arabs were able to revive some sparks of the Greeks' genius; but •they were subjected to a despotism that was backed by religion. So this light ·of scientific knowledge· shone only briefly, and was replaced by a thicker darkness; and these works of the Arabs would have been lost to the human race if they hadn't prepared the way for the more durable restoration that the West is going to present us with.

So we see for the second time genius abandoning a people that it had enlightened; but ·this isn't surprising, because· it was again tyranny and superstition that drove it out of sight. Born in Greece by the side of liberty, genius couldn't halt the collapse of liberty or defend reason against the prejudices of peoples already degraded by slavery. Born among the Arabs in the womb of despotism and near the cradle of a fanatical religion, genius has—like the generous and brilliant character of that people—proved to be only a short-term exception to the general laws of nature that condemn enslaved and superstitious nations to brutality and ignorance.

So this second example oughtn't to make us afraid regarding the future; but it does warn our contemporaries •to do all they can to preserve and increase knowledge if they want to become free or remain so; and •to maintain their

freedom if they want to keep the advantages that knowledge has brought them.

To the history of the Arabs' achievements I shall add the history of the rapid rise and precipitate fall of that nation. After reigning from the Atlantic coast to the banks of the Indus, then driven by the barbarians from the greater part of its conquests and retaining the rest only to exhibit in them the shocking spectacle of a people driven down to the lowest state of servitude, corruption and wretchedness, the Arab nation still occupies its original territory (·as distinct from its conquests·), where it has preserved its *mœurs*, its spirit, its character, and been able to regain and defend its former independence.

I shall show how the religion of Mahomet—

- the simplest in its dogmas,
- the least absurd in its practices, and
- the most tolerant in its principles,

—seems to have condemned to perpetual slavery and incurable stupidity all that vast portion of the earth over which it has extended its domination; while we're also going to see the genius of the sciences and of liberty shine brightly under the most absurd superstitions and in an environment of the most barbaric intolerance. China exhibits a similar phenomenon, though there the effects of this stupefying poison have been less fatal.

Seventh era

From the first advances of the sciences around the time of their revival in the West to the invention of printing

Various circumstances contributed to the human mind's gradually regaining the energy that had seemed to have been crushed forever by the degrading and heavy chains that had weighed it down.

The priests' intolerance, their efforts to get political power, their scandalous greed, and their dissolute *mœurs* made more disgusting by their hypocrisy, inevitably raised pure souls, healthy understandings and courageous characters against them. People were struck by how their dogmas, maxims and conduct contradicted the gospels that were the original basis for their faith and morality—the evangelists' books—that the priests hadn't been able to conceal entirely from the knowledge of the people.

So powerful outcries were raised against them. In the south of France whole provinces united in adopting a simpler doctrine, a purer christianity, in which any man—answerable only to the divinity [i.e. only to God, not to the priests]—would form his own judgment regarding what the divinity had condescended to reveal in the books that came from him.

Fanatical armies led by ambitious captains laid waste those southern provinces. Executioners, under the direction of legates and priests, slaughtered those whom the soldiers had spared. A tribunal of monks was established with instructions to send to the stake anyone suspected of still listening to his reason.

But they couldn't prevent the spirit of freedom and enquiry from silently advancing. Repressed in one country where it dared to show itself, where more than once intoler-

ant hypocrisy kindled bloody wars, it started up and spread secretly elsewhere. It keeps showing up at intervals until the time when, helped by the invention of *printing*, it became strong enough to rescue a part of Europe from the yoke of the court of Rome.

Back near the start of this seventh era there were already men who, having risen above all the superstitions, settled for despising them in secret, or at most went no further than to ridicule the superstitions in passing, with the ridicule being made more striking by the veil of respect that they took care to cover it with. These boldnesses were forgiven because of their good-humoured tone. They were cautiously distributed throughout works intended for high-ranking or learned readers; they never reached the mass of the people, which is why they didn't arouse the hatred of the persecutors.

Frederick II [13th century] was suspected of being what our priests of the 18th century have since called a *Philosophe* [see Glossary]. The pope accused him, before all the nations, of having treated the religions of Moses, Jesus and Mahomet as political fables. His chancellor Pierre des Vignes was said to have written a book called *The Three Impostors*. Actually there wasn't any such book; but the mere title announced the existence of the opinion—the natural upshot of examining these three creeds that all had the same source—that they were only a corruption of a purer form of worship rendered by earlier people to the universal soul of the world.

Our collections of fables and the *Decameron* of Boccaccio

are full of traits that express this freedom of thought, this contempt for prejudices, this inclination to aim sharp and secret derision at them.

So this era provides us with peaceful despisers of all the superstitions, side by side with passionate reformers of their grossest abuses; and I'll be able to connect—almost—the history of •these quiet rejections and •loud• protests on behalf of the rights of reason with the history of •the last philosophers of the school of Alexandria.

I shall look into whether, when philosophical proselytism was so dangerous, secret societies weren't formed with the aim of perpetuating—spreading quietly and safely among an inner circle—a few simple truths as reliable antidotes to the prevailing prejudices.

I shall examine whether we oughtn't to include among such societies the celebrated order that popes and kings conspired against so basely and destroyed so barbarously. [This refers to the order of the Knights Templar. See 'Jacques de Molay' in Wikipedia; read also, if you can stand it, Browning's poem 'The Heretic's Tragedy'.]

Priests had to be studious, •for self-defence, •to invent pretexts for grabbing secular power and •to perfect their skill in forgery. On the other side the kings, wanting to strengthen their hands in a war in which the claims of each side were backed by authority and precedent, encouraged schools that could provide lawyers they needed to help them against the priests.

In these disputes between the clergy and the governments, and between the clergy of each country and the supreme head of the Church, those who had more honest minds and more frank and upright characters fought •for the cause of the laity against that of priests and •for the cause of the national clergy against the despotism of the foreign head •of the Church•. They attacked these abuses and usurpations

and tried to reveal their origin. This boldness strikes us today as nothing but servile timidity; we smile at seeing men work so hard to prove things that could have been learned through simple good sense; but those were new then, and they often decided the fate of a people. These men sought them with an independent soul; they defended them bravely; and it's through them that human reason began to recall its rights and its liberty.

In the quarrels that arose between kings and nobles, the kings secured the support of the big cities by granting privileges or by restoring some natural human rights; they tried by emancipating •serfs• to increase the number of those who would have the common rights of citizens. And these men, born again to freedom, would come to realise how important it was for them to acquire—through the study of law and of history—a nimbleness and authority of opinion that would help them to counterbalance the military power of the feudal tyranny.

