Sketches Of The History Of Man

In Two Volumes

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Section I. Useful Arts.

SKETCH V.

Origin and Progreſs of ARTS.

SECTION I.

USEFUL ARTS.

SOme uſeful arts muſt be nearly coeval with the human race; for food, cloathing, and habitation, even in their original ſimplicity, require ſome art. Many other arts are of ſuch antiquity as to place the inventers beyond the reach of tradition. Several have gradually crept into exiſtence, without an inventer. The buſy mind however, accuſtomed to a beginning in things, cannot reſt till it find or imagine a beginning to every art. Bacchus is ſaid to have invented wine; and Staphylus, the mixing water with wine. The bow and arrow are aſcribed by tradition to Scythos, ſon of Jupiter, tho' a weapon all the world over. Spinning is ſo uſeful, that it muſt be honoured with ſome illuſtrious inventer: it was aſcribed by the Egyptians to their goddeſs Iſis; by the Greeks to Minerva; by the Peruvians to Mama Ella, wife to their firſt ſovereign Mango Capac; and by the Chineſe to the wife of their Emperor Yao. Mark here by the way a connection

nection of ideas: ſpinning is a female occupation, and it muſt have had a female inventer *.

In the hunter-ſtate, men are wholly occupied in procuring food, cloathing, habitation, and other neceſſaries; and have no time nor zeal for ſtudying conveniencies. The eaſe of the ſhepherd-ſtate affords both time and inclination for uſeful arts; which are greatly promoted by numbers who are relieved by agriculture from bodily labour: the ſoil, by gradual improvements in huſbandry, affords plenty with leſs labour than at firſt; and the ſurplus hands are employ'd, firſt, in uſeful arts, and, next, in thoſe of amuſement. Arts accordingly make the quickeſt progreſs in a fertile ſoil, which produces plenty with little labour. Arts flouriſhed early in Egypt and Chaldea, countries extremely fertile.

When men, who originally lived in caves like ſome wild animals, began to think of a more commodious habitation, their firſt houſes were extremely ſimple; witneſs the houſes of the Canadian ſavages, which continue ſo to this day. Their houſes, ſays Charlevoix, are built with leſs art, neatneſs, and ſolidity, than thoſe of the beavers; having neither chimneys nor windows: a hole only is left in the roof, for admitting light, and emitting ſmoke. That hole muſt be ſtopped when it rains or ſnows; and of courſe the fire is put out, that the inhabitants may not be blinded with ſmoke. To have paſſed ſo many ages in that man-

* The Illinois are induſtrious above all their American neighbours. Their women are neat-handed: they ſpin the wool of their horned cattle, which is as fine as that of Engliſh ſheep. The ſtuffs made of it are dyed black, yellow, or red, and cut into garments ſewed with roe-buck ſinews. After drying theſe ſinews in the ſun, and beating them, they draw out threads as white and fine as any that are made of flax, but much tougher.

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ner, without thinking of any improvement, ſhows how greatly men are influenced by cuſtom. The blacks of Jamaica are ſtill more rude in their buildings: their huts are erected without even a hole in the roof; and accordingly at home they breathe nothing but ſmoke.

Revenge early produced hoſtile weapons. The club and the dart are obvious inventions: not ſo the bow and arrow; and for that reaſon it is not eaſy to ſay how that weapon came to be univerſal. As iron is ſeldom found in a mine like other metals, it was a late diſcovery: at the ſiege of Troy, ſpears, darts, and arrows, were headed with braſs. Meneſtheus, who ſucceeded Theſeus in the kingdom of Athens, and led fifty ſhips to the ſiege of Troy, was reputed the firſt who marſhalled an army in battle-array. Inſtruments of defence are made neceſſary by thoſe of offence. Trunks of trees, interlaced with branches, and ſupported with earth, made the firſt fortifications; to which ſucceeded a wall finiſhed with a parapet for ſhooting arrows at beſiegers. As a parapet covers but half of the body, holes were left in the wall from ſpace to ſpace, no larger than to give paſſage to an arrow. Beſiegers had no remedy but to beat down the wall: a battering ram was firſt uſed by Pericles the Athenian, and perfected by the Carthaginians at the ſiege of Gades. To oppoſe that formidable machine, the wall was built with advanced parapets for throwing ſtones and fire upon the enemy, which kept him at a diſtance. A wooden-booth upon wheels, and puſhed cloſe to the wall, ſecured the men who wrought the battering ram. This invention was rendered ineffectual, by ſurrounding the wall with a deep and broad ditch. Beſiegers were reduced to the neceſſity of inventing engines for throwing ſtones and javelins upon thoſe who occupied the advanced parapets, in order to give opportunity for filling up the ditch; and ancient hiſtories expatiate upon the powerful operation of the catapulta and baliſta. Theſe engines ſuggeſt-

