

treatment. Here there was a strong preference for the right eye, and no evidence of equal visual acuity. Moreover, although his parents were distressed by his appearance, M. had no symptoms. It was the symptoms which prompted use of the lenses in the other three cases, surgery being disallowed.

At this stage the use of concave lenses must be approached with caution. It would appear that surprisingly weak lenses may relieve symptoms, and it is the relief of symptoms that justifies their use. Like prisms, they can serve merely as a temporary measure to maintain or strengthen binocularity until an operation is possible.

Although reactions in the first three cases are encouraging, six months is but a short time. Perhaps next year I shall be able to tell you more about the indications for or against this type of therapy.

THE HESS-WEISS MEASUREMENT OF OCULO-MOTOR DEVIATIONS BY A METHOD OF FORMS OF CHOICE

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Introduction

Orthoptists have long charted oculo-motor deviation using one of the adaptations of the Hess technique, that is with the eyes fully dissociated by means of complimentary colour filters or a plane mirror. They are also aware that oculo-motor deviation can be heavily influenced by fusion and by accommodation. Hitherto, the standard techniques for recording this modified deviation have not produced the neat and graphical presentation of the Hess.

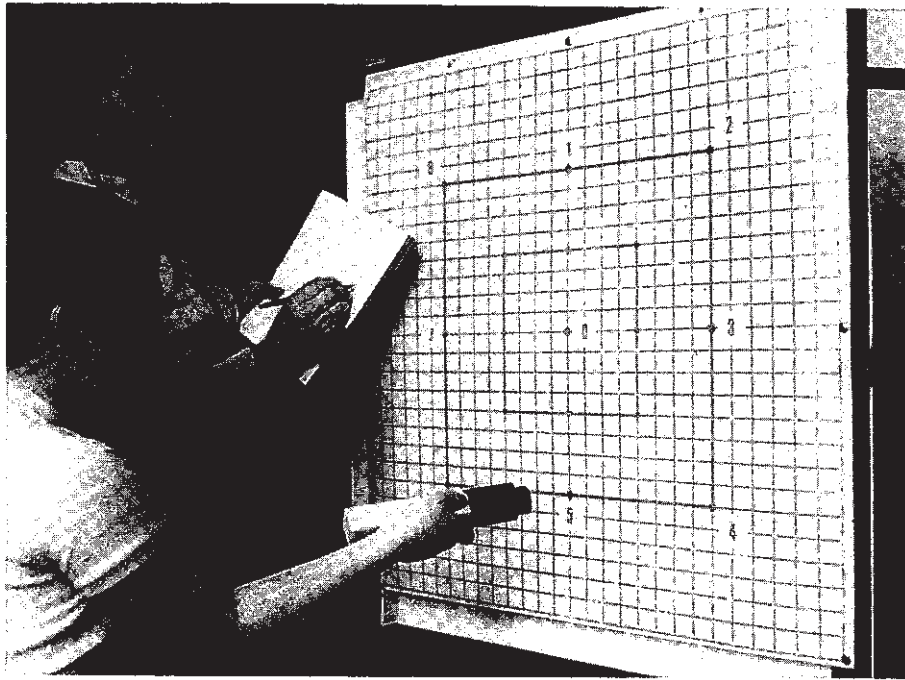
Professor Weiss has developed a technique to do this using two screens; red and green filters, and a torch to project a red arrow. Thus the effect of the normal efforts to fuse and accommodate can be seen at a glance by comparing the charts.

The patient observes the Hess-Weiss screen at a distance of 50 cms. using red and green filters and indicates the cardinal points on the screen by means of a red arrow projected by a torch held in his hand. The usual care is taken to keep the head steady and in a constant position throughout the test. The examiner plots the position of the red arrow on special charts for the purpose.

The test is performed first using the "fully dissociated" screen-forme libre (F.L.), to ascertain the full deviation. The test is then carried out again using the second screen which has numerous black dots accompanying the previous pattern i.e. with fusion and accommodation involvement- forme à choix multiple (F.C.M.) This second test indicates a more true to life situation than the fully dissociated test.

