

Review Article

Medical examiner variability

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Abstract

There are undoubtedly many factors that contribute to inter-examiner variability relevant to the use of medical practitioners in justiciable matters. One source of variability with regard to claims relating to hearing disorders could well be the training and 'calibration' of medical examiners. A tentative analysis of the examination papers and of the declared roles of the specialties that provide these examiners lends support to such a thesis. One solution would be to train special specialists for medicolegal work, as envisaged by Boyarsky for forensic urology (Boyarsky, 1996). At the same time there is the need to change the role-perception of many examiners. There is also the need for medical examiners to express honest, unbiased opinions. There are also problems inherent in the litigation process which does not promote the interactive and adaptive processes between experts that characterise scientific discussions and enquiry.

Key words: Jurisprudence; Observer variation; Education; Hearing loss, noise-induced.

Introduction

The theme of inter-examiner variability relevant to the use of medical practitioners in justiciable matters has not been subject to the critical analysis that it deserves. The extent to which the observations of a single doctor differs from one occasion to another is termed intra-observer variation; the extent to which the observations of one doctor differ from those of another is termed inter-observer variation.

Unfortunately, there is no evidence as to whether or not observed intra-observer variations represent random fluctuations in interpretation or systematic changes and, if the latter, the course that is subsequently followed. Because of the very nature of this phenomenon, information on intra-observer variation is difficult to obtain.

Assessments which differ from one examiner to another may be attributed not only to different ways of eliciting the plaintiff's story, having been able/unable to have sight of all the plaintiff's medical records or to the use or non-use of different clinical or special tests (or the equipment for these) but also to different interpretations of the test results.

The matter of observer variation was of sufficient concern to be investigated by the Medical Research Council forty-five years ago and reported in a paper 'Observers' Errors in Taking Medical Histories'

(Cochrane *et al.*, 1951). The findings are just as valid today as then. Discrepancies are dominated by observer bias.¹

Doctors appear to be very concerned with quality control in respect of equipment, but little at all in respect of their history taking. Transcriptions of some interviews make it quite clear which answer stemmed from what question. But because many examiners do not record such matters it is all too often not possible to determine whether differences are attributable to intra-observer variation in respect of the plaintiff or differences in questions posed by the medical examiners.

The British Government's Industrial Injuries Advisory Council's Report which preceded the recognition of noise-induced hearing loss as a prescribed occupational disease commented on this matter (DHSS, 1973). In the 'Summary of evidence on practical measures for diagnosis and assessment' (Appendix 3) it said 'In order to facilitate obtaining the medical history the use of a questionnaire was suggested. If the questionnaire were to be completed by the claimant it would need to be framed so as to require a YES/NO type of answer, although it was thought that this might lead to abuse, and that it

¹This word is used here in a scientific and not a pejorative sense.

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would lack the contribution that the clinician would make by his assessment and weighting given to different factors in the medical history.' I suspect that many medical examiners use a questionnaire. Hence the difficulty of comparing their 'history' with the results of a recorded interview.

Although many medical examiners pay lip service to the clinical examination, this is frequently so minimal as to be almost non-existent. For example, there is a tendency to eschew the clinical examination of hearing and consider special tests, e.g. audiometry, only. This reflects the gradual decline in clinical diagnostic otology in the British Isles since the turn of the century when the nature and extent of a clinical examination was clearly set out, for example, by Macnaughton-Jones *et al.* (1902). One should however distinguish performing an incomplete clinical and audiometric examination from foregoing any examination when circumstances demand or permit it. For example, in cases where the clinical picture is non-specific and two or more medical examiners have already provided sufficient information on which to base an assessment, an examination may well be dispensed with, e.g. in claims for occupational noise-induced hearing loss.

Many terms used by medical examiners in their reports have a specific connotation, but many seem to be unaware of this. The word probable (or one or other of its variants) is no exception. As Hand (1996) has said, 'No modern statistician can be unfamiliar with the fact that there are different interpretations of probability, that these lead to different schools of inference and that the conclusions drawn by these schools can differ.' The word 'probably' is best avoided in reports by medical examiners, particularly when the use of the term by lawyers is not the same as it is by statisticians (Bentham, 1825).