ed a new invention for defence: inſtead of a circular wall, it was built with ſalient angles, like the teeth of a ſaw, in order that one part might flank another. That form of a wall was afterward improved, by raiſing round towers upon the ſalient angles; and the towers were improved by making them ſquare. The ancients had no occaſion for any form more complete, being ſufficient for defending againſt all the miſſile weapons at that time known. The invention of cannon required a variation in military architecture. The firſt cannons were made of iron bars, forming a concave cylinder, united by rings of copper. The firſt cannon-balls were of ſtone, which required a very large aperture. A cannon was reduced to a ſmaller ſize, by uſing iron for balls inſtead of ſtone; and that deſtructive engine was perfected by making it of caſt metal. To reſiſt its force, baſtions were invented, horn-works, crown-works, half-moons, &c. &c.; and military architecture became a ſyſtem, governed by fundamental principles and general rules. But all in vain: it has indeed produced fortifications that have made ſieges horridly bloody; but artillery at the ſame time has been carried to ſuch perfection, and the art of attack ſo improved, that, according to the general opinion, no fortification can be rendered impregnable. The only impregnable defence, is good neighbourhood among weak princes, ready to unite whenever one of them is attacked with ſuperior force. And nothing tends more effectually to promote ſuch union, than conſtant experience that fortifications ought not to be relied on.

With reſpect to naval architecture, the firſt veſſels were beams joined together, and covered with planks, puſhed along with long poles in ſhallow water, and drawn by animals in deep water. To theſe ſucceeded trunks of trees cut hollow, termed by the Greeks *monoxyles*. The next were planks joined together in form of a monoxyle. The thought of imitating a fiſh advanced naval architecture. A prow was conſtructed in imitation of the head, a ſtern with

with a moveable helm, in imitation of the tail, and oars in imitation of the fins. Sails were at laſt added; which invention was ſo early that the contriver is unknown. Before the year 1545, ſhips of war in England had no port-holes for guns, as at preſent: they had only a few cannon placed on the upper deck.

When Homer compoſed his poems, at leaſt during the Trojan war, the Greeks had not acquired the art of gelding cattle; they eat the fleſh of bulls and of rams. Kings and princes killed and cooked their victuals: ſpoons, forks, table-cloths, napkins, were unknown. They fed ſitting, the cuſtom of reclining upon beds being afterward copied from Aſia; and, like other ſavages, they were great eaters. At the time mentioned, they had not chimneys, nor candles, nor lamps. Torches are frequently mentioned by Homer, but lamps never: a vaſe was placed upon a tripod, in which was burnt dry wood for giving light. Locks and keys were not common at that time. Bundles were ſecured with ropes intricately combined (*a*); and hence the famous Gordian knot. Shoes and ſtockings were not early known among them, nor buttons, nor ſaddles, nor ſtirrups. Plutarch reports, that Gracchus cauſed ſtones to be erected along the high-ways leading from Rome, for the convenience of mounting a horſe; for at that time ſtirrups were unknown, tho' an obvious invention. Linen for ſhirts was not uſed in Rome for many years after the government became deſpotic. Even ſo late as the eighth century, it was not common in Europe.