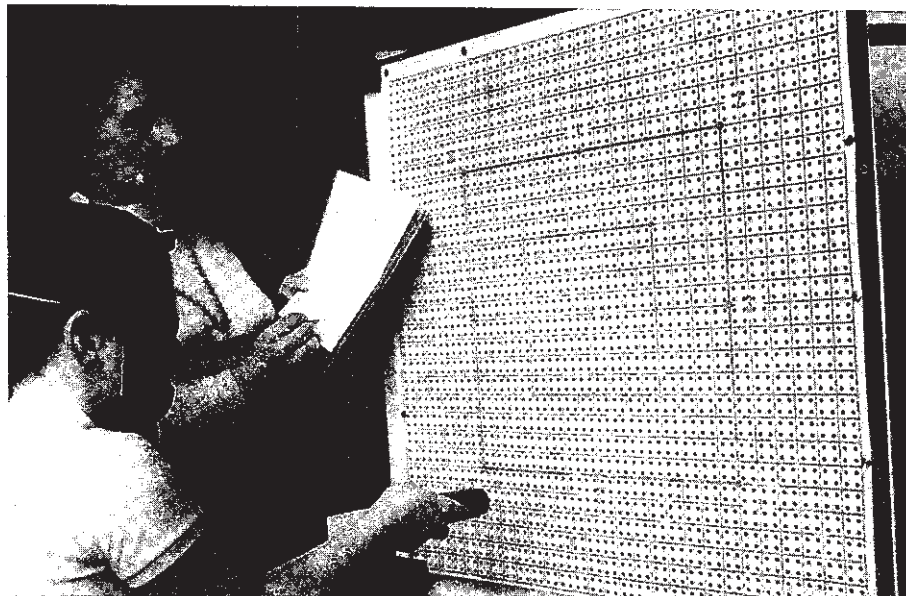
The Hess-Weiss Screens

The F.L. screen (fully dissociated) shows red/orange lines forming small squares of side 2.5 cms. which correspond to 5 prism dioptres at 50 cms. The cardinal points are also marked in the pattern. The central square field is 20 prism dioptres out from the centre and the peripheral field is 40 prism dioptres out from the centre. When viewed through the green filter, the lines appear black but are unseen when viewed through the red filter. The patient indicates the position of the cardinal points on the screen with a red arrow projected from a torch held in his hand. This arrow is only seen by the eye behind the red filter.



Examiners should note that the eye behind the red filter is the deviating eye and the one which is being plotted.

The F.C.M. screen (form of multiple choice) is similar to the F.L. screen in so far as the red lines are concerned, again these lines are only seen through the green filter. However, the screen has numerous black dots - four in every square formed by the red lines.



The great number of these small black dots provides a very strong stimulus to fusion and accommodation, as they are seen by both eyes simultaneously.

The theory of multiple choice depends on the fact that in physiological diplopia for any object not on the horoptor there can be more than one apparent position of that object. When there are numerous, similar objects it is feasible for one apparent object to be fused with another apparent object closely adjacent. Weiss (1971)

The Hess-Weiss is a simple and rapid means of examination and can be used by ophthalmologists, neurologists and orthoptists. It provides a means to further elucidate the problems of refractive error and oculo-motor deviation, by measurement assessed in the absence (fully dissociated) and then in the presence of fusion and accommodation which can be of great value in the clinical field.

Examination should be carried out using both screens, firstly without glasses and then with glasses; with prisms; or with corneal lenses and the charts marked accordingly.

Best results are obtained using a chin rest for the patient. Normal room lighting of the screen is satisfactory.

Uses of the Hess-Weiss Screens

1. To determine the effect of plus or minus lenses on the ocular muscle balance i.e. the wearing of glasses.
2. To determine the effect of an anisometropic correction on the ocular muscle balance.
3. Assessment of compensation or decompensation in cases of heterophoria including A and V syndromes.
4. To determine the prism required in vertical squint or phoria.
5. Adjunct in the analysis of intermittent squint.
6. Method of assessing the dominant eye. When the dominant eye is fixing the non-dominant eye tends to deviate more than the dominant eye does when the non-dominant eye is fixing.
7. Assessment of the type of abnormal retinal correspondence (harmonious or unharmonious) when used in comparison with other methods (objective) of assessment of the deviation.
8. In nystagmus where prisms may be used to reduce the nystagmus.
9. In paralytic squint where the deviation may be ascertained both fully dissociated and with the stimulus of fusion and accommodation.

