KINESCOPY—OBJECTIVE AND SUBJECTIVE

(A practical Kinescope S)

BY

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OSLO

CUIGNET detected in 1873 the *objective* Kinescopy, which he named "Kératoscopie." Parent introduced the method with concave mirror in Galezowski's clinic as "Rétinoscopie." Chibret pointed out the advantages of a plane mirror and translated Priestley Smith's "Shadow Test" into classical Greek: *Skiascopie*, which is the usual, but wrong name.

I have in both eyes a mixed astigmatism with the two hypermetropic meridians $+0.5$ D. nearly vertically situated to each other. I detected in 1902-1904 two new and subjective methods of determining ametropia (1, 2 and 3). In both methods are seen movements of objects in the distance—by myopia in the *same* direction as the moved stenopaic aperture or needle and by hypermetropia in the *opposite* direction; equally by astigmatism, when the two principal meridians have these ametropias—in all other meridians the movements *of* or *in* far objects are oblique. In spite of their accuracy the two methods did not attract much attention in those days.

In Paris, 1921, Trantas (Athens) presented "La Vélonoskopie,"⁴ termed after the modern Greek "veloni" (needle)—the principle was that of my "Skiakinescopie" (3) from 1904.

Richard Krämer⁵ said in Vienna, February 21, 1927, that the method of Trantas is identical with Holth's method, published 17 years previously.

On June 20, 1927, Trantas gave a detailed lecture (6) on his procedure: the object disc—fixed in the wall—was now *red* in the upper half and *black* in the lower half with luminous radiating lines across the whole disc in every 15th meridian. Besides there were 2 eccentric "light-points" downwards in the black half; thus Trantas deprived himself of my present rapid and exact method of determining the direction of the two principal astigmatic meridians by means of the central "light-point" from 1904.

On May 21, 1929, at the annual meeting of Norwegian oculists I spoke on my two methods under the collective designation "Kinematoscopia subjectiva;" for the old "Shadow Test" and proposed the new name "Kinematoscopia objectiva."

* Lecture and demonstration May 31, 1935, at the annual meeting of Norwegian oculists.

The German translation of my lecture was printed (7) in the *Klin. Monatsbl. f. Augenheilk.* In the same journal I published a note (8) on mounting the black object disc before a 75 Watt electric lamp fixed in the wall at the height of 1.20 metre and included in a metal cylinder with "iris diaphragm," by which the "light-opening" could be regulated down to 3 mm.; the ametropes was sitting on a swivel chair—in this way his eyes could come on a level with the "light-opening" of the object disc. This arrangement was cumbersome; I was soon tired of it.—I will this evening show you another arrangement, which is handy (Fig. 4).

H. K. Müller, in Basel,⁹ in April 1933, proved, that the subjective kinesiography is a modification of Scheiner's experiment (1619); I had myself written in 1903 (2, p. 199): "This is—if you like—a new way of performing Scheiner's experiment."—

FIG. 1.

Holth's needle, 1.5 mm. thick for Kin. S.

H. K. Müller says it so: Scheiner used a broad bridge between two narrow openings. Holth³ and Trantas^{4, 6} separate larger holes by a narrow bridge: by the needle (Fig. 1), held an inch before the trial frame, the pupil is divided into two.

Besides H. K. Müller⁹ demonstrated by conclusive diagrams the fact that the "shadow" in the method is not produced by the needle—but is only diffusion areas from the "light-point" or the "light-lines" and therefore has the colour of the surrounding object disc ("red" by Trantas).

Richard Krämer¹⁰ proved that the only original feature of Trantas⁶ is the red colour on the disc. The translation of Trantas's method is in "seeing the needle's shadow;" but such a shadow is non-existent. In the explanation of these methods the fateful mistake is made to consider "non-illumination" or "darkness" as a "shadow." The same mistake has—as is well known—created the wrong name "Shadow Test:" also here the movement is of a "non-illuminated" part of the fundus.