Thales, one of the ſeven wiſe men of Greece, about ſix hundred years before Chriſt, invented the following method for meaſuring the height of an Egyptian pyramid. He watched the progreſs of the ſun, till his body and its ſhadow were of the ſame length; and

(*a*) Odyſſey, b. 8. l. 483. Pope's tranſlation.

at that inſtant meaſured the ſhadow of the pyramid, which conſequently gave its height. Amaſis King of Egypt, preſent at the operation, thought it a wonderful effort of genius; and the Greeks admired it highly. Geometry muſt have been in its very cradle at that time. Anaximander, ſome ages before Chriſt, made the firſt map of the earth, ſo far as then known. About the end of the thirteenth century, ſpectacles for aſſiſting the ſight were invented by Alexander Spina, a monk of Piſa. So uſeful an invention cannot be too much extolled. At a period of life when the judgement is in maturity, and reading is of great benefit, the eyes begin to grow dim. One cannot help pitying the condition of bookiſh men before that invention; many of whom muſt have had their ſight greatly impaired, while their appetite for reading was in vigour.

As the origin and progreſs of writing make a capital article in the preſent ſketch, they muſt not be overlooked. To write, or, in other words, to exhibit thoughts to the eye, was early attempted in Egypt by hieroglyphics. But theſe were not confined to Egypt: figures compoſed of painted feathers were uſed in Mexico to expreſs ideas; and by ſuch figures Montezuma received intelligence of the Spaniſh invaſion: in Peru, the only arithmetical figures known were knots of various colours, which ſerved to caſt up accounts. The ſecond ſtep naturally in the progreſs of the art of writing, is, to repreſent each word by a mark, termed a *letter*, which is the Chineſe way of writing: they have about 11,000 of theſe marks or letters in common uſe; and in matters of ſcience, they employ to the number of 60,000. Our way is far more eaſy and commodious: inſtead of marks or letters for words, which are infinite, we repreſent by marks or letters, the articulate ſounds that compoſe words: theſe ſounds exceed not thirty in number; and conſequently the ſame number of marks or letters are ſufficient for writing. This was at once to ſtep from hieroglyphics,

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the moſt imperfect mode of writing, to letters repreſenting ſounds, the moſt perfect; for there is no probability that the Chineſe mode was ever practis'd in this part of the world. With us, the learning to read is ſo eaſy as to be acquired in childhood; and we are ready for the ſciences as ſoon as the mind is ripe for them: the Chineſe mode, on the contrary, is an unſurmountable obſtruction to knowledge; becauſe it being the work of a lifetime to read with eaſe, no time remains for ſtudying the ſciences. Our caſe was in ſome meaſure the ſame at the reſtoration of learning: it required an age to be familiarized with the Greek and Latin tongues; and too little time remained for gathering knowledge out of their books. The Chineſe ſtand upon a more equal footing with reſpect to arts; for theſe may be acquired by imitation or oral inſtruction, without books.

The art of writing with letters repreſenting ſounds, is of all inventions the moſt important, and the leaſt obvious. The way of writing in China makes ſo naturally the ſecond ſtep in the progreſs of the art, that our good fortune in ſtumbling upon a way ſo much more perfect cannot be ſufficiently admired, when to it we are indebted for our ſuperiority in literature above the Chineſe. Their way of writing is a fatal obſtruction to ſcience; for it is ſo rivetted by inveterate practice, that the difficulty would not be greater to make them change their language than their letters. Hieroglyphics were a ſort of writing, ſo miſerably imperfect, as to make every improvement welcome; but as the Chineſe make a tolerable ſhift with their own letters, however cumberſome to thoſe who know better, they never dream of any improvement. Hence it may be averred with great certainty, that in China, the ſciences, tho' ſtill in infancy, will for ever continue ſo.

The art of writing was known in Greece when Homer compoſed his two epics; for he gives ſomewhere a hint of it. It was at

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that time probably in its infancy, and uſed only for recording laws, religious precepts, or other ſhort works. Ciphers, invented in Hindoſtan, were brought into France from Arabia about the end of the tenth century.

