zone, in conſequence of its expansion in that climate. We repeat it, it is almoſt ſolely produced by the aerial tide, and is necessary for the very formation of this tide. We cannot perceive the accumulation. It cannot affect the barometer, as many think, becauſe, though the air becomes deeper, it becomes deeper only becauſe it is made lighter by the gra­vitation to the sun. Inſtead of preſſing more on the ciſtern of the barometer, we imagine that it presses leſs ; becauſe, like the ocean, it never attains the height to which it tends. It remains always too low for equilibrium, and therefore it ſhould preſs with leſs force on the ciſtern of a barometer.

There is an appearance preciſely ſimilar to this in the planet Jupiter. He is ſurrounded by an atmoſphere which is arranged in zones or belts, probably owing to climate dif­ferences of the different latitudes, by which each ſeems to have a different kind of ſky. Something like this will ap­pear to a ſpectator in the moon looking at this earth. The general weather and appearance of the ſky is conſiderably different in the torrid and temperate zones. Jupiter’s belts are not of a constant ſhape and colour ; but there often ap­pear large ſpots or tracts of cloud, which retain their ſhape during ſeveral revolutions of Jupiter round his axis. To judge of his rotation by one of theſe, we ſhould ſay that he turns round in 9.55. There is also a brighter ſpot which is frequently ſeen, occupying one certain ſituation on the body of Jupiter. This is ſurely adherent to his body, and is either a bright coloured country, or perhaps a tract of clouds hovering over ſome volcano. This ſpot turns round in 9.511/4. And thus there is a general current in his atmo­ſphere from eaſt to west.

Both the motion of the air and of the water tend to diminiſh the rotation of the earth round its axis : for they move flower than the earth, becauſe they are retarded by the luminaries. They muſt communicate this retardation to the earth, and muſt take from it a quantity of motion preciſely equal to what they want, in order to make up the equilibrated tide. In all probability this retardation is compenſated by other cauſes ; for no retardation can be obſerved. This would have altered the length of the year ſince the time of Hipparchus, giving it a ſmaller number of days. We see cauſes of compenſation. The continual waſhing down of soil from the elevated parts of the earth muſt produce this effect, by communicating to the valley on which it is brought to reſt the exceſs of diurnal velocity which it had on the mountain top.

While we were employed on this article, a book was put into our hands called *Studies of Nature,* by a Mr Saint Pierre. This author ſcouts the Newtonian theory of the tides, as erroneous in principle, and as quite inſufficient for explaining the phenomena ; and he aſcribes all pheno­mena of the tides to the liquefaction of the ices and ſnows of the circumpolar regions, and the greater length of the po­lar than of the equatorial axis of the earth. He is a man of whom we wiſh to ſpeak with respect, for his constant at­tention to final cauſes, and the proof thence reſulting of the wiſdom and goodneſs of God. For this he is entitled to the greater praiſe, that it required no ſmall degree of for­titude to reſiſt the influence of national example, and to re­tain his piety in the midſt of a people who have drunk the very dregs of the atheiſm of ancient Greece. This is a ſpecies of merit rarely to be met with in a Frenchman of the preſent day ; but as a philoſopher, M. de St Pierre can lay claim to no other merit except that of having collected ma­ny important facts. The argument which he employs to prove that the earth is a prolate ſpheroid, is a direct demonstration of the truth of the contrary opinion ; and the melt­ing of the ice and ſnows at the poles cannot produce the ſmalleſt motion in the waters. Were there even 10 times more ice and ſnow floating on the northern ſea than there is, and were it all to melt in one minute, there would be no flux from it ; for it would only fill up the ſpace which it formerly occupied in the water. Of this any perſon will be convinced, who ſhall put a handful of ſnow ſqueezed hard into a jar of water, and note the exact height of the water. Let the ſnow melt, and he will find the water of the ſame height as before.

Tide*-Waiters,* or *Tideſmen,* are inferior officers belonging to the cuſtomhouſe, whoſe employment is to watch or at­tend upon ſhips until the cuſtoms be paid : they get this name from their going on board ſhips on their arrival in the mouth of the Thames or other ports, and ſo come up with the tide.

TIEND, in Scots law. See Teind.

TIERCE, or Teir.ce, a meaſure of liquid things, as wine, oil, &c. containing the third part of a pipe, or 42 gal­lons.

TIERCED, in heraldry, denotes the ſhield to be divi­ded by any part of the partition-lines, as party, coupy, tranchy, or tailly, into three equal parts of different colours or metals.

TIGER, in zoology. See Felis.

Tiger-Wolf, the name by which the hyæna is called at the Cape of Good Hope. See Hyæna.

TIGRIS, a river of Aſia, which has its ſource near that of the Euphrates in the mountain Tchildir in Turkomania: afterwards it ſeparates Diarbeck from Erzerum, and Khuſiſtan from Irac-Arabia ; and uniting with the Euphrates at Gorno, it falls into the gulf of Bafforah, under the name of *Schat el-Arab.* This river passes by Diarbekar, Gezira, Mouſul, Bagdad, Gorno, and Baſſorah.

TILIA, Lime or Linden-tree, in botany : A genus of plants belonging to the claſs of *polyandria,* and order of *monogynia ;* and in the natural ſyſtem ranging under the *Columnſerae.* The calyx is quinquepartite ; the corolla pentape- talous ; the berry is dry, globoſe, quinquelocular, quinque­valve, and opening at the base. There are four ſpecies ; the europæa and americana, pubeſcens and alba.

The *europaea,* or common lime-tree, is generally suppoſed to be a native of Britain; but we are informed by Mr Coxe, that Mr Pennant told him (on what authority is not mentioned), that it was imported into England before the year 1652@@.

The leaves are heart-ſhaped, with the apex produced, and ſerrated on the edges ; the flowers grow in a thin umbel, from three to nine together, of a whitiſh colour and a fra­grant ſmell ; very grateful to bees. The wood is light, ſmooth, and of a ſpongy texture, uſed for making laſts and tables for ſhoemakers, &c. Ropes and bandages are made of the bark, and mats and ruſtic garments of the inner rind, in Carniola and ſome other countries.—The lime-tree con­tains a gummy juice, which being repeatedly boiled and cla­rified produces a ſubſtance like ſugar.

TILLEMONT (Sebaſtian le Nain. de). See Nain.

TILLER *of a Ship,* a ſtrong piece of wood faſtened in the head of the rudder, and in ſmall ſhips and boats called the *helm.*

TILLŒA, in botany : A genus of plants belonging to the claſs of *tetrandria*, the order of t*etragynia,* and in the natural syſtem ranging under the 13th order, *Succulentae.* The calyx has three or four diviſions ; the petals are three or four, and equal ; the capſules three or four, and polyſpermous. There are four species; of which one only, the muscoſa, is a native of England, and is not mentioned among the Scotch plants.

The *muſcoſa,* or procumbent tillœa, has proſtrate stems,

@@@[mu] Coxe's Travels in Switzerland, vol. ii. p. 64.