The rivalry between emperors and popes prevented Italy from being united under a single master and enabled many independent societies to exist there. In the small States there was a need to add the power of persuasion to that of force, resorting to negotiation as often as to weapons; and because this political war was really driven by a war of opinion, and because Italy had never entirely lost its taste for learning, it was on course to become a source of enlightenment for Europe—not a bright light yet, but one that promised to grow quickly.

Then religious fanaticism drew the western nations to the conquest of places that were said to have been made holy by the miracles and death of the Christ; and this uproar •had two good effects: it •helped the cause of liberty by weakening and impoverishing the nobles, and it extended the connection of the peoples of Europe with the Arabs—a connection that

had already been •formed by the Arabs' mixing in with the christians of Spain and •cemented by their trade with Pisa, Genoa and Venice. The Europeans learned Arabic, read books in that language, and learned some of the Arabs' discoveries; and if they didn't rise *above* the level at which the Arabs had left the sciences, they at least had the ambition to rise *up to* it.

These wars, undertaken in the service of superstition, destroyed it. The spectacle of many religions eventually aroused in men of good sense •an equal indifference for these creeds that are equally powerless against men's passions and vices, •an equal contempt for the equally sincere and equally obstinate attachment of their devotees to contradictory opinions. [This paragraph in the original contains five occurrences of *également*.]

Republics were formed in Italy; some were imitations of the Greek republics, while others tried to reconcile the servitude of a subject people with the liberty and democratic equality of a sovereign one. Some towns in Germany, to the north, achieved almost entire independence and were governed by their own laws. In certain parts of Switzerland the people broke the chains of feudal and of royal power.

In nearly all the large States mixed constitutions came into being; the authority for imposing taxes and making new laws was divided in some of them amongst the king, the nobles, the clergy and the people; in others amongst the king, the barons and the commons. Under these imperfect constitutions the populace, though still not freed from humiliation, was at least sheltered from oppression; and the real *stuff* of a nation—that same populace—was given the legal right to defend its own interests and to be *heard* by those who were regulating its destiny. In England a famous act solemnly sworn by the king and the great men of the realm secured the rights of the barons and some of the rights of

the •common• men. [This refers to the Magna Carta of 1215.]

Other nations, provinces and even cities also obtained similar charters, though less famous and less well defended. They're the origin of the *declarations of rights* that every enlightened man these days regards as the basis of liberty, but which the ancients didn't—*couldn't*—have any idea of because

- their constitutions were polluted by domestic slavery,
- with them the right of citizenship was hereditary or voluntarily conferred by the state, and
- they never rose to the level of knowing the rights that are inherent in mankind and belong absolutely equally to all men.

In France, England and other great nations the people seemed to want to get their true rights back; but they were blinded by the sense of oppression rather than enlightened by reason, so that they expressed their desires only by violence; for which they were punished by acts of vengeance that were more barbarous and (especially) more unjust, and looting followed by misery that was more severe, •than what they had been rebelling against. •

But in England the principles of the reformer Wycliffe had launched a movement, directed by some of his disciples, which pointed to more thorough and better organised attempts that the people were to make under other reformers in a more enlightened age.

The discovery of a manuscript of Justinian's code led to a revival of the study of jurisprudence and of legislation, and served to make laws less barbarous even among the peoples who knew how to profit from them without being willing to submit to them.

The trade of Pisa, Genoa, Florence, Venice, the Belgian cities and some free towns of Germany embraced the Mediterranean, the Baltic and the European coasts of the North

Atlantic. Their merchants sought out precious commodities of the Levant in the ports of Egypt and out to the furthest shores of the Black Sea.

No-one tried to find, deepen or develop the principles of politics, legislation, or economics; these weren't yet sciences. But as men began to be enlightened by experience, they made observations that could lead to •such principles, and learned things that were going to make the need for •them to be felt.

Aristotle was known at first only by a translation of an Arabic version of his works. His philosophy, persecuted at the beginning, soon held sway in all the schools: it didn't bring new light, but it gave more regularity, more method, to the art of argumentation that theological disputes had given birth to. This discipline didn't lead to the discovery of truth; it didn't even help with evaluating and soundly judging evidence for the truth; but it sharpened men's minds; and the taste for subtle distinctions, the need to

- continually divide and subdivide ideas,
- seize their elusive shades of meaning and
- express them in new words

—all this apparatus, first used in disputes to embarrass one's antagonist or to escape from his traps, was the origin of the philosophical analysis that has since been the rich source of our advances.

We're indebted to these scholastics for the more precise notions that can now be formed concerning

- the supreme being and his attributes;
- the distinction between the first cause and the universe that it is supposed to govern;
- the distinction between mind and matter;
- the different senses that can be given to the word 'liberty';
- what is meant by 'creation';

- how to distinguish the different operations of the human mind from each other; and
- how to classify the ideas the mind forms of *things* and of their *properties*.

But this method was bound to slow the progress of the natural sciences in the schools. All we find in the sciences at this time are:

- a few anatomical researches;
- some obscure work in chemistry, exclusively pursuing the great work of turning base metals into gold;
- some studies in geometry and algebra, which didn't involve knowledge of everything the Arabs had discovered or an understanding of the works of the ancients; and lastly
- some astronomical observations and calculations, which were useful only for making and completing tables and were polluted by a ridiculous admixture of astrology.

Yet the mechanical arts began to approach the degree of perfection they had retained in Asia. In countries of southern Europe the culture of silk was introduced; windmills and paper-mills were established; and the art of measuring time was taken beyond where it had got to with the ancients and with the Arabs.

Two important discoveries characterise this era. **(i)** The loadstone's property of pointing always to the same region of the sky—a property that the Chinese knew and even used in steering their vessels—was also observed in Europe. The compass came into use, an instrument that increased commercial activity, improved the art of navigation, suggested the idea of the voyages that have since given us knowledge of a new world and have enabled man to look at the whole extent of the globe on which he is placed. **(ii)** A chemist, by mixing saltpetre with an inflammable matter, discovered

the secret of ·gunpowder·, the powder that has produced an unexpected revolution in the art of war. Despite the terrible effects of fire-arms, by keeping combatants further apart they have made war less murderous and warriors less ferocious. Military expeditions are more expensive; wealth can counter-balance force; and even the most warlike nations feel the need to enrich themselves through commerce and the arts if they are to have the means of making war. ‘Civilised’ peoples no longer have to fear anything from the blind courage of barbarian nations. Great conquests and the revolutions that follow them have become almost impossible.

The nobles had had the upper hand over the people because of their armour of iron and their skill in riding almost invulnerable horses and in using the lance, the mace, or the sword; and ·with the discovery of gunpowder· all this was completely done away with. The destruction of this last obstacle to men’s liberty and real equality came from an invention which at first glance seemed to threaten the annihilation of the human race!

