$\lambda_1 = 0{,}618\,\mu \qquad I = 76^0\,33' \qquad H = 30^0\,49'$
$\lambda_2 = 0{,}540\,\mu \qquad 75^0\,20' \qquad 31^0\,23'$
$\lambda_3 = 0{,}460\,\mu \qquad 73^0\,44' \qquad 31^0\,27'$

At $i = 60^0$ my measurements again give a *magneto-optic dispersion of the phase;* the change of the magneto-optic amplitude with colour may be called *magneto-optic dispersion of the amplitude.*

The results are the following:

	$m - 180^0$		μ			
colour	observed	calculated	observ.	calcul.	S.	$\frac{\mu \text{ observ.}}{\mu \text{ calcul.}}$
λ_1	$22^0\,33'$	$-18^0\,39'$	$2{,}30 \times 10^{-3}$	$2{,}77\,A$	$41^0\,12'$	$0{,}83 \times \frac{10^{-3}}{A}$
λ_2	$32^0\,30'$	$-16^0\,53'$	$2{,}41 \times 10^{-3}$	$2{,}44\,A$	$49^0\,23'$	$0{,}99 \times$ „.
λ_3	$33^0\,55'$	$-16^0\,56'$	$2{,}18 \times 10^{-3}$	$2{,}03\,A$	$50^0\,51'$	$1{,}07 \times$ „

For the constant $A = \frac{2\pi}{T}\,\varepsilon_1\ h\ N$. vide theory. The hitherto given and yet following amplitudes relate to the intensity of magnetization $I = 700$ C.G.S.

Inferior in exactness is a determination at $i = 50^0$:

λ_2	$25^0\,9'$	$-22^0\,21'$			$47^0\,30'$	

At $i = 72^0$, phase not very exact:

λ_2	$45^0\,5'$	$-6^0\,44'$	$1{,}96 \times 10^{-3}$	$2{,}02\,A$	$51^0\,49'$	$0{,}97 \times \frac{10^{-3}}{A}$

On a mirror of electrolytically deposed *nickel* was found at $i = 50^0$:

$\lambda = 0{,}589\,\mu$	$11^0\,40'$	$-19^0\,30'$	$1{,}20 \times 10^{-3}$		$31^0\,10'$	$0{,}52 \times \frac{10^{-3}}{A}$

Dr. P. ZEEMAN. *Measurements on Kerr's phenomenon in the case of reflexion from the polar surface of a magnet made of cobalt at different angles of incidence.*

Not long ago appeared a theory of KERR's phenomenon by GOLDHAMMER (Wied. Ann. Bd. 46).

He introduces into his theory the difference of phase S, the existence of which Dr. SISSINGH deduced from his observations on light reflected from tangentially magnetized iron. GOLDHAMMER's δ is $= -S$. The formulae arrived at are the same as those given in LORENTZ's theory; only the expression for the phase differs with a constant quantity $-\delta$. Somewhat later also DRUDE gave a very comprehensive memoir on the same subject (Wied Ann. Bd. 46). DRUDE also communicated at the same occasion some observations made by him, on the reflexion from tangentially magnetized cobalt and iron (aequatorial reflexion). I calculated as well from these observations as from LORENTZ's theory the phase and amplitude of the magneto-optical component. The values adopted for the optical constants, the principal incidence and principal azimuth are for cobalt those determined by DRUDE; for nickel the usually given ones. From DRUDE's observations on aequatorial reflexion on cobalt and nickel I deduce, m being the phase and μ the amplitude at the angle of incidence i:

Cobalt.

i	$m - 180^0$ observ.	$m - 180^0$ calcul.	μ observ.	μ calcul.	S.	$\frac{\mu \text{ observ.}}{\mu \text{ calcul.}}$
35^0	$-77^0\,24'$	$-89^0\,3'$	$2{,}80 \times 10^{-3}$	$0{,}450\,A$	$11\ \ 39'$	$6{,}20 \times \frac{10^{-3}}{A}$
60^0	$-25^0\,27'$	$-79^0\,42'$	$0{,}56 \times 10^{-3}$	$0{,}629\,A$	$54^0\,15'$	$0{,}90 \times$ „
75^0	$-12^0\,56'$	$-67^0\,1'$	$0{,}54 \times 10^{-3}$	$0{,}574\,A$	$54^0\,5'$	$0{,}95 \times$ „
83^0	$-12^0\,57'$	$-54^0\,9'$	$0{,}50 \times 10^{-3}$	$0{,}389\,A$	$41^0\,12'$	$1{,}30 \times$ „

Nickel.

