MAILBOX

A new substrain of the non-obese diabetic mouse which develops cataracts (NOD/Ba/Lop19)

EDITOR,—The non-obese diabetic (NOD) mouse is a spontaneous model of type 1 (insulin dependent) diabetes mellitus, frequently used in diabetes research.¹ The colony at the medical college of St Bartholomew's Hospital (NOD/Ba) was established in 1987 and some 55% of females and 15% of male mice spontaneously develop diabetes by 30 weeks of age.² Cataracts are not a characteristic normally found in NOD mice but were observed during routine inspection in 1988. All animals in the substrain NOD/Ba/Lop19 now spontaneously develop cataracts in both eyes (typically at 104–199 days of age). There are differences between NOD/Ba/Lop19 and the other mice of the colony with puberty, gestation period, teeth eruption, and eye opening all taking place later. Cataracts of the type seen are often the result of metabolic disturbances; however, although blood glucose levels greater than 12 mmol/l are known to cause cataracts in experimental models,³ their development in NOD/Ba/Lop19 is not related to the development of diabetes (normally at 112–133 days) as they occur before blood glucose levels exceed 11.5 mmol/l. This is unusual in that cataract formation in other susceptible laboratory rodents usually precedes the development of a general disease state.⁴

The cataracts initially take the form of a visible dense white sclerotic central area (see Fig 1), accompanied by clouding of the lens itself, which becomes denser over a few days. Both eyes are usually affected within 5 days of each other. Back cross breeding experiments show the Mendelian inheritance patterns typical of a single recessive gene. It has been suggested that there may be a subset of young diabetic patients with unusual susceptibility to cataracts and other complications of diabetes affecting the eye⁵ and NOD/Ba/Lop19 could act as a specific model for this group. If the mechanism by which cataract formation occurs in NOD/Ba/Lop19 mice could be established then it could prove useful to determine if any diabetic patients who develop cataracts have the same genotypic and/or metabolic characteristics. This then raises the possibility of preventative treatment.

Figure 1 A NOD/Ba/Lop19 mouse with cataracts. Note the thick band of sclerotic material on the right hand side.

The support of the Joint Research Board of St Bartholomew's Hospital is gratefully acknowledged.

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- 1 Mansfield KJ, Beales PE, Williams AJK, *et al*. Housing, production and life-maintenance of the non-obese diabetic (NOD) mouse. *Animal Technology* 1992;43:29–37.
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- 4 Williams D. Laboratory animal ophthalmology—an overview. *Animal Technology* 1992;43:147–65.
- 5 Carroll PB, Herskowitz RD, Goodman AD, *et al*. Rapid onset of severe retinopathy, cataracts and neuropathy in young patients with diabetes mellitus. *Acta Paediatr* 1992;81:355–8.

Cortically visually impaired children

EDITOR,—While Hoyt and Fredrick rightly state the heterogeneous aetiology of cortical visual impairment (CVI) in children,¹ we were disappointed in their bland and unjustified dismissal of the value of electrophysiological studies in these cases. They fail to quote any electrophysiological studies more recent than 1979 in their review, of which there have been a not inconsiderable number. As for our own work we have found that a normal flash VEP indicates statistically and clinically a better prognosis in blind babies with non-ocular visual impairment even though we would concede that in some cases flash VEPs can be normal in CVI.² It is therefore clinically useful to perform evoked potential studies in these children, a position endorsed by the commentary in the same issue of *BrJO*,³ which states that electrophysiological investigations are mandatory in the investigation of babies with poor visual contact. We endorse this sentiment and although accepting the limitations of the technique, feel that VEP investigations provide valuable objective information in the assessment of these infants. Hoyt and Fredrick rightly point out that further work is required in the evaluation of infant CVI but not even to attempt any review of work within the past 20 years—never mind the most recent—is at best misleading and at worst scientifically unacceptable.

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- 1 Hoyt CS, Fredrick DR. Cortically visually impaired children: a need for more study. *Br J Ophthalmol* 1998;82:1225–6.
- 2 Clarke MP, Mitchell KW, Gibson M. The prognostic value of flash evoked potentials in the assessment of non-ocular visual impairment in infancy. *Eye* 1997;11:398–402.
- 3 Casteels I, Spileers W, Missotten L, *et al*. The baby with poor visual contact. *Br J Ophthalmol* 1998;82:1228–9.

