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Introduction to Geography

Geography is a term derived from the Greek language, and literally signifies a description of the earth. It is a branch of mixed mathematics, and treats of the nature, figure, and magnitude of the earth; the situation, extent, and appearance of different parts of its surface; its productions, and inhabitants. The time when attention was first paid to the study of geography, is unknown. It is the general opinion that the Greeks, who were the first cultivators of this science in Europe, received it either from the Egyptians or Babylonians. Herodotus informs us, that the Greeks first learned the gnomon, and the twelve divisions of the day, from the Babylonians.

Geography was very imperfect in its beginning, and has advanced slowly towards its present state of perfection. The true figure of the earth was unknown to the ancients. It was considered as a large circular plane; and the heavens, in which the sun, moon, and stars appear daily to move from east to west, were supposed not to be elevated to a very great height above it; and to have been created solely for its use and ornament.

The situation of places was first determined according to climates; and geographers were guided in fixing on climates by the form and colour of certain animals, which were to be found in different countries. The appearance of Negroes or Ethiopians, and of the larger sized animals as the rhinoceros and elephant, suggested to them the northern and southern limits of the torrid zone. A different, and more scientific method, was used by the Egyptians and Babylonians; who determined the situation of places, or their distance from the Equator, by observing the length of their longest and shortest days: and these observations were made with a species of sundial, having a stile or gnomon erected perpendicularly upon a horizontal plane, by which the length of the shadow of the gnomon, in proportion to its height, might be measured.

Travelling, soon after it began to be much practised in the world, gave rise to a kind of geography. Some who had performed journeys, gave a rough sketch of their routs, for the information of others who might afterward wish to travel in the same. The earliest specimen of this kind, of which we have an account, is that of Sesosthis an Egyptian king, and conqueror; who as Ptolemy relates, recorded his march in maps. Homer, was first distinguished among the Greeks for his knowledge of the different nations of the earth, and Strabo considered him as first among the ancient geographers. Thales, of Miletus, the father of Grecian philosophy, who lived 641 years before Christ; travelled into Egypt, obtained a knowledge of geometry, astronomy, and philosophy; returned into Greece; calculated

eclipses; and introduced some of the fundamental principles of geography and astronomy. Among other things, he taught that the earth is globular; and may be divided into five zones by means of five parallel circles, viz. the equator, the two tropics, and the two polar circles; and that the equator is cut obliquely by the ecliptic, and perpendicularly by the meridian. He taught also that the year consisted of 365 days, which he learned from the Egyptians; and maintained that a supreme Intelligence governed all the motions of the universe. Pythagoras, the scholar of Thales, taught publicly the common doctrine that the earth was the centre of the universe; but to his scholars he communicated his real opinions, which were similar to those since adopted by Copernicus.

Philolaus, the scholar of Pythagoras, and Archytas of Tarentum first taught publicly the diurnal motion of the earth, and its annual or yearly motion round the sun.

Democritus, first taught that the milky way, or galaxy, is caused by the confused light of an infinity of stars.

Plato; and Aristotle, and Eudoxus his scholars, contributed much to the improvement of astronomy.

Anaximander, a disciple of Thales, was the author of the first Grecian map on record: it was styled by Hipparchus the ancient map. The knowledge of the earth was very limited at that time, as it scarcely extended beyond the temperate zone, and did not even comprise the whole of that. The extent of the representation of the world from east to west, was twice as long as from north to south; hence the reason, why distances on the earth in the former direction, were denominated longitudes and those in the latter, latitude. Maps were afterwards multiplied. Some idea may be formed of the maps of those times, from what Herodotus relates of one, which Aristagoras tyrant of Miletus, carried with him when he went to make application to Cleomenes, king of Sparta, to attack the king of Persia even in his palace at Susa; and which he showed him with a view of inducing him to engage in such an enterprise, for the purpose of restoring the Ionians to their ancient liberty. Aristagoras carried with him, says Herodotus, a plate of brass on which a description of the whole earth, with the seas, and rivers were engraved. From the state of geography at that time, it seems

rational to conclude, that by the sea, was meant no more than the Mediterranean; by the earth or land, the coasts of that sea; and more particularly the Lesser Asia extending toward the middle of Persia; and by the rivers; the Halys, Euphrates, and Tigris, which Herodotus informs us, must have been crossed in the projected expedition.

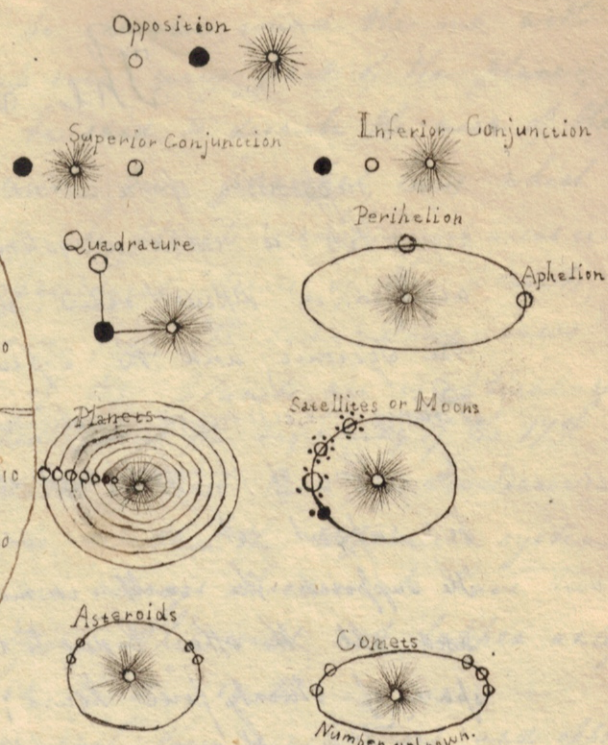
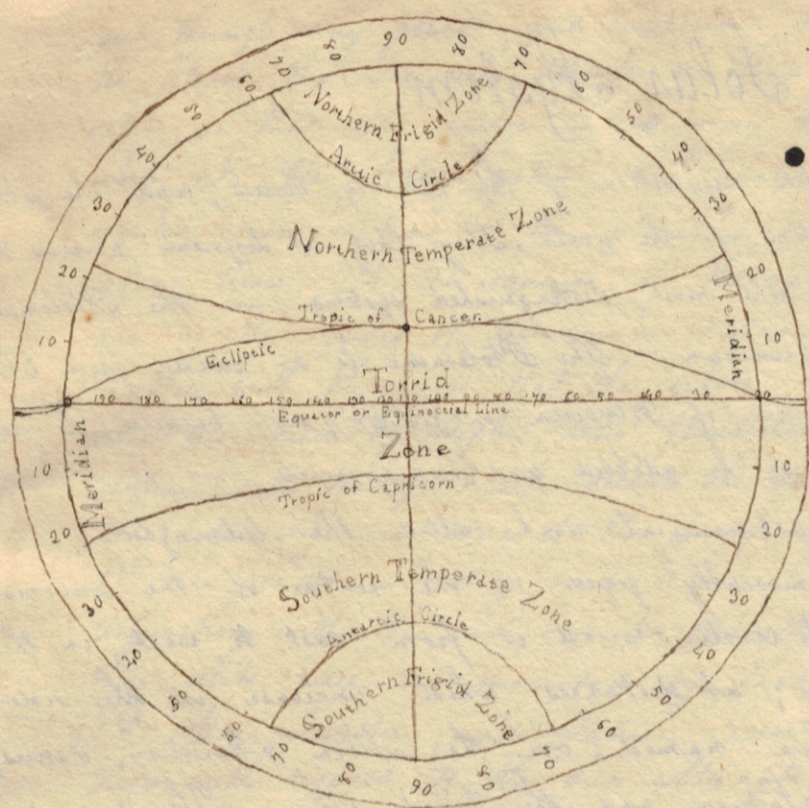
Eratostrhenes was the first who introduced a regular parallel of latitude. This was traced over certain places where the longest day was of the same length. He began it at the Straits of Gibraltar, and it thence passed through the Sicilian sea, and near the southern extremities of Peloponnesus; whence it was continued through the Island of Rhodes, and the bay of Ephesus; and thence it entered Cilicia; and having crossed the Euphrates and Tigris, was extended to the mountains of India. In drawing this parallel, he was regulated by observing where the longest day was $14\frac{1}{2}$ hours, which Hipparchus afterwards found, to be the latitude of 36° . Eratostrhenes soon after attempted not only to draw other parallels of latitude, but also to draw a meridian at right angles to these; passing through Rhodes and Alexandria, down to Syene and Meroe. He at length attempted to determine the circumference of the globe, by an actual measurement of an arc of one of its great circles. He knew that the sun at the summer solstice, was vertical to the inhabitants of Syene; a town on the confines of Ethiopia, under the tropic of Cancer; where they had a well sunk for the purpose of ascertaining the time of the summer solstice; which would be on the day, when the rays of the sun fell perpendicularly on the bottom of the well. He observed by the shadow of a wire, set perpendicularly in a hemispherical basin, how far the sun was distant from the zenith of Alexandria at the noon of the same day; and found that distance to be the fiftieth part of a great circle upon the earth. Then Syene and Alexandria being supposed to be under the same meridian, he concluded the distance between them, was the fiftieth part of a great circle. Timocharis and Aristillus who flourished about 300 years B.C. and were members of the famous astronomical school of Alexandria, founded by Ptolemy Philadelphus, were the first who attempted to fix the longitudes and latitudes of the fixed stars by considering their situation with regard to the Equator. One of their observations, gave rise to the discovery of the precession of the equinoxes by Hipparchus, about 150 years afterwards; and he made use of their method, in order to delineate the parallels of latitude and the meridians on the surface of the earth; thus laying the first solid foundation of the science of geography, and uniting it more closely to astronomy. The longitudes and latitudes of the fixed stars were referred to the Equator, both by Timocharis and Hipparchus; and never uniformly to the ecliptic, till after the precession of the equinoxes, was fully established by Ptolemy.

Among the Romans, Julius Caesar by his reformation of the Roman calendar, and his knowledge of the principles of Astronomy, contributed more than any other person to the advancement of Astronomy: He, during the Punic wars, ordered a general survey to be made of the whole Roman Empire: this war was made subservient to the advancement of geographical knowledge.

Strabo and Ptolemy, were the most eminent of the ancient geographers. Strabo relates very little more than he saw himself. Good sense, perspicuity, accuracy, and solidity of judgment, are visible in his works. Ptolemy composed his system of geography about 150 years after Christ; when the Roman Empire had been enlarged to its greatest extent, and its provinces well known and surveyed: his geography is more extensive than that of Strabo, but this extent renders it liable to more errors. Notwithstanding its errors however, it continued to be the only book of note and authority on this science, till the beginning of the 17th century. It was not till Copernicus of Prussia, Tycho Brahe of Denmark born in 1546, Kepler of Germany, Galileo of Italy, Descartes of France, all of the same century; Cassini of Nice, Flamsteed, Halley, and Sir Isaac Newton of England, had enlightened the world with their discoveries, that Astronomy and Geography were placed on their true foundation, and reduced to a tolerable degree of consistency and accuracy.

The ancients were acquainted with but a small portion of the earth's surface. On the west, the Atlantic ocean and British Isles terminated their knowledge. The Fortunate Isles now called the Canaries, were the remotest lands towards the South. Their notions with regard to the northern countries were very imperfect. Though Scandinavia was known, yet that and some other countries on the same continent, were considered as large Islands. It is not easy to determine what place the ancients understood by Ultima Thule: many take it for Iceland, but Procopius thinks it a part of Scandinavia.

In the 15th century, the Portuguese animated with the desire of finding a passage to the East Indies, pushed their enquiries along the western coast of Africa, till they found the Cape of Good Hope in 1486. In 1497 Vasco da Gama doubled the Cape, and the next year made a voyage to India, and thus completed the discovery of that country by the east. Several European nations then sent their ships to the Indian sea, where they discovered the Asiatic Isles, and penetrated to the empire of Japan. The voyages of the Russians have completed our knowledge of the eastern parts of the continent of Asia. In 1492 Columbus discovered America. Since the lunar tables have been improved by Prof. Mayer, and time-keepers by Mr Harrison, longitudes have been determined by measuring distances of the moon from the sun, and from certain fixed stars, & by keeping time



The Ecliptic intersects the Equator at the Equinoctial points. The sun passes through them on the 20th of March, and the 23rd of September. The former is called the vernal, the latter the autumnal Equinox. The Meridian passing through these points is called the Equinoctial Colure. The two points in the Ecliptic ninety degrees distant from the Equinoctial points, are called the Solstitial points; because when the sun is in either of them it is summer in the nearest hemisphere. The Meridian passing through them is the Solstitial Colure. The Sun is in the solstitial points the 21st of June, and the 21st of December. The former when the sun is in Cancer, is called the summer, the latter in Capricorn, is called the winter Solstice.

The greatest elongation of a heavenly body, is its greatest apparent distance from the sun. The eccentricity of the orbit of a planet, is the distance from the sun to the centre of the orbit, the sun not being in the centre, but in one of the foci.

A Digit, is a twelfth part of the diameter of the sun or moon.