Often when a medical examiner's opinion runs counter to another's he will take refuge in the clinical experience resulting from seeing several thousand similar cases. One is reminded of an eminent philosopher's comments on 'clinical observations' (Popper, 1972): 'The Freudian analysts emphasised that their theories were constantly verified by their 'clinical observations'. As for Adler, I was much impressed by a personal experience. Once, in 1919, I reported to him² a case which to me did not seem particularly Adlerian, but which he found no difficulty in analysing in terms of his theory of inferiority feelings, although he had not even seen the child. Slightly shocked, I asked him how he could be so sure. 'Because of my thousandfold experience', he replied, whereupon I could not help saying: 'And with this new case, I suppose, your experience has become a thousand-and-one-fold.'

Medicine's current Zeitgeist, i.e. evidence-based medicine (Sackett *et al.*, 1996), a subset of an evidence-based society, de-emphasises intuition and unsystematic clinical experience (Aswapokee, 1996). It is independent of one's specialty training (or lack of it). One would thus expect inter-examiner varia-

tion to be reduced significantly by examiners adopting an evidence-based medicine approach immersed in the scientific philosophy of Popper. But this is merely a modern day expression of the second of the five Quan Yin precepts of oriental antiquity, i.e. to refrain from speaking what is not true.

There are differences in role perception. For example, one examiner wrote in his report that he 'wanted to represent the plaintiff in court' (or words to that effect). Moreover this statement was made at least twice in his report. One wonders whether he himself could have said or done anything else which would have done more to impugn his impartiality.

It has been held, both by the courts and by doctors (Morrison, 1993) that an expert medical report is meant for the impartial assistance of the court and not simply to buttress one party's case.

Concern has been expressed regarding the manner in which expert evidence comes to be organised by lawyers. Comments have been made both in the Court of Appeal and in the House of Lords. In a House of Lords' judgment, Lord Wilberforce said that 'while some degree of consultation between experts and legal advisers was entirely proper it was necessary that expert evidence presented to the Court should be, and should be seen to be, the independent product of the expert, uninfluenced as to form or content by the exigencies of litigation. To the extent that it was not, the evidence was likely to be not only incorrect but self-defeating' (*Whitehouse v Jordan and Another*, 1980). Consequently, a doctor is right in refusing to amend a report at the behest of the solicitor requesting it (Medicolegal, 1979).

In his *Access to Justice*, Lord Woolf (1995) considered the matter sufficiently important to draw attention to this manipulation of expert witnesses by lawyers by quoting from an editorial in *Counsel* (1984): 'Expert witnesses used to be genuinely independent experts . . . Today they are in practice hired guns.'³ At the 11th World Congress on Medical Law, a Lord Justice of Appeal (the Right Honourable Lord Justice MacDermott, 1996) expressed judicial concern regarding evidence provided by medical examiners in particular. But with whom does the fault lie? The lawyers, the medical examiners or the system? In his Presidential address to the Royal Statistical Society, Adrian Smith (1996) said 'It is somewhat paradoxical . . . that the procedures and protocols of UK law-courts seem so much at odds with the kinds of disciplined scientific reasoning that many of us would see as essential in an evidence-based society'. It is therefore not surprising that Lord Woolf summarised the current situation: 'There is now widespread support from judges, lawyers and academics, as well as from those who use the courts, for a new approach to civil litigation.'

There should, of course, be no difference between two medical reports appertaining to the same plaintiff, except for matters of format and style. Irrespective of who retains them, expert witnesses

²During the time that he lived in Vienna, Popper helped Adler with his social work among the workingclass young.

³Quoted by Lord Woolf in *Access to Justice* p 183.

swear 'to tell the truth, the whole truth and nothing but the truth.' However, having regard not only to Wilbush's (1992) argument that diagnosis is not accomplished by pursuing a unilineal course but also to Adam Politzer's dictum '*Alles ist verbunden mit allem*' (everything is related to everything) a report in the otological domain would be limitless. This would apply particularly to occupational noise-induced damage to hearing, where the diagnosis is essentially by exclusion (Chadwick, 1971; Coles, 1975; Alberti, 1987). As one Australian counsel would put it, all these reports will be 'economical with the truth' in some degree or another.

