

Heft 76

Zur Entstehung der Farben – Die Erkenntniswege des «Goetheanismus» und der «modernen Physik»

Thomas Schmidt

Through investigating the relation between light and colour, Goethe's method of natural science is applied to the 'gestures of ideas' of modern research in physics.

In section *I* of this paper an explanation is given in some detail of how the processes of generating coloured light in heated or otherwise excited substances show a twofold polarity in the sense of Goethe, which entirely is in accordance with the 'ways of ideas' travelled by modern physics during the 20th century.

Section *II* deals with the origin of colours from colourless light. Considering the ideas of Goethe as well as the investigations of modern physics in their general context, difficulties in understanding prismatic colours by means of Goethe's 'primal phenomenon of a semi-transparent medium' are disappearing. Moreover, all possibilities of generating colours from colourless light can be arranged in a continuous 'panorama', where the results of both current physics and Goethe's approach to dealing with perception by the human senses harmonise surprisingly well.

Die Grundversuchsanordnungen für die Lichtbeugung an Kanten

Hanspeter Seipp

The simplest arrangements of edges that give rise to the phenomenon of light diffraction are presented. Especially two of them are of particular importance. They imply two different types of optical imaging and generate diffraction patterns of opposite character. One involves the casting of a shadow by a pointlike lightsource where 'dark fringes in the luminous region' are generated, the other represents the image formation of a pinhole camera, where 'bright fringes in the dark' are produced. Some more complicated situations are analysed and it is shown how they can be brought into relation to the basic arrangements following a phenomenological method similar to Goethe's approach in his theory of prismatic colours.

Es werden die einfachsten Versuchsanordnungen mit Kanten vorgestellt, welche Anlass zu Lichtbeugungsphänomenen geben. Darunter gibt es zwei hervorstechende, die auf zwei verschiedenen optischen Abbildungsprinzipien beruhen und Beugungsmuster mit gegensätzlichen Eigenschaften hervorrufen. Beim einen Prinzip handelt es sich um die Schattenprojektion mittels punktförmiger Lichtquelle, wo sich «dunkle Streifen im hellen Bereich» zeigen, das andere ist die Lochkameraabbildung, welche zu «hellen Streifen im dunkeln Bereich» Anlass gibt. Kompliziertere Situationen werden untersucht und es wird gezeigt, wie diese auf die Grundanordnungen zurückgeführt werden können, wobei eine Methode verfolgt wird, die der von Goethe in seiner Phänomenologie der prismatischen Farben angewendeten entspricht.

Bewegung in ihrem Bezug zu den Elementen – Anregungen aus dem Zweiten Naturwissenschaftlichen Kurs zur Mechanik

Wilfried Sommer

Starting from Steiner's ideas about the elements as developed in his Heat Course, we examine free fall as well as the relation between dynamics and kinematics. With free fall we are

involved with the formation of the earth which happens as a process of motion. Of course, free fall cannot be understood without being able to see the formative processes of the earth as a whole. Just as with free fall, ideal connections also exist in the relationship of dynamics and kinematics. At the end of this investigation we present dynamics as a realisation and externalisation of possibilities, which, in their interaction with the elements, had previously existed as forcing.