In Italy the language reached almost its perfection about the 14th century. Dante is often noble, precise, energetic. Boccaccio has grace, simplicity and elegance. The ingenious and tender Petrarch is still fresh. In this territory, whose fine climate comes close to Greece’s, they studied the models of antiquity and tried to bring some of their beauties across into the new language. . . . Already some attempts gave reason to hope that the genius of the ·fine· arts—aroused by the view of ancient monuments, learning their mute but eloquent lessons—was going *again* to add beauty to man’s existence and give him those pure pleasures the enjoyment of which is equal for everyone and grows in proportion as it is shared.

The rest of Europe followed at a distance; but a taste for letters and poetry at least *began* to give a polish to languages that were still barbarous.

The same forces that had driven minds out of their long lethargy also of course directed their activities. When opposing interests were agitating some question, reason couldn’t be brought in to answer it; religion, far from acknowledging reason’s power, claimed to overrule it and gloried in its humiliation; and what politics regarded as just was ·not what reason endorsed but· what had been consecrated by conventions, by longstanding practice, by ancient customs.

No-one suspected that men’s rights were written in the book of nature and that to look for them in any other would be to get them wrong and to violate them. The search for maxims or examples from which to infer maxims was conducted in

- the sacred books,
- respected authors,
- papal edicts,
- the decrees of kings,
- the records of old usages and
- the annals of the churches.

Their way to tackle a principle was never to examine it in itself, but to look into the texts being used to support it—to interpret, to question, to support or to annul *them* by means of yet other texts! A proposition was adopted not because it was true but because it was written in book x and had been accepted in country y ever since century z.

Thus the authority of men was everywhere substituted for that of reason, Books were studied much more than nature and the opinions of the ancients were studied more than the phenomena of the universe. This mental slavery—with no chance yet of an appeal to enlightened criticism—did more harm to the advances of the human species •by corrupting the method of study than it did •by its immediate effects. And the ancients were still too far from being equalled for anyone to think of correcting or surpassing them.

During this era *mœurs* retained their corruption and their ferocity; religious intolerance was even more active than before; and civil discords and the incessant wars among a crowd of petty sovereigns took the place of barbarian invasions and the even more deadly scourge of private feuds. It's true that

- the 'gallantry' of minstrels and troubadours and
- the creation of orders of chivalry that professed generosity and frankness and devoted themselves to the maintenance of religion, the relief of the oppressed and the service of women,

seemed likely to bring into people's *mœurs* more mildness, decency and dignity. But this change was confined to courts and castles and didn't reach the mass of the people. It led to a little more equality among the nobles, less perfidy and

cruelty in their relations with each other; but there was no change in their contempt for the people, the violence of their tyranny, the brazenness of their thefts; and the nations, as oppressed as ever, were as ignorant, barbarous and corrupt as ever.

This poetical and military 'gallantry', this chivalry—largely due to the Arabs, whose natural generosity long resisted superstition and despotism in Spain—had doubtless their use: they spread seeds of humanity that weren't going to grow until happier times. It was the general character of this era that it disposed the human mind for the revolution that the discovery of printing was going to bring, and prepared the ground that the following ages would cover with such a rich and abundant harvest.

Eighth era

From the invention of printing to the period when the sciences and philosophy threw off the yoke of authority

Those who haven't *reflected* on the human mind's progress in the discovery of the truths of science or the processes of the arts must be astonished that after men discovered how to make impressions of drawings it took them so long to discover how to print characters.

No doubt some engravers of plates had had the idea of this application of their art; but they had been more impressed with the difficulty of doing it than with the benefits of success. It is indeed fortunate that they didn't—*couldn't*—suspect how vast that success would be; for if they had, the priests and kings would have combined to stifle at birth this enemy that was going to unmask the priests and dethrone the kings.

·WHAT PRINTING ACHIEVED·

With printing, indefinitely many copies of a work can be made at a small expense. This gives to those who can read access to books that meet their tastes and their needs; and this ease in reading has intensified and propagated the desire to learn to read.

These printed copies of works spread facts and discoveries further and faster than ever before. There comes to be an active world-wide *commerce* in items of knowledge.

·Before printing·, individual manuscripts had to be searched for, in the way we now search for rare books. ·But once printing had been discovered·, things that had

previously been read by only a few individuals could now be read by a whole people and have an impact at almost the same time on everyone who understood the relevant language.

They knew how to address widely scattered nations. They saw how to establish a new kind of platform (**tribune**) •from which to communicate things that are less showy but deeper; •from which the passions aren't pushed around so tyrannically and reason gets a more certain and durable power; •where all the advantage is on the side of truth, because any loss of means to seduce is matched by a gain in means to clarify. A public opinion is formed; it is powerful because so many people share in it, and energetic because the factors that drive it act on all minds at once, even if not always at close range. In short, we now have a tribunal (**tribunal**) in favour of reason and justice, independent of all human power, from which it is hard to conceal anything and impossible to escape.

New methods, the record of the first steps along the road to a discovery, the labours that prepare the way for it, the views that could suggest the idea of such a discovery or create a desire to search for it—these are quickly communicated, and give each individual a conspectus of all the means that the efforts of everyone have been able to create; and high intelligence seems by this mutual help to have more than doubled its powers.

Every new error is resisted from its birth; often attacked before it has even been propagated, it doesn't have time to take root in the mind. The errors accepted from infancy that each person identifies, in a way, with his own reason; and those that fear or hope have made dear to weak souls—these have been *shaken* by the fact that it's now impossible

- to prevent their being discussed,
- to hide the fact that they can be rejected or opposed,

- to set oneself up against the advances of truths which will eventually display their absurdity.

It is to printing that we owe the possibility of spreading works that are called for by current events or passing waves of opinion, thus bringing to bear on some single topic of discussion the views of all the men who speak the relevant language.

Without the help of the art of printing, could we have multiplied books aimed at each class of readers, at each educational level? To printing we owe

- the *prolonged* discussions that are needed to throw light on doubtful questions and provide an unshakable basis for truths that are so abstract, so subtle, so remote from the prejudices of the people and from the common opinion of the scientists, that they would otherwise soon be forgotten;
- wholly elementary books, dictionaries, works in which a multitude of facts, observations and experiments are reported in detail, with all the evidence developed and all the difficulties investigated;
- valuable anthologies, some containing everything that has been discovered, written, thought, in a particular part of the sciences, some reporting the results of the year's work of all the scientists of a single country;
- lists, charts and diagrams of every kind: some enable one to simply *see* results that the mind would have needed hard labour to work out; others make a perfect job of presenting the fact, the discovery, the number, the method, the object that one needs to know; yet others provide in a convenient form, a methodical order, materials from which high intelligence can infer new truths.