It has been suggested that the qualifications and the training of medical examiners could be relevant to accounting for inter-observer variation, particularly when some solicitors claim that the medical examiners whom they have retained are 'fully trained'.⁴

Although professional qualifications may be dismissed as nothing more than the persistence of the initiation rites of pre-literate societies, they may also be looked upon as 'calibrations' (Hinchcliffe, 1996b). The range of relevant professional qualifications that medical examiners in the field of hearing and its disorders may have taken at one time or another (Table I) is analysed in Tables II to VI inclusive. Tables II, III and VI are based upon an analysis of 1990/1995 samples and Tables IV and V on 1974/1979 samples in an on-going study of the

development of training in audiological medicine and science in relevant health care professions. Most, if not all, of current medical examiners acquired their qualifications before 1990. The item content of the 'calibrations' which apply to current medical examiners may therefore have been different. Nevertheless this analysis brings out patterns that can well be extended to the years relevant to a particular examiner. However, the item content of any 'calibration' which was unsuccessful, whether a diploma or a degree, is of greater importance. It is nevertheless possible to ascertain on which topics an examiner received a 'calibration', and on which he did not.

But, in connection with 'failed calibrations', it should be remembered that some people are just 'slow learners', perhaps getting there in the end. For example, Baron von Richthofen was such a bad student when he entered flying school that he would have been thrown out had he not been a member of the nobility. Yet he became the greatest military aviator in the First World War. People who sport 'failed calibrations' are indeed in good company. Those whom one might consider three of the greatest intellects in the last half millenium (Copernicus, Galileo and Charles Darwin) were medical school dropouts. Albert Einstein's professors did not think sufficiently highly of him to recommend him for a university position. The one and only Nobel Prizewinner in the field of vestibulology, Bárány, was rejected by his colleagues.

⁴This is a description that can never be applied to doctors or scientists since training (self- or otherwise) continues throughout life.

TABLE I
MEDICAL EXAMINER "CALIBRATION"

"Calibration" ¹	For measuring ²	"Programmed" ³	"Calibrator" ⁴
Diploma of Licentiate of Royal College of Physicians and Membership of Royal College of Surgeons	Nil	Nil	N/A
Diploma in Laryngology and Otology of Royal College of Surgeons	Yes	Possibly ⁵	Surgeons specialising in ear, nose and throat disorders
Diploma of Fellowship of Royal College of Surgeons	Yes	Possibly ⁶	Surgeons specialising in ear, nose and throat disorders
Diploma of Membership of Royal College of Physicians	No	No	N/A
Diploma of Fellowship of Royal College of Physicians	No	Possibly ⁷	Senior physicians, including those experienced in relevant area of specialisation
Degrees of Bachelor of Medicine and Bachelor of Surgery	Possibly ⁸	Possibly	Relevant University's Professor of Otolaryngology
Degree of Master of Science ⁹	Probably not	Yes	Medical and science examiners
Degree of Master of Surgery	No	Unlikely	Professors of surgery and other examiners
Degree of Doctor of Medicine	No	Possibly ¹⁰	University examiners; could include Professors of Ear, Nose and Throat Surgery
Degree of Doctor of Philosophy	No	Possibly ¹¹	Examiners to the appropriate University

¹i.e. examination.

²i.e. evidence for ability to perform a clinical examination of ear, nose and throat.

³i.e. evidence that required knowledge imparted.

⁴i.e. examiners.

⁵depends on whether a question was set by examiners and answered successfully by candidate.

⁶as above.

⁷depends on area of interest of the doctor since conferment of this grade is by election.

⁸only at University of Manchester, and then only for a limited period around 1950.

⁹in audiological medicine, audiological science or clinical audiology.

¹⁰depends upon topic of thesis.

¹¹depends upon topic of thesis.

TABLE II
EXAMINATION FOR DIPLOMA IN LARYNGOLOGY AND OTOTOLOGY¹²
[HEARING-RELATED QUESTIONS]¹³
ANALYSIS OF THE FIVE-YEAR PERIOD 1990/1995]

