

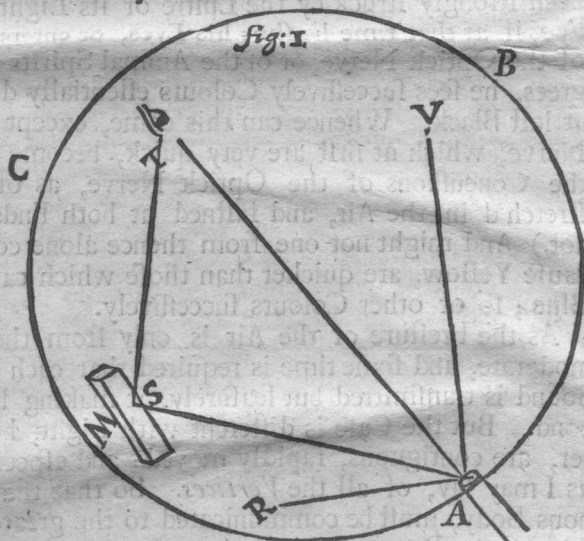
F. MALEBRANCHE's TREATISE
 CONCERNING
Light and Colours.
 BEING AN
ILLUSTRATION
 OF THE
 Fourth CHAPTER of his Sixth BOOK.

Never before Printed.

IN order to explain my Thoughts concerning the Natural Causes of Light and Colours, let us conceive a great Foot-ball externally press'd by a Force, in a manner infinite; and that the fluid Matter contain'd in it, has so rapid a Motion, as not only to turn all, after one and the same Fashion, with a mighty Swiftneſs; but that each Part of it, to imploy all its Motion, (that is, to move it ſelf equally to its Force,) is ſtill oblig'd either to turn upon the Centre of an infinite Number of little *Vortices*, or elſe to glide between them, and all this with a prodigious Celerity; inſomuch that the Force of the Matter contain'd in the Foot-ball, ſhall make an equal Poize with that external Force which compreſſes it. In a word, let us conceive the Matter contain'd in the Foot-ball to be like that with which M. *Des Cartes* furniſhes our *Vortex*, excepting only that the little Bowls of his ſecond Element, which he ſuppoſes hard, be nothing but little *Vortices* themſelves; or at leaſt, that they have no Hardneſs but what is occaſion'd by the Preſſure of thoſe which ſurround them: For if theſe little Bowls were hard by their own Nature, (as I think I have demonſtrated the contrary,) it were impoſſible for them to tranſmit Light and Colours, as we ſhall ſee by and by. But if this Suppoſition be difficultly conceived, let us only ſuppoſe a Foot-ball fill'd with Water, or rather with a Matter infinitely more fluid, and receiving an external Preſſure from without. The Circle *A B C* is the Section through the Centre of the Foot-ball.

In the laſt Chapter of the Search, where I treat of the Hardneſs of Bodies.

This being ſuppos'd, let there be imagin'd a ſmall Hole to be made at the Point *A*; I ſay, that all the Parts of the Water, as *R S T V*, contain'd therein, will tend towards the Point *A* by the right Lines, *R A*, *S A*, &c. For all the Parts which were equally preſs'd before, ceaſe to be ſo on that ſide which answers to the Hole. They muſt therefore tend towards it, ſince every Body that is preſs'd, muſt tend to move it ſelf that way where it finds the leaſt Reſiſtance.



But if a Stopple be put in the Orifice *A*, and it be haſtily thruſt inwards, the ſame Parts, *R S T V*, &c. will all tend to remove themſelves from the Hole, directly by the ſame Lines, *A R*, *A S*, &c. Becauſe, upon the advancing in of the Stopple, they are more preſs'd on the Side wherein it enters.

Laſtly, If we conceive the Stopple moved haſtily backwards and forwards, all the Parts of the ſubtile Matter (which exactly fills the Foot-ball, whoſe Elafiicity is very great, and which difficultly contracts or extends it ſelf) will receive infinite Vibrations from the Preſſure.

Let us now ſuppoſe an Eye at *T*, or elſewhere, directed towards a Torch at *A*; the Parts of the Torch being in continual Motion, will conſtantly preſs the ſubtile Matter on all ſides, and conſequently quite from *A* to the Fund of the Eye: And the Optick Nerve, being vehemently preſs'd and ſhaken by very quick Vibrations, will excite in the Soul the Senſation of Light, or of a lively and glittering Whitenefs.

If we ſuppoſe at *S* a dark Body *M*, the ſubtile Matter being not reflected towards the Eye that way directed, nor vibrating the Optick Nerve, the Body will appear black; as when we look into the Mouth of a Cave, or the Hole of the Pupil of the Eye.

If the Body *M* be ſuch, as that the ſubtile Matter vibrated by the Torch, be reflected towards the Eye, without any Diminution of the Quickneſs of the Vibrations, the Body *M* will appear