Huſbandry made a progreſs from Egypt to Greece, and from Afric to Italy. Mago, a Carthaginian General, compoſed twenty-eight books upon huſbandry, which were tranſlated into Latin by order of the Roman ſenate. From theſe fine and fertile countries, it made its way to colder and leſs kindly climates. According to that progreſs, agriculture muſt have been practiſed more early in France than in Britain; and yet the Engliſh at preſent make a greater figure in that art than the French, inferiority in ſoil and climate notwithſtanding. Before huſbandry became an art in the northern parts of Europe, the French nobleſſe had deſerted the country, fond of ſociety in a town-life. Landed gentlemen in England, more rough, and delighting more in hunting and other country-amuſements, found leiſure to practiſe agriculture. Skill in that art proceeded from them to their tenants, who now proſecute huſbandry with ſucceſs, tho' their landlords have generally betaken themſelves to a town-life.

When Cæſar invaded Britain, agriculture was unknown in the inner parts: the inhabitants fed upon milk and fleſh, and were cloathed with ſkins. Hollinſhed, cotemporary with Eliſabeth of England, deſcribes the rudeneſs of the preceding generation in the arts of life: "There were very few chimneys even in capital "towns: the fire was laid to the wall, and the ſmoke iſſued out "at the roof, or door, or window. The houſes were wattled and "plaiſtered over with clay; and all the furniture and utenſils "were of wood. The people ſlept on ſtraw-pallets, with a log of "wood for a pillow." Henry II. of France, at the marriage of the Ducheſs of Savoy, wore the firſt ſilk ſtockings that were made in France. Queen Eliſabeth, the third year of her reign, received

ved in a preſent a pair of black ſilk knit ſtockings; and Dr Howel reports, that ſhe never wore cloth hoſe any more. Before the conqueſt there was a timber bridge upon the Thames between London and Southwark, which was repaired by King William Rufus, and was burnt by accident in the reign of Henry II. ann. 1176. At that time a ſtone bridge in place of it was projected, but it was not finiſhed till the year 1212. The bridge Notre-Dame over the Seine in Paris was firſt of wood. It fell down anno 1499; and as there was not in France a man who would undertake to rebuild it of ſtone, an Italian cordelier was employ'd, whoſe name was *Joconde*, the ſame upon whom Sanazarius made the following pun:

Jocondus geminum impoſuit tibi, Sequana, pontem;
Hunc tu jure potes dicere pontificem.

The art of making glaſs was imported from France into England ann. 674, for the uſe of monaſteries. Glaſs windows in private houſes were rare even in the twelfth century, and held to be great luxury. King Edward III. invited three clockmakers of Delft in Holland to ſettle in England. In the former part of the reign of Henry VIII. there did not grow in England cabbage, carrot, turnip, or other edible root; and it has been noted, that even Queen Catharine herſelf could not command a ſalad for dinner, till the King brought over a gardener from the Netherlands. About the ſame time, the artichoke, the apricot, the damaſk roſe, made their firſt appearance in England. Turkeys, carps, and hops, were firſt known there in the year 1524. The currant-ſhrub was brought from the iſland of Zant ann. 1533; and in the year 1540, cherry-trees from Flanders were firſt planted in Kent. It was in the year 1563 that knives were firſt made in England. Pocket-watches were brought there from Germany ann. 1577. About the year 1580,

1580, coaches were introduced; before which time Queen Eliſabeth on public occaſions rode behind her chamberlain. A ſaw-mill was erected near London ann. 1633, but afterward demoliſhed, that it might not deprive the labouring poor of employment. How crude was the ſcience of politics even in that late age?

People who are ignorant of weights and meaſures fall upon odd ſhifts to ſupply the defect. Howel Dha Prince of Wales, who died in the year 948, was their capital lawgiver. One of his laws is, "If any one kill or ſteal the cat that guards the Prince's granary, "he forfeits a milch ewe with her lamb; or as much wheat as will "cover the cat when ſuſpended by the tail, the head touching "the ground." By the ſame lawgiver a fine of twelve cows is enacted for a rape committed upon a maid, eighteen for a rape upon a matron. If the fact be proved after being denied, the criminal for his falſity pays as many ſhillings as will cover the woman's poſteriors.

