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Correspondence

Depth perception in strabismus

SIR, Recently Henson and Williams published an article entitled 'Depth perception in strabismus.'[1] Regettably, the authors did not review the literature completely. If they had, they would have noted that Cooper and Warshowsky[2] scientifically evaluated monocular cues in the Titmus stereo test, and that Cooper and Feldman[3-6] looked at the availability of monocular cues in random dot stereograms. In those studies they found that monocular cues are used by patients when a line stereogram is made up of symmetrical shapes decentered in a small area, i.e., Titmus circle test, and that monocular cues are rarely used by subjects viewing random dot stereograms. Cooper and Feldman also found, as Henson and Williams reported, that small-angle strabismics have real stereopsis on line stereograms, while large-angle strabismics do not.[6] This is not surprising in light of the fact that fusion is not needed for stereopsis, and that stereopsis has been reported with up to 14° of disparity in normals.

Contrary to Henson and Williams, we have not found any constant strabismics who appreciate random dot stereograms.[3] This is consistent with Fender's and Julesz's findings in normals that fusion is needed for appreciation of a random dot stereogram. Another way of saying the same thing is that the deviation *must* be smaller than Panum's area for appreciation of a random dot stereogram. The difference between our findings and Henson and Williams's may be explained if some or all of their subjects were intermittent strabismics. Three of the 7 subjects who had good stereopsis were defined as nonamblyopic, small-angle, constant exotropes. This is an extremely rare situation— one which we have never seen. In addition the esotropes who demonstrated 'good' stereopsis had a mean angle of deviation, 3.3Δ with best optical correction and no real amblyopia. This is such a small angle of deviation that it is possible that all these patients were actually intermittent. (No cover testing was reported by Henson and Williams during actual testing of stereopsis.) It is our clinical and research experience that any patient with 20 seconds of stereoacuity must be bifoveal and cannot have a constant strabismus. Thus we suspect that most of the Henson and Williams subjects were intermittent strabismics, not constant strabismics, as they reported.

In conclusion, we have found that small-angle strabismics have reduced stereoacuity on lined stereograms and no stereopsis on random dot stereograms. Large-angle strabismics possess no stereopsis on either line or random dot stereograms.

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Spasmus nutans or congenital nystagmus? Classification according to objective criteria

SIR, Several years ago in this journal we and colleagues published recordings of head and eye movements obtained from a child who was presumed to be an example of spasmus nutans.[1] The essential features of this case were the presence of a high frequency oscillatory nystagmus in the horizontal plane and that during fixation of targets of interest the child shook his head from side to side in order to improve visual acuity. During the head shaking the nystagmus was suppressed or 'turned off' in some way, and the child was left with a normal 'doll's head' reflex eye movement which stabilised gaze during the head oscillation.

It was obviously dangerous at the time to make an inductive generalisation on the basis of one example. However, we were motivated to do so and to publish because it was apparently the first time that recordings had been obtained in this condition, and they had revealed a mechanism which accounted for the combination of head and eye movements.

Since that time we have encountered 2 similar cases. One reported to us by Dr David Zee, of the Johns Hopkins Hospital, was by all accounts identical to the one we reported. A third child referred by Dr John Lee, of the Moorfields Eye Hospital, was examined in the MRC Neuro-otology Laboratory. The patient was a Sudanese child of 3 years of age with no family history of visual or neurological abnormalities. Her parents reported that at the age of 6 months they noticed that her eyes had begun to oscillate to and fro and were definite that this abnormality had not been present before that age. Some time between 6 months and 1 year of age it was noticed that when she looked at an object intently she held her head down with eyes deviated upwards in the orbit, and her head shook rhythmically from side to side. Examination confirmed the parents' observations. There was no manifest strabismus. Recordings of head and eye movements revealed a sinusoidal conjugate nystagmus which was intermittent and of variable amplitude. When the oscillation persisted its frequency was 10 to 11 Hz. During head shaking with the eyes in the upwards deviated position the nystagmus ceased, and the child had normal compensatory eye movements. When the head shaking occurred, it was at a frequency of exactly 4 Hz.

