

of one and the same "channel" (using these terms also in their most general sense) along which each set, separately, might be freely propagated—*i.e.*, so that the foremost crest of the first set shall strike the mouth of the channel at the same moment with that of the other—they will combine and run on along the channel as a single set or series of waves of double the height or intensity. In this case they are said to arrive "*in the same phase*" (a term borrowed from the phases of the moon which passes periodically through the states of full and new, increase and wane). The same will be the case if the foremost *crest* of the series be so timed (by the previous arrangements) as to reach the mouth of the channel simultaneously with the second, third, or fourth *crest* of the other, in which case the one set is said to be in arrear or advance of the other (as the case may be) by one, two, or more entire "*undulations.*" On the other hand, if the foremost *crest* of the one set be so timed as to arrive simultaneously with the first, second, third, &c., *trough* of the other—up to the time of its arrival indeed the one, two, or three foremost waves which are not contradicted will run forward ;—but, from the moment when the others begin to arrive, they will cease to be followed up by any more. In this case the one set is in advance or arrear of the other by exactly one, or three, or five, &c., *semi-undulations*, and the series are said to be *in opposite phases*. In the intermediate "phases" it is easy to see that a combined set of waves *will* be produced, but intermediate in height, intensity, or (as it is called) "amplitude" between these two extremes