Reply

EDITOR,—We thank Clarke and Mitchell for their thoughtful comments on our editorial on cortical visual impairment (CVI). We are

somewhat bemused by the notion that the passage of time invariably invalidates good clinical studies. Our editorial did not go into detail about VEPs and CVI because of space limitations and the focus of that editorial. We meant only to imply that VEPs had been less useful than we all hoped they would be in evaluating this difficult group of visually impaired children. We do not disagree with Clarke and Mitchell that intact flash VEPs usually imply a better visual outcome than if the VEPs are abnormal or absent. Similar results have been reported by Taylor and McCulloch.¹ Regrettably, in our studies of children with cortical visual impairment the group of patients with intact flash VEPs represents only a small portion of those we care for. In the remaining larger group of patients with abnormal VEPs we have not found good correlation with the ultimate visual outcome. Moreover, in children with neurological disorders, flash VEPs are often abnormal even when the patient is well sighted.² The problem then is how to interpret an abnormal VEP in a child with CVI. This is where VEPs have been disappointing and frequently misleading. VEP mapping may be a significant improvement over standard flash VEPs. Witing *et al*³ reported that VEP mapping in 50 children with permanent CVI was always abnormal and showed good correlation with computed tomography results, whereas the conventional VEP recordings were abnormal in only 50% of cases and with much less good correlation. We, therefore, look forward to further studies of VEPs demonstrating improved techniques that provide better prognostic value when evaluating the abnormal VEP in a child with CVI.

We apologise for any confusion caused by the terseness of our discussion. We encourage Clarke and Mitchell to continue their VEPs of children with CVI and look forward to reading their results in the future.

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DOUGLAS R FREDRICK
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- 1 Taylor MJ, McCulloch DL. Prognostic value of VEPs in young children with acute onset of cortical blindness. *Pediatr Neurol* 1991;7:111–15.
- 2 Taylor MJ. Evoked potentials in pediatrics. In: Halliday AM, ed. *Evoked potentials in clinical testing*. 2nd ed. London: Churchill Livingstone, 1992.
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Automated perimetry by optometrists in patients at low risk of glaucoma

EDITOR,—The letter by Dayan *et al*¹ raises some interesting questions regarding the examination and referral of patients by optometrists for further investigation in relation to open angle glaucoma.

While the authors base their comments upon largely anecdotal evidence from a series of only 11 subjects from one referral source, there are nevertheless some important points to be answered from these comments.

Firstly, the College of Optometrists guidelines offer guidance based on clinical evidence to optometrists conducting eye examinations. They specifically encourage optometrists to conduct the appropriate tests on any individual patient as a matter of best practice. In the case of glaucoma, recommendations are made that visual field tests should be conducted on subjects over the age of 40, those with a family history of glaucoma, and those with suspicious optic discs or other risk factors.²

The majority of visual field tests used in optometric practice are based upon static

perimetry (College of Optometrists annual clinical survey, 1998) and decisions then need to be made on the results obtained. Therefore, if one or two points are missed on a central field test does that mean an abnormality is present? The optometrist needs to make a judgment on this issue in the light of the complete clinical findings rather than simply exert a pass/fail criterion from a screening test.

Not surprisingly most glaucoma patients in hospital clinics are referrals from optometrists but evidently this is at the cost of a relatively high false positive rate.³ Not surprisingly also, visual field test designers are continually trying to develop programs with high specificity and high sensitivity,⁴ which help the user to make an appropriate decision regarding normal or abnormal findings and thus referral.

Whether the optometrist refers a patient to the general practitioner for further investigation is influenced by a number of factors. Optometrists are legally required to refer patients if an abnormality is suspected or found.

Therefore, realistically, individual practitioners are more concerned about missing pathology than referring false positives. This feeling is further strengthened by legal cases reaching the General Optical Council where optometrists have been sued (successfully) for not detecting and referring ocular pathology.

This defensive attitude could be changed. Clearly, ophthalmologists do not wish to spend clinical time seeing large numbers of "normal" eyes although there must be a grey area where a patient will be referred with a reasonable measure of doubt as to the presence of an abnormality. What is an acceptable false positive rate with respect to referrals to a hospital eye clinic?