All these means of making the human mind's journey faster, surer and easier are benefits of printing.

I'll show other benefits brought by printing when I analyse the effects of the move from •writing about the sciences almost exclusively in one language shared by all the world's scientists to •using in the sciences the vernacular languages of the individual nations.

[In this long paragraph, **(a)** and **(b)** are inserted to help make clear the two kinds of despotism that are in question throughout.] Isn't *printing* what freed the education of peoples from all **(a)** religious and **(b)** political shackles? It would be useless to either kind of despotism •to invade all our schools; •to try by rigid rules fix what errors minds are to be protected from and what truths they are to retain; •to require that professorships dedicated to the moral education of the people or to teaching the young philosophy and the sciences shall teach only doctrines that are favourable to this double tyranny. ·Even if these attempts were made·, printing could still diffuse a pure and independent light. The education that an individual man can get from books in silence and solitude can't be corrupted for everyone; all that is needed is one corner of the free earth where the pages can be loaded into a printing-press. Amid that multitude of different books, of copies of each book, of reprints that can multiply a book overnight, how can all the doors through which the truth might enter be shut tightly enough? It was *hard enough* back when a work could be annihilated merely by destroying a few copies of a manuscript, and when a truth or opinion could be driven into eternal oblivion merely by being outlawed for a few years; hasn't it now become *impossible*, given that it would require continuous vigilance, unrelenting activity? Also there is this point: in addition to •the all-too-obvious truths that directly harm the interests of inquisitors, there are also •others that *surreptitiously* include the former, prepare the way the way for them and are bound some day to lead men to them. Now, even if the inquisitors *could* drive away the former,

how could they prevent the latter from creeping in and spreading? Could they do it without having to do something that would be as fatal to the power of error as the truth itself would—namely, dropping their mask of hypocrisy? So we'll see reason triumphing over these vain efforts. We shall see in this war—a war constantly renewed and often cruel—reason succeeding against **(a)** violence and against **(b)** cunning; **(a)** braving the flames and **(b)** resisting seduction; crushing under its omnipotent hand both

- (a)** fanatical ·religious· hypocrisy demanding that its dogmas be sincerely worshipped and
- (b)** political hypocrisy going on its knees and begging to be allowed to enjoy in peace the profit of errors which—according to these hypocrites—are equally profitable for the people to be sunk in for ever.

The invention of printing [in 1440] nearly coincides with two other events, of which one had an immediate influence on the advances of the human mind, while the other will influence the destiny of mankind for as long as it exists.

I refer to **(i)** the taking of Constantinople by the Turks [1453] and **(ii)** the discovery of the route that gave Europe direct communication with the eastern parts of Africa and Asia. [Vasco da Gama's long sea-voyage in 1497–9 from Portugal to India provided for trade that was 'direct', i.e. didn't involve trading with middle-eastern intermediaries who then traded further eastwards.]

·THE FALL OF CONSTANTINOPLE·

The Greek literati, flying from Turkish domination, sought refuge in Italy. They taught people to read the poets, orators, historians, philosophers and scientists of ancient Greece in their original language; and provided many manuscripts—and soon after, editions—of those works. ·Studious· people stopped confining themselves to worshipping what they had agreed to call 'Aristotle's doctrine'; they looked in his own

writings to find out what his doctrine really was; they went so far as to judge it and to oppose it; they contrasted him with Plato. And by thinking they were entitled to choose a master, they were already starting to throw off the yoke.

Reading Euclid, Archimedes, Diophantus and Aristotle's book on animals and his physics revived the spirit of geometry and physics; and the anti-christian opinions of philosophers re-awakened the almost extinct ideas of the time-honoured rights of human reason.

·WHAT EXPLORATIONS ACHIEVED·

Intrepid men, led by a love of glory and a passion for discoveries, had rolled back for Europe the boundaries of the universe, had shown it new skies and opened unknown territories to it. Vasco da Gama had reached as far as India, after following with tireless patience the immense extent of the African coasts; while Christopher Columbus, trusting himself to the waves of the Atlantic ocean, had reached the hitherto unknown country that stretches out to the west of Europe and to the east of Asia.

This passion, whose restless activity was from then onwards addressed to *everything*, pointed to the ·coming· great advances of the human species; and the heroes of navigation had been animated by a noble curiosity; but the kings and robbers who were to profit from their labour were governed by mean and cruel greed, stupid and fierce fanaticism. The unfortunate inhabitants of these new territories, because they weren't christians, were not treated as men. This prejudice, more degrading to the tyrants than to the victims, stifled all sense of remorse and left the greedy and barbarous men that Europe spewed from her bosom free to satisfy their insatiable thirst for gold and for blood. The skeletons of five million men have covered the wretched countries to which the Spaniards and Portuguese took their greed, their

superstition and their ferocity. These bones will for ever be evidence against the doctrine of the political utility of religions, which has its defenders even today.

It's only in this ·eighth· era that man has been able •to know the globe that he inhabits, •to study the human species in all countries, varied by the long-term influence of natural causes or social institutions, •to observe the productions of land and sea in all temperatures and all climates. And the happy consequences of these discoveries have been:

- the resources of every kind that those productions provide to mankind, still so far from being exhausted that we don't even suspect their extent;
- what the knowledge of those objects has been able to do in the way of adding truths to the sciences and destroying accredited errors;
- the commercial activity that has spurred industry and navigation and—inevitably—all the sciences and all the arts; and lastly
- what this activity has done to give free nations the power to resist tyrants and to empower subject nations to break their chains or at least to loosen the feudal ones.

But these benefits won't compensate for what they have *cost* humanity until the moment when Europe, renouncing the oppressive and sordid system of commercial monopoly, •recognises that men all over the world—equals and brothers, nature says—weren't formed by nature to nourish the pride and greed of a few privileged nations; and, with a better understanding of its own real interests, •invites all peoples to share in its independence, its liberty and its enlightenment. Unfortunately, we have yet to learn whether this revolution will be the honourable fruit of advances in philosophy or—as it has been so far—merely the shameful consequence of national jealousies and the excesses of tyranny.