There is a possibility that our 3 cases should be classified with congenital nystagmus, but, if so, they would form a

very distinct subgroup, for they differ from cases of congenital nystagmus with compensatory head shaking.[2] In the first place the wave form of congenital nystagmus usually consists of much lower frequency oscillations interrupted by saccade-like movements. In addition the compensatory type of head shaking in congenital nystagmus accompanies a modification of the nystagmus rather than a total suppression.[1] Perhaps the most distinctive difference symptomatically is that visual acuity in congenital nystagmus is relatively preserved and enhanced during head shaking. In contrast, visual acuity in our patients with high frequency oscillatory nystagmus was markedly impaired.

Alternatively, as we believed of the patient we reported, all 3 children may be examples of spasmus nutans. If this is so and the classical descriptions of spasmus nutans are comprehensive, then they should eventually resolve.[3] Unfortunately we have been unable to follow up this possibility, so we cannot firmly make a diagnosis of spasmus nutans (as it is commonly understood) in these 3 patients. Nevertheless, for the reason that we have found a distinct pattern of head/eye co-ordination in these 3 patients we suggest that they do constitute a distinct nosological entity.

Three distinct patterns of head and eye co-ordination in children who suffer congenital nystagmus or the onset of nystagmus from an early age are now recognised.[2] There is a head tremor with nystagmus in which the head movements are involuntary and in no way assist vision. There are children with compensatory head movements and nystagmus in whom the head shaking modifies the nystagmus so that vision is improved. The third type is the one we have tentatively termed spasmus nutans in which head shaking abolishes the nystagmus. These 3 would seem to cover the logical possibilities of the combinations of head and eye movements and as such provide a basis for objective classification of nystagmus and nodding. We would welcome reports on the long-term progress of such patients so that this classification, according to objective criteria, may eventually be used as a guide for prognosis.

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Correction

SIR, Since the publication of our article[1] describing 3 patients with corneal ulceration due to *Branhamella catarrhalis*, we have become aware of a previously reported case.[2]

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Book reviews

Colour Vision Deficiencies. Vol. 5. Ed. G. VERRIEST. Pp. 410. £40·00. Adam Hilger: Bristol. 1980.

The regularity with which *Colour Vision Deficiencies* appears is as baffling to the reader as it must be gratifying to the distinguished editor. Is it possible that the subject should be making such vast strides as to merit a tome every year?

If one really reads the book then one notes by way of answer that the title is misleading. Some of the contributions do not mention the subject (cf. Creutzfeldt, Stell, etc.). Others (e.g. Cobb and Shaw) write about its non-existence. Some papers are highly informative even if they deal with colour vision rather than its defects. However, the level of the papers is so unequal that one is bound to feel sorry for the wheat that is mixed up with the chaff. This report of the symposium held in Teddington in June 1979 illustrates that, if one has paid one's registration fee, one can attend the meeting, but fails to prove that all contributions have to appear in print. Just because the printed page cannot scream is no reason to make it suffer. And a 2-page index to a 400-page book is of arguable value.

ROBERT WEALE

A Singular View (Revised). By FRANK B. BRADY. Pp. 144. $15·50. Medical Economics Company: Oradell, New Jersey. 1979.

This book is clearly written and easy to read. It has an American style of expression aimed at an American readership, but is well set out in appropriate chapters to show the newly one-eyed patient how to overcome many problems. There are a few unimportant inaccuracies in description of clinical conditions and diagrams, but these do not detract from the general usefulness of the book. It is also useful reading for the ophthalmologist, as it sets out many aspects of the advice to be given to such patients, which may not have been so clearly appreciated before. M. J. ROPER-HALL

Atlas of External Diseases of the Eye. Vol. 3. Cornea and Sclera. 2nd edn. By DONALD D. DONALDSON. Pp. 506. £61·50. YB Medical Publishers: London. 1980.

This second edition of volume III is an extremely well illustrated atlas of external disorders of the cornea and sclera. Text covers them well and comprises a compact account of each disorder, often followed by the author's case reports illustrating the disorder together with their photographic representations in monochrome. The descriptions are concisely and clearly written, thus giving the reader readily assimilated details. The photography depicting each disorder is excellent, and most readers will learn a