

the results of air in motion. The air resting upon the equatorial regions being more heated than that which surrounds the polar, there must be a constant current of cold air rushing from the poles to the equator, and a counter current of hot air from the equator to the poles. We might therefore anticipate, that all countries in the northern hemisphere would experience a constant north wind, and all in the southern hemisphere a constant south wind, except so far as local obstructions might interfere. No such results, however, are produced; but within thirty degrees of the equator in each hemisphere, constant winds are blowing, called the tradewinds; that in the northern hemisphere from the northeast, that in the southern from the southeast.

It is true that there is a never-ceasing under-current of air from the polar regions to the equator. But, in consequence of the revolution of the earth from west to east, the atmosphere is influenced by a force acting at right angles to that which results from the heating of the air at the equator. As an atmosphere must necessarily participate in the motion of the body it surrounds, and as the velocity of the earth's circumference must increase from the poles to the equator, so the velocity of the atmosphere from west to east must increase in proportion to its advance towards the equatorial regions. Let us, then, imagine a current of cold air rushing from the poles to the equator to occupy the place vacated by the heated air, and throughout its progress to be influenced by a constantly increasing rotary motion from west to east, and it will be evident that, as two forces are acting upon it, it cannot implicitly obey either, but must take an intermediate path, and in fact describe a curve line, the convexity of that line being turned towards the east. The cause of the tradewinds will now be easily deduced. In the northern hemisphere there is a current of air from the north to the equator; but, being impressed by a force tending to drive it eastward, that is to say, being under the influence of the earth's rotation, it takes an intermediate course, and a northeast wind is produced. In the southern hemisphere there is a current from the south to the equator, but this being also under the influence of a force tending to drive it eastward, a southeast wind is produced.

Some writers have referred to the influence of the solar and lunar attraction upon the atmosphere as a general cause