But Krämer¹⁰ has nevertheless in "Kinesiography S" demonstrated a *veritable needle-shadow*: looking at a big white wall surface and moving the needle in front of the eye one sees a large faint shadow, which—completely independent of the refraction—under all circumstances moves in the same direction as the needle. The shadow looks so faint because the eye in relation to the needle is

extremely hypermetropic and the diffusion areas therefore are very large. But just this extreme hypermetropia is the cause of independence of the shadow movement from the refraction: a simple geometrical optical drawing makes this immediately clear. Under the arrangement for "Kin. S" this shadow is invisible, because the movements in the "light-opening" completely vanquish the real needle-shadow.

R. Krämer¹⁰ says: "The merit of all who have given to ophthalmology a new and extremely valuable refractometry is exclusively due to Holth."

Krämer does not doubt that Trantas (1917-1921) had made his observations independently. His error is that he was fascinated by his finding—did not trouble to seek for a possible predecessor; and his real blunder is that he, in spite of knowing the real discoverer, retains the—moreover wrong—denomination "Velonoskiascopie."

I am obliged to confess that in 1904 I had belief in the "shadow" and therefore gave my second "Kinescopy S" the name "Skia-kinescopie"; (3) the works of H. K. Müller⁹ and of R. Krämer¹⁰ destroyed the rest of this faith.

Because movement is the chief point I proposed (7) as above mentioned, in 1929, for my two methods, 1902-1904 (1, 3) the collective designation "Kinematoscopia subjectiva" and for "Skiascopy" the new name "Kinematoscopia objectiva." Both these names are too long; I propose therefore now for my two methods: "Subjective Kinescopy" (Abbr. Kin. S) and for the "Shadow Test" "Objective Kinescopy" (Abbr. Kin. O).

My "Kinescopie"¹ in 1902 was excellent for the oculist himself, but unhandy for his patients. For these—the ametropes—the Kin. S floor lamp, shown in Fig. 4 is very practical.

This improved arrangement is mainly depending on the fact, that the level of the "light-point" can rapidly be regulated vertically between 0.85 and 1.5 metre. The height of the eyes over the floor of a sitting adult ametrope is on the average 1.25 metre, but must in each case be measured with an American stiff steel ribbon, divided in centimetres and English inches (may be had in the length of 2 metres, rolled up in a metal capsule; the upper 40 centimetres are broken off—see Fig. 4 to right). The electrical lamp of 75 Watt with milk glass globe is now *not* included in the metal cylinder with the "iris-diaphragm;" the lamp is now placed immediately behind the 5 mm. wide central "light-opening" in the Kin. S disc (Fig. 4).

FIG. 2.

FIG. 3.

Figs. 2 and 3 are representing the Kin. S. - disc in $1/5$ linear diminution. The white meridian pointer is now only 5 mm. broad and projects from a rotating black disc, 2.5 cm. in diameter; in the centre of this black disc the 5 mm. wide "light-opening" is seen as a white spot. The peripheral graduation in the upper half of the disc for every 5th meridian is the identical (Amsterdam, 1929) and subjective, while the same graduation in the trial frame is seen from the front. The deepened meridian marks are filled with "white ink" (a cretaceous emulsion) in order to be distinctly seen by the reader in Fig. 2 and Fig. 3. At the distance of 5 or 6 metres the white numbers and marks are hardly seen by eyes with normal visual acuity. But this "white ink" may—if you like—be washed away with cold water as in Fig. 4, where the disc from Fig. 2 is seen in half profile. Then the meridian graduation is *black* and can only be seen by the oculist at close quarters, when he sets the meridian pointer in prolongation of the "light-line" indicating the strong refracting principal meridian in astigmatism; this is in Fig. 2, the vertical one (90°) and in Fig. 3, 135° , the feeble refracting principal meridians being respectively 180° and 45° .

The isolated "Kin. S. - disc" may be had for Kr. 30 from M. Gallus, Pilestredet 8, in Oslo (Norway).