The negroes of the kingdom of Ardrah in Guinea have made great advances in arts. Their towns, for the moſt part, are fortified, and connected by great roads, kept in good repair. Deep canals from river to river are commonly filled with canoes, for pleaſure ſome, and many for buſineſs. The vallies are pleaſant, producing wheat, millet, yams, potatoes, lemons, oranges, cocoa-nuts, and dates. The marſhy grounds near the ſea are drained; and ſalt is made by evaporating the ſtagnating water. Salt is carried to the inland countries by the great canal of Ba, where numberleſs canoes are daily ſeen going with ſalt, and returning with gold duſt or other commodities.

In all countries where the people are barbarous and illiterate, the progreſs of arts is wofully ſlow. It is vouched by an old French poem, that the virtues of the loadſtone were known in France before the 1180. The mariner's compaſs was exhibited at Venice ann. 1260 by Paulus Venetus, as his own invention. John

Goya

Goya of Amalphi was the firſt who, many years afterward, uſed it in navigation; and alſo paſſed for being the inventer. Tho' it was uſed in China for navigation long before it was known in Europe, yet to this day it is not ſo perfect as in Europe. Inſtead of ſuſpending it in order to make it act freely, it is placed upon a bed of ſand, by which every motion of the ſhip diſturbs its operation. Hand-mills, termed *querns*, were early uſed for grinding corn; and when corn came to be raiſed in greater quantity, horſe-mills ſucceeded. Water-mills for grinding corn are deſcribed by Vitruvius (*a*). Wind-mills were known in Greece and in Arabia as early as the ſeventh century; and yet no mention is made of them in Italy till the fourteenth century. That they were not known in England in the reign of Henry VIII. appears from a houſehold book of an Earl of Northumberland, cotemporary with that King, ſtating an allowance for three mill-horſes, "two to draw in the mill, and one to carry ſtuff to the "mill and fro." Water-mills for corn muſt in England have been of a later date. The ancients had mirror-glaſſes, and employ'd glaſs to imitate cryſtal vaſes and goblets: yet they never thought of uſing it in windows. In the thirteenth century, the Venetians were the only people who had the art of making cryſtal glaſs for mirrors. A clock that ſtrikes the hours was unknown in Europe till the end of the twelfth century. And hence the cuſtom of employing men to proclaim the hours during night; which to this day continues in Germany, Flanders, and England. Galileo was the firſt who conceived an idea that a pendulum might be uſeful for meaſuring time; and Hughens was the firſt who put the idea in execution, by making a pendulum clock. Hook, in the year 1660, invented a ſpiral ſpring for a watch, tho' a watch was far from being a new invention. Paper was made no

(*a*) L. 10. cap. 10.

earlier than the fourteenth century; and the invention of printing was a century later. Silk manufactures were long eſtabliſhed in Greece before ſilk-worms were introduced there. The manufacturers were provided with raw ſilk from Perſia: but that commerce being frequently interrupted by war, two monks, in the reign of Juſtinian, brought eggs of the ſilk-worm from Hindoſtan, and taught their countrymen the method of managing them. The art of reading made a very ſlow progreſs. To encourage that art in England, the capital puniſhment for murder was remitted if the criminal could but read, which in law-language is termed *benefit of clergy*. One would imagine that the art muſt have made a very rapid progreſs when ſo greatly favoured: but there is a ſignal proof of the contrary; for ſo ſmall an edition of the Bible as ſix hundred copies, tranſlated into Engliſh in the reign of Henry VIII. was not wholly ſold off in three years. The people of England muſt have been profoundly ignorant in Queen Eliſabeth's time, when a forged clauſe added to the twentieth article of the Engliſh creed paſſed unnoticed till about forty years ago *.

The diſcoveries of the Portugueſe in the weſt coaſt of Africa, is a remarkable inſtance of the ſlow progreſs of arts. In the begin-

* In the act 13th Eliſabeth anno 1571, confirming the thirty-nine articles of the church of England, theſe articles are not engroſſed, but referred to as compriſed in a printed book, intitled, *Articles agreed to by the whole clergy in the convocation holden at London* 1562. The forged clauſe is, "The church has power to "decree rites and ceremonies, and authority in controverſies of faith." In the articles referred to, that clauſe is not to be found, nor the ſlighteſt hint of any authority with reſpect to matters of faith. In the ſame year 1571, the articles were printed both in Latin and Engliſh, preciſely as in the year 1562. But ſoon after came out ſpurious editions, in which the ſaid clauſe was foiſted into the twentieth article, and continues ſo to this day. A forgery ſo impudent would not paſs at preſent; and its ſucceſs ſhows great ignorance in the people of England at that period.