Further study of the examples shown in Professor Weiss's book will provide more interest and understanding of this new equipment available to orthoptists.

In presenting the above, I have given as accurate a condensation as possible of the French text by Professor Weiss, which accompanies the paired Hess-Weiss screens. The following cases charted on the screens show some of the possibilities.

KERRI - aged 11 years, has a plexiform neuroma on the floor of the anterior part of the left middle cranial fossa extending into the left orbit. Vision is R6/6 L6/9. Deviation in the primary position -4° R/LB with fusion and good stereopsis. There is some head tilt to the left. The fully dissociated chart (F.L.) shows limitation of movement of the left eye in the field of the left superior rectus with some overaction of the right inferior oblique. On the F.C.M. chart (with the influence of fusion and accommodation present) the deviation is greatly reduced although some right hypertropia is still present. This residual deviation will still require treatment. See Figure III.

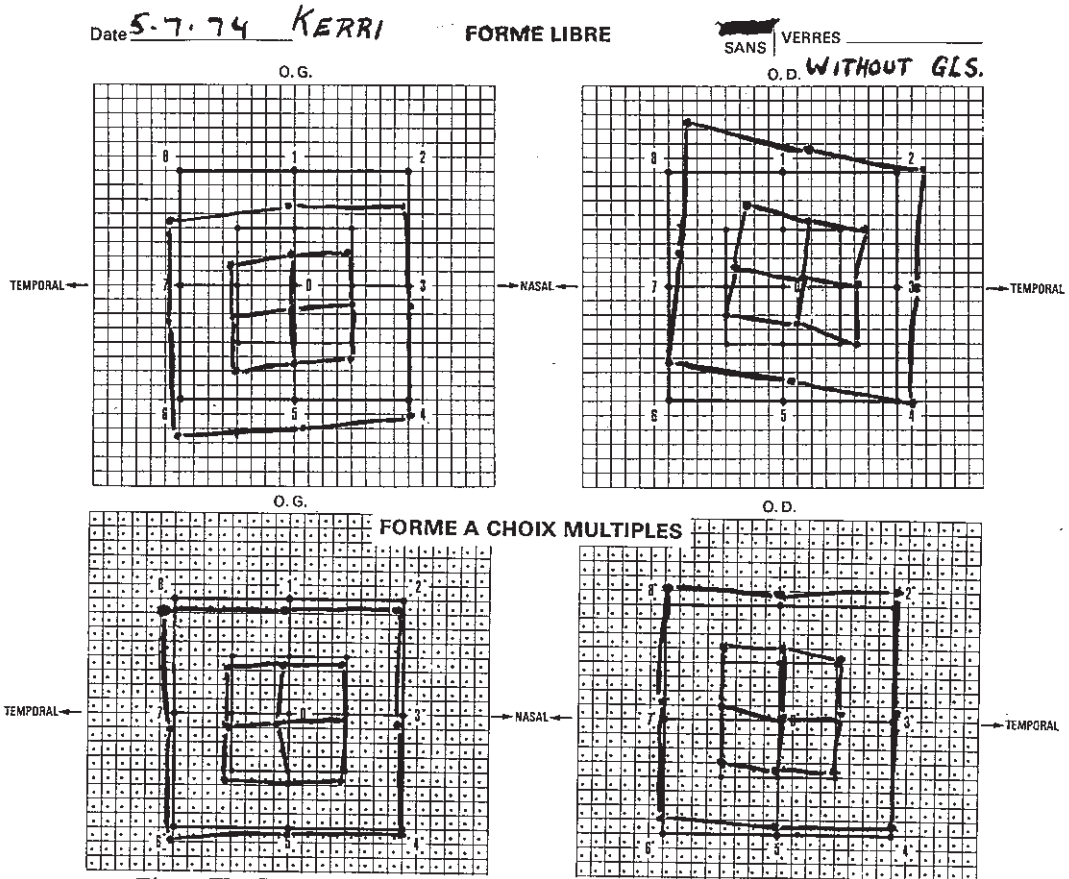
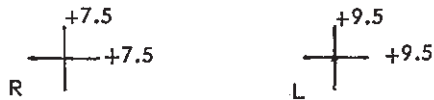


Figure III. Case L. Space-occupying lesion of L upper orbit, limiting the action of left superior rectus.

