

A conjecture about an under-Current at the Streights-Mouth, read before the Oxford Society, Dec. 21. 1583. by the reverend and learned Tho. Smith D. D. Fellow of Mag. Col. Oxon. and of the R. Society.

IN the *Offing* between the *North Foreland* and *South Foreland* it runs *Tide* and *half Tide*, that is it is either *ebbing water* or *flood* upon the shore, in that part of the *Dorvns*, three hours, which is grossly speaking the time of *half a tide*, before it is *fo, off at sea*. (For the *flux* and *reflux* of the *sea* is not made exactly twice in 24 hours, but, as it appears by accurate observation, it requires an overplus of almost 50 *minutes*.) The reason of this diversity of *tides*, I take to be from the meeting of the two *seas* in that narrow *streight*.

Ofentimes when the *wind* has blown hard at N.E. or at W. or W. and by S. there has hapn'd an alteration of the *tides* in the *river of Thames*, which ignorant people have mistakingly lookt upon as a *prodigy*.

It is a most certain *Observation*, that where it flows *tide* and *half tide*, tho the *side* of *flood* runs aloft, yet the *side* of *ebb* runs *under foot*, that is, close by the *ground*; and so at the *side* of *ebb*, it will *flow* under foot, as that great and experienc'd Sea-Commander, * *Sr. Henry Marmarings* words it. Upon this supposition I shall humbly offer a *conjecture* to this learned *Society* concerning the *Mediterranean Sea*, after I have premised this brief *history* of it, as containing certain matter of fact.

There is a vast *draught* of *water* poured continually out of the *Atlantick* into the *Mediterranean*, the mouth or entrance of which between *Cape Spartel* or *Sprat*, as the *sea-men* call it, and *Cape Trafalgar*, may be near 7 leagues wide, the *current* setting strong into it, and not losing its force till it runs as far as *Malaga*, which is about 20 leagues within the *Streights*. By the benefit of this *Current*, tho the wind be contrary, if it does not over-blow, *Ships* easily turn into the *gut*, as they term the *narrow passage*, which is about 20 miles in length. At the end of which are two *Towns*, *Gibraltar* on the

(a) *Seamans diction* p. 106.

coast

coast of *Spain*, which gives denomination to the *Strait*, and *Cuta* on the *Barbary* coast: at which places *Hercules* is supposed to have set up his *pillars*. What becomes of this great quantity of water poured in this way, and of that, which runs from the *Fuxim* into the *Bosphorus* and *Propontis*, and is carried at last through the *Hellepont* into the *Aegean* or *Archipelago*, is a curious *speculation*, and has exercised the wit and understanding of *Philosophers* and *Navigators*. For there is no sensible rising of the water all along the *Barbary Coast*, even down to *Alexandria*, the land beyond *Tripoli*, and that of *Egypt*, lying very low, and easily overflowable. They observe indeed, that the water rises 3 feet, or 3 feet and an half, in the *gulph* of *Venice*, and as much, or very near as much, all along the *Riviera* of *Genova*, as far as the river *Arno*: but this rather adds to the wonder.

I here omit to speak at large of the several *hypotheses*, which have been invented to solve this difficulty: such as *subterraneous vents*, cavitys and indraughts, *exhalations* by the *Sun beam*: the running out of the water on the *African side*, as if there were a kind of circular motion of the water, and that it only flowed in upon the *Christian shore*: which latter I look upon as a meer *fansy*, and contrary to all observation.

My conjecture is, that there is an *under-current*, whereby as great a quantity of water is carried out, as comes flowing in. To confirm which, besides what I have said above about the difference of tides in the *offing*, and at the *Shore* in the *Downs*, which necessarily supposes an *under Current*, I shall present you with an instance of the like nature in the *Rabtick Sound*, as I received it from an able seaman, who was at the making of the tryal.

He told me, that being there in one of the *King's Fregats*, they went with their *Pinnace* into the *rabtick Strait*, and were carried violently by the *Current*: that soon after they sank a *bucket* with a large *Cannon* bullet to a certain *depth* of water, which gave check to the boats motion, and sinking it still lower and lower, the *boat* was driven a head-ward against the *upper Current*: the *current* aloft, as he added, not being above 4 or 5 *fathoms* deep, and that the lower the *bucket* was let fall, they found the *under-Current* the stronger. I
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designed to have made the *Experiment* in the *Streights-Channel*; but both times I past, the Easterly wind blew so hard, that there was no putting out the boat with any safety; nor indeed at those times had we any leisure for such a *Curiosity*; which those, who lived at *Tanger*, might have tried without any difficulty or danger.

This conjecture, how likely or unlikely soever, will stand or fall according to the certainty of the *Observations*, which shall be made there, which I will endeavour to procure in order to the further establishment, or utter overthrow of it.