The system of heavenly bodies to which the earth belongs, is composed of the sun, the planets, the asteroids, and the comets, & satellites. The sun is the source of light, and heat, and motion to all the bodies which revolve around it.

The number of primary planets is seven, the names of which according to their nearness to the sun are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Herschell. The two first are called inferior planets, because they are below the Earth, with respect to the centre; and interior because their orbits are within the orbit of the Earth. The four last are called superior, because vice versa. The number of satellites is eighteen. The earth has one, Jupiter four, Saturn seven, Herschell six. These roll round their respective primaries, and accompany them in their annual revolution round the sun. Jupiter has four moons, that were discovered by Galileo in 1600. The progressive motion and velocity of light was discovered by observations on the satellites of Jupiter. From these it appears that light takes up 16 $\frac{1}{2}$ minutes, in passing over the diameter of the earth's orbit, which is about 190 millions of miles. This is nearly at the rate of 200,000 miles a second. Saturn has seven satellites, one of which was discovered by Huygens, 4 by Cassini, and 2 by Herschell. Herschell has six, discovered by Dr Herschell.

Asteroids] These bodies were entirely unknown till the commencement of the present century; they are four in number; Ceres, discovered by Joseph Piazzi; Pallas, and Vesta discovered by Dr Olbers; Juno, by Mr Harding. The Asteroids are too small to be measured with precision: their orbits are all between those of Mars and Jupiter. Their diameters are between one and two hundred miles, and their distance from the sun between 2 and 300,000,000.

Climates] There are 30 climates between the Equator and either pole. In the first 24, between the equator and either polar circle, the period of increase for every climate is half an hour. In the other six, between either polar circle and its pole, the period of increase for each climate is a month. These climates continually decrease in breadth as you proceed from the Equator.

The Solar System.

The supposition of a certain disposition of the heavenly bodies, and the planetary orbits is called a system of the world. They have at different periods been arranged in different orders. The most distinguished systems, are the Ptolemaic, the Tychonic, and the Copernican. The Ptolemaic is so called from Claudius Ptolemy, a celebrated astronomer of Pelusium in Egypt; not because he was the author of it, but because he adopted and endeavoured to support it, in his astronomical work called the Almagest. He supposed the earth immovably fixed in the centre of the universe, and all the other bodies to revolve round it from east to west, in the space of twenty four hours; at distances which increase in the order in which they are here named. viz. the Moon, Mercury, Venus, the Earth, Mars, Jupiter, Saturn, and the fixed stars. The sun, & planets were supposed to be firmly set in separate crystalline spheres, inclosed by a concave one, containing the fixed stars, which would of course be all equally distant from the earth. Above this starry sphere, were imagined to be the two crystalline spheres, the primum mobile communicating motion to all the interior spheres; and finally the heaven of heavens, or empyrean heaven, to which a cubic form was attributed. The Tychonic or Tybrahean system was invented by Tycho Brahe a nobleman of Denmark. He admitted one of the grossest absurdities of the Ptolemaic hypothesis, that was, the revolution of the whole universe to its furthest visible limits, about the earth's axis, in the space of a day, produced by the primum mobile. The Copernican system is so called from Copernicus, a native of Thorn, in Royal Prussia; and is the true Solar System. It had been taught by some of the Pythagorean Philosophers, but was nearly lost when Copernicus undertook to restore it in 1530. It supposes the sun to be in the centre of the system, and all the planets to move round the sun. This supposition readily solves all the appearances observable in the motion of the planets, and also agrees with the strictest philosophical and mathematical reasoning. All the planets are opaque, spherical bodies, and receive their light from the sun. Their orbits are not circular, but elliptical or oval, and have one common focus which is occupied by the sun. Hence in their revolutions they are sometimes nearer to, and sometimes farther from that luminary. The influence of the sun is the cause of the motions of the planets, and this influence increases, as their distance from the sun decreases. Hence also we see the reason why the planets move faster as they approach nearer to the sun, and slower as they recede from it. If a right line called by some the vector radius, be drawn from the

sun, through any planet, and supposed to revolve round the sun with the planet; this line will describe, or pass over every part of the plane of the orbit, so that the vector radius may be said to describe the area of the orbit. In the Solar system are observed two principal laws which regulate the motions of the planets. 1st The planets describe equal areas in equal times. 2nd The squares of the periodical times of the planets, are as the cubes of their mean distances from the sun. These laws together with the facts that the orbits of the planets are elliptical &c. were discovered by Kepler, who flourished about the beginning of the 17th century; but the first who shewed the reason of these laws, was Sir Isaac Newton. The following are some of the proofs to establish the Copernican system. 1st The planets Mercury, and Venus are always observed to have two conjunctions with the sun, but no opposition. This could not happen unless their orbits were circumscribed by that of the earth. 2nd Mars, Jupiter, and Saturn have each their conjunctions and oppositions with respect to the sun alternately and successively; which they could not have, unless their orbits were exterior to that of the earth. 3rd The greatest elongation or distance of Mercury from the sun is about $28^{\circ} 20'$, and that of Venus $47^{\circ} 48'$, which answers exactly to their distance in the Copernican system, but according to the Ptolemaic they must often be seen in opposition to the sun, or at the distance of 180 degrees. 4th In this disposition of the planets all of them will be sometimes much nearer to the earth than at others; the consequence of which is, that their brightness and splendour, as well as their apparent diameters will be proportionally greater at one time than another, and this we observe to be true every day. Thus the apparent diameter of Venus when greatest is near one minute; when least not more than ten seconds; that of Mars when greatest is twenty-two seconds, when least only four. But if the Ptolemaic hypothesis be true they must be always equal. 5th All the planets sometimes appear in direct motion, sometimes stationary and sometimes retrograde. These appearances must happen according to the Copernican system, but are absolutely repugnant to any other. 6th The bodies of Mercury and Venus in their superior conjunction with the sun, pass behind the body of that luminary; and in the inferior conjunction are seen to transit, or pass over its disc in the form of a round black spot. These phenomena are necessary in the Copernican system, but there could be no superior conjunction in that of Ptolemy. 7th The times in which these conjunctions, oppositions, stations, and retrogradations of the planets happen, are not such as they would be were the earth at rest in the centre; but precisely such as would happen if the earth and all the planets move about the sun in the order and with the velocities assigned them in the Copernican system. Consequently this must be the true system of the world.

Table of Planets

	Diameter	Dist. from Sun.	Rates of Motion Miles an hour	Rev. round the Sun Days, hours, M. S.
Sun	883, 246	39, 304, 300		
Mercury	3, 224	36, 000, 000	111, 000	87, 23, 14, 33
Venus	7, 687	68, 000, 000	81, 000	224, 16, 41, 27
Earth	7, 945	94, 000, 000	75, 000	365, 5, 48, 48
Mars	4, 189	144, 000, 000	56, 000	1 Year 321 d
Jupiter	89, 170	491, 000, 000	30, 000	11 do
Saturn	79, 040	901, 000, 000	22, 000	29 do.
Herschell	35, 112	1803, 000, 000	15, 000	83 do.

The Sun revolves on its axis in 25 days, 14 hours, 8 minutes. Though to the naked eye it appears so extremely bright, yet with a telescope of but small powers, it is discovered to have dark spots on its surface. These were first observed by Galileo in 1611. They are uncertain in their number; sometimes none are visible, and frequently 20, 30, & 40 are seen at one time. In 1625, Scheiner a german astronomer counted 50 at a single observation; some of these are barely perceptible—others, have been so large as to cover the continents of Asia or Africa. One appeared in 1779 more than 31,000 miles in diameter, and visible to the naked eye. They of course are not permanent nor regular in their number, shape, magnitude, nor duration. By astronomers they are called maculae; and when they disappear, the places which they occupied generally become brighter than the rest of the sun, and are called faculae. By means of these spots the revolution of the sun on its axis was discovered. Every spot if it continues long enough without being dissolved, appears to enter the sun's disc on the east side; to go from thence with a velocity continually increasing, till it has gone half way; and then to move slower and slower till it goes off at the west side; after which it disappears about the same space of time which it appeared, and then enters upon the east side again, and pursues the same course. It follows from these facts, that the spots are attached to the surface of the sun; that the sun has a revolution on its axis, and that the time which elapses between the first appearance of a spot on the sun's eastern disc, and its reappearance there, is the period of such a revolution. The path of the sun in his revolution around the centre of gravity of the solar system is very irregular. It is not ascertained whether the sun has an atmosphere. There is an appearance in the heavens termed the *semita luminosa*, or zodiacal light, which is now generally supposed to be owing to the atmosphere of the sun. It was discovered by Popsini in 1683. In northern latitudes it is most conspicuous after

the evening twilight about the latter end of February, and before the morning twilight in the beginning of October, It is very extensive, and reaches beyond the orbit of Venus, but not so far as that of the Earth:

Mercury.] Mercury emits a very bright, white light - can be seen but a few days at a time. Near its Equator water would constantly boil.

Venus] This is the most beautiful of the celestial luminaries, and the only star ever visible in the day time. This happens once in about 8 years. When Venus appears to the west of the sun, it rises before him in the morning, and is called the morning star; and when it appears to the east of the sun, it shines in the evening after the sun sets, and is called the evening star. Spots were first seen on the disc of Venus in 1665 by Mr. Brouncker of Poland. It is not determined whether it has an atmosphere - some astronomers have supposed that she has a satellite, but others deny its existence. Mercury and Venus are inferior planets. Their orbits are within that of the Earth. Both these planets undergo the same changes nearly in their appearance as the moon - they are sometimes invisible; at others, pointed; at others, gibbous; and at others nearly full. They are never in opposition.

The Earth] That the earth is spherical is obvious from these considerations. First such a figure is best adapted to motion. 2^{dly}, When you stand upon the shore of the ocean, the spherical form of its surface is manifest to the eye. 3^{dly}, From analogy as all the other planets and heavenly bodies are spherical. 4^{thly}, The higher the eye is placed, the more extensive is the prospect; but on a plane absolutely horizontal objects at a given distance would be visible, whether the eye were high or low; nor would any of them vanish till the angle under which they must appear, became too small to be perceptible. 5^{thly} To people on shore, the mast of a ship appears before the hull; but were the earth a plane, the hull would appear long before the mast, by reason of the much greater angle which it subtends. 6^{thly}, To people at sea the land disappears, though near enough to be visible, were it not for the convexity of the water. 7^{thly}, The earth has been sailed round by Magellan, Drake, Lampier, Anson, Cook, and since by many others. This could not have been, had not the earth been globular. 8^{thly} The boundary of the Earth's shadow upon the moon in a lunar eclipse is always circular; and nothing but a spherical body, can in all situations produce a circular shadow. Still the earth is not a perfect sphere, but an oblate spheroid - that is, its equatorial diameter is longer than its axis. The difference of these diameters is about 24 miles. The mean diameter of the earth is 7,928 miles; of course

the equatorial diameter is 7,945 miles; and the length of the earth's axis is 7,111. The equatorial circumference of the earth is about 24,970 miles; its mean circumference in latitude 45° is 24,917, and its meridional circumference 24,863. It performs a rotation on its axis once in 24 hours. This is proved by the following circumstances 1st By analogy the sun and all the planets as far as they can be examined have such a rotation; 2nd The sun, the moon, the planets, and fixed stars appear to revolve every day about the earth; 3rd If you take a thin iron hoop, and make it revolve swiftly about one of its diameters, that diameter will be diminished; and the diameter which is perpendicular to it will be increased. This is true of the earth. Its axis is not so long as its equatorial diameter. This figure of the earth can only have arisen from its rotation on its axis. The same is true of Mars, Jupiter, and Saturn, which are seen to revolve on their axes. The earth's distance from the sun is 94,507,428 miles. The diameter of its orbit is 189,000,000, and the circumference about 594,000,000 miles. The earth like the other planets has two motions the one round its axis, the other round the sun. The former, called the diurnal motion is from west to east, which causes an apparent motion of the heavenly bodies from east to west, and a continual succession of days and nights. By this motion the inhabitants on the Equator are carried 1043 miles an hour. The latter which is its annual motion, causes the difference in the lengths of the days and nights, and the agreeable succession of the seasons. The earth is surrounded with a thin, invisible, elastic fluid called air; the whole body of which forms what is called the atmosphere. It being an elastic fluid is capable of compression; on which account the lower parts of the atmosphere are denser than the upper parts; and the density gradually decreases the higher you go, from the continual diminution of compression: for, the air being found to have weight, as you ascend the weight of the incumbent air will be diminished. The density of the air is not always the same, it being subject to be expanded by heat, and contracted by cold. In its mean state it is found to be 850 times lighter than water. Notwithstanding the air is so extremely rare, it is capable of producing very considerable effects upon the rays of light, as they pass through it; both by reflection, and refraction. By reflection, the rays coming from the sun falling on the particles of air, and upon the vapours and exhalations contained in the atmosphere, are thrown in all directions; and thus the whole heavens become illuminated, by which our eyes are affected so strongly as to render the fainter light of the stars invisible. Whereas if there were no atmosphere, we should receive only those rays.