One of the main ways in which the referral process could be improved is by a formal notification system from ophthalmologists to optometrists to let individual optometrists assess the accuracy of their clinical findings/decisions/results of the cases that they refer. The health service referral forms are designed to allow this to happen since the patient can be asked to sign giving consent to the general practitioner or ophthalmologist to pass information back to the referring optometrist. Ideally the ophthalmologist will send a copy of the reply to the general practitioner and to the referring optometrist. Currently and historically this process does not happen in many areas of the country (personal communication with members).

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- 1 Dayan M, Gales K, Griffiths P. Automated perimetry by optometrists in patients at low risk of glaucoma. *Br J Ophthalmol* 1998;82:1221.
- 2 College of Optometrists Guidelines. The routine eye examination. London: College of Optometrists, September, 1997.
- 3 Bell, O'Brien C. Accuracy of referral to a glaucoma clinic. *Ophthalmic Physiol Opt* 1997;17:7-11.
- 4 Henson DB, Spry PG, Spencer IC, et al. Variability in glaucomatous visual fields: implications for shared care schemes. *Ophthalmic Physiol Opt* 1998;18:120-5.

Reply

EDITOR,—We thank Dr Stevenson for his interest in our letter. Though he rightly comments that our evidence is anecdotal there has been no systematic study to justify the use of routine visual field screening in patients over 40 attending their optometrist.

The best way to improve the positive predictive value of visual field screening would

be to apply it to a group with a higher pretest probability of having pathology—for example, patients over 60 years of age. We doubt that forthcoming technological developments will improve the trade off between sensitivity and specificity to a point where routine screening of patients over 40 can be justified. Furthermore, a test of adequate positive predictive value is a prerequisite for a screening programme not a post hoc modification.

With regard to the legal position, this has in part been created by the guidelines themselves since a practitioner who does not comply with them can be held to have been negligent.

The fault does not lie with individual optometrists who cannot be blamed for making the referrals; having identified a field defect they have little option but to refer to the hospital eye service. Informing the optometrist of the outcome of all referrals is undoubtedly good practice but we do not think it would have any significant impact on the false positive referral rate. It is the guidelines themselves that are the problem.

We note that there is some disquiet among optometrists as well as ophthalmologists about the guidelines. This is a difficult area in practice and there are no easy answers; however, it is time to review the cut off age for routine visual field screening.

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Author's reply

EDITOR,—I thank Dr Griffiths for his reply to my original comments. However, I would like to answer some of the points that he raises.

The use of visual field screening in patients above the age of 40 in optometric practice is based upon the fact that the incidence of glaucoma increases above that age. Therefore, measuring intraocular pressure and visual fields and combining this with assessment of the optic disc is highly relevant in that group of the population. The highest positive predictive value (PPV) is demonstrated when information on all three factors is included.²⁻³

Logically it follows that the PPV of visual fields as a "stand alone" test increases if it is only used in a group with a higher cut off age—that is, 60 years of age as suggested by Griffiths, given the age related nature of many ocular conditions including glaucoma. This approach is likely to miss a significant number of possible early chronic simple glaucoma cases. Conditions other than glaucoma may also be detected by routine visual fields testing, a point made in Griffiths's original letter.

The legal position of the college guidelines may be misunderstood by Griffiths in that, by not complying with them, he suggests that a practitioner may be held negligent. This is not the case since the guidelines are not set by the General Optical Council as law but are simply College of Optometrists professional guidelines given to members to represent current best practice.

Most optometrists feel that if they receive feedback on referrals to indicate a high false positive referral rate, referral criteria would be modified to correct this problem. Recent ophthalmological opinion does suggest that feedback on referrals would help case finding.^{3,4}

Finally, I do agree that it would be welcome and timely to have dialogue between ophthalmologists and optometrists regarding the age

above which individuals should have their visual fields tested at routine eye test appointments. Much of the misunderstanding regarding referrals in this area could then be clarified.

This is also relevant in light of the current review of the GOC referral guidelines to optometrists relating to the present obligation to refer to a general practitioner when an abnormal finding is detected in the routine eye test.

RONALD STEVENSON

- 1 Dayan M, Gales K, Griffiths PG. Automated perimetry by optometrists in patients at low risk of glaucoma. *Br J Ophthalmol* 1998;82:1221.
- 2 Crick RP, Tuck MW. How can we improve the detection of glaucoma? *BMJ* 1995;310:546-7.
- 3 Theodossiadis J, Murdoch I. Positive predictive value of optometrist initiated referrals for glaucoma. *Ophthalmic Physiol Opt* 1999;19:62-7.
- 4 Crick RP. What can we do about the detection of primary open angle glaucoma? *Glaucoma Forum* 1999;1:10-18.