LIANO - aged 10 years, has a retinoscopy



under mydriatic. Deviation on the synoptophore is $+5^{\circ}$ with good fusion and stereopsis. Visual acuity without glasses is R6/6 L6/9. Hess-Weiss F.L. chart without glasses shows an esophoric deviation which is not significantly reduced on the F.C.M. chart.

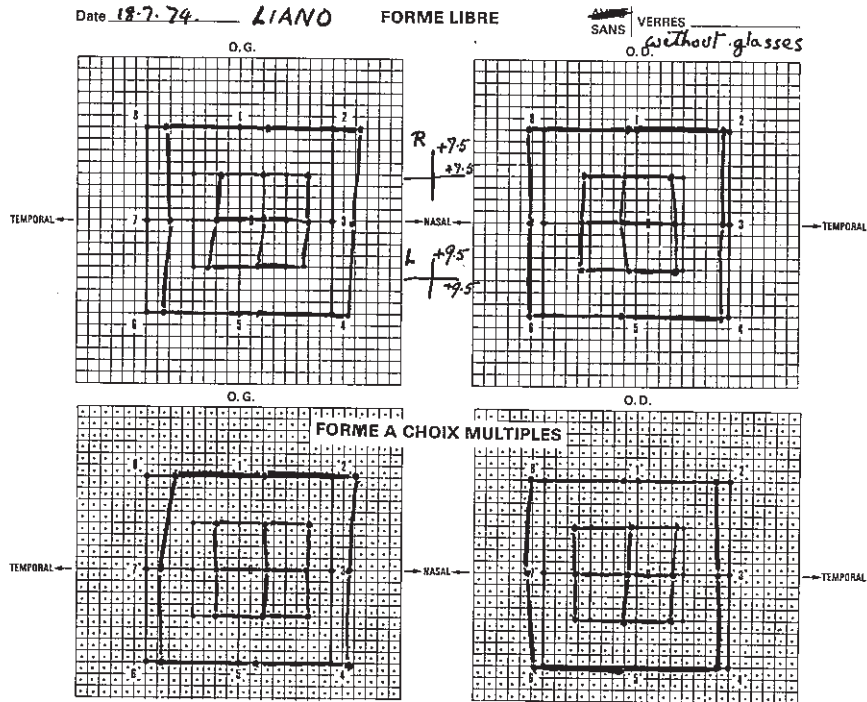


Figure IV. Case II. Anisometric hypermetrope, tested in glasses.

Fig. IV With glasses R+3.00 D.S., L+3.75 D.S., visual acuity is R6/5 pt, L6/6 pt; synoptophore deviation is zero with good fusion and stereopsis. Hess-Weiss F.L. chart with glasses shows a small esophoric deviation and the F.C.M. chart shows equilibrium of the visual axes. Fig. V.

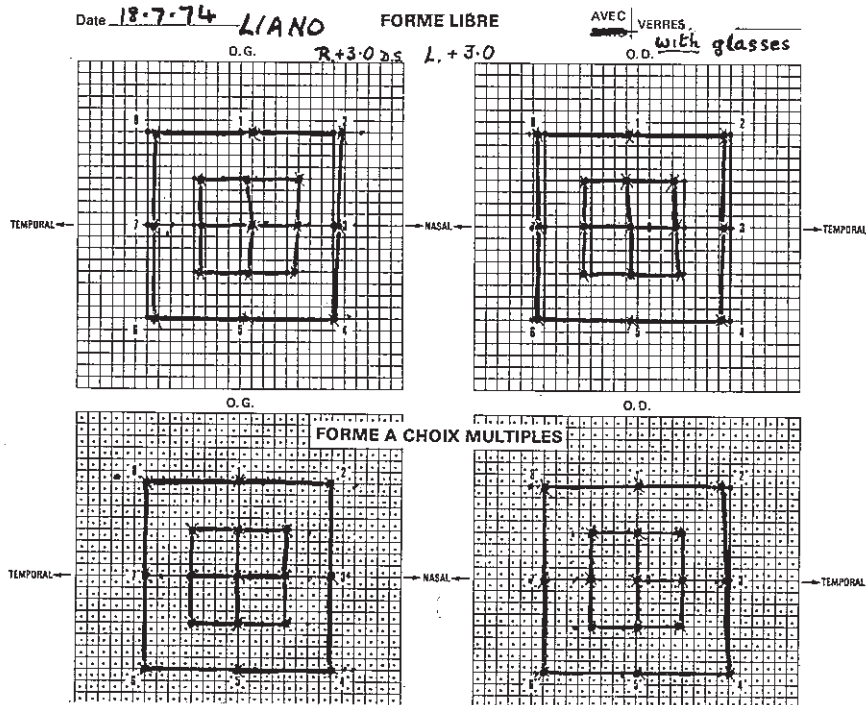


Figure V. Case II. Tested without glasses.