·THE REFORMATION·

Until this ·eighth· era the crimes of the priesthood had not been punished. The pleas of oppressed humanity, of violated reason, had been smothered in blood and in flames. The spirit that had dictated those pleas was not extinct; but this terrified silence emboldened ·the priesthood· to commit further outrages. At last, a new explosion was caused by the outrage of farming out to the monks the right to *sell* forgiveness of sins in taverns and public places. Luther, with the sacred books in one hand, pointed with the other to

- the pope's claiming the right to forgive crimes and sell pardons;
- the insolent despotism that he exercised over the bishops who had for so long been his equals;
- the way in which the fraternal supper of the first christians had become (under the name 'mass') a kind of magical operation that could be bought and sold;
- priests condemned to the corruption of irrevocable celibacy;
- that cruel and scandalous law ·requiring celibacy· extended to the monks and nuns with which papal ambition had inundated and polluted the church;
- all the secrets of the laity handed over—through confession—to the intrigues and the passions of priests; and finally
- God himself scarcely retaining a feeble share in the worship lavished on bread, men, bones and statues.

Luther announced to the astonished multitude, that these disgusting institutions were not christianity but rather the corruption and shame of christianity; and that to be faithful to the religion of Jesus-Christ one had to start by rejecting the religion of his priests. He used equally the weapons of logic and scholarship and the no less powerful devices of ridicule. He wrote at once in German and in Latin. It was no

longer as in the days of the Albigenses or of Jan Hus, whose doctrines were unknown beyond the walls of their churches and were so easy to libel. The German books of the new apostles worked their way into every town of the empire at the same time, while their Latin books jolted all of Europe out of the shameful sleep that superstition had plunged it into. •Those whose reason had already taken them to where the reformers were going but who had been kept silent by fear; •those who were troubled with secret doubts but trembled to admit them even to their consciences; •those simpler folk who knew nothing of all the theological absurdities and who, having never reflected on the questions at issue here, were astonished to learn that it was up to them to choose from among different opinions;—all entered eagerly into these discussions which, they saw, affected their interests in this world and their happiness in the next.

The whole of christian Europe, from Sweden to Italy and from Hungary to Spain, was instantly covered with supporters of the new doctrines; and the Reformation would have delivered all the European peoples from the yoke of Rome if the mistaken policy of certain princes hadn't ·unintentionally· raised again the same priestly sceptre that had so often weighed down the heads of kings.

This policy, which unfortunately their successors still haven't rejected, was •to ruin their States by trying to add to them and •to measure their power by the extent of their territory rather than by the number of their subjects.

Thus, Charles V ·of the Holy Roman Empire· and Francis I ·of France·, battling one another for control of Italy, sacrificed to the pursuit of good relations with the pope the much greater benefits the Reformation offered to any country that had the wit to adopt it.

Seeing that the princes within the Empire sided with opinions that would increase their power and wealth, the

emperor ·Charles· became the protector of the old abuses, hoping that a religious war would give him an opportunity to invade their States and destroy their independence. Francis imagined that by having protestants burned at the stake ·in France· while protecting their leaders in Germany he would preserve the friendship of the pope without losing valuable allies.

But that wasn't their only motive. Despotism has also its instinct, and that instinct told these kings that •men, after subjecting religious prejudices to the examination of reason, would soon extend the examination to political prejudices; that •after being enlightened on the usurpations of popes they would eventually want to be enlightened on the usurpations of kings; and that •reforming the ecclesiastical abuses that were so useful to royal power might lead to reform of the more oppressive abuses on which that power was based. So no king of a large nation voluntarily favoured the party of the reformers. Henry VIII, slapped down by the pope's anathema [see Glossary], went on persecuting them. Edward VI and Elizabeth, unable to espouse papism without pronouncing themselves usurpers, established in England the faith and manner of worship that came closest to it. The protestant monarchs of Great Britain have always favoured catholicism except when there was the threat of a catholic claimant to their crown.

The kings in Sweden and Denmark saw the establishment of lutheranism as merely a precaution to secure the expulsion of the catholic tyrant from whom they were taking over; and in the Prussian monarchy, founded by a philosophical prince, we already see his successor unable to disguise his secret hankering for the religion—·catholicism·—that kings loved so much.

Religious intolerance was common to all the sects, which passed it on to all the governments. The papists persecuted

all the reformed communions; and the latter, while pronouncing anathemas against each other, joined together against the unitarians who—in a more rational frame of mind—had tested every doctrine if not by the touchstone of reason at least by that of rational criticism, and who had *not* concluded that the only way to free themselves from some absurdities was to retain others equally disgusting. This intolerance ·among the reformed communions· served the cause of papism.

For a long time there existed in Europe—especially in Italy—a class of men who rejected all superstitions, were indifferent to all modes of worship, were governed only by reason, and accordingly regarded religions as human inventions; one might laugh at them in secret, but prudence and policy required an appearance of respect for them.

Later on, boldness went further. While the schools used the •misunderstood philosophy of Aristotle to perfect the art of theological hair-splitting and to make *ingenious* things that would naturally have been merely *absurd*, some scientists used his •actual doctrines as the basis for a system that was destructive of every religious idea. According to this system the human soul was only a faculty, which vanished when life ended, and the only ruler of the world—the only providence—consisted in the necessary laws of nature. These thinkers were opposed by the platonists, whose views (resembling what has since been called 'deism' [see Glossary]) were even more terrifying for priestly orthodoxy.

The terror of punishment soon put a stop to this imprudent frankness. Italy and France were stained with the blood of those martyrs to the freedom of thought. All sects, all governments, all authorities of any kind agreed in just one thing, hostility to reason. Reason had to be covered with a veil that would hide it from tyrants' eyes but let it be seen by philosophy's.

So it was necessary to take refuge in the timid unforthcomingness of that secret doctrine—that religions are fit to be laughed at, though only in private—which always had many adherents. It had been propagated especially among the heads of governments, as well as among those of the Church; and around the time of the Reformation the only things that princes, ministers and pontiffs believed were the principles of religious machiavellianism. These opinions had even corrupted philosophy. Indeed, what morality could be expected from a system one of whose principles is that the morality of the people should be supported by false opinions, that it is all right for •enlightened men to deceive the populace as long as the errors they impose are useful, keeping people in the shackles that •they themselves have escaped from?

If the foundation of all true morality is men's natural equality—the ultimate principal basis of their rights—then what could be expected from a philosophy one of whose maxims is open contempt for that equality and for those rights? No doubt this same philosophy could have contributed to the advances of reason, whose reign it was silently preparing the way for; but while it existed *alone*, all it did was to •replace fanaticism by hypocrisy and to •corrupt those who presided over the destiny of States, while freeing them from their prejudices.

Truly enlightened philosophers, untouched by ambition and extremely cautious in how they went about undeceiving men while not allowing themselves to confirm them in their errors, would have been naturally inclined to embrace the Reformation; but—that is not what actually happened, for at least three reasons. (i) Most of them, deterred by finding just as much intolerance *everywhere*, didn't think they should expose themselves to the drawbacks of a change that would then lead on to the same oppressive restraints as before.