Viscoelastic

EDITOR,—I was very disappointed to read in the *BJO*, a BMJ publication, an example of corrupt English usage. In the January issue, on page 71, the term viscoelastic is freely used. I presume the term is addressing the properties of a substance which has both viscous and elastic properties. The words "viscous" and "elastic" are adjectives describing the property of a substance. It is therefore incorrect to use the terms as nouns. American English has coined the word viscoelastic and through common usage is encouraging others to adopt it. However, surely we should expect a native British journal to set a better example by using technically correct terminology.

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BOOK REVIEW

Ida and the Eye—a Woman in British Ophthalmology. Ed Elizabeth Imlay Buckley, Dorothy Usher Potter. Pp 322; £18. Speldhurst, Kent: Parapress, 1998. ISBN 1-898594-63-5.

The editors of Ida Mann's autobiography, Elizabeth Buckley and Dorothy Potter, have undertaken a task of a true devotion. Through their long standing respect and admiration for this giant of 20th century ophthalmology, the authors have successfully brought together an excellent book which reviews the somewhat meandering autobiography which Ida Mann herself wrote.

For those who are interested it is an extremely fascinating account of individuals who helped to form Ida Mann's career from her early days at Moorfields and Oxford onto her period in Australia and the continuing research that she did there on Aboriginal demographics.

The autobiography itself provides a unique insight into the enormous energy, but even more so into the approach, which Ida Mann took to her research work. Undoubtedly, these were driven by a great interest in her topics. In addition, she paid great attention to detail and this is highlighted in the book itself with some

idiosyncratic but highly enjoyable personal references and even quotations which one must assume represent the spoken word.

There is also some rare insight into the politics involved in the emergence of early 20th century UK ophthalmology, with special reference to the difficulties and the advantages that women may have in developing medical careers—particularly in the field of ophthalmology.

Overall, this is a very enjoyable read and it can be recommended to all those interested in the history of ophthalmology.

JOHN V FORRESTER

NOTICES

Community based rehabilitation

The latest issue of the *Community Eye Health* (no 28) discusses community based rehabilitation in developing countries. For further information please contact *Community Eye Health*, International Centre for Eye Health, Institute of Ophthalmology, 11-43 Bath Street, London EC1V 9EL. (Tel: (+44) 171 608 6910; fax: (+44) 171 250 3207; email: eyeresource@ucl.ac.uk) Annual subscription £25. Free to workers in developing countries.

Residents' Foreign Exchange Programme

Any resident interested in spending a period of up to one month in departments of ophthalmology in the Netherlands, Finland, Ireland, Germany, Denmark, France, Austria, or Portugal should apply to: Mr Robert Acheson, Secretary of the Foreign Exchange Committee, European Board of Ophthalmology, Institute of Ophthalmology, University College Dublin, 60 Eccles Street, Dublin 7, Ireland.

12th Annual Meeting of German Ophthalmic Surgeons

The 12th annual meeting of German Ophthalmic Surgeons will be held on 10-13 June 1999 at the Meistersingerhalle, Nürnberg, Germany. Further details: MCN Medizinische Congress-Organisation Nürnberg GmbH, Weilandstrasse 6, D-90419 Nürnberg, Germany (tel: ++49-911-3931621; fax: ++49-911-3931620; email: doerflinger@mcn-nuernberg.de).

Continuing Medical Education

The Tenth Annual Loyola Ophthalmology Resident Alumni Day on the subject of corneal oedema will be held on 12 June 1999 at Loyola University Medical Center, Maywood, IL, USA. Further details: Russell Dolce, Department of Ophthalmology, Loyola University Medical Center, 2160 South First Avenue, Maywood, IL 60153, USA (tel: (708) 216-3408).

Royal National Institute for the Blind

A national conference of the Royal National Institute for the Blind will be held on 22-23 June 1999 at the Cedar Court Hotel, Wakefield. Further details: Kristene Wilde, Conference administrator, Royal National Institute for the Blind, RNIB Education Centre: North, Grosvenor House, Grosvenor Road, Leeds LS6 2DZ (tel: 0113-274 8855; fax: 0113-274 8800).