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ning of the fifteenth century, they were totally ignorant of that coaſt beyond Cape Non, 28 deg. north latitude. In the 1410 the celebrated Prince Henry of Portugal fitted out a fleet for diſcoveries, which proceeded along the coaſt to Cape Bojadore in 26 deg.; but had not courage to double it. In 1418 Triſtan Vaz diſcovered the iſland Porto Santo; and the year after the iſland Madeira was diſcovered. In 1439 a Portugueſe captain doubled Cape Bojadore; and the next year the Portugueſe reached Cape Blanco, lat. 20 deg. In 1446 Nuna Triſtan doubled Cape Verd, lat. 14° 40′. In 1448 Don Gonzallo Vallo took poſſeſſion of the Azores. In the 1449 the iſlands of Cape Verd were diſcovered for Don Henry. In the 1471 Pedro d'Eſcovar diſcovered the iſland St Thomas and Prince's iſland. In 1484 Diego Cam diſcovered the kingdom of Congo. In 1486 Bartholemew Diaz, employ'd by John II. of Portugal, doubled the Cape of Good Hope, which he called *Cabo Tormentoſo*, from the tempeſtuous weather he found in the paſſage.

The exertion of national ſpirit upon any particular art, promotes activity to proſecute other arts. The Romans, by conſtant ſtudy, came to excel in the art of war, which led them naturally to improve upon other arts. Having, in the progreſs of ſociety, acquired ſome degree of taſte and poliſh, a talent for writing broke forth. Nevius compoſed in verſe ſeven books of the Punic war; beſide comedies, replete with bitter raillery againſt the nobility (*a*). Ennius wrote annals, and an epic poem (*b*). Lucius Andronicus was the father of dramatic poetry in Rome (*c*). Pacu-

(*a*) Titus Livius, lib. 7. c. 2.

(*b*) Quintilian, lib. 10. c. 17.

(*c*) Cicero de oratore, lib. 2. No. 72.

vius wrote tragedies (*a*). Plautus and Terence wrote comedies. Lucilius compoſed ſatires, which Cicero eſteems to be ſlight, and void of erudition (*b*). Fabius Pictor, Cincius Alimentus, Piſo Frugi, Valerius Antias, and Cato, were rather annaliſts than hiſtorians, confining themſelves to naked facts, ranged in order of time. The genius of the Romans for the fine arts was much inflamed by Greek learning, when free intercourſe between the two nations was opened. Many of thoſe who made the greateſt figure in the Roman ſtate, commenced authors, Cæſar, Cicero, &c. Sylla compoſed memoirs of his own tranſactions, a work much eſteemed even in the days of Plutarch.

The progreſs of art ſeldom fails to be rapid, when a people happen to be rouſed out of a torpid ſtate by ſome fortunate change of circumſtances: proſperity contraſted with former abaſement, gives to the mind a ſpring, which is vigorouſly exerted in every new purſuit. The Athenians made but a mean figure under the tyranny of Piſiſtratus; but upon regaining freedom and independence, they were converted into heroes. Miletus, a Greek city of Ionia, being deſtroy'd by the King of Perſia, and the inhabitants made ſlaves; the Athenians, deeply affected with the miſery of their brethren, boldly attacked that king in his own dominions, and burnt the city of Sardis. In leſs than ten years after, they gained a ſignal victory at Marathon; and under Themiſtocles, made head againſt that prodigious army with which Xerxes threatened utter ruin to Greece. Such proſperity produced its uſual effect: arts flouriſhed with arms, and Athens became the chief theatre for ſciences as well as for fine arts. The reign of

(*a*) Cicero de oratore, lib. 2. No. 193.

(*b*) De finibus, lib. 1. No. 7.