(ii) Given that they had to go on seeming to believe absurdities that they really rejected, they saw no great benefit in reducing the number of those absurdities a little. (iii) They were afraid that by coming out in favour of protestantism they would seem to have been outright hypocrites. So they stayed attached to the old religion, strengthening it with the authority of their reputation.

The spirit that animated the reformers didn't lead to real freedom of thought. Each religion forbade most opinions in the country in which it prevailed. But since the different creeds were opposed to each other, there were few opinions that weren't attacked in some parts of Europe and supported in others. Also, the new communions had been forced to relax dogmatic rigour a little. They couldn't without gross contradiction put unduly tight limits on the right of free enquiry, because they had recently invoked this right to justify their separation from the established religion. They refused to restore to reason its full liberty, but they consented to its prison's being less confined: the chain wasn't broken but it was made lighter and longer. Eventually, in the countries where no religion had been able to suppress all the others, there came to be established something that the ruling sect had the nerve to describe, insolently, as their 'tolerance', namely a system in which some men permit other men to believe what their reason opts for, to do what their conscience dictates, to pay to their common God the homage they think best pleases him. In these countries the 'tolerated' doctrines could be upheld with more or less complete freedom.

We thus see arising in Europe a sort of freedom of thought, not for men but for christians; and even today it exists only for christians, except in France.

But this intolerance—or, strictly speaking, this very limited 'tolerance'—forced human reason to explore the

rights that had been too long forgotten, or rather had never been properly known or properly explained.

Indignant at seeing the people oppressed in the very sanctuary of their conscience by kings—the superstitious or political slaves of the priesthood—some good-hearted men eventually dared to inquire into the foundations of kingly power; and they revealed to the world this great truth:

- liberty is a blessing that can't be taken away;
- there is no prescription in favour of tyranny, no contract that could irrevocably bind a nation to one family;
- magistrates [see Glossary], whatever their titles or functions or power, are the agents of the people and not their masters;
- the people have the right to withdraw any authority that they gave in the first place, if that authority is misused or even if the people merely think that it no longer serves their interests; and lastly,
- the people have the right not only to cancel their agents' authority but also to punish them.

Such are the opinions that Althusius and Languet—and later on Needham and Harrington—boldly professed and energetically expounded. Out of deference to the age in which they lived, they too often relied on texts, authorities and examples; and their opinions obviously owed much more to the quality of their minds and the force of their characters than to an accurate analysis of the true principles of social order.

However, other more timid philosophers settled for maintaining that there were equal rights and duties in both directions between the peoples and the kings, an equal obligation to keep the contracts that had created those rights and duties. An hereditary magistrate might indeed be deposed or punished, but only if he had infringed this

sacred contract, which still held between the people and his descendants. This doctrine, which pushed natural law aside and made everything a matter of positive [see Glossary] law, was supported by legal scholars and theologians: it was more favourable to the interests of powerful men and to the projects of the ambitious, because it struck at the individual who had power rather than at the power itself. So it was embraced by almost all political writers and adopted as the starting-point in revolutions and political dissensions.

History will show us during this era few real advances towards liberty, but more order and force in governments and among the people a stronger and especially a more just sense of their rights. Laws are better combined; they appear less often to be the shapeless result of circumstances and of whims; if they are not yet made by philosophers, they are at least made by learned men.

The popular movements and the revolutions that agitated England, France and the republics of Italy inevitably led philosophers to attend to the part of political theory that consists in observing and predicting the effects that constitutions, laws and public institutions can have on peoples' liberty, on prosperity, on the strength of States and on the preservation of their independence and form of government. Some, such as More and Hobbes, followed Plato in deriving from a few general principles the plan of an entire system of social order and presented the model which (they said) men should continually approach. Others, like Machiavelli, sought in a profound investigation of historical facts the rules that would justify optimism about mastering the future.

Economics as a science still didn't exist; princes didn't count how many men they had, but how many soldiers; finance was merely the art of plundering the people without driving them to revolt; and the only attention governments paid to commerce was in extorting taxes from it, using

privileges to interfere with its workings, or quarrelling with one another over monopolising it.

The nations of Europe, occupied by the common interests that united them and the opposed interests that they thought had to divide them, felt the need to have certain rules of conduct to govern their peacetime relations independently of treaties; while other rules, to be respected even in the midst of war, would soften its ferocity, lessen its ravages and at least prevent its pointless calamities.

So there was a science of the law of nations; but unfortunately these laws were sought not in reason and nature—the only authorities that independent peoples could acknowledge—but in established usages or the opinions of antiquity. Less weight was given to •the rights of humanity and justice towards individuals than to •the ambition, pride and greed of governments.

That is why in this era we don't see moralists inquiring into man's heart, analysing his faculties and his feelings, so as to discover his nature, and the origin and law of his duties and the penalty for failing in them. They *did* know how •to employ every kind of scholastic hair-splitting to discover, regarding actions whose lawfulness seems uncertain, the precise line where innocence ends and sin begins; •to settle what authority has enough weight to justify performing of any of these dubious actions; •to produce methodical classifications of sins, some by genus and species, others in terms of their seriousness; and above all •to identify the kinds of sins such that performing just one of them would deserve eternal damnation.

Clearly the science of morality couldn't exist yet, because priests had the privilege of being the sole interpreters and judges of morality. But these same hair-splittings—as ridiculous as they were scandalous—led to an inquiry into (and helped in the discovery of) •how good or bad actions or their

motives are, •the order and limits of our duties and •the principles that should guide our choice when these duties appear to be in conflict. It's like what often happens when a skilful mechanic, by studying a clumsily built machine that happens to have come his way, sees how to turn it into a new one that is less imperfect and truly useful.

The Reformation destroyed confession, indulgences, monks and the celibacy of priests, thus purifying the principles of morality and even lessening the corruption of *mœurs* in the countries that accepted it. It delivered those countries from priestly forgiveness of sins (that dangerous encouragement to vice) and from religious celibacy, which destroys all the virtues because it is the enemy of the domestic ones. [indulgence: priestly act supposed to reduce the time the recipient will have to spend in purgatory; these acts were *bought*.]

This era was more disfigured than any other by terrible atrocities. It was the era of religious massacres, holy wars and the depopulation of the new world.

It saw, re-established in the new world, slavery that was on the ancient pattern but now more barbaric, more productive of crimes against nature; and mercantile greed trading the blood of men, selling them like merchandise after first 'buying' them by treachery, robbery or murder and dragging them from one hemisphere to be condemned in another—amidst humiliation and outrages—to the prolonged torture of a slow and cruel destruction.