Date	Part I (structure and function) ¹⁴	Part II (Clinical)
Oct/Nov 1990	Inner ear fluids; a middle ear muscle(s); circulation of brain	Delayed speech; grommets; bone conduction hearing aids(s)
Jun 1991	Ear wax(s); development of outer ear(s)	Chronic middle ear infection; herpes(s)
Oct/Nov 1991	An inner ear fluid(s)	Objective hearing tests; fungal infection of outer ear passage(s)
Jun 1992	Inner ear, embryonic origin of ear(s)	Herpes(s); treatment with ultrasound(s); eardrum perforation
Oct/Nov 1992	None	Middle ear aeration; one-sided hearing loss in adult; acquired sensorineural hearing loss in children(s); ototoxicity(s); bone conducted hearing aids(s); aspirin toxicity(s)
Jun 1993	Middle ear function; embryonic blood supply of ear(s)	Ear pain; surgical management of ear infections
Oct/Nov 1993	A nerve in ear(s); function of an aural structure(s);decibel(s); mastoid process	Diagnostic use of a muscle reflex(s)
Jun 1994	Nerve supply of outer ear(s); inner ear function(s)	Sudden deafness(s); ear polyps(s); earache(s); glue ear in child
Oct/Nov 1994	Middle ear; auditory tube	Noise-induced hearing loss(s); speech audiometry(s); Otosclerosis(s); ERA(s)
Jun 1995	Physiology of hearing; a middle ear muscle reflex(s); development of outer ear(s)	Senile presbycusis ¹⁵ (s); an inflammatory condition of Eardrum(s); A middle ear muscle reflex(s)

¹²Of Royal College of Surgeons of England.

¹³Or subquestions—denoted by (s).

¹⁴Five out of six 36-minute questions to be answered in each part; topics of hearing-related questions only listed.

¹⁵I do not know what this means (“impaired hearing in elderly elderly”?).

Nevertheless, Tables III to VI indicate that higher surgical diplomas are not particularly directed to the helpful in the assessment of occupational noise damage to the hearing. It may well be asked ‘Why should they be?’ A recent prize essay (Hadfield, 1995) on ‘*How to judge the performance of an ENT surgeon*’ did not include diagnostic or prognostic ability, nor did it include competence in medical or psychological management or knowledge of preventive medicine.

It should also be noted that the name of the one and only Nobel Prizewinner in the field of hearing (Békésy) and the name of one of the fundamental

units of sound (hertz) have been mis-spelled (Table IV). Questions therefore arise as to what standards the candidates are being ‘calibrated’.

Yet on first inspection, higher medical diplomas fare no better; worse, it could be argued. But medical specialists in hearing and its disorders (audiological physicians) are required to acquire not only a higher medical diploma but also a higher degree in the field of hearing and its disorders (usually the degree of Master of Science in Audiological Medicine⁵) Possession of a higher medical diploma recognises

⁵A qualification which some ENT Surgeons also take.

TABLE III
EXAMINATION FOR DIPLOMA IN LARYNGOLOGY AND OTOTOLOGY¹⁶
[HEARING-RELATED QUESTIONS]¹⁷
(EXCLUDING QUESTIONS WHICH COULD BE AVOIDED THROUGH PERMITTED CHOICE)
[ANALYSIS OF THE FIVE-YEAR PERIOD 1990/1995]

Date	Part I (structure and function) ¹⁸	Part II (Clinical)
Oct/Nov 1990	A middle ear muscle(s); circulation of brain	Grommets; bone conduction hearing aids(s)
Jun 1991	Development of outer ear(s)	Herpes(s)
Oct/Nov 1991		Fungal infection of outer ear passage(s)
Jun 1992	Embryonic origin of ear(s)	Herpes(s); treatment with ultrasound(s)
Nov 1992	None	Middle ear aeration; acquired sensorineural hearing loss in children(s); ototoxicity(s); bone conducted hearing aids(s); aspirin toxicity(s)
Jun 1993	Embryonic blood supply of ear(s)	Surgical management of ear infections
Nov 1993	A nerve in ear(s); mastoid process	
Jun 1994	Nerve supply of outer ear(s)	Earache(s); glue ear in child
Nov 1994	Auditory tube	Speech audiometry(s); otosclerosis(s); ERA(s)
Jun 1995	A middle ear muscle reflex(s); development of outer ear(s)	An inflammatory condition of eardrum(s); a middle ear muscle reflex(s)

Note that by appropriate selections it is possible to avoid questions which have a more direct bearing on occupational noise-induced hearing loss, including the only one specifically mentioning the condition and the only one specifically mentioning decibels.

¹⁶Of Royal College of Surgeons of England.

¹⁷Or subquestions—denoted by (s).

¹⁸Five out of six 36-minute questions to be answered in each part; topics of hearing-related questions only listed.