Auguſtus

Auguſtus Cæſar, which put an end to the rancour of civil war and reſtored peace to Rome with the comforts of ſociety, proved an auſpicious æra for literature; and produced a cloud of Latin hiſtorians, poets, and philoſophers, to whom the moderns are indebted for their taſte and talents. One who makes a figure rouſes emulation in all: one catches fire from another, and the national ſpirit is every where triumphant: claſſical works are compoſed, and uſeful diſcoveries made in every art and ſcience. This fairly accounts for the following obſervation of Velleius Paterculus (*a*), that eminent men generally appear in the ſame period of time. "One age," ſays he, "produced Eſchylus, Sophocles, and Eu-"ripides, who advanced tragedy to a great height. In another "age the old comedy flouriſhed under Eupolis, Cratinus, and A-"riſtophanes; and the new was invented by Menander, and his "cotemporaries Diphilus and Philemon, whoſe compoſitions are "ſo perfect that they left to poſterity no hope of rivalſhip. The "philoſophic ſages of the Socratic ſchool, appeared all about the "time of Plato and Ariſtotle. And as to rhetoric, few excelled in "that art before Iſocrates, and as few after the ſecond deſcent of "his ſcholars." The hiſtorian applies the ſame obſervation to the Romans, and extends it even to grammarians, painters, ſtatuaries, and ſculptors. With regard to Rome, it is true, that the Roman government under Auguſtus was in effect deſpotic: but deſpotiſm, in that ſingle inſtance, made no obſtruction to literature, it having been the politic of that reign to hide power as much as poſſible. A ſimilar revolution happened in Tuſcany about three centuries ago. That country having been divided into a number of ſmall republics, the people, excited by mutual hatred between ſmall nations in cloſe neighbourhood, became ferocious and bloody,

(*a*) Hiſtoria Romana, lib. 1. in fine.

flaming

flaming with revenge for the ſlighteſt offence. Theſe republics being united under the Great Duke of Tuſcany, enjoy'd the ſweets of peace in a mild government. That comfortable revolution, which made the deeper impreſſion by a retroſpect to recent calamities, rouſed the national ſpirit, and produced ardent application to arts and literature. The reſtoration of the royal family in England, which put an end to a cruel and envenomed civil war, promoted improvements of every kind: arts and induſtry made a rapid progreſs among the people, tho' left to themſelves by a weak and fluctuating adminiſtration. Had the nation, upon that favourable turn of fortune, been bleſſed with a ſucceſſion of able and virtuous princes, to what a height might not arts and ſciences have been carried! In Scotland, a favourable period for improvements was the reign of the firſt Robert, after ſhaking off the Engliſh yoke: but the domineering ſpirit of the feudal ſyſtem rendered abortive every attempt. The reſtoration of the royal family, mentioned above, animated the legiſlature of Scotland to promote manufactures of various kinds: but in vain; for the union of the two crowns had introduced deſpotiſm into Scotland, which ſunk the genius of the people, and rendered them heartleſs and indolent. Liberty indeed and many other advantages, were procured to them by the union of the two kingdoms; but theſe ſalutary effects were long ſuſpended by mutual enmity, ſuch as commonly ſubſiſts between neighbouring nations. Enmity wore out gradually, and the eyes of the Scots were opened to the advantages of their preſent condition: the national ſpirit was rouſed to emulate and to excel: talents were exerted, hitherto latent; and Scotland at preſent makes a figure in arts and ſciences, above what it ever made while an independent kingdom *.

Another

* In Scotland, an innocent bankrupt impriſoned for debt, obtains liberty by a proceſs termed *Ceſſio bonorum*. From the year 1694 to the 1744 there were but twenty-

Another cauſe of activity and animation, is the being engaged in ſome important action of doubtful event, a ſtruggle for liberty, the reſiſting a potent invader, or the like. Greece, divided into ſmall ſtates frequently at war with each other, advanced literature and the fine arts to unrivalled perfection. The Corſicans, while engaged in a perilous war for defence of their liberties, exerted a vigorous national ſpirit: they founded an univerſity for arts and ſciences, a public library, and a public bank. After a long ſtupor during the dark ages of Chriſtianity, arts and literature revived among the turbulent ſtates of Italy. The royal ſociety in London, and the academy of ſciences in Paris, were both of them inſtituted after civil wars that had animated the people, and rouſed their activity.