At the same time hypocrisy covers Europe with wood-piles [for burning people at the stake] and assassins. The monster of fanaticism, enraged by its wounds, seems to redouble its fury and to rush to pile up its victims because reason will soon snatch them out of its reach. Yet there can also be seen to re-appear some of those gentle, courageous virtues that do honour to humanity and bring it consolation. History gives them names that it can utter without blushing. Strong, pure

souls—great talents combined with noble characters—appear at intervals among these scenes of treachery, corruption and carnage. The human race still revolts the philosopher who looks at the picture it presents; but it no longer humiliates him, and now offers him hope for the future.

·ADVANCES OF THE SCIENCES AND MATHEMATICS·

The sciences begin to stride rapidly and brilliantly. The language of algebra is generalised, simplified and improved—or rather it was only then that it was truly formed. The first foundations are laid for the general theory of equations, the nature of the solutions they give comes to be better understood, and equations of the third and fourth degree are solved.

The ingenious invention of logarithms streamlines the operations of arithmetic, thus making it easier to apply calculations to real things. And this extends the scope of all the sciences in which a numerical process comes into checking the consequences of an hypothesis or theory against the empirical facts, thereby discovering laws of nature. In fact the sheer length and complicatedness of some calculations put them beyond the range of what we have time (or indeed intellectual ability) to manage, so that science could never have escaped from that range if it weren't for the help of ·logarithmic· abbreviations.

The law of falling bodies was discovered by Galileo, who was able to deduce from it the theory of uniformly accelerated motion and to calculate the curve followed by a projectile launched into the air with a given velocity and accelerated by a constant force acting parallel to the acceleration.

Copernicus •revived the true system of the world that had been forgotten for so long, •destroyed the senses' objections to it by the theory of apparent motions, and •contrasted the extreme simplicity of the real motions resulting from this

system with the almost ridiculous complicatedness of the motions required by the Ptolemaic hypothesis. The motions of the planets were better understood; and the genius of Kepler discovered the forms of their orbits and the eternal laws by which those orbits are governed.

Galileo, applying to astronomy the recent discovery of telescopes (much improved by him), opened a new sky to the view of mankind. The spots he saw on the disk of the sun told him that it rotates, and he determined how fast and according to what laws it does so. He demonstrated the phases of Venus and discovered the four moons that circle around Jupiter and accompany it in its vast orbit.

He also learned how to measure time accurately, by the swing of a pendulum.

Thus man owes to Galileo the first mathematical theory of motion other than uniform motion in a straight line, as well as knowledge of one of the mechanical laws of nature; while to Kepler he is indebted for knowledge of one of those empirical laws the discovery of which brings two benefits: •leading to knowledge of the mechanical law (·Newton's·) of which the empirical laws express the upshot, and •compensating for the lack of that knowledge ·of Newton's law· during the period when it was still out of reach.

The discovery of the weight of air and of the circulation of the blood are notable advances in •experimental physical science that was born in the school of Galileo and in •anatomy, already too extended not to be separated from medicine.

Natural history, chemistry (despite its chimerical hopes and obscure language), medicine and surgery all make astonishingly fast advances, though we are often sad to see the monstrous prejudices that these sciences still retain.

Without mentioning the works in which Gesner and Agricola present much real knowledge that was so rarely altered [see Glossary] by being mixed with scientific or popular

errors, we see Bernard Palissy •displaying to us both the quarries from which we get our building materials and the masses of rock that compose our mountains and were formed from the remains of sea animals—authentic monuments of the ancient revolutions of the globe; and •explaining how water

- raised from the sea by evaporation,
- restored to the earth by rain,
- stopped by beds of clay and
- assembled in snow on the mountains

supplies the eternal stream of waterfalls, creeks and rivers; while Jean Rey discovered the secret of the combination of air with metals, the first seed of those brilliant theories that widened the boundary of chemistry some years ago.

•LANGUAGE AND THE FINE ARTS•

In Italy the arts of epic poetry, painting and sculpture achieved a perfection unknown to the ancients. In France it could be seen in Corneille that the dramatic art was also about to reach a still greater level. The passion for antiquity leads those who have it to see a higher level of genius in *those who created* its masterpieces, and perhaps they are right; but comparing those works with the productions of Italy and of France, a rational enquirer can hardly fail to see the real advances that *the art itself* has made in the hands of the moderns.

The Italian language was completely formed, and in the languages of other peoples we see the marks of their ancient barbarism continually disappearing.

There was a growing sense of the worthwhileness of metaphysics and grammar and of acquiring the art of analysing—explaining philosophically—both •the rules governing the composition of words and sentences and •the customary usages that play a part in it.

In this era we see everywhere authority battling reason for mastery, a contest that prepared for and heralded the triumph of reason.

So this was the time for the birth of the spirit of criticism without which erudition is hardly worthwhile. They still had to know everything that the ancients had done, and were starting to grasp that if they were obliged to admire the ancients they were also entitled to judge them. And criticism was needed in other ways too. Reason, which sometimes got help from authority and was often opposed by it, wanted to estimate the worth of •that help and of •the reasons for making the sacrifices demanded of it. Those who accepted authority as the basis of their opinions and the guide of their conduct felt how important it was for them to be sure of the strength of their weapons and not have them shattered in the first attacks of reason.

•DETHRONING LATIN•

The practice of writing only in Latin on the sciences, philosophy, jurisprudence and (with a few exceptions) even history, gradually gave way to the practice in each country of using the common language of that country. This is the place to look into how the advances of the human mind were affected by this change, which

- made the sciences more popular, but made it harder for scientists to keep up with developments in them;
- led to a book's being read by more poorly-educated people in one country and fewer enlightened men in the rest of Europe;
- removed the burden of having to learn Latin from many men who were anxious to be educated but hadn't the spare time or the means to read deeply, but forced scientists to consume more time learning different languages.

Granted that Latin couldn't be made the common tongue throughout Europe, maintaining it for writing on the sciences would have been only a short-term advantage for scientists. Why? Because the existence of a sort of scientific language for all nations, while the populace of each nation spoke something different, would have

- divided men into two classes,
- perpetuated the people's prejudices and errors,
- posed a permanent obstacle to true equality—to equal use of the same reason, to equal knowledge of essential truths—

and by stopping in this way the advances of the mass of mankind, would eventually have

- put an end, as happened in the East, to any advances by the sciences themselves.