TABLE IV
EXAMINATION FOR DIPLOMA IN LARYNGOLOGY AND OTOLGY¹⁹
[HEARING-RELATED QUESTIONS]²⁰
[ANALYSIS OF THE FIVE-YEAR PERIOD 1974/1979]

Date	Part I (structure and function)	Part II (Clinical)
Nov 1974	Outer ear passage; intensity of sound(s); a middle ear muscle(s)	"Acoustic trauma" ²¹ ; infection of outer ear passage
Jun 1975	Auditory tube; an inner ear structure(s); "human hearing range"(s); outer ear passage(s)	Presbycusis; Carhart's notch(s); cholesteatoma
Nov 1975	Hearing physiology; stapedius reflex(s)	Sudden deafness; psychological illness in ENT practice
Jun 1976	Eardrum; external ear(s)	Acute otitis media; hearing aids
Nov 1976	Auditory tube(s); decibel(s)	Tumour of nerve of hearing; bony outgrowth of outer ear passage(s); a tuning fork test(s)
Jun 1977	Middle ear sound transmission; an inner ear structure(s); "Hertz" ²² (s); an inner ear fluid(s)	Ménière's disease; impedance audiometry; noise-induced deafness(s)
Nov 1977	Stapedius reflex(s)	Syphilis(s); hard ear wax(s)
Jun 1978	An inner ear structure(s); intensity of sound(s)	Deaf child; tinnitus; a tuning fork test(s); a neurological syndrome(s)
Nov 1978	Middle ear; an inner ear structure(s); ear development(s)	Operation for otosclerosis; operation for "glue ear"; Békèsy ²³ audiometry"(s); an ear abnormality(s)
Jun 1979	Anatomy of nerve of hearing; hearing physiology; auditory tube development(s)	Cholesteatoma; sensorineural hearing loss; eardrum injury(s); outer ear infection(s)

¹⁹Of Royal College of Surgeons of England.

²⁰Or subscriptions—denoted by(s)

²¹But do the examiners wish to restrict discussion to this or to include occupational hearing loss?

²²This refers to the scientist; probably examiners intended "hertz" (unit of frequency)

²³A mis-spelling of "Békèsy audiometry".

the ability to conduct properly a thorough clinical examination and interpret the results; possession of the specialist higher degree also should ensure that this specialist physician can examine someone complaining of disordered hearing to determine causation, assess the nature and degree of impairment, disability and handicap, and prescribe appropriate management. Conferment of the Fellowship of a Royal College of Physicians constitutes the recognition of a physician's contribution to his specialty. One can neither make an application to sit an examination for this grade nor request the grade bestowed on one. Unfortunately by using the grade of Fellowship as the reward for passing an attainment examination the Colleges of Surgeons have

precluded a grade which recognises excellence in a given surgical specialty.

One cannot, of course, take too far the analogy of professional qualifications with 'calibrations'. One would never accept measurements from an audiometer that had been calibrated only on the one occasion when it had emerged from the factory. Many of the new 'programs'⁶ have appeared subsequent to an examiner's 'calibration'.

Some years ago, the British Government saw that there was a specific need for medical specialists in disorders of hearing, particularly in the matter of occupational noise-induced hearing loss: 'We are convinced that the only solution to these problems

⁶i.e. published work.

TABLE V
EXAMINATION FOR DIPLOMA IN LARYNGOLOGY AND OTOLGY²⁴
[HEARING-RELATED QUESTIONS]²⁵
(EXCLUDING QUESTIONS WHICH COULD BE AVOIDED THROUGH PERMITTED CHOICE)
[ANALYSIS OF THE FIVE-YEAR PERIOD 1974/1979]

Date	Part I (structure and function)	Part II (Clinical)
Nov 1974	Outer ear passage; a middle ear muscle(s)	Infections of outer ear passage
Jun 1975	Auditory tube; an inner ear structure(s); outer ear passage(s)	Carhart's notch(s); cholesteatoma
Nov 1957	Stapedius reflex(s)	Psychological illness in ENT practice
Jun 1976	External ear development(s)	Acute otitis media
Nov 1976	None	Bony outgrowth of outer ear passage(s); a tuning fork test(s)
Jun 1977	An inner ear structure(s)	Ménière's disease; impedance audiometry
Nov 1977	None	Hard ear wax(s)
Jun 1978	None	Deaf child; a tuning fork test(s); a neurological syndrome(s)
Nov 1978	None	Operation for otosclerosis; operation for "glue ear"; an ear abnormality(s)
Jun 1979	Anatomy of nerve of hearing, auditory tube development(s)	Cholesteatoma; eardrum injury(s); outer ear infection(s)

Note that by appropriate selections it is possible to avoid questions which have a more direct bearing on occupational noise-induced hearing loss, including the only one specifically mentioning the condition and the only one specifically mentioning decibels.