which come directly to us, and the other part of the heavens would appear dark, and the stars all be visible as at night. From the same cause we receive a considerable quantity of light for some time before the sun rises, and after he sets; this is called twilight, and were it not for this, we should be involved in total darkness the instant after the sun is set; and there would be a sudden transition from darkness to light at the rising of the sun, which would be extremely prejudicial to the eyes. From the time at which twilight begins and ends, the beginning and end are found to be 18° below the horizon. It lasts till the sun is further below the horizon in the evening, than the morning, and also lasts longer in summer, than winter. In the former case, the heat of the day has raised the vapours and exhalations, and in the latter they will be more elevated from the heat of the season. In the Equatorial regions, darkness comes on very soon after sunset; because the convexity of the earth comes quickly in between the eye of the observer, and the luminary; the motion of the earth being much more rapid there, than any where else. Under the poles twilight lasts seven weeks. As we approach the elevated pole, the twilight becomes brighter and brighter, untill at last the sun does not appear to touch the horizon; but moves in a circle at some distance above it for many days successively. In like manner during the winter, the same luminary sinks lower and lower, untill at last it does not appear at all; and there is only a dim twinkling of twilight for an hour or two in the middle of the day. The height of the atmosphere is not yet ascertained. The beginning and ending of twilight show that the height at which the atmosphere begins to refract the sun's light, is about 44 or 45 miles. But this may not improbably be owing to the height to which the aqueous vapours are carried. That it actually extends much higher, is proved by the fact that atmospheric meteors have often been seen at the height of 90 miles. Another property of the atmosphere is that of refracting the rays of light, by which means the heavenly bodies appear out of their true places. The refraction of the air causes all the heavenly bodies to appear in the morning above the horizon, when they are actually below it; and in the evening they appear above, a little after they are actually set. In climates nearer the Equator the refraction is less than it is here, and in colder regions it is much greater. Notwithstanding the seeming inequality in the distribution of light and darkness, it is certain that throughout the whole world there is nearly an equal proportion of light diffused on every part; if we disregard what is absorbed by clouds, vapours, and the atmosphere itself. The equatorial regions have indeed the most intense light during the day; but the nights are long and dark; while in the northerly and southerly parts, though the sun shine less powerfully, yet the length of time that it appears above the horizon, makes up for the seeming deficiency.

[Mars] Mars is an oblate spheroid, and of a fiery, red colour. It has an atmosphere of considerable extent.

[Jupiter] Jupiter the largest of the planets, is an oblate spheroid. Jupiter is surrounded by faint substances called belts. These were discovered in 1665. They are parallel to each other, and to the Equator of the planet. So many changes appear in them, that they are generally supposed to be clouds. Large spots often appear in them, and when a belt vanishes the contiguous spots disappear with it. Sometimes eight have been seen at once covering almost the whole disc of the planet. Dr Herschell thinks that these belts do not adhere to the planet, but exist in its atmosphere.

[Saturn] The most remarkable appearance attending this, or indeed any of the planets, is a large ring entirely separated from the planet itself, and yet completely surrounding it. The ring is double, or is composed of two rings, having the same plane and the same centre: the space between them is 2977 miles. The ring is doubtless no less solid, than the planet; and it is observed to cast a strong shadow upon it. Its light is also generally brighter than the planet, for it appears sufficiently bright when the telescope scarcely affords light enough for Saturn. The thickness of the ring is probably less than 1000 miles.

[Herschell] This planet is called in England Georgium Sidus; on the continent of Europe Uranus; and generally in this country Herschell. It was discovered by Dr Herschell in 1781. It has ^{not} been determined whether it revolves on an axis, but there can be little doubt of it as its shape is an oblate spheroid. The quantity of light and heat communicated to the earth by the sun is at least 360 times as great as that enjoyed by Herschell. Owing to its immense distance, few discoveries have been made respecting it.

[The Moon.] The Moon's diameter is 2180 miles. Its distance from the earth is 240,000 miles. The moon revolves round the earth in 29 days, 12 hours, and 44 minutes. If the earth stood still or had no revolution round the sun, every month would be of the former length; but as the earth during a lunar revolution materially alters its place, it takes the moon 2 days 5 hours to regain what it has lost by the earth's motion. It is found by observation that the moon always turns the same side towards the earth. The side of the moon which is towards the earth during its day, receives light both from the sun, and from the earth; and during its night only the light of the earth.

The other side of the moon has half the time the light of the sun; the other half it is in perfect darkness. The spots visible on the moon are occasioned by the mountains and vallies on its surface. When the moon is in conjunction with the sun, she

said to be new, and is then invisible. As she goes eastward, she appears
hounded; till she gets 90° from the sun, when she appears half enlightened
or dichotomized - from thence till she comes into opposition, she appears
more than half enlightened, or gibbous; and at opposition, she appears
full. From opposition to conjunction her apparent bright part decreases, as
it before increased. When the moon is about three days from the new,
the dark part is visible by the light reflected from the earth, but when
she is in quadrature, her great light prevents the dark part from
being seen. The strength of moonlight at the full moon, is thus cal-
culated by Nicholson. When the moon is visible in the day time, its light
is so nearly equal to that of the lighter thin clouds, that it is with
difficulty distinguished from them. Its light continues the same during
the night, but the absence of the sun suffering the pupil of the eye
to dilate itself, it becomes more conspicuous. It therefore follows that
if every part of the sky were equally luminous with the moon's disc,
the light would be the same as if in the day time it were everywhere
covered with such thin clouds. He calculates that 90,000 moons would
about cover the whole surface of the sky visible at one time. Of course
90,000 moons would afford as much light as we enjoy when the sky
is covered with such clouds. Mr Bouguer from experiments on lunar
light concludes that 300,000 moons would not make a stronger light
than that of clear bright sunshine. The light of the moon condensed by
the best mirrors produces no sensible effect on the thermometer. The
earth in the course of a month shows the same phases to the lunaria
as the moon does to us; the earth is at the full, at the time of
new moon; and new, at the time of full moon. The surface of the
earth being about 13 times greater than that of the moon, it affords
13 times more light to the moon, than the moon does to us. It is
remarkable that in those countries which are at considerable distances
from the Equator and the Poles, the autumnal full moons rise nearly
at sunset from the first, to the third quarter, by this means she affords
an almost immediate supply of light after sunset, for a whole week
together, which is very beneficial at that season for gathering in the
fruits of the earth. Hence this full moon is called the Harvest moon.
When the moon is near the horizon, her distance from the eye is really
greater than when she is on the meridian. Still her apparent diameter
as seen by the naked eye, is usually two or three times greater in the
former case, than in the latter, though when measured by an instru-
ment her diameter is not increased at all. This phenomenon is called
the horizontal moon - and is owing to an ocular illusion occasioned
by the apparent concavity of the sky. When the moon or a star is
elevated about 23° above the horizon, it appears advanced half way
from the horizon to the zenith; and the eye estimates the distance
of any two objects in the heavens by the quantity of sky, that
appears to lie between them. Thus the apparent quantity of sky from
the zenith to the plane of the sensible horizon, is not greater than
 46° , although the real distance is 90° . Hence 23° of sky near the
horizon, appear about as large as the remaining 67° . A body therefore
near the horizon would appear nearly three times as large as the
same body in the zenith. In the same manner the extremities of a
rainbow appear to the naked eye broader, than the centre of the arch;
and two stars near the horizon farther apart, than the same stars on
the meridian. This however is not the case when these objects are

seen through an instrument. This will account for the ordinary increase of size in the horizontal moon. But the horizontal moon sometimes appears five or six times as great, as the moon on the meridian. This unusual enlargement is owing to the state of the atmosphere. A horizontal line drawn from the eye to the extremity of the atmosphere, would pass through a much longer tract of air, than a line passing from the eye to the zenith. When the air is misty, a body near the horizon will of course appear more faint, than when in the zenith.

Eclipses An eclipse of the moon is caused by its entering into the earth's shadow, and consequently it must happen at the full moon, or when she is in opposition to the sun; as the shadow of the earth must lie opposite to the sun. An eclipse of the sun is caused by the interposition of the moon between the earth and sun, and therefore it must happen when the moon is in conjunction with the sun or at the new moon. — The ecliptic limits of the sun are to those of the moon nearly as three to two, and hence there will be more solar than lunar eclipses in about that ratio. But more lunar than solar eclipses are seen at any given place, because a lunar eclipse is visible to a whole hemisphere of the earth at once; whereas a solar eclipse is visible to a part only, and therefore there is a greater probability of seeing a lunar than a solar eclipse. Since the moon is as long above the horizon as below, every spectator may expect to see half the number of lunar eclipses which happen. If the earth had no atmosphere, when the moon was totally eclipsed she would be invisible; by the refraction of the atmosphere however, rays will be brought to fall on the moon's surface, on which account she is rendered visible, and of a dusky, red colour. The greatest number of eclipses which can happen in a year is seven; and when this happens five will be of the sun, and two of the moon. The least number which can occur is two, and these must be both solar. For in every year there must be 2 solar eclipses. The mean number in a year is about 4.

Comets Comets are bodies revolving in very eccentric ellipses about the sun in one of the foci. They are popularly called blazing stars — having the form of a star. They are distinguished from other stars, that they are usually attended with a long train of light always opposite to the sun, and of a fainter light the farther it is from the body. When a comet is east of the sun, and moving from it, it is said to be bearded, because the light precedes the body or nucleus of the comet like a beard. When a comet is west of the sun, a train of light follows it, in manner of a tail. When the sun and the comet are on opposite sides of the earth, the train is principally hid behind the body of the comet, and the little that appears is the form of a border of hair, or coma. The substance of the bodies of comets must be extremely solid, or they would be dissipated in their perihelion, or nearest approach to the sun. According to Sir Isaac Newton the comet of 1680, endured a heat 2000 times as great as the heat of red hot iron. Their nuclei are most luminous when near the sun, and their tails are brightest immediately after the perihelion. Their tails are also transparent, so that the smallest stars are visible through them, and are always broader and less luminous at the upper extreme than near the comet. Newton supposes the tail to be a thin vapour emitted by the nucleus, ignited by the sun. The apparent magnitudes are very various. One which appeared in the

of Aëro, was as Seneca relates, apparently as large as the sun. The comet of 1744 had a tail of the length of 23,000,000 of miles; that of 1759 of more than 40,000,000. The number of Comets belonging to our system has never been ascertained. Conjecture has limited it to 450. The velocity of a comet increases as it approaches the sun. That of 1680 in its perihelion moved at the amazing rate of 880,000 miles an hour. Dr Halley remarks that if so large a body, with so rapid a motion, were to strike against the earth, a thing by no means impossible, the shock might reduce this beautiful frame to its original chaos. Whiston supposed the deluge to have been owing to its near approach to the earth, and he also conjectured that it would probably be the instrumental cause of the final conflagration.

Fixed Stars Those stars which always preserve the same situation with regard to each other are called fixed stars; they are distinguished from the planets by their twinkling. Astronomers have distinguished them from their apparent magnitudes into six classes. They are also distributed into constellations - to which the name of some beast, bird, fish &c. is given. There are 90 constellations, of which 12 are in the Zodiac, 33 north, and 45 south of it. Those stars which have never been arranged into constellations, are called unformed stars. The real number of the fixed stars cannot be ascertained, as seen through a telescope they are found to be collected in clusters. When a small magnifying power is used, these clusters appear like small light clouds, and hence have been called nebulae. These nebulae are found to consist of immense multitudes of stars, Dr Herschell is of opinion that the starry heavens are replete with these nebulae; that each nebula is a distinct and separate system of stars; and that each star is the sun or centre of its own system of planets. The galaxy or Milky way he concludes is the particular nebulae to which our sun belongs. La Lande has assigned the number of fixed stars to be 75,000,000, but this probably falls far short of the truth. Their distance however from the earth precludes the probability of their ever being calculated with certainty. The diameter of the earth's orbit, which is 190,000,000, makes not the smallest perceptible difference in the size of any of them. When viewed through the telescope, instead of being increased, they are diminished. The distance of the nearest fixed star from us, is estimated at more than 5,000,000,000,000 miles. Their real magnitudes are not known. In astronomical calculations their size is supposed to be equal to that of the sun - With regard to their nature we can make nearer approaches to certainty. We know that they shine with their own light, 1st because reflected light is too feeble to shine at all to such an immense distance; 2nd because if they borrowed their light from any large luminous body which was near them, that body would itself be visible. They resemble the sun in several other particulars. Many of them are observed to revolve on an axis, to have spots on their surface, and changeable spots too, like those of the sun. Hence they are very fairly concluded to be suns, each one a centre of light, and warmth, and motion to its own system of planets. Many of the stars which appear single to the naked eye, Dr Herschell has discovered to be double, treble, and even quadruple.

Geographical Thermoms To all places under the same semicircle of the meridian whether on the north or south side of the equator, it is noon, or midnight, or any other hour of the day or night at the same time precisely.

Places lying eastward of any other place, have their morning, noon, and evening hours, earlier than at that place by one hour for every fifteen degrees it lies eastward of it. ---

Places lying westward of any other place, ~~and vice versa~~. ---

A person in going eastward quite round the globe, will gain one day in his reckoning of time with respect to the account kept at the place whence he departed; but if his circuit be made westward he will lose one day. Of course two persons setting out at the same time ~~one~~ one going east, and the other west, will on their return differ in their account of time, by two entire days.