Further examination of these charts particularly those done without glasses show the dominance of the right eye.

JUDITH - aged 18 years, was involved in a motor vehicle accident on 23.1.74. She suffered a Le Fortes Grade III middle facial fracture with the main displacement on the R side. F.L. chart shows considerable limitation of elevation of the right eye with overaction of the elevators of the left eye. The F.C.M. chart shows a reduction in the deviation but the influence of fusion and accommodation is not sufficient to overcome the deviation. Judith still complains of diplopia mainly in upward gaze. Figure VI

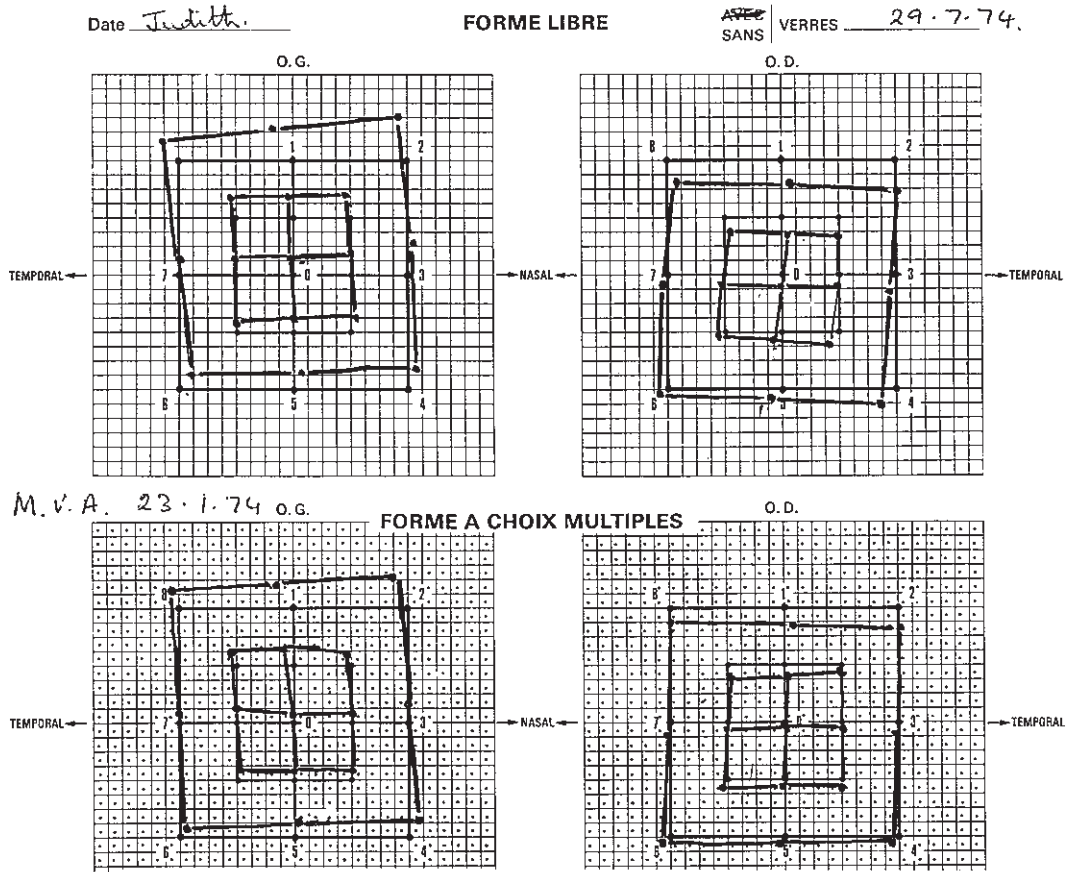


Figure VI. Case III. Middle facial fracture.