²⁴Of Royal College of Surgeons of England.

²⁵Or subscriptions—denoted by (s).

TABLE VI
CLINICAL SURGERY-IN-GENERAL WITH OTOLARYNGOLOGY SECTION¹
[ANALYSIS OF THE FIVE-YEAR PERIOD 1990/1995]

Date	Hearing-related short notes topics ²	Hearing-related short notes topics ³
Sep 1990	None	Inner ear function; conductive hearing loss; ear pain
Jan 1991	None	Surgical reconstruction of middle ear; congenital deafness; leakage of inner ear fluids
Apr 1991	None	Hearing aids; one-sided deafness
Sep 1991	None	Electric response audiometry
Date	Hearing-related short notes topics ⁴	Theme of obligatory essay ⁵
Jan 1992	Intracranial tumours; complications of stapedectomy; shingles	Sudden deafness
Apr 1992	Value of X-rays in middle ear disease;	Paralysed face
Oct 1992	Blood in the middle ear	Aural cholesteatoma
Jan 1993	Non-organic hearing loss	Paranasal nasal sinus infection
Apr 1993	A neurological syndrome involving the ear	Allergy
Oct 1993	Hearing aids	Acute vertigo
Jan 1994	A certain type of eardrum abnormality	Collapse after oesophagoscopy
Apr 1994	Inflammation of outer ear passage; screening	Deaf child
Oct 1994	Screening children's hearing	Trauma to ear
Jan 1995	One-sided tinnitus	ENT disease in an Eye Department
Apr 1995	None	Vertigo

¹Examination for Diploma of Fellowship of Royal College of Surgeons of England.

²Among eight obligatory 15 minute questions (Paper I).

³Among six obligatory 10 min questions (Paper II).

⁴Among eight obligatory questions (Paper I).

⁵Paper II.

will be an increase in the number of consultants and technicians specialising in audiological medicine. . . and we strongly recommend that such an increase should be brought about in the near future.' (DHSS, 1982).

However, a number of audiological physicians have specialised in matters that are unconnected to adult occupational noise-induced hearing loss. Conversely, some ear, nose and throat surgeons have taken the trouble to acquire considerable knowledge of, and expertise regarding, occupational noise-induced hearing loss. Indeed one group of solicitors enquired about the possibility of asking medical examiners to follow the examining and reporting system used by a Consultant Ear, Nose and Throat and Head and Neck Surgeon who practised in the North of England. It may well be said that these Consultants are 'self-trained' in this matter. But this is not to their detriment. The most valuable component to training is 'self-training' (Hincliffe, 1996a). After all, who trained Broca, Charcot and Politzer, the founders of the specialties which contributed to the derivative specialty of audiological medicine, i.e. speech medicine, neurology and otology respectively?

The assessment of occupational noise-induced hearing loss is such a specialised subject that probably only a customised training would be adequate. In conjunction with the Medical Research Council, the Royal Air Force and the Royal Navy could provide such a training in the 1950s. The facilities offered to doctors in those days are, for a variety of reasons, not open to trainee specialists now. Nor have such training facilities been available for probably the last thirty years or so. Nevertheless, one would endorse the pleas for special specialty training that have been made for example by Cornes and Aitken (1992) and by Boyarsky (1996).

But even after similar considerable training and experience, experts may disagree, and apparently violently so, in interpreting the same facts, as Brewin (1992) has indicated in another field. Montaigne's (1580) conclusions over 400 years ago are still inescapable:

*'Et ne fut jamais au Monde deux opinions pareilles, non plus que deux poils ou deux grains. Leur plus universelle qualité, c'est la diversité.'*⁷