In all places situated in a parallel sphere (ie) at or near the poles, the sun's daily motion is parallel to the horizon of such places.

In every place situated in a right sphere (ie) at or near the equator, the sun's daily motion is perpendicular to the horizon.

In all places situated in an oblique sphere, (ie) between the equator and the poles, the sun's daily motion is oblique to the horizon.

On the days of the equinoxes only, (ie) about the 20th of March and the 23rd of September, the sun rises exactly in the east point of the horizon, and sets in the west to every place on the earth.

To places in north latitude, the sun rises towards the north of east and sets towards the north of west, from the vernal to the autumnal equinox; and rises towards the south of east, and sets towards the south of west from the autumnal to the vernal equinox.

In all places of the torrid zone, the morning and evening twilight is least; in the two frigid zones it is greatest; and in the temperate zones the twilight is a medium between these extremes.

Heat and cold] The presence of the sun is one of the principal sources of heat, and its absence the cause of cold; but were these the only sources, there would be in the same parallels of latitude the same degree of heat and cold at the same season; but this is not the fact: the temperature of the eastern coast of North America is much colder than the western coast of Europe, under the same latitude. Very hot days are frequently felt in the coldest climates and very cold weather, even perpetual snow, is found in countries under the equator. One source is from the earth, probably arising from a mass of heat diffused through it, which imparted from the earth to the atmosphere tends greatly to moderate the severity of the winter's cold. The internal heat of the earth in our climate is always above 40° , and therefore the snow generally begins to melt first at the bottom. Another source of heat is the condensation of vapour. It is well known that vapour contains a great quantity of heat, which produces no other effect but that of making it assume an aerial, expanded form, until the vapour is condensed into a liquid, during which condensation a certain quantity of heat escapes, and warms the surrounding atmosphere. This condensation is frequently formed

the attraction of an electrical cloud, and hence arises the great sultry
which we frequently experience before rain, and particularly before a
thunder-storm. --- As the earth is a source of heat, so distance
from it is a source of cold; and thus we find that as you ascend
in the atmosphere, the cold increases. Hence we find that the highest
mountains even under the equator have their tops continually covered
with snow. Mr Bouguer found the cold of Pichina one of the
Cordilleres, immediately under the line, to extend from 70° to 90° below
the freezing point every morning before sunrise; and hence at a certain
height which varies in almost every latitude, it constantly freezes at
night all the year round, though in the warm climates it thaws to
some degree the next day. This height he calls the lower term of conge-
lation. Between the tropics he places it at the height of 15,577 feet
English measure. The next great source of cold is evaporation. The
same cause which makes the condensation of vapour a source of heat,
makes evaporation a source of cold, as it absorbs the fire in the latter
instance which it gives out in the former; the heat thus absorbed is
called latent heat, it producing in that state no sensation of warmth.
At a certain height above the lower term of congelation, it never free-
zes; not because the cold decreases, but because the vapours do not
ascend so high. This height Mr Bouguer calls the upper term of cong-
elation, and under the equator he fixes it at the height of 28,000 feet.
The heat and cold of different countries are transmitted from one to the
other by the medium of winds. --- The vicinity to the sea is
another circumstance which affects the temperature of a climate,
as it moderates the heat from the land, and brings the atmosphere
down to a standard best fitted to the human constitution. In our
hemisphere, countries which lie to the south of any sea are warmer
than those that have the sea to the south of them; because the winds
that should cool them in winter, are mitigated by passing over the sea,
whereas those which are northward of the sea, are cooler in sum-
mer by the breezes from it. A northern or southern bearing of the
sea renders a country warmer than an eastern or western bearing.
Islands participate more of temperature arising from the sea and
are therefore warmer than continents. The annual heat of London
and Paris is nearly the same, but from the beginning of April
to the end of October, the heat is greater at Paris than at London.
Hence grapes arrive at greater perfection, in the neighbourhood of
Paris than about London. --- Land is capable of receiving much
more either heat or cold than water. In winter when the surface of
water is much cooled by contact with the colder air, the deep-
er and warmer water at the bottom being specifically lighter, rises
and tempers the top, and as the colder water constantly descends dur-
ing the winter in the following summer, the surface is generally
warmer than at greater depths, whereas in winter it is colder; hence
it has been remarked that the sea is always colder in summer,
and warmer in winter after a storm, the water at great depths
being mixed with that of the surface. --- As the water in the
northern and southern latitudes is by cold rendered heavier

than that in lower warm latitudes; hence arises a perpetual current from the poles to the equator, which sometimes carries down large masses of ice which cool the air to a great extent. Island seas of great extent have been frozen in very severe winters. In 1668 the Baltic was so firmly frozen, that Charles XI of Sweden carried his whole army over it, and the Adriatic was frozen in 1709. The temperatures of the smaller seas in general, if not surrounded with high mountains, are a few degrees warmer in summer, and colder in winter than the standard ocean - in high latitudes they are frequently frozen. The White sea is frozen in winter. The gulf of Bothnia is in a great measure frozen in winter. The German sea is about 3° colder in winter, and 5° warmer in summer than the Atlantic. The Mediterranean sea is for the greater part of its extent, warmer both summer and winter than the Atlantic, which for that reason flows into it. The Black sea is colder than the Mediterranean, and flows into it. The Caspian sea is situated in the vicinity of high mountains, and is in a great measure frozen in winter.

Winds Few natural bodies have been the subject of more experiments than the air, and from these it appears that it is both heavy and elastic. By its gravity it is capable of supporting all lighter bodies, as smoke, and vapours &c. And by its elasticity a small volume of air is capable of expanding itself into such a mass as to fill a very large space, and also of being compressed into a much smaller compass. Cold has the property of compressing air, and heat of expanding it. -- Wind is nothing more than a stream or current of air capable of very different degrees of velocity, and generally blowing from one point of the horizon to its opposite. The horizon like all other circles is divided into 360° ; but as these divisions are too minute for common use, it is also divided into 32 equal parts, called rhombs or points of the compass. Winds are divided into three classes, general, periodical, and variable. -- General winds are such as blow always nearly in the same direction. They prevail in the Atlantic and Pacific oceans, between the latitudes of about 28° north and south, blowing generally at the equator from the east, on the north side of it between the north and east, and on the south side between the south, and east: these are also called tropical or general trade winds. The superior degree of heat near the equator produced by the action of the sun, in conjunction with the earth's rotation on its axis may be considered as the cause of the general winds. For in consequence of greater heat the air becomes more rarefied, and currents flow thither from the northern and southern regions. And since the velocity of the diurnal motion is greater at the equator than in any parallel of latitude, and since the air having this motion in common with the earth, when at rest with respect to the earth is proportionally swifter at the equator, it follows that a current moving from the north or south toward the equator, having less velocity toward the east than the equatorial region, will have a relative motion toward the west, (ie) it will become an easterly wind blowing between north and east on the north side of the equator, and between south and east on the south side.

Periodical winds are such as blow nearly in certain directions during certain periods of time. The monsoons or shifting trade winds and the land and sea breezes are of this kind. The monsoons blow six months in one direction, and then six months in the opposite, the changes happening about the times of the equinoxes. These winds chiefly prevail in some parts of the Indian Ocean. Variable winds are those which are subject to no regularity of duration or change. All the winds in latitudes higher than 40° are of this kind. Between the fourth and tenth degrees of North Latitude, and between the longitudes of Cape Verde and the easternmost of the Cape Verde Islands, is a tract of sea which seems to be condemned to perpetual calms, attended with dreadful thunder and lightnings, and such frequent rains that it has acquired the name of "The Rains". This phenomenon seems to be caused by the great rarefaction of air on the neighbouring coast, which causes a perpetual current of air to set in from the westward, and this current of air meeting here with the general trade winds, the two currents balance each other, and cause a general calm while the vapours carried thither by each wind meeting and condensing, occasion these frequent deluges of rain.

[Gravity] The attraction of Gravitation called also the centripetal force is that property and power by which distant bodies tend towards one another. This is the universal principle of nature from which all motion arises. This is the universal principle of nature from which by this principle stones fall, and all bodies on whatever side of the earth are kept on its surface; by this the moon preserves her proper distance, and steadily performs her revolution round the earth - the other satellites attend their respective planets, and the planets and comets are retained in their orbits. Hence it appears that downwards is a term which has respect entirely to the centre of the system, or body to which it is applied; or in other words to move downwards is to approach towards the centre of a body or system; and to move upwards is to recede from the said centre. Thus the centre of the sun is the lowest point in the solar system, toward which every object in the system is attracted. With respect to the earth the lowest point is its centre, and every object belonging to that planet, on whatever side tends towards it. It is constantly erroneous to suppose that people on the side of the earth opposite to us, walk with their heads downward, or are in danger of falling from its surface. It is abundantly proved by experiment and observation, that the force of gravity is inversely as the squares of the distances of the bodies from one another, (i.e.) the force decreases in the same ratio as the squares of the distances increase and vice versa.

[Tides] The flowing and ebbing of the ^{sea} are to be attributed to the attraction of the sun and moon; but principally to that of the moon on account of its less distance from the earth. The earth by its daily rotation about its axis, presents each part of its surface

to the direct action of the moon twice each day, and thus produces two floods and two ebbs. But because the moon is in the mean time passing from west to east in its orbit, it arrives at the meridian of any place later than it did the preceding day; whence the two floods and ebbs require nearly 25 hours to complete them. The tide is highest about 3 hours after the moon has passed the meridian, for though the force be greater at that time, yet the greatest effect cannot appear on the water till some time afterward. When the moon is in conjunction or opposition with the sun, they both tend to raise the water in the same place: the tides are then highest and are called spring tides. When the sun and moon are 90° distant from each other, the sun depresses those parts which the moon raises; they are then lower than ordinary, and are called neap tides. Hence the highest tides happen at the time of new and full moon; and the lowest when the moon is at her first and third quarters. --- The phenomena of the tides was clearly pointed out by Sir Isaac Newton, in the latter part of the 16th century. ---

[Fossils] The earth below its surface is composed of various substances collectively called fossils. --- All those substances dug out of mines as metals, coal, sulphur, ochre &c. are called minerals. Such of the minerals as can be malleated are called Metals. Of these there are seven, which are reckoned according to their weight - Platina, Gold, Lead, Silver, Copper, Iron, Tin. To these should be added Quicksilver. Three of these Platina, Gold, and Silver, are called perfect metals, because they remain longest unchanged by fire. The other four are called imperfect metals - because they may be destroyed or changed by fire into earth. By a chymical operation on Iron, Steel is produced. A mixture of Tin and Lead in certain portions forms the compound called Pewter. The best chymists divide bodies into salts, earths, inflammable substances, metals, and waters. The effects of heat and mixture on these bodies constitute the science of chemistry.

[Length of Miles] The English statute mile consists of 5280 feet, 1760 yards or 8 furlongs. --- Eleven Irish miles are equal to 14 English. --- The Russian Vorst is little more than $\frac{3}{4}$ of an English mile. The Turkish and Italian mile is nearly 1 English. --- The Scotch mile is about $1\frac{1}{2}$ English. --- Dutch Spanish and Polish are about $3\frac{1}{2}$ English. --- The German is more than 4 English. --- The Swedish Danish and Hungarian is from 5 to 6 English. --- The French common marine league is nearly 3 and the English marine league is three nautical miles. --- The Arabian mile ancient and modern is about $1\frac{1}{4}$ English. The Indian is almost 3 English. ---

Table of Population.