BRIAN - aged 9 years, has an exophoria measuring -5° on the synoptophore with good fusion and stereopsis. He is emmetropic, visual acuity is 6/5 in either eye and his convergence is good following a course of orthoptic treatment. F.L. chart shows the exo. deviation and with the addition of fusion and accommodation the deviation is reduced to equilibrium as shown on the F.C.M. chart. No further treatment is indicated now. Fig. VII

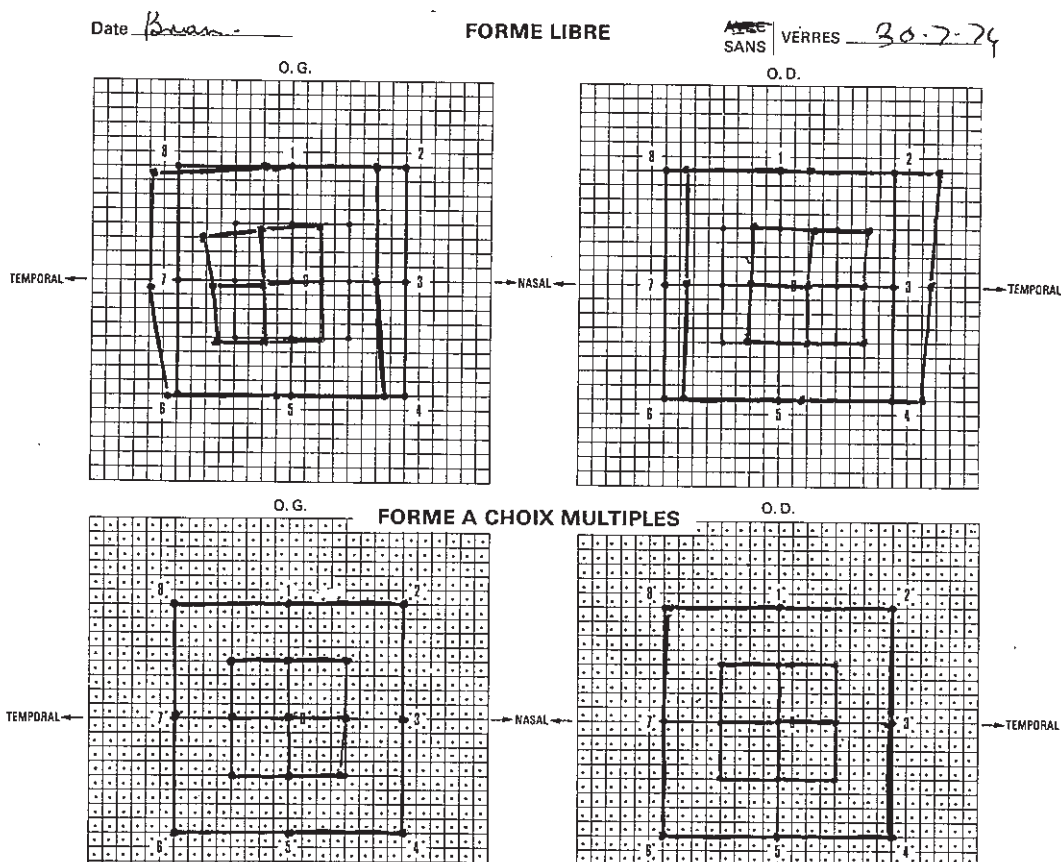


Figure VII, Case IV. Exophoria.

Further study of the examples shown in Professor Weiss's book will provide more interest and understanding of this new equipment available to orthoptists. The Hess-Weiss screens should become a worthwhile adjunct to the well equipped orthoptic clinic, providing another interesting and useful orthoptic procedure, which can be used in the interests of better eye care for the patients of our referring ophthalmologists.

My thanks go to Miss Lance, Head of the Orthoptic School of the New South Wales College of Paramedical Studies, for allowing me to examine the possibilities of this recently acquired piece of equipment.

I would also like to thank Dr. George Selby and Dr. Donald Dunlop for permission to present these cases.

REFERENCE:

Weiss, J.B. (1971) *Mesure des Desequilibres Oculo-moteurs par la methode de Formes à Choix*, Page 6, Doin, Paris.