Neglected Areas of Disease Burden: the Biomaterials Challenge

A workshop will be held on 30 June 1999 at the Society for Chemical Industry, 14/15 Belgrave Square, London covering five areas: ophthalmic, craniofacial, stroke, respiratory, renal, with a keynote address "Artificial vision" given by Professor Mark Humayun (Baltimore, USA). Further details: Jeanette Hawkes, The Biomaterials Partnership, LGC (Teddington) Ltd, Queens Road, Teddington, Middx TW11 0LY (tel: 0181 943 7596; fax: 0181 943 2767; email: biomaterials@lgc.co.uk).

XII Congress European Society of Ophthalmology

The XII Congress European Society of Ophthalmology will be held in Stockholm, Sweden on 27 June-1 July 1999. Further details: Congress (Sweden) AB, PO Box 5819, S-114 86 Stockholm, Sweden (tel: +46 8 459 66 00; fax: +46 8 661 91 25; email: soe@congrex.se; <http://www.congrex.com/soe/>).

British Ophthalmic Photographic Association

The British Ophthalmic Photographic Association (BOPA) will hold a workshop entitled "The other side of the chin rest" on 10 July 1999 at the Southampton Eye Unit. Topics include: consent; allergies and complications; living with visual impairment; and procedures. Cost £20. Further details: Tim Mole (tel: 01703 798747).

Vision '99: International Conference on Low Vision and Vision Rehabilitation

The International Conference on Low Vision and Vision Rehabilitation will be held on 12-16 July 1999 at the Waldorf-Astoria Hotel, New York City, New York. Further details: Lighthouse International, 111 East 59th Street, New York, NY 10022-1202, USA (tel: (212) 821-9482; fax: (212) 821-9705; email: vision99@lighthouse.org).

4th Meeting of the European Neuro-Ophthalmology Society

The 4th meeting of the European Neuro-Ophthalmology Society will be held on 29 August-2 September 1999 in Jerusalem, Israel. Further details: Secretariat, 4th Meeting of the European Neuro-Ophthalmology Society, PO Box 50006, Tel Aviv, 61500, Israel (tel: 972-3-514000; fax: 972-3-

5175674/972-3-5140077; email: Eunos99@kenes.com).

International Agency for the Prevention of Blindness

The sixth general assembly of the International Agency for the Prevention of Blindness will be held on 5-6 September 1999 at the Conference Centre, Beijing Friendship Hotel, Beijing, People's Republic of China. The theme is "The right to sight". Further details: IAPB Secretariat, LV Prasad Eye Institute, LV Prasad Marg, Banjara Hills, Hyderabad 500 034, India (tel: 091-40-215389; fax: 091-40-248271; email: IAPB@lvpeye.stph.net).

Ophthalmological Clinic, University of Creteil

An international symposium on the macula will be held on 1-2 October 1999 at the Ophthalmological Clinic, University of Creteil. Further details: Professor G Soubrane, Chef de Service, Clinique Ophtalmologique Universitaire de Creteil, Centre Hospitalier Intercommunal, 40 Avenue de Verdun, 94010 Creteil, France (fax: 01 45 17 52 27).

Jules François Prize

The 2000 Jules François Prize of \$100 000 for scientific research in ophthalmology will be awarded to a young scientist who has made an important contribution to ophthalmology. All topics in the field of fundamental and/or clinical research in ophthalmology will be considered. The application should be sent jointly with a curriculum vitae, the list of all publications, and three copies of the candidate's 10 most relevant publications to Jules François Foundation Secretary, Professor Dr M Hanssens, Dienst Oogheelkunde, de Pintelaan 185, B-9000 Gent, Belgium. Deadline for applications 31 December 1999.

XXXIV Nordic Congress of Ophthalmology

The XXXIV Nordic Congress of Ophthalmology will be held in Reykjavik, Iceland, 18-21 June 2000. This meeting celebrates the 100 year anniversary of the Nordic Ophthalmology Conference. Further details: Iceland Incentives Inc, Hamraborg 1-3, Is-Kopavogur, Iceland (tel: +354 554 1400; fax: +354 554 1472; email: incentiv@itn.is).

DR-2000, International Forum on Diabetic Retinopathy

The International Forum on Diabetic Retinopathy will take place on 7-9 September 2000 at the Palazzo Reale, Naples, Italy. Further details: Francesco Bandello, Congress Secretariat, MGR Congressi, Via Servio Tullio, 4, 20123 Milano, Italy (tel: 39 02 430071; fax: 39 02 48008471; email: dr2000@mgr.it).