References

- Alberti, P. W. (1987) Noise and the ear. In *Scott-Brown's Otolaryngology*. 5th Edition. Vol 2, Ch 18. Adult audiology. Butterworths, London, pp 594-641.
- Aswapokee, N. (1996) What is evidence-based medicine? *Proceedings of the Siriraj Scientific Congress*, 4-8 March, Chuan Printing, Bangkok, p 136.
- Bentham, J. (1825) *Treatise on Judicial Evidence*, Payne, London, p 41.
- Boyarsky, S. (1996) Forensic urology: A practical vision. *Proceedings of 11th World Congress on Medical Law, Sun City, Northwest Province, South Africa*. International Centre of Medicine and Law, Buhrmannsdrif, South Africa, 1: 75-80.
- Brewin, T. B. (1992) Excessive fear of dilute radiation. *Journal of the Royal Society of Medicine* **85**: 311-313.
- Chadwick, D. L. (1971) Occupational hearing loss and the otologist. In *Occupational Hearing Loss*. (Robinson, D. W., Ed). Academic Press, London, pp 217-223.
- Cochrane, A. L., Chapman, P. J., Oldham, P. D. (1951) Observers' errors in taking medical histories. *Lancet* **1**: 1007.
- Coles, R. R. A. (1975) Medico-legal aspects of noise hazards to hearing. *Medico-Legal Journal* **43**: 3-19.
- Cornes, P., Aitken, R. C. B. (1992) Medical reports on persons claiming compensation for personal injury. *Journal of the Royal Society of Medicine* **85**: 329-333.
- DHSS (1973) Occupational Deafness. Report by the Industrial Injuries Advisory Council in accordance with Section 62 of the National Insurance (Industrial Injuries) Act 1965

⁷There never was in the world two opinions alike, no more than two hairs or two grains; the most universal quality is diversity.

- on the question whether there are degrees of hearing loss due to noise which satisfy the conditions for prescription under the Act. Cmnd. 5461, HMSO, London.
- DHSS (1982) *Occupational Deafness*. Cmnd 8749, HMSO, London, para. 39.
- Editorial (1984) *Counsel*, Nov/Dec⁸
- Hadfield, P. (1995) How to judge the performance of an ENT surgeon. *ENT News* **4**: 9–10.
- Hand, D. J. (1996) Statistics and the theory of measurement. *Journal of the Royal Statistical Society A* **159**: 445–492.
- Hinchcliffe, R. (1996a) Who train the trainers? A broad perspective. *Proceedings of VIII International Symposium on Audiological Medicine*, Chiang Rai, Thailand.
- Hinchcliffe, R. (1996b) Inter-examiner variability. *Proceedings of 11th World Congress on Medical Law, Sun City, Northwest Province, South Africa*. International Centre of Medicine and Law, Buhrmannsdrif, South Africa. **1**: 389–402.
- MacDermott, J. (1996) A judicial point of view with regard to the testimony of medical experts. *Presented at 11th World Congress on Medical Law, Sun City, Northwest Province, South Africa*. International Centre of Medicine and Law, Buhrmannsdrif, South Africa (Session 3 on 29 July).
- MacNaughton-Jones, H., Stewart, W. R. H., Milligan, W., Tilley, H., Birmingham, A., Joyce, R. D. (1902) *The Practitioner's Handbook of Diseases of the Ear and Nasopharynx*. 6th Edition. Baillière, Tindall and Cox, London.
- Medicolegal (1979) Medical reports not to the lawyers' liking. *British Medical Journal* **ii**, 1376.
- Montaigne, M. de (1580) *Essais 2: De La Ressemblance des Enfants aux Pères (Of the Resemblance of Children to their Fathers)*. Chapitre XXXVII. Reprinted by Librairie Générale Française, Paris, 1972. p 540.
- Morrison, M. C. T. (1993) Medico-legal Reports. *Journal of the Royal Society of Medicine* **86**: 247.
- Popper, K. R. (1972) *Conjectures and Refutations: The Growth of Scientific Knowledge*. 4th Edition. Routledge and Kegan Paul, London, p 35.
- Sackett, D. L., Rosenberg, W. M. C., Gray, J. A. M., Haynes, R. B., Richardson, W. S. (1996) Evidence based medicine: what it is and what it isn't. *British Medical Journal* **312**: 71–72.
- Smith, A. F. M. (1996) Mad cows and ecstasy: chance and choice in an evidence-based society. *Journal of the Royal Statistical Society A*. **159**: 367–383.
- Wilbush, J. (1992) The Sherlock Holmes paradigm - detectives and diagnosis. *Journal of the Royal Society of Medicine* **85**: 342–345.
- Woolf, The Right Honourable the Lord (1995) *Access to Justice: Interim Report to the Lord Chancellor on the civil justice system in England and Wales*.

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⁸Quoted by Lord Woolf in *Access to Justice* at p 183.