The "Kin. S-disc" (Fig. 2 and Fig. 3) is suspended by means of the rectangular opening upwards on the upper horizontal iron arm of the floor lamp (Fig. 4) in such position that the central "light-opening" is in immediate contact with the centre of the milk glass bulb of the 75 Watt electric lamp. For a sitting child this "light-opening" must be lowered to about 0.85 metre and for a tall patient raised to about 1.5 metre. If this is neglected, the oblique fixation through spherical lenses by myopes or hypermetropes simulates a non-existing astigmatism—and gives wrong results in a real astigmatism.

FIG. 4.

Floor lamp stand and attached Kin. S. - disc in $1/10$ linear diminution, with cable, 75 Watt electric lamp (220 volt alternating current) with milk-glass bulb; the central "light-opening" (5 mm.) may be moved vertically between 0'85 and 1'50 metre over the floor.

This complete Kin. S. - lamp may be had for Kr. 60 from M. Gallus, Pilestredet 8, in Oslo (Norway).

In astigmatism *under* 1.0 D.—besides the constantly used objective methods—the *subjective* determination of the direction of the principal meridians can be made in the usual way with the black radiating lines in the astigmatic fan—and the refraction of each of the two principal meridians then be determined with the *needle* (Fig. 1) *for Kin. S.*

In astigmatism of 1.0 D. or more I have long ago ceased to use the 2 mm. red glass rod in a disc as meridian searcher (Lit. 3, Fig. 6); it was excellent for an astigmatic oculist himself—but the sharp centring in front of a patient's pupil was too cumbersome (Lit. 8, p. 2).

Here I found that the strong "light-point" permitted a rapid determination of the *exact direction* of the two principal meridians in the following way: After correction of the less refracting principal meridian by a spherical lens, the "light-point" is transformed into a sharp lighting line, whose direction—prolongated with the white meridian pointer (Fig. 2 and Fig. 3)—indicates the strong refracting principal meridian; the less refracting one is 90° distant. If the white meridian pointer is set a little to left or right for the prolongation of light line—then this line is going *obliquely* in relation to the pointer. I can demonstrate this immediately to my colleagues, who have emmetropic eyes or your far distance correcting glasses with you: you hold this Cyl. +3.0 D. lens with the axis horizontally before your eye; the effect is myopic astigmatism with the vertical light-line going in line with the pointer (Fig. 2)—but by moving the axis ever so little you will see the light-line to the right or to the left of the pointer, and *obliquely* in relation to the direction of the pointer.

I advise oculists to get the complete "Kin. S-lamp" (Fig. 4) with the strong central "light-point" for three reasons:

1. In ametropes you can without dark-room in full daylight rapidly decide as to the evidence of myopia, hypermetropia or mixed astigmatism.

2. In astigmatism of 1.0 D. or more you can—after exact correction of the less refracting principal meridian with a spherical lens—make a rapid and exact determination of the direction of the strong refracting principal meridian; and consequently also of the 90° distant less refracting principal meridian.

3. This "Kin. S" method gives a valuable control and eventually correction of all in the ordinary way objectively and subjectively determined ametropias, both without and especially with astigmatism.

I have repeatedly by this "Kin. S" method proved the sharpness of 0.12 D. sph. and cyl. up to ± 1.0 D.—but I do not prescribe these weak lenses, which are not sold in Norway.

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A RATIONALIZED MIRACLE IN MEDIAEVAL ENGLAND

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THE first 42 leaves of the Bodleian MS. 859 contain a contemporary copy of a collection of letters made between the years 1381 and 1406 or thereby, by Gilbert Stone, canon of Wells.

Dr. E. F. Jacob, the Professor of Mediaeval History in Manchester University, discussed this collection in the *Bulletin of the John Rylands Library* for July, 1933 (Vol. XVII, No. 2), and his article contains the following story of mediaeval superstition associated with quasi-miraculous healing of a case of eye disease. Gilbert Stone was registrar to Ralph Erghum, Bishop of Salisbury, and wrote on behalf of the latter "to the Bishop of Lincoln urging him to take steps 'against those committing idolatry at the new well near Bustlesham' (Bisham).^{*} Certain persons, 'blinded by the phantasy of diabolical deceit' had been worshipping the well and paying profane and heathen devotion

^{*} In Berkshire; on the south bank of the Thames west of Maidenhead.