

	Fathoms.
Le Canigon of the Pyrennees -	1441
Le Mouffec -	1253
Le Saint Barthélemy -	1184
The Mountain of Gold in Auvergne, an extinguished volcano -	1048
According to Mr. Needham, the height of the mountains of Savoy are,	
The Convent of St. Bernard -	1241
The Rock to the south of St. Bernard -	1274
Mount Serène -	1282
L'Allée Blanche -	1249
Mount Tourné -	1683
According to M. Facio de Duiller, Mount Blanc, or the Cursed Mountain, is	2213

It is certain, that the chief mountains of Switzerland are higher than those of France, Spain, Italy, and Germany. Several learned men have ascertained the height of these mountains.

The greatest part of these mountains, according to M. Mikhéli, as the Wetter-horn, the Schreck-horn, the Eigheß-Schneeberg, the Fisher-horn, the Stroubel, the Fourke, the Louk-marier, the Crispalt, the Moughe, the ridge of Baduts and Gottard, are from 2400 to 2750 fathoms above the level of the sea. But these measures, I suspect, are too high, especially as they exceed, by one half, those given by Cassini, Scheuthzer, and Mariotte, which may be estimated too low, but not to this extent. My suspicion is farther confirmed, by considering that, both in the

the cold and temperate regions, where the air is always troubled with storms, the barometer is subject to so great variations, that its results cannot be trusted.

II.

Of the Direction of Mountains.

IN vol. i. p. 240. I remarked, that *the direction of the great mountains of America is from north to south, and that those of the Old Continent run from west to east.* This last assertion requires to be modified; for though, at first sight, we may follow the mountains as far as China, by passing from the Pyrennees in Auvergne, to the Alps in Germany, and in Macedonia, to Caucasus and other mountains of Asia, as far as the Tartarian sea; and though Mount Atlas, in the same manner, appears to traverse the Continent of Africa from west to east, the middle of this vast peninsula may still consist of a chain of high mountains stretching from Mount Atlas to the Mountains of the Moon, and from these to the Cape of Good Hope: In this view, the middle of the Continent of Africa may be considered as consisting of mountains which run from north to south through its whole extent, like the mountains

tains of America. Those parts of Mount Atlas which traverse Africa from west to east, should be considered as branches only of the principal chain. The mountains of the Moon, which run from west to east, may likewise be regarded as collateral branches; and, if there are no volcano's in this prodigious range of mountains, it may be owing to the vast distance of the sea from the middle regions of Africa; whilst, in America, the sea is very near the foot of the high mountains, which, instead of occupying the middle of the peninsula of South America, are all situated to the west; and the extensive low lands are entirely on the east side.

The great chain of the Cordeliers are not the only mountains of America which run from north to south. In the territory of Guiana, about one hundred and fifty leagues from Cayenne, there is a chain of pretty high mountains, which also extends from north to south. On the Cayenne side, this chain is so steep, that these mountains are almost inaccessible. This steepness seems to indicate, that, on the other side, the declivity is gentle, and consists of fine land. The tradition of the country, accordingly, or rather the testimony of the Spaniards, is, that, beyond the mountains, there are populous nations of savages united into regular societies. It is likewise said, that there is a gold mine in these mountains, and a lake in which grains of gold

gold are found: But this fact requires confirmation.

In Europe, the chain of mountains which begins in Spain, and passes through France, Germany, and Hungary, divides into two great branches, one of which extends into Asia by the mountains of Macedonia, Caucasus, &c. and the other branch stretches from Hungary into Poland and Russia, and extends as far as the sources of the Wolga and Boristhenes; and, stretching still farther, it joins another chain in Siberia, and terminates in the north sea to the west of the river Oby. These chains of mountains ought to be regarded as one continued ridge, from which several large rivers derive their sources: Some of these rivers, as the Tagus, and the Doura in Spain, the Garonne and the Loire in France, and the Rhine in Germany, empty themselves into the ocean; others, as the Oder, the Vistula, and the Niemen, fall into the Baltic sea; others, as the Dwina, fall into the White Sea, and the river Petzora empties itself into the Frozen sea. On the east side, this chain of mountains gives rise to the Yeucar and Ebre in Spain, to the Rhone in France, and to the Po in Italy, which falls into the Mediterranean; to the Danube and Don, which lose themselves in the Black Sea; and, lastly, to the Wolga, which falls into the Caspian.