United States of America $\frac{7}{10}$ 230,000

Christians

The World - - - - -		Millions	800	United States of America $\frac{7}{10}$ 230,000	
Asia - - - - -	387	First Class	Thousands	Virginia - - - - -	974
Europe - - - - -	166	New York - - - - -	959	Pennsylvania - - - - -	810
America - - - - -	116	N. Carolina - - - - -	555		
Africa - - - - -	61	Second Class		Massachusetts - - - - -	472
Pagans - - - - -	481	Kentucky - - - - -	416	S. Carolina - - - - -	415
Christians - - - - -	170	Third Class		Maryland - - - - -	380
Mahometans - - - - -	140	Fourth Class		Connecticut - - - - -	261
Catholics - - - - -	90	Tennessee - - - - -	261	Georgia - - - - -	252
Protestants - - - - -	50	New Jersey - - - - -	245	Ohio - - - - -	230
Greeks & Armenians - - - - -	30	District of Maine - - - - -	228	Vermont - - - - -	217
Others - - - - -	9	New Hampshire - - - - -	214		
China - - - - -	200	Fifth Class		Rhode Island - - - - -	76
Hindoostan - - - - -	60	Orleans - - - - -	76	Delaware - - - - -	72
Russia in Europe - - - - -	36	Sixth Class		Mississippi - - - - -	40
France - - - - -	32	Indiana - - - - -	24	District of Columbia - - - - -	24
Japan - - - - -	30	Territory of Louisiana - - - - -	20	Territory of Illinois - - - - -	12
Austria - - - - -	23	Territory of Michigan - - - - -	4		
Prussian Empire - - - - -	17	Colleges in the U.S.A.		D of Maine - - - - -	Bowdoin College at Brunswick.
Great Britain & Ireland - - - - -	15	N. Hampshire - - - - -	Dartmouth College at Hanover.	N. Hampshire - - - - -	One at Middlebury & one at Burlington
Spain - - - - -	11	Vermont - - - - -	Harvard University at Cambridge	Massachusetts - - - - -	and Williams College at Williamstown
Persia - - - - -	10	Massachusetts - - - - -	Brown University at Providence	Rhode Island - - - - -	Yale College at New Haven.
Tartary - - - - -	10	Rhode Island - - - - -	Columbia College at New York,	Connecticut - - - - -	Union College at Schenectady, and
Arabia - - - - -	10	Connecticut - - - - -	Hamilton College at Clinton.	New York - - - - -	Trasau Hall at Princeton, and
Turkey in Asia - - - - -	10	New York - - - - -	Queen's College at Brunswick.	New Jersey - - - - -	University of Pennsylvania at Phila
Spanish dominions in S. A. - - - - -	9	Pennsylvania - - - - -	Dickinson C. at Carlisle, Franklin C.	Pennsylvania - - - - -	at Lancaster, and one at Washington
Russia - - - - -	8	Ohio - - - - -	Ohio University at Athens, Miami	Ohio - - - - -	College at Oxford.
German States - - - - -	8	Maryland - - - - -	St. Johns C. at Annapolis, Washington	Maryland - - - - -	C. at Chestertown, Methodists have a C.
Turkey in Europe - - - - -	8	Virginia - - - - -	at Harford, Roman Catholics at Geny	Virginia - - - - -	town, and the French at Baltimore
United States of A. - - - - -	7	Kentucky - - - - -	William and Mary C. at Williamsb	Kentucky - - - - -	Hampton Sidney C. in Prince Edward's
Russia in Asia - - - - -	5	Tennessee - - - - -	County Washington C. at Lexington.	Tennessee - - - - -	a College at Lexington.
Siam - - - - -	5	North Carolina - - - - -	Greenville C. in Green county, Blou	North Carolina - - - - -	C. at Knoxville, Washington in W
Spanish dominions in N. A. - - - - -	4	South Carolina - - - - -	North C. University at Chapel Hill.	South Carolina - - - - -	Mount Zion C. at Wrensborough, Sou
Portuguese dominions - - - - -	4		Carolina C. at Columbia, one at Charle		and one at Cambridge.
Italian republics - - - - -	4				
Portugal - - - - -	4				
Sweden - - - - -	3				
Denmark - - - - -	3				
Norway or Holland - - - - -	3				
Egypt - - - - -	2 1/2				
Switzerland - - - - -	2				
Ethiopia - - - - -	2				
Pope's States - - - - -	2				
Naples - - - - -	2				
Abyssinia - - - - -	2				
Morocco - - - - -	2				
British possessions in N. A. - - - - -	3/4				
Tripoli - - - - -	1/2				
Algeria - - - - -	1/4				

Population of the largest cities and towns in the world.

1870

Between 60 & 70,000					
Pekin	China	2,000,000	Warsaw	Prussia	66,000
Canton	China	1,500,000	Silistia	Turkey in E.	66,000
Nankin	do	1,500,000	Bucharest	Turkey in E.	66,000
Addo	Isle of Nippon	1,000,000	Bursa	Turkey in A.	60,000
London	England	839,000	Tokat	Turkey in A.	60,000
Paris	France	650,000	Yatavia	Isle of Java	60,000
Calcutta	Hindooistan	500,000	Louloose	France	60,000
Constantinople	Turkey in E.	400,000	Lisle	Netherlands	60,000
Naples	Italy	380,000	Ghent	do	60,000
Lisbon	Portugal	300,000	50 & 60,000		
Cairo	Egypt	300,000	Lima	Peru	54,000
Between 2 & 300,000			Cusco	do	54,000
Vienna	Austria	254,000	Honingsburg	Prussia	52,000
Alippo	Turkey in A.	250,000	Wreslaw	Germany	52,000
Amsterdam	Holland	212,000	Bafiora	Turkey in A.	50,000
Ispahan	Persia	200,000	Limerick	Ireland	50,000
Mexico	Mexico	200,000	Tunis	Tunis	50,000
Between 150 & 200,000			Narta	France	50,000
Petersburg	Russia in E.	192,000	Antwerp	Netherlands	50,000
Rome	Italy	162,000	Dresden	Germany	50,000
Lyons	France	160,000	St. Iago	Chili	50,000
Dublin	Ireland	150,000	40 & 50,000		
Genoa	Italy	150,000	Rotterdam	Holland	48,000
Venice	do	150,000	Baltimore	Maryland	46,000
Between 100 & 150,000			Mentz	France	46,000
Berlin	Germany	148,000	Strasbourg	do	40,000
Madrid	Spain	140,000	30 & 40,000		
Milan	Italy	140,000	Malaga	Spain	38,000
Smyrna	Turkey in A.	100,000	Buda	Austria	36,000
Algiers	Algiers	100,000	Santiago	Spain	36,000
Barcelona	Spain	100,000	Munich	Germany	36,000
Between 90 & 100,000			Leipsic	do	35,000
Hamburg	Germany	95,000	Boston	Massachusetts	33,000
New York	New York	93,000	Yangoon	Burman Empire	30,000
Philadelphia	Pennsylvania	92,000	Legs	Noroland	30,000
Marseilles	France	90,000	Waterford	Ireland	30,000
Mecca	Arabia	90,000	Brest	France	30,000
Edinburgh	Scotland	90,000	Opoto	Portugal	30,000
Bordeaux	France	90,000	Middleburg	Holland	30,000
Between 80 & 90,000			Frankfort	Germany	30,000
Copenhagen	Denmark	82,000	Buenos Ayres	Buenos Ayres	30,000
Adrianople	Turkey in E.	80,000	20 & 30,000		
Toulon	France	80,000	Triga	Russia in E.	27,000
Seville	Spain	80,000	Dundee	Scotland	26,000
Granada	do	80,000	Bartholomew	Terra Firma	25,000
Prague	Germany	80,000	Belgrade	Turkey in E.	25,000
Stockholm	Sweden	80,000	St. Domingo	Hispaniola	25,000
Between 70 & 80,000			Altona	Denmark	24,000
Glasgow	Scotland	77,000	Gottenburg	Sweden	24,000
Cadix	Spain	75,000	Aberdeen	Scotland	24,000
Athacah	Russia in A.	70,000	Charleston	S Carolina	24,000
Cork	Ireland	70,000	New Orleans	Louisiana	20,000
Broussel	France	70,000	Jerusalem	Turkey in A.	20,000
Florence	Italy	70,000			

1870

Population continued.

Between 20,000 & 25,000	Bagdad	London	20,000
	Alexandria	Egypt	20,000
	Perth	Scotland	20,000
	Cherson	Russia in E	20,000
Between 19 & 20,000	Paisley	Scotland	19,000
	Bergen	Norway	19,000
	Montreal	Lower Canada	16,000
Between 15 & 16,000	Quebec	Lower Canada	15,000
	Basle	Switzerland	15,000
	Berne	do	13,000
	Conception	Chili	13,000
Between 12 & 13,000	Archangel	Russia in E	12,000
	Salem	Massachusetts	12,000
	Havana	Ile of Cuba	12,000
Between 10 & 12,000	Paimaibo	Guiana	10,000
	Providence	Rhode Island	10,000
Between 9 & 10,000	Richmond	Virginia	9,000
	Albany	New York	9,000
	Norfolk	Virginia	9,000
Between 8 & 9,000	Halifax	Nova Scotia	8,000
	Washington	D of Columbia	8,000
	Newark	New Jersey	8,000
	Newport	Rhode Island	8,000
Between 7 & 8,000	Newburyport	Massachusetts	8,000
Between 6 & 7,000	Alexandria	D of Columbia	7,000
	Portland	D of Maine	7,000
	Portsmouth	New Hampshire	7,000
	Yorktown	Upper Canada	7,000
Between 6 & 7,000	Marblehead	Massachusetts	6,000
	New Haven	Connecticut	6,000
	Worcester	do	6,000
Between 5 & 6,000	Lancaster	Pennsylvania	5,000
	Savannah	Georgia	5,000
	Knobsville	Tennessee	5,000
	Pittsburg	Pennsylvania	5,000
Between 4 & 5,000	Lexington	Kentucky	4,000
	Hudon	New York	4,000
Between 2 & 3,000	Windsor	Vermont	2,700
	Bennington	do	2,500
	Wilmington	North Carolina	2,400
	New Bern	do	2,400
Less than 2,000	Natchez	Mississippi	1,500
	Detroit	Michigan	1,400

Table of Mountains

Miles

The most extensive is the western range of America	11,000
Andes - of South America	4,100
Cordilleras - of Mexico	4,400
Stony - of N America	2,500
Altayan - of Asia	5,000
Mountains of the moon - Africa	2,000
Uralian - between Europe and Asia	1,400
Sofrafield - between Norway and Sweden	1,100
Olenz - European Russia	1,000
Alleghany - United States	900
Taurus - Asiatic Turkey	600
Carpathian - Austria	500
Alps - Switzerland & Italy	500
Caucasus - Asia Minor	400
Halmus - European Turkey	400
Pyrenean - between France and Spain	200
Tastarnie - European Turkey	200
Arvergne - France	150

Highest Summits

Feet

Chimborazo - of the Andes	20,000
Manflos - Tupungato - Descabrado - Corcobado - Chillan -	
Longavi - Blasquillo - of the Andes, & supposed to be	20,000
Cotopaxi - of the Andes in Peru	19,000
Popocatepetl - Citlattepetl - of the Cordilleras	17,000
Mount Elias - of the Stony mountains in N America	17,000
Nevada - Andes of Merida in S America	16,000
Ixtaccuehuatl - Naucampatepetl - Toluca - Cordilleras	15,000
Pachinca - Andes in Peru	15,000
Mont Blanc - Alps in Switzerland	15,000
Collinas - Caucasus in Asia Minor	15,000
Mosa - Alps in Switzerland	15,000
Peak of Teneriffe - in the Island ditto - one of the Canaries	15,000
Mount Washington - White hills, in New Hampshire	14,000
Mount Peidu - Pyrenees in France	14,000
Grimmel - Furca - Tellis - Alps in Switzerland	10,000
Mount Etna - in the island of Sicily	9,000
Mt St Gothard - Swiss Alps	9,000
Canigon - Pyrenees in France	9,000
Lomnity - Hermark - Livian - Carpathian in Aus	8,000
Peak of Sansi - Cantal - of the Cevennes - south of France	6,000
Brenner - in Germany	5,000
Peaks of Otter - Alps in Austria	4,000
Wharfedale - in England	4,000
Ben nevis - Scotland	4,000
Desurvis - Italy	3,000
Snowden - Wales	3,000
Mount Carmel - in Connecticut	600
Mansfield - Green Mountains	500
Moosehillock - New Hampshire	500
Catskill - New York	400

Hindostan

Hindustan

Hindustan or India within the Ganges, includes all the countries in the western peninsula, from the mountains of Gattay and Tibet on the north. It has usually three divisions. 1st Hindustan Proper or the northern provinces, which include all those north of the river Chumbul; 2nd The Deccan which includes all the provinces between the Chumbul and the Krishna. 3rd The provinces of the peninsula south of the Krishna.

Delhi was once a large, rich, and populous city; and the capital of the Mogul empire but since its decline and downfall by repeated invasions, the population is much diminished. Agra was once a most extensive and splendid city, where the great mogul sometimes resided; but since its decline and downfall, but of late it has rapidly declined. Cachemire is considered the garden of the east. I might almost say of the world. It is a beautiful province that the world produces. The roses, the billow, and the most beautiful flowers have long been preserved in the east. One of our most beautiful poets in contemplating its beauties, aptly explains "With its roses the brightest that earth ever gave."

As temples, and gardens, and fountains, as clear as the love-lighted eye, that long over their wave? Many small islands emerge from the lake of Cachemire that are yet with albatross, and large open bays of the sea. The country says its historians, had its own princes 4000 years before its conquest by Akbar in 1555. Akbar would have found some difficulty to reduce this part of the Indies, situated as it is within such a fortress of mountains; but its monarch Quasim Khan was easily betrayed by his Akab.