i	$m - 180^0$ observ.	$m - 180^0$ calcul.	μ observ.	μ calcul.	S.	$\frac{\mu \text{ observ.}}{\mu \text{ calcul.}}$
60^0	$-48^0\,22'$	$-79^0\,14'$	$0{,}65 \times 10^{-3}$	$0{,}595\,A$	$30^0\,52'$	$1{,}08 \times$ „
65^0	$-46^0\,3'$	$-76^0\,16'$	$0{,}84 \times 10^{-3}$	$0{,}592\,A$	$30^0\,12'$	$1{,}42 \times$ „
75^0	$+11^0\,41'$	$-66^0\,19'$	$0{,}30 \times 10^{-3}$	$0{,}512\,A$	78^0	$0{,}59 \times$ „
80^0	$-\ 8^0\,42'$	$-58^0\,11'$	$0{,}17 \times 10^{-3}$	$0{,}420\,A$	$49^0\,29'$	$0{,}40 \times$ „

A being the constant from LORENTZ's theory.

The results of this calculation don't show anything of a constancy of S.

At first sight one would rather think that these observations contradict that constancy. However DRUDE's observations are so called minimum-rotations, whereby the errors of measurement influence to a much higher degree on the value of SISSINGH's phase, than when null-rotations are made. Yet the discordances among the results might give rise to some doubt as to the exactness of my preliminary conclusions communicated to the Academy, June 25, '92. The continuation of the investigation however has wholly convinced me of the constancy of S, in the case of polar reflexion from cobalt. For my purpose I have made measure-

ments with *white light* at 3 angles of incidence, always controlling the invariability of the mirror and eliminating the errors, that might arise from deviations of the light by the passing through the Nicols; besides I ever employed the method of the null- as well as that of the minimum-rotations. A sufficient accordancy of the result of both methods was always found. For the calculation of the result in every especial case that method was used, which gives for the required quantity the result least affected by errors of measurements.

The final results, reduced concerning the amplitude, at the magnetization $I = 430$ C.G.S. are the following with our usual notation.

Reflexion from the pole of cobalt mirror $I = 430$ C.G.S.

i	$m - 180^0$ observ.	$m - 180^0$ calcul.	μ observ.	μ calcul.	S.	$\frac{\mu \text{ observ.}}{\mu \text{ calcul.}}$
45^0	$20^0\,34'$	$-28^0\,47'$	$1{,}58 \times 10^{-3}$	$2{,}76\,A$	$49^0\,21'$	$0{,}57 \times \frac{10^{-3}}{A}$
60^0	$27^0\,40'$	$-21^0\,49'$	$1{,}50 \times 10^{-3}$	$2{,}71\,A$	$49^0\,29'$	$0{,}56 \times$ „
73^0	$37^0\,55'$	$-11^0\,43'$	$1{,}17 \times 10^{-3}$	$2{,}18\,A$	$49^0\,38'$	$0{,}54 \times$ „

Hence it follows that SISSINGH's difference of phase is nearly constant within wide limits of the angle of incidence. Also they wholly confirm the value formerly given (Comm. to the Academy of June 25 '92. p. 2. supra). The theory of KERR's phenomenon also requires the exact numerical value of SISSINGH's phase. According to DRUDE's theory, containing only one magneto-optical constant in the differential-equations, contrary to GOLDHAMMER's theory with two constants, one might calculate (as was remarked by GOLDHAMMER) SISSINGH's phase from $2\,o - \delta = \pi$ etc. In this formula $-\delta = S$ and o is the quantity first introduced by EISENLOHR and called τ in LORENTZ's theory. For cobalt GOLDHAMMER employed the preliminary value $S = 50^0$ with which I furnished him (Wied. Ann. Bd. 47, p. 347). He calculates that according to DRUDE's theory this should be 60^0 and accordingly concludes that DRUDE's theory is in error. This conclusion is wholly confirmed by the now given measurements.

Dr. P. **ZEEMAN**. *On a subjective phenomenon in the eye.*

When being engaged in measurements on KERR's magneto-optic phenomenon, I noticed, observing with the compensator of Babinet, a phenomenon, the cause of which lies in the eye. Since the phenomenon seems yet to be unknown in physiology, I wish to communicate it here.

Soon I noticed that the complicated apparatus, with which I at first saw the appearance, is not necessary for the observation. The light needs not to be polarized, only a slit is wanted intensely illuminated, while the surrounding of the field is dark na-light being very efficacious

When observing with a telescope one sees, especially during the first moments after suddenly bringing the eye before the eye-piece, not only the illuminated slit but also a blue-violet line of light soon fading.

The phenomenon may be observed as well by looking suddenly with unassisted eye at the slit. The line resembles to the outline of a pear, the axis of which is perpendicular to the centre of the slit. To the right eye the pointed part of the line, i. e. the stem of the pear appears at the right side of the slit, the curved part falling somewhat at the other side.