·EDUCATION·

For a long time there had been no education except in churches and cloisters. The universities were still dominated by the priests. Forced to hand over to the government a part of their influence, they retained it in full force with regard to primary and general education, the education that covers knowledge that is needed in all the common professions and among all classes of mankind. Getting its grip on the infant and the growing child, this education models at its pleasure their flexible minds, their uncertain and obedient souls. All they left to the secular power was the right to direct the study of jurisprudence, medicine, advanced science, literature and learned languages, smaller schools to which no pupils were sent who weren't already broken to the priestly yoke.

The priests lost this influence in countries where the Reformation held sway. The common education, though dependent on the government, was still directed there by a theological spirit; but it wasn't now confined to clerics. It

still corrupted men's minds with religious prejudices, but it didn't bend them to the yoke of priestly authority; it still made fanatics, visionaries, sophists, but it no longer created slaves to superstition.

Yet teaching, being everywhere subjugated, had corrupted minds everywhere by •crushing the minds of all the children under the weight of their country's religious prejudices, and in the young people who were going on to higher education by •stifling the spirit of liberty by means of political prejudices.

It's not only that each man, left to himself, found his path to the truth blocked by a close-knit and terrible battalion of the errors of his country and his times, but also the most dangerous of those errors were already, in a way, *his*. Before he could clear away anyone else's errors, he had to recognise his own; before he tackled the difficulties that nature put in the way of his discovering the truth, he needed to (so to speak) rebuild his own understanding. Education was already conveying some knowledge; but for it to be useful it had first to be refined, to be separated from the clouds in which superstition and tyranny had combined to wrap it.

·OTHER HINDRANCES TO INTELLECTUAL PROGRESS·

I will show what obstacles of various strengths were posed to the advances of the human mind by those vices of public education, those mutually conflicting religious creeds, that influence of the different forms of government. You'll see that •the more reason's topics affected political or religious interests, the slower those advances were; that •general philosophy and metaphysics (whose truths directly attacked *all* superstition) were more obstinately held back than political enquiry (whose improvement threatened only the authority of kings and aristocratic parliaments); and that •this applies equally to the physical sciences.

I'll also set out the other sources of inequality—

·unevenness of development·—that could have arisen from the nature of the objects that each science studies or from the methods it adopts.

When the rate of progress in one science varies in different countries, that's the joint effect of political and natural causes. I shall investigate what part of this variation is to be ascribed to •differences in religions, to •forms of government, to •each nation's wealth, power, national character, geographical situation and events it has experienced and finally to •the facts about which nations *happen* to have had any of those extraordinary men whose influence, extending over the whole human race, is especially powerful in their immediate surroundings.

I shall measure •how much each science has advanced ·at a given time· simply by how many truths it has discovered ·up to that time·, and •how much each nation has advanced in each science first by how many of its men know that science's leading and most important truths and next by the number and nature of those truths.

In fact we have reached the point in civilisation where the populace gets benefits from intellectual knowledge, not only through the services it receives from educated men but also through its ability to treat intellectual knowledge as a sort of patrimony—·an inherited fortune from which funds can be drawn·—which the people can themselves use on their own initiative to resist error, to anticipate or satisfy their needs and to deal with the ills of life by preventing them or mitigating them by additional pleasures.

The history of the persecutions that the defenders of the truth were exposed to in this era won't be forgotten. We'll see these persecutions extend from the truths of philosophy and politics to those of medicine, natural history, physics and astronomy. In the 8th century an ignorant pope had persecuted a deacon for contending that the earth was round,

contrary to the opinion of that *orator* Augustine. In the 17th century the much more shameful ignorance of another pope delivered Galileo into the hands of the inquisition, convicted of having argued for the daily rotation of the earth and its annual movement around the sun. The greatest genius that modern Italy has given to the sciences, overwhelmed with age and infirmities, was obliged—the alternative being prison or torture—to ask God to *pardon* him for having taught men to understand his works better and to admire him in the simplicity of the eternal laws by which he governs the universe!

But the absurdity of the theologians was so *palpable* that they had to yield to human understanding and allow men to maintain that the earth moves provided it was only as an *hypothesis* and didn't conflict with the faith! But the astronomers did the exact opposite: they believed the motion of the earth to be real and did their calculations on the basis of the *hypothesis* of its immobility!

The transition from this ·eighth· era to the one that will follow was marked by three great men, Bacon, Galileo and Descartes. Bacon revealed the true method of studying nature by employing the three instruments she has given us for the discovery of her secrets—observation, experiment and calculation. He wanted the philosopher, dumped down in the middle of the universe, to start by renouncing every belief he had received and even every notion he had formed, so as to create for himself a new understanding (as it were) that would admit no ideas that weren't precise, no notions that weren't sound, no truths whose degree of certainty or probability hadn't been rigorously weighed. But Bacon, though supremely able in philosophy, was not so in the sciences; and these methods for the discovery of truth (he gave no examples) were admired by philosophers but made no difference to the course of the sciences.

Galileo had enriched the sciences with useful and brilliant discoveries; he had taught by his own example how to get more knowledge of the laws of nature by a sound and productive method that doesn't require scientists to sacrifice the hope of success to the fear of going wrong. He founded the first school that pursued the sciences without mixing in anything irrational, whether on behalf of prejudices or of authority; and that ruled out with philosophical severity every means other than experiment and calculation. But confining himself exclusively to the mathematical and physical sciences, he couldn't give to men's minds the push that they seemed to be waiting for.

This honour was reserved for the steadfast and ingenious Descartes. Endowed with supreme ability in the sciences, he combined examples and precepts in exhibiting the method for finding and recognising the truth. He applied this method to the discovery of the laws of dioptrics [= 'optics of refraction'], of the collision of bodies and finally of a new branch of mathematics that was going to enlarge the scope of mathematics in all directions.

He wanted to extend his method to every object of human

intelligence: he brought his meditations to bear on God, man, the universe. In the physical sciences he is less sure-footed than Galileo, not having learned enough from his **lessons** to distrust his imagination, to base his beliefs purely on calculation, and to observe the universe instead of instructing it. And his philosophy is less wary than Bacon's because he didn't learn enough from his **example** to interrogate nature only by experiments, and to study man instead of guessing at his nature. But the very boldness of his errors helped the human species to advance. He aroused minds that his two great rivals hadn't been able to awake from their lethargy. He told men to shake off the yoke of authority and not acknowledge any influence that their reason wouldn't endorse; and he was obeyed, because his daring pushed men along and his enthusiasm pulled them.

The human mind wasn't yet free, but it knew that it was formed to be free. Those who ventured to hold that it should remain in chains or who tried to give it new ones were forced to prove that the chains *ought to* be retained or imposed; and it's easy to see it wouldn't be long before they were broken.