Govindar has a monument erected to the memory of Sar Seiv a musician of incomparable skills who flourished at the court of Akbar. The monument is adorned by a tree containing which a superstition action prevails that the clearing of its leaves will give an extraordinary melody to the voice. The inhabitants of Hindustan all say "superstition" In some places they worship apes - The women whose office it is to dance round the great Pagoda, the great of Delhi, have like golden bells fastened to their feet, the soft harmonious tinkling of which vibrates in unison with the exquisite melody of their voices. - It is believed too that as pure Hindus can cross the waters of the Ganges or Ghous river. - A singular piece of superstition is practised when any person has friends who have gone on dangerous voyages. A small lamp is lighted filled with oil of cocon, and adorned with a wreath of flowers, and then committed to the waves. This is practised by way of offering up vows for the safe return of the dear departed. If the lamp sinks immediately the order is disastrous; but if it goes down the stream, and continues to burn till out of sight, the return of the beloved is in the dust of evening. On the banks of the Ganges this ceremony is so frequent that often on sea of stars, which is the place where the Ganges is seen gliding all over with lights, like the stars of the firmament, more than a hundred springs which sparkle like stars. - There is a fragrant grass grows on the banks of the Ganges, whose sweetness is known both by crushing it. The Indians prize that Rudra was first seen floating down the Ganges on the city of Benares, or Benares, Benares, Benares - a part of it is called Ben or Benar. In some of the countries south of India vegetable gold is supposed to be produced. Changing the the Emperor of Delhi (says D'Almeida) gave a fund of powder, he held the clock of religion between his actions and the religion, and in the end, he was murdered. He was murdered by his brother, he was murdering a magnificent mosque at Delhi as an offering to God for his assistance to him in the civil wars. He acted as a high priest at the consecration of the temple and the practice of offering divine service there. But then he lifted one hand to the Divinity, the other to the sword, and went forth the usurper of his religion. Ananga gave birth to Chandra, the conqueror of Delhi.



Persia

Persia is divided into many provinces, among which are Georgia, anciently Albania—Erivan, Armenia—Aderbeys, Atropatena, Media, Chilan, Gela Hyrcania—Shac Ajemi, Fikabana or Partia; Choristan, Suissani—Kerman, Carmania—Ardlestan, Bactriana—The Persian empire succeeded the ancient Assyrian or Babylonian, and was the second which has been called universal. It was founded by Cyrus, who about 538 years before the Christian era restored the Greeks to liberty, and their country, after having been 70 years in captivity at Babylon. His empire was of short duration. It ended with Darius who was conquered by Alexander the Great, 331 years before Christ.

of short duration. It is
the Great 331 years before Christ.
Ispan the capital of Persia is thought by some to be the first city in the
east. It is said to consist of a great number of magnificent palaces, mosques
caravansaries, baths, and fine streets. The remains of the ancient Persopolis
is a great curiosity in this country. It is called "the forty Pillars" It is
imagined by the Persians that this palace and the edifices at Balbec were
built by Genii for the purpose of hiding in their subterraneous caverns in increase
treasures, which still remain there: the gen of Samshid or Giamshid mentioned
by poets, they say was discovered when digging for the foundations of Persopolis.
Xerxes is the chief residence of these ancient natives who worship the Sun and the
fire; which latter they have carefully kept lighted without being once extin-
guished for a month above 3000 years on a mountain near Ispahan called
after Dardak, signifying the house or mansion of the fire. They reckoned very un-
fortunate who dies off that mountain. On the western coast of the Persian
Sea near Baccus or Baber, are springs of asphalt or pure rock oil. It is as
clear as water; and when the weather is hard the springs boil up the higher, and the
asphalt often takes fire on the surface of the earth and runs in a flame in to the
sea to a distance almost incredible. In speaking of the climate of Persia

to a distance almost incredible. In speaking of the climate of Shiraz
Shanbeh says "the dew is of such a pure nature, that if the brightest scimitar should
be exposed to it all night, it would not receive the least rust. The scimitar is elevated
for a fable of apple, half of which is sweet, and half sour. At Gombaroon and the
island of Ormus, it is sometimes so hot that the people are obliged to live all day in the
water. They have towers for the purpose of catching the wind, and cooling the houses.
There is an extraordinary fire in the air, from kind of the Persian Gulf, called the Ghaleh
mountain. It rises in the form of a lofty cupola and on the summit of it they say is
the remains of a fire temple. It is superstitiously held to be the evidence of Dostevah
Spites, and many emeralld stones are reckoned of the injury and intellect suffered
by those who stayed in former days to ascend, or behold it. - The Ghaleh or fire mountain
lets say that when Abraham their great prophet was thrown into the fire, by order of
Nimrod, the flame turned instantly into a bed of roses, where the child sweetly reposed.
At their other Prophet Loostan the following story is told - that the love of wisdom and virtue
leading him to a solitary life upon a mountain, he found it one day all in a flame
with celestial fire, out of which he came without harm, and instituted certain sacrifices
God, who he declared then appeared to him. Kishmee, or Kismis is an island in the Persian Gulf
celebrated for its white wine. One of the greatest curiosities found in the Persian Gulf is a fish which the
English call the Devil fish. It is in every part of the night very luminous resembling the full moon surrounded
by stars. It is named after the formerly Gobatan was the Capital of ancient Media.

Turkey in Asia.



Turkey in Asia.

exhibited in its white wine. One of the greatest curiosities found in the Persian Gulf is a fish which the English call Stawfish. It is circular and at night very luminous resembling the full moon surrounded by rays. Itamedon formerly Gebetara was the Capital of Ancient Media

Turkey in Asia.

This country comprehends the provinces of Anatolia or Asia Minor which is subdivided into Anatolia Proper, Caracomania, Armenia, Colchidia - Turcomania or Armenia; Georgia, Mingrelia part of Georgia, Caucasus the three last arcenctly called Colchis, Iberia, and Abkhazia. The provinces of Caudistan or Aegypti, Candace or Mesopotamia, Sava, Persia or Chaldaea; Syria &c. &c. Palestine or the Holy Land.

Natolia compels the ancient provinces of Lydia, Pamphylia, Pisidia, Lyconia, Cilicia, Pontus, Cappadocia, and the seven churches of Asia all of them situated in Greece, Thracia, and a sacred history, but they are now in ruins. Bursa and Smyrna were Ionia, are still considerable cities. Ephesus has some remains of its ancient splendour - The Georgians are said to be the handsomest people in the world. The country though subject to the Turks is chiefly peopled by Christians. It is called by the inhabitants the Babu (when town) from the warm-baths in the east, severe to walk Phasis was the capital of Colchis, and celebrated in fable, for the expeditions of the Argonauts. from Greece in search of the golden fleece by which it is understood the sick productions of the country - Curdistan the ancient Assyria lies south of Georgia. Trebizond has a kind of trade leading where the sea feeds upon, and the honey thence drives people mad.

Syria indeed comprehended the towns of Antioch, Aleppo, Damascus, Hama, Sidon, Tyre, Beirut, and Aleppo. At Antioch now Antioch was the disciples of our Saviour first received the name of Christians. Richardson thinks that Syria had its name from Sini, a beautiful delicate species of rose, for which that country has been always famous. Sini, which is the land of roses. Jerusalem on the brood Seder which is the land of leopards, is now an inconsiderable place, and although formerly a city of importance, it was here that our Saviour preached the Christian religion, and was crucified for the Jews upon Calvary. The capital of Syria was Damascus.

el in the year 700. Palmyra, but was used to the ground by the the Roman
with the remains of antiquity. Suddenly the sea opens to the heavens
is presented with the most striking objects, that are to be found in the
Palmyra was called by the ancient Sargon in the desert. The temple
of our lord in ruins at Palmyra, but the acule to it is through a vast number
of beautiful Corinthian columns of white marble. According to the best judges
the ruins of Palmyra display the boldest plan of architecture that was ever at-
tempted. - I take of Aspharides, on the Dead Sea, is so salt that neither animals
nor vegetables live in it. It is said that there are apple-trees on the sides of the
sea, which bear very lovely fruit, but when are full of apples. It is
nearly 100 miles in extent, and is supposed to occupy the place where
Sodom and Gomorrah once stood - Jordan is a river of Palestine
which runs south through the sea of Galilee or Lake of Tiberias, alias
Genesaret, and falls into the dead sea. This river is on both sides
thrust with little, thick, and pleasant woods among which thousands
of vespertines would all together. The Gracians a river in China
of vespertines would all together. The Gracians a river in China
China is where Alexander first defeated the Persians. The Persians
famous for the defeat of Queen's King of Lydia, who was deceived by
the ambiguous meaning of his oracle. - Hercules passes over the Hellespont
shall destroy a great Empire. The empire was his son. The Persians said
by the ancient of have flowed on golden sands. The Medes and Persians



[illegible]

A historical map of the Midlands and North of England, showing major cities like York, Lincoln, Nottingham, Sheffield, Derby, Manchester, Liverpool, and London. The map is oriented with North at the top and includes labels for the Irish Sea and the English Channel.

A detailed map of the British Isles, showing the English Channel, the North Sea, and the Atlantic Ocean. The map includes numerous place names, such as London, York, and Edinburgh, and is labeled with 'GEORGES CHANNEL' at the bottom. The map is oriented with North at the top. The English Channel is labeled 'GEORGES CHANNEL' at the bottom. The North Sea is labeled 'NORTH SEA' at the top. The Atlantic Ocean is labeled 'ATLANTIC OCEAN' on the right. The map shows the coastlines of Great Britain and Ireland, with numerous place names marked. The map is a historical representation, likely from the 18th or 19th century.

[illegible]

THE BRITISH CHANNEL

The castle was destroyed by fire in 1794. The destruction of the castle was the result of the confinement of the French fleet in the English Channel.

Northwest Harbor

Ireland was anciently called *Hibernia*, Dublin the capital, is situated on the *Liffey*. It is considered the second city in the British dominions and contains 140,000 people. The appearance of the metropolis; the bay of Dublin and the surrounding country is green and beautiful. *Trinity College* in this city is the only university in Ireland. It is the boast of Ireland never to have been conquered.

a scheme in the country; but it was rather the temporary limit of a bandit, than a peaceful residence of established conquerors. After years of rapine, murder, and desolation they were utterly extirpated. The famous battle of Clontarf was fought on Good Friday April 23rd 1014, wherein the Danes were completely defeated with a loss of 11,000 men, and driven out of Ireland; but the said King Brian Boru was killed. The reign of this great monarch presents a bright example of valour, intrepidity, and every talent which can adorn the warrior. Brian the Victorious pursued his path; in peace, the arts embellished his repose. After having defeated the Danes in 25 engagements, the venerable hero was again called into action.

the glorious career of a sovereign, whose land was best or war but whose heart was for the peace of Europe. Nicholas Breakspere an Englishman who took the title of Adrian IV in 1154 made a grant of Ireland to Henry II of England which was confirmed by Pope Alexander III. A romantic spot called the vale of Posca is situated at the junction of the rivers Avon and Avon, between Stratford-upon-Avon and Warwick. It has been sweetly celebrated by Moore in his "meeting of the waters." The daingle in the same country is a narrow vale formed by the sides of two opposite mountains. It is narrowed to the narrow order of the river, which tumbles from rock to rock. The extent of wood that hangs to the eye in every direction is great and the depth of the precipice immense. At some distance below is a vast chasm in the rock which seems torn asunder to let the torrent through, that comes tumbling over a rocky bed far such in a channel unobscured in wood. In a hollow formed of rock and tumbles through the chasm, rocks bulging over it as if ready to fall into the channel. The shade is so thick as to exclude the beams of the sun. The first Protestant priest performed prodigies of valour and obtained the king's pardon. His forces after he had besieged the city 6 weeks. Belfast is the Athens of Ireland - Linen is celebrated for its manufactures, particularly of gloves. Ireland has been for its men of genius and learning. This was the country of Ossian, Dryden, & Ossian. The age is still shown in the south of Ireland where Spenser wrote his "Faery Queen." Devoe, of the Irish peasantry, was born there in 1670. He died at 88 years, and was buried in the church of his native place. A simple mound of grass forms his monument; and pure as the air of the mountains. It is worthy of remark that some of the brightest ornaments of the Irish nation, O'Connell, Grant, Bunsford &c form a bright constellation in the unhappy people! In America, they lead the bar - In England, they adorn the State - at home - they are disgraced.



Scotland was anciently called Caledonia. It is divided by the river Tay into North Scotland or the Highlands; and South Scotland or the Lowlands. Edinburgh stands on an eminence and makes a grand appearance. The castle is built on a solid rock of great height, which overlooks the city; and commands an extensive and beautiful prospect. Glasgow is the second city in Scotland for population, riches and commerce. Aberdeen for trade, export, and manufactures are celebrated for their universities. Edinburgh Glasgow, and St Andrews are situated in the Lowlands. Culloden, about four miles east of the town of Inverness, was the seat of a battle between the English under the Duke of Cumberland, and Prince Charles Edward Stuart pretender to the throne of England. This prince, vanquished and exposed to the greatest dangers, saved himself by disguising as a woman, and taking advantage of some misapprehensions of the king of Sweden, both obliged to favour his flight. In the centre of Loch Leven is an island called, where Mary the beautiful queen of Scots was confined a close prisoner, under the custody of William Douglas, but by her insinuating manners, she prevailed on his young brother George to procure her liberty. At Falkirk, a most bloody battle was fought in the 13th century between the English under the command of King Edward 1st, and the Scots literally plumed with Scottish blood. After the defeat, the Regent of Scotland had an interview with Robert Bruce on the river's banks and persuaded him to rejoin the standard of his country and assert her liberties. Rob Roy, formerly called Lumbel, a few miles from Glasgow, is the place where the great Sir William Wallace was betrayed into Edward's power by the treachery of Sir John Menteith. On the banks of the Clyde near Lanark, is a town that bears the name of Wallace. It is said to be a remnant of his dwelling. There is also a tower within the precinct of Dunbar Castle called by his name, and a sword is shown as one that belonged to him. About four miles from Edinburgh is Mosley, noted for a stately Gothic chapel, a most curious piece of workmanship. --- Glasgow stands on the edge of the residence of the Duke of Argyll. Here he received Ben Jonson, who journeyed from London on foot to visit him. The beauty of this striking scene has been much injured by the age. The traveller now looks in vain for the leafy bowen "where Jonson sat in Damocles' social shade." No stream in Scotland can boast such a varied succession of the most interesting objects, as well as the most romantic and beautiful scenery as the Loch of the Trossachs. Sir Joseph Banks in his voyage thought these islands as highly improved their beauty. Mr Pennant describes the island of Staffa as a new world's wonder, rising amidst the waves; but with columns of double the height of that in Ireland and again in the Isle of Skye is another series of genuine basaltic columns, whose pillars are about 20 feet high consisting generally of five angles. This is the most wondrously beautiful in the "spectral dominions." The Great Causeway north of Ireland, first, Staffa succeeds, the rock Grouse. Do legions gather, and finally these columns of Skye. The depth of ocean probably conceals the vast limits of this chain. The famous island of Iona was once the seat of learning, and the burial place of many kings of Scotland. Ireland and Orkney - Iona contains the castle of Vothney which gave the title of Duke to the eldest sons of the kings of Scotland, as it now does to the Prince of Wales.