Norway is full of rocks and groups of mountains. There are plains, however, which extend, without interruption, six, eight, and ten miles. Their direction is not from west to east, like that of the other European mountains. On the contrary, they stretch, like the Cordeliers, from south to north*.

In the south of Asia, from the island of Ceylon to Cape Comorin, there is a chain of mountains which separates Malabar from Coromandel, traverses the Mogul country, joins Mount Caucasus, stretches through the country of the Calmucks, and terminates in the North Sea to the east of the Irtis. Another chain extends from north to south as far as Razatgat in Arabia, and may be traced, at some distance from the Dead Sea, as far as Jerusalem: It surrounds the extremity of the Mediterranean, and the point of the Black Sea, from which it traverses Russia, and terminates in the North Sea.

We may likewise remark, that the mountains of Indostan and those of Siam run from south to north, and both unite with the rocks of Thibet and Tartary. Each side of these mountains presents a different season: On the west, they have six months of rain, while, on the east, they enjoy the finest weather†.

* Hist. Nat. de Norwege, par Pontoppidan. *Journal étranger*, mois d'Aout, 1755.

† Hist. Phil. et Polit. tom. II. p. 46.

All

All the mountains of Switzerland, as those of the Vallesse and the Grisons, those of Savoy, Piedmont, and Tiral, form a chain, which extends, from north to south, as far as the Mediterranean. Mount Pelate, which is situated in the centre of Lucerne, nearly in the centre of Switzerland, forms a chain of about fourteen leagues, extending from north to south as far as the canton of Bern.

We may therefore conclude in general, that the greatest eminences of this globe are situated from north to south, and that those which run in other directions ought to be regarded as collateral branches only of these primitive mountains: And, it is partly by this disposition of the primitive mountains, that all the points or terminations of continents are either south or north; as appears from the points of Africa, of America, of California, of Greenland, of Cape Comorin, of Sumatra, of New Holland, &c. This fact seems to prove, as formerly remarked, that the waters have proceeded in greater quantities from the south than from the north pole.

If we consult a new map of the world, in which are represented, round the Arctic Pole, all the lands of the four quarters of the globe, except the north point of America, and, round the Antarctic Pole, all the seas, and the small portions of land to be found in the southern hemisphere, we shall evidently perceive, that many

many more revolutions have happened in the latter than in the former hemisphere, and that the quantity of water has always been, and still is, much greater there than in our hemisphere. Every thing concurs in proving, that the greatest inequalities of the globe exist in the southern regions, and that the general direction of the primitive mountains is from north to south, rather than from east to west, through the whole extent of the earth's surface.

III.

Of the Formation of Mountains.

ALL the vallies and dales on the surface of the globe, as well as all the mountains and hills, have originated from two causes, namely, fire and water. When the earth first assumed its consistence, a number of inequalities took place on its surface; swellings and blisters arose, as happens in a block of glass or of melted metal. Hence this first cause produced the original and the highest mountains, which rest on the interior rock of the earth as their base, and below which, as every where else, there must have been vast caverns, which sunk in at different periods. But, without considering this second event,

event, the falling in of the caverns, it is certain, that, when the earth first consolidated, it was every where furrowed with depths and eminences, which were produced solely by the action of cooling. Afterwards, when the waters were precipitated from the atmosphere, which happened when the earth cooled so much as to be unable to repel the vapours, these waters covered the whole surface of the globe to the height of two thousand fathoms; and, during their long abode upon our continents, the motion of the tides and that of the currents changed the disposition of the primitive mountains and valleys. These movements would form hills in the valleys, and would cover the bottoms and knaps of the mountains with new beds of earth; and the currents would produce furrows or valleys with corresponding angles. It is to these two causes, of which the one is much more ancient than the other, that the present external form of the surface of the earth is to be referred. Afterwards, when the seas sunk down, they produced those steep precipices on the west, where they ran with the greatest rapidity, and left gentle declivities on the east.

The structure of those eminences which were formed by the sediments of the ocean, is very different from that of those which owe their origin to the primitive fire. The first are disposed in horizontal beds, and contain an infinite