

admitted. But let a glass prism, abc , be interposed between the aperture and the screen, and in such a position that the ray may fall on the surface bc , and emerge from the surface ac at equal angles, and the ray will be not only deflected, but decomposed, and a coloured image of the sun will be formed on the screen SS .

Having ascertained that white light is capable of decomposition, a new subject of inquiry is immediately suggested to the mind: is it not possible that the component rays themselves may be compound, and that the same process which decomposed the white light may also decompose them? Sir Isaac Newton made the experiment; but after examining each coloured ray, making them in their order to pass through a small hole in the screen, and to fall upon a second prism placed behind it, he discovered that the colours could not be again decomposed, but obeyed the common law of refraction, that which governs white light under ordinary circumstances. From these results it may be deduced, that the coloured rays resulting from the decomposition of white light are homogeneous, and they are therefore called the primary colours; while those which are formed by the combination of two or more primary rays are denominated secondary.

Only one thing is now necessary to fully prove the compound nature of white light, and that is to recombine the seven colours, and to produce from them the original colour. To accomplish this object, take a second prism, made of the same kind of glass, and having the same refracting angle, and place the two together so that they may form a parallelogramic figure, and all the seven rays that are produced by analysis with the first prism, are reunited and combined by the second, a single white spot being formed. In this experiment the separate results may be distinctly seen; the decomposition by the one, and the composition by the other.

That the seven primitive colours produce white light may be proved by painting a circular board in such a manner as to represent the intensity and proportion of the seven colours. When this board is put into rapid revolution, the primitive colours are resolved into an almost pure white.

DECOMPOSITION OF LIGHT BY ABSORPTION.

Having proved the compound nature of light, both by analysis and synthesis, it will be only necessary to state that