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Glasgow, and St Andrews are nearest for new uniforms. Edinburgh
Culloden, about four miles east of the town of Inverness, was the seat of a battle
between the English under the Duke of Cumberland, and Prince Charles Edward Stuart
to the throne of England. This prince, regarded and exposed to the
greatest dangers, saved himself by disguising as a woman, and taking advantage
of some rapids to get the king of Sweden had quitted to favour his flight. So the centre of
Loch Leven is called 'Loch Leven', where Mary the Queen's grave is. The centre of
Inverness, under the custody of William Douglas, but by her interesting manners, she gained
ed on his young brother George to procure her liberty. At Falkirk, a most bloody
battle was fought in the 13th century between the English under the command of
King Edward 1st and the Scots led by Sir William Wallace. The latter were
defeated, and the river Gairn literally flowed with Scottish blood. After the
fight, the Regent of Scotland had an interview with Robert Bruce on
the river's banks, and persuaded him to join the standard of his country, and
about her liberties. Rob Royson, formerly called Lumbel, a few miles from Glasgow,
is the place where the great Sir William Wallace was betrayed into Edward's
power by the treachery of Sir John Montgomerie. On the banks of the Clyde near
Larabal, is a town that bears the name of Wallace. It is said to be a remnant
of his dwelling. There is also a tower within the fort of Dumbarton Castle
called by his name, and a sword is shown as one that belonged to him.

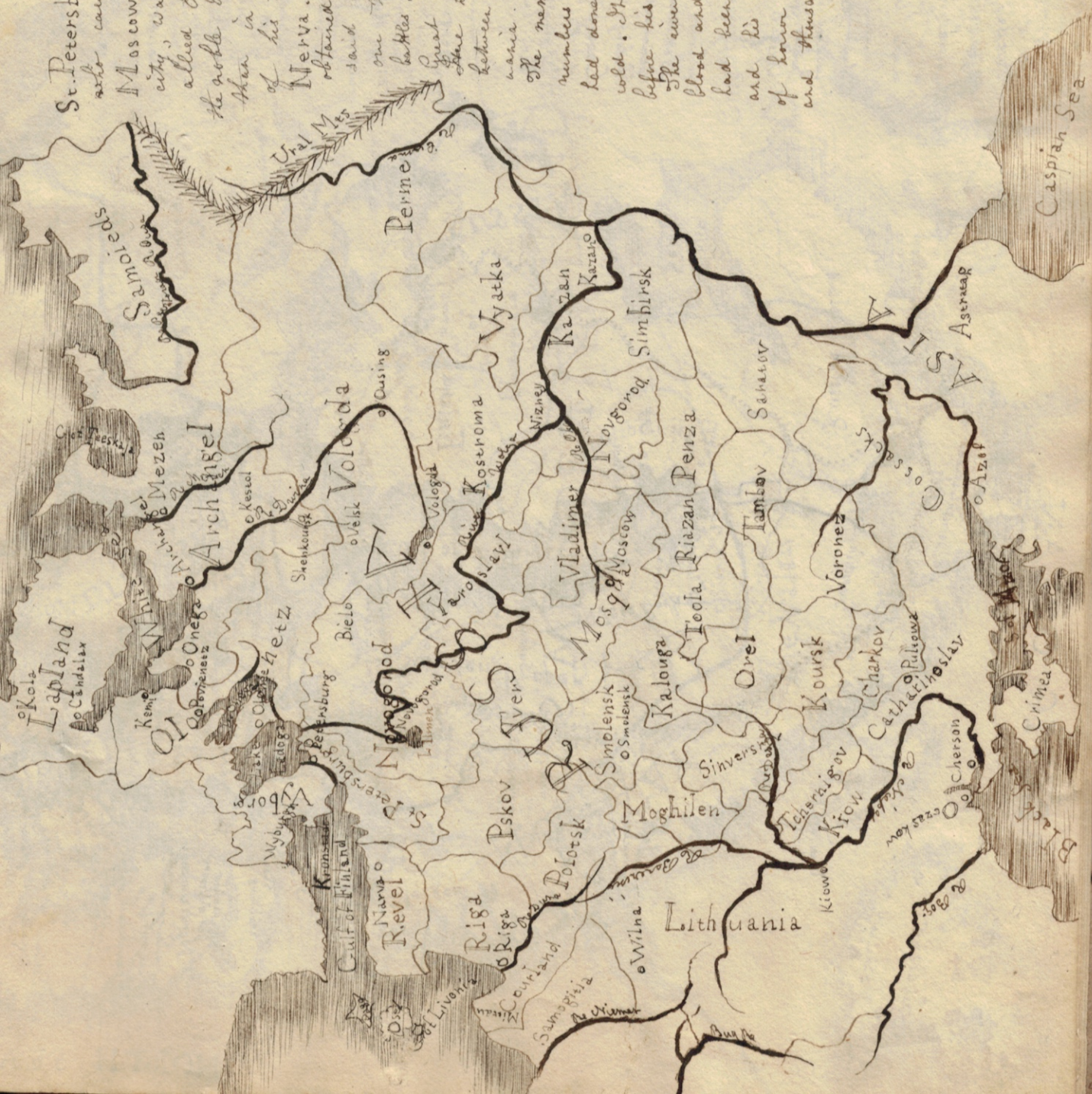
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St. Petersburg, so called in honor of the apostle Peter, by Peter the Great who caused the city to be built in 1703.

Moscow was once the capital of Russia. In the church of its assumption in this city, was the greatest bell in the world. In the recent wars between the allied Powers, and France; Bonaparte took possession of Moscow, and the noble Russians preferring that their city should be no more, rather than in the hands of a tyrant, destroyed it by fire at the moment of his entrance. It has since been re-taken, and in a measure rebuilt.

Nerva. At this place Charles XII of Sweden, when but nineteen years old, obtained a complete victory over Peter the Great in 1700. The czar Peter said on this occasion, "I am sure they will learn us to beat them in one year." Peter's south-west of St. Petersburg has been the scene of two great battles. One nine years after the battle at Cherm, between Peter the Great and Charles XII. The latter was defeated, and escaped to Finland. Here his prosperity terminated. The other battle was fought in 1389 between Janak-lara Emperor of Mogul, and Ustol grand duke of Lithuania, who was defeated. Cherson was the burial-place of the Philanthropist Howard the memorable winter of 1709, which was that of the battle of Poltava, destroyed numbers of the troops of Charles XII, for he resolved to leave the season as he had done his enemies, and ventured to make long marches during this mortal cold. It was in one of these marches, that 2000 men fell dead with cold before his eyes.

The river Beresina a beard of the Meister, is remarkable for the sure of blood and honor transacted during Bonaparte's retreat from Moscow. A bridge had been thrown across the river; the Emperor with his suite had passed over and his army wishing on to escape the fire of their pursuers. It was a scene of horror and courage, and in the midst of it the bridge was fired. Thousands and thousands of the French army sunk into eternity.



Sweden

Sweden, Denmark, Norway, Lapland, were called by the ancients Scandinavia. The capital of Sweden is built on seven rocky islands, which are united by wooden bridges. Stockholm the capital of Sweden is built on seven rocky islands, which are united by wooden bridges. The island of Gotland. In the middle of this Strait of Calmar is also celebrated for the act of union, made here by the three crowns of Sweden, Denmark, and Norway under the reign of Christian IV. Copenhagen, the thick and black smoke from the forges is so great, that when the west wind blows it back on the houses, the inhabitants are obliged to leave their houses. At Helsingborg in the year 1619, Gustavus-Adolphus King of Sweden, had an amicable interview.

Denmark

DENMARK
Denmark is a small kingdom - that is, Denmark Proper - It consists of the peninsula of Jutland, and several islands in the Baltic Sea; but the Danish Colonies extend over the northern part of Lapland, Greenland, Iceland and the Faroe Isles, belonging Norway, the northernmost part. It signifies the Cheeked's Haven. It is one of the best fortified and most regular built cities in the north of Europe incl. St. Paul's Univ. has a respectable university. Altona is the second town in Denmark for commerce & population.

Norway

Bergen is one of the principal sea-ports in Norway. Christene sometime called its first name from Christian IV King of Denmark, who caused it to be builded. Frederickstadt is where Charles X. II of Sweden was killed in laying siege to the city. He was kneeling on a carpet, and contemplating some piece he take there. On the south-west coast of Norway is the great strait called the Skagell Ström. It is here at a great distance and forms L'Anchorage. Ex comes near it it is dear is and shared to pieces.

Norway

to be found

of vast depth and extent. When the Lapps are under a regular government. Their huts are so low as scarcely to admit their standing upright. Their fire is built in the centre, around which they sit upon their heels. When they eat the food is placed upon the ground on a carpet—the winters are extremely cold. In attempting to drink the ligs are frequently frozen to the cup. In some parts of Lapland, the sun in winter is absent eleven hours to the day. In some parts almost constantly visible, and together with the northern light, renders the night less dreary than might be expected. In summer the sun does not set for the same length of time, which renders the latter part of the year very agreeable. For two months the sun never sets in Iceland. The Island abounds in sulphur, subterranean fires, and volcanoes. Mount Hecla is a volcano one mile high, and is always covered with snow. Several years ago a volcanic island near Iceland, rose from the bottom of the sea; but it soon after disappeared.



Switzerland

[illegible]

180 west of London



Poland

Poland, though at present shut out of the list of nations yet on account both of historical and political knowledge requires a place in geography. It was divided into twelve provinces of which Polish Prussia, Great Poland, Little Poland, Masovia and Polesia belong to Prussia; Courland, Samogitia, and Lithuania, belong to Prussia; Volhynia, Podolia, and Red Russia, belong to Austria. The salt mines here are a great curiosity. They are 6 or 800 feet deep more than 1000 lead and extend to 6 or 800 feet in length. The top of the cave is supported by columns of salt which have been left for supports to the roof. When these mines are illuminated they exhibit a brilliant appearance the smooth and transparent surfaces of the salt reflecting all the colours of the rainbow. This country gave birth to the illustrious Thaddeus Kosciuszko commander in chief of the Polish army he has recently died in France. Thorn is the most ancient city of Prussia and the birth place of Nicholas Copernicus the celebrated restorer of the Solar system.

GERMANY

Vienna was formerly the capital of the whole German Empire but in 1806 the constitution of Germany was dissolved by the power of France and it is now the capital only of the Austrian dominions

Hamburg is one of the first commercial cities in Europe. Anspach gave birth to John Philip Bach. This extraordinary child at six years old was acquainted with the Greek Latin Hebrew German and French languages and was an author at twelve years and died in 1740 in his nineteenth year. At Cologne is a splendid monument erected to the memory of the Emperor Charlemagne. Cöteringen has a celebrated university. The Guild of Magdeburg invented the printing press. It is the place where Charles XII of Sweden retired after having left Turkey. Wittemburg was the native place of the astronomer John Kepler. Luther began to preach his doctrine and here he was buried. At Blemheim was a celebrated battle won by the Duke of Marlborough and allies against the French. At Hohenlinden near Munich was a battle fought in a brilliant winter's evening. It has been rendered very interesting by Campbell's beautiful little poem. [Leipzig] At this place an interesting and bloody battle was fought by the allied armies under the command of Blücher. Schwarzenberg &c., in opposition to the French under Bonaparte in 1813. The latter was obliged to retreat with great loss. At the battle of Dresden, which was fought a short time previous to that of Leipzig, a catastrophe occurred which awakened much sensibility and regret throughout the allied army. Gen. Morau whilst in earnest conversation with the Emperor of Russia on the operations of the day, had both his legs carried off by a cannon-shot, the ball going through his knee. This distinguished officer had quitted his retirement in the United States, and had accepted the commission of Major General from the Emperor of Russia. Innsbruck is the place where Chariva of Germany, one of the great supporters of the reformation, surprised and succeeded to capture Charles V, who had placed himself there with a small force only. The Emperor escaped over the Alps almost unharmed. This Chariva who was Marquis of Miravia and Thuringia was an extraordinary character. After having effectually humbled Charles, restored the Germanic constitution, and confirmed the religious liberties of Germany, he promised to become one of the greatest actors in the drama of modern Europe; but in gaining a victory over Albert of Brandenburg who had for some time depopulated the country, he lost his life aged 32 years.