An uſeful art is ſeldom loſt, becauſe it is in conſtant practice. And yet, tho' many uſeful arts were in perfection during the reign of Auguſtus Cæſar, it is amazing how ignorant and ſtupid men became, after the Roman empire was ſhattered by northern barbarians: they degenerated into ſavages. So ignorant were the Spaniſh Chriſtians during the eighth and ninth centuries, that Alphonſus the Great, King of Leon, was reduced to the neceſſity of employing Mahometan preceptors for educating his eldeſt ſon. Even Charlemagne could not ſign his name: nor was he ſingular in that reſpect, being kept in countenance by ſeveral neighbouring princes.

twenty-four proceſſes of that kind; which ſhows how languidly trade was carried on while the people remained ſtill ignorant of their advantages by the union. From that time to the year 1771 there have been thrice that number every year, taking one year with another; an evident proof of the late rapid progreſs of commerce in Scotland. Every one is rouſed to venture his ſmall ſtock, tho' every one cannot be ſucceſsful.

As

As the progreſs of arts and ſciences toward perfection is greatly promoted by emulation, nothing is more fatal to an art or ſcience than to remove that ſpur, as where ſome extraordinary genius appears who ſoars above rivalſhip. Mathematics ſeem to be declining in Britain: the great Newton, having ſurpaſſed all the ancients, has not left to the moderns even the fainteſt hope of equalling him; and what man will enter the liſts who deſpairs of victory?

In early times, the inventers of uſeful arts were remembered with fervent gratitude. Their hiſtory became fabulous by the many incredible exploits that were attributed to them. Diodorus Siculus mentions the Egyptian tradition of Oſiris, that with a numerous army he traverſed every inhabited part of the globe, in order to teach men the culture of wheat and of the vine. Beſide the impracticability of ſupporting a numerous army where huſbandry is unknown, no army could enable Oſiris to introduce wheat or wine among ſtupid ſavages who live by hunting and fiſhing, which probably was the caſe, in that early period, of all the nations he viſited.

In a country thinly peopled, where even neceſſary arts want hands, it is common to ſee one perſon exerciſing more arts than one: in ſeveral parts of Scotland, one man ſerves as a phyſician, ſurgeon, and apothecary. In a very populous country, even ſimple arts are ſplit into parts, and each part has an artiſt appropriated to it. In the large towns of ancient Egypt, a phyſician was confined to a ſingle diſeaſe. In mechanic arts that method is excellent. As a hand confined to a ſingle operation becomes both expert and expeditious, a mechanic art is perfected by having its different operations diſtributed among the greateſt number of hands: many hands are employ'd in making a watch; and a ſtill greater number in manufacturing a web of woollen cloth. Various arts or operations carried on by the ſame man, envigorate his

his mind, becauſe they exerciſe different faculties; and as he cannot be equally expert in every art or operation, he is frequently reduced to ſupply want of ſkill by thought and invention. Conſtant application, on the contrary, to a ſingle operation, confines the mind to a ſingle object, and excludes all thought and invention: in ſuch a train of life, the operator becomes dull and ſtupid, like a beaſt of burden. The difference is viſible in the manners of the people: in a country where, from want of hands, ſeveral occupations muſt be carried on by the ſame perſon, the people are knowing and converſable: in a populous country where manufactures flouriſh, they are ignorant and unſociable. The ſame effect is equally viſible in countries where an art or manufacture is confined to a certain claſs of men. It is viſible in Hindoſtan, where the people are divided into *caſts*, which never mix even by marriage, and where every man follows his father's trade. The Dutch lint-boors are a ſimilar inſtance: the ſame families carry on the trade from generation to generation; and are accordingly ignorant and brutiſh even beyond other Dutch peaſants. The inhabitants of Buckhaven, a ſeaport in the county of Fife, were originally a colony of foreigners, invited hither to teach our people the art of fiſhing. They continue fiſhers to this day, marry among themſelves, have little intercourſe with their neighbours, and are dull and ſtupid to a proverb.