Sir Harold Ridley’s vision