Holland or Batavia

51° 55' N
4° 30' E

Amsterdam is a fine city containing 240,000 inhabitants. The houses are built upon piles of wood or beams driven into the soft earth.

Rouendam was not for commerce and wealth. It is the birthplace of Erasmus. The Hague though called a village was long the seat of government and the residence of all ambassadors and strangers of distinction. It is celebrated for the magnificence and beauty of its buildings and the politeness of its inhabitants which are 40,000. Leyden and Utrecht are fine cities and celebrated for their universities. At the peace of Westphalia Newfoundlands Nova Scotia and China in Europe were confined to Great Britain also. A great Britain birthplace of Dr. Boerhaave the celebrated Physician. At the battle of Leyden is the great Sir Philip Sidney after having three losses shot under him. Luuphen the great which terminated his life is about 25 hours. at length received a wound which terminated the act of printing. Savanah is mentioned as the place where the great or person would his affluence to ship-building and laboured as a common man. Hague was the birthplace of Huygens the celebrated astronomer.

Netherlands

49° 51' N Latitude
2° 30' E Longitude

Amwerp one the emporium of the European continent is now ceased to be a teeming and thread-bare ship. Brussels is a fine town here are made the best of canvas and the finest kinds of lace this town and Irovaire and Se Omers have been famed for their colleges. Lille is a large city and over there are 300 bridges. Spa is celebrated by canals into 28 islands and over they are much visited to. Waverloo is the seat of its mineral waters they are much visited by the French under Bonaparte of a celebrated battle recently fought by the allies decided the fate of France and the allied armies this Marshal Luthier and John Bullin celebrated of France and Bonaparte. At Coblenz is the monument of the young and talented General Moreau killed by a wife ball at Attendichen fighting for France. France adorned and her enemies admired both west over him his funeral was attended by the generals and old. Dendermonde from both armies in the same grave General Hoche in entered but though he distinguished himself greatly in battle he did not die there his death was attended by suspicions of poison. Hoche was attended among the first of France's earlier generals before Bonaparte monopolized her triumphs.



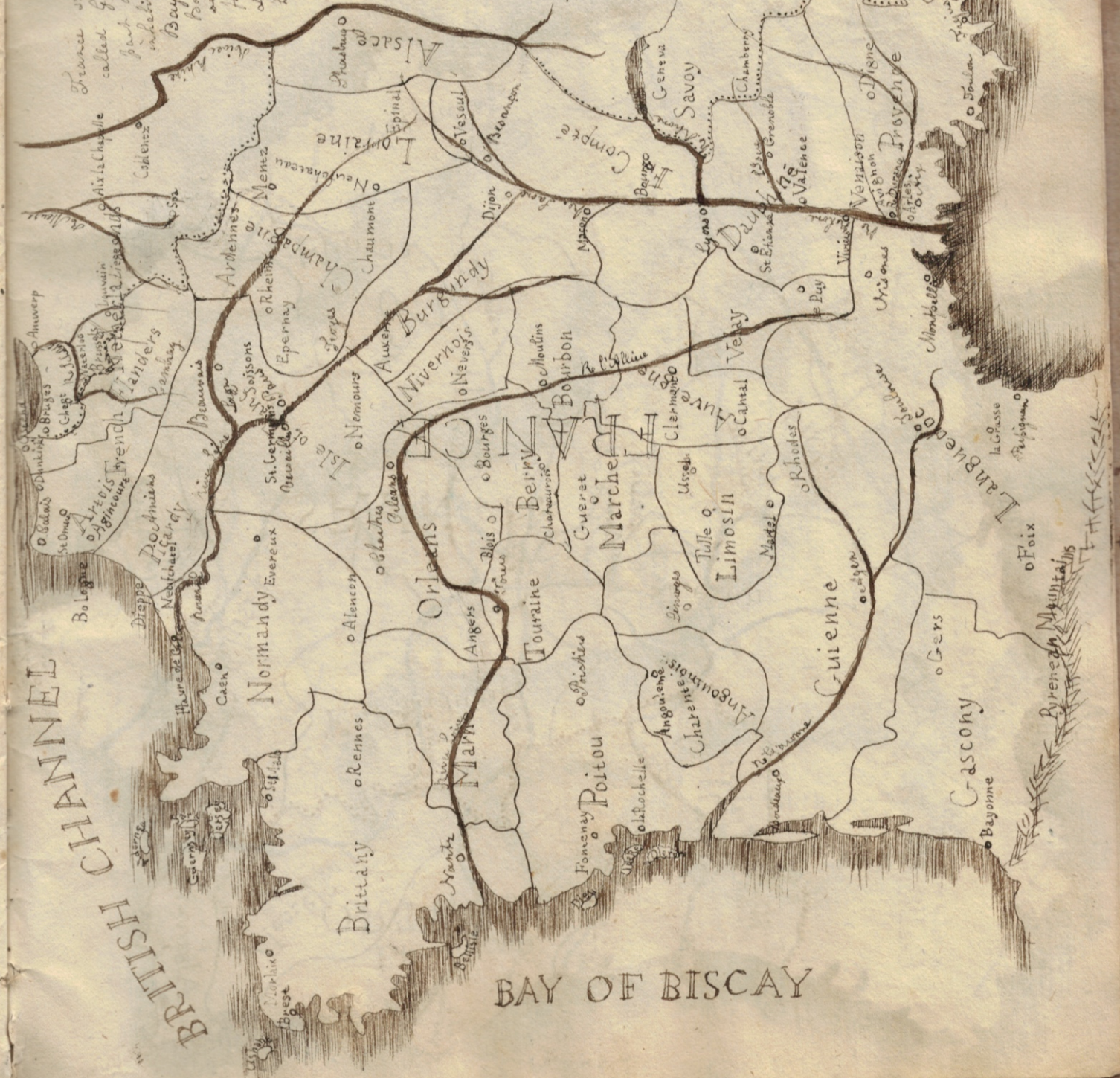
Amsterdam 51° 55' N
4° 30' E

Netherlands 49° 51' N Latitude
2° 30' E Longitude

Amsterdam 51° 55' N
4° 30' E

MUNEL 42° 5' 10" N latitude
5° 48' 8" E longitude

France stands in a commanding situation in the centre of Europe. It was anciently called Gaul or Gallia, and comprehended besides France, Flanders, Holland, Switzerland, part of Germany. Paris the capital is a most magnificent city containing 800,000 inhabitants. Bordeaux, one of the first cities in France is famous for commerce & Black wine. Bayonne near the border of Spain, has become celebrated for being the place where Bonaparte visited Ferdinand VII king of Spain on a friendly visit - or meeting, he secured the person of the king, and made him prisoner. Montpellier is celebrated for the salubrity of its air. Toulon and Marseilles, are important seaports Lyons is the second city in France for beauty, commerce and opulence. It has manufactures of silk, gold & silver stuffs. Troyes, is celebrated as the place where St. Bonaparte landed after his return from the island of Malta. Arriving in the beautiful valley of Beauvais, was the residence of the beautiful fée Dame de Sade; and here Petrarch first beheld her. Valenciennes near Arras was the favorite residence of St. Louis. Henry 4th of France and his rival candidate for the throne Henry 3rd, a son of Catherine de Medici met on the plain of Jons, not long after the horrid massacre of St. Bartholomew, buried all feelings of discord and opened mutual animosity to the League. Henry 3rd was shortly after assassinated and Henry of Navarre succeeded the throne of France. Henry, Epemay, Rouen, Montreuil, &c. were the seats of battles fought by the Huguenots headed by Henry 4th, in opposition to the League of Catholics. At Usson is the castle or rather fortress, where Chaumont de Valois the daughter of Catherine de Medici, and the neglected wife of Henry the Great, was imprisoned by her uncharitable brother Charles IX. She however found means to escape, her Governor, and held at Usson or Ussel, but she court. At Blois castle, the admirable Duke de Guise, the head of the League was assassinated by Catherine and her son Henry 3rd. Troyes contained the Picardie monastery founded by Abbeled, who was interested with Blois in an adjoining monument. Moulins is celebrated as the place where St. Louis saw a vision, which meeting gave rise to the beautiful song entitled St. Louis's Chant. Palais is memorable for the beauty and patriotism manifested by its chief inhabitants when it was besieged by Edward 3rd, Sir of his noblest sons, offered to sacrifice their own lives to save their fellow-citizens. but the intrepidity of Queen Philippa Edward's wife procured their pardon. Orleans is celebrated as the residence of Joan of Arc the celebrated Maid of Orleans, who performed such prodigies of valor during the battles between France & England in the reign of Charles VI, and Henry VI. After obtaining many victories she was at length captured by the Duke of Burgundy, and buried in the market place at Paris. English during the reign of Charles VI the seat of a celebrated battle fought by the French & English, known by the French name of the battle of Agincourt, is memorable for a battle fought by the French VI and Henry V of England. Poitiers is memorable for a battle fought under King John an army of 60,000, and the English under Prince John of Aragon an army of 10,000, but the latter obtained a complete victory, and John prisoner, who treated him with great generosity. Clement in Auvergne was the birth place of Edward III of England. The famous visit of Vasco de Gama to the port of Calicut was passed by Henry IV in 1482.



BAY of BISCAY

Spain 36° 44' N latitude
9° 48' 40' W longitude
Lisbon, one of the most commercial towns in
Europe, is famous for its oranges.

Spain is the emporium of the Spanish foreign trade
Cadix, is situated on an island.
At a naval battle off Cadix, Lord Nelson lost his life.
Salamanca, a town on the Tagus is renowned
interesting by a battle fought there between the
French and English. The opposing armies after a
day of blood, came to the hand of a small river
that separated them; when hands were thrown
and the ensuing morning revealed their work
of terror. Gordon's gun killed the French and French
of battle. Valledor, or a branch of the Douro,
Christophen Columbus terminated his life.

Valencia, in the South of Spain is famous for oranges.
Gibraltar, is a very strong fort, built on a
rock, and has more than a century belonged
to the English. Mount Calpe now the hill
of Gibraltar, was opposite to Mount Abyla
in ancient times; on the African side of
the Straits of Gibraltar. These two mountains
were according to tradition
once united, and the cleft in order to
open a communication between the Mediterranean
Sea, and the Atlantic Ocean, sent
them asunder. Hence they were called Pillars of
Hercules.

Portugal, was formerly called Lusitania.
Lisbon, the capital, is built like old Rome, on
seven hills. In 1755 it was destroyed
by an earthquake, but has been rebuilt. Oporto,
a handsome city, and second
noted for its strong wines, called Port.



Italy 38° and 47° N Latitude
6° and 14° E Longitude

Italy, the garden of Europe, the parent of the arts, and civilization, is a large peninsula, washed on three sides by the Mediterranean Sea. It was once the mistress of the world, and is still an interesting country. By the recent conquest in Italy by the French, the northern states have been formed into a kingdom, including Piedmont, Milan, Venetian states, Mantua, Parma, Genoa, Modena: they are called the Kingdom of Italy.

Milan is considered the capital. Venice is built on 72 low islands of Venice is a beautiful city full of paintings, sculpture, and architecture. Leghorn celebrated for its harbour and manufactory of hats. Macinavel, Naples has been called a paradise, from its beauty and fertility. The city is built in the form of an amphitheatre, contains 350,000 inhabitants. Mount Vesuvius near Naples is a celebrated volcano: it has a circuit of seven miles, and lava is sometimes thrown seven.

Herulacium and Pompeii were once considerable cities, and are remarkable for having been overwhelmed by an eruption of Vesuvius in 479. These cities remained undiscovered till the year 1713.

Mantua, or rather Andes a neighbouring village, was the birth-place of Virgil; Solimena, of Virid; Venusa, of Horace; and Verona, of Caius. Naples, Catulaw, and Pliny the elder. Anzio the birth-place of Petarch. Capri, or Capri, is memorable for being the residence of Pythagoras, for the birth of the celebrated Aulo, who was a second Heracles.

Sicily is the largest of the islands: the Cyclops were among its first inhabitants. Mount Etna in this island, is two miles high, and remarkable for its volcano. Its circuit is 180 miles, and lava is often thrown 30.

In the straits of Messina, was Scylla a rocky point on the Italian, and Pharyngades a vast whirlpool on the Sicilian side, sung by the poets. Helita, now Chaita, was the island to which St Paul escaped from the shipwreck, in his voyage to Rome. At Aringa is the tomb of Lucian.

The Lipari or Eolian Islands, were called from Eolus, who it was said resided there. Agaccio in Corsica is celebrated for the birth of Napoleon Bonaparte, and Elba is the place where he was banished by the allied sovereigns.

Pantellio is a mountain near Melby on which is shown the tomb of Virgil.



August 12 1813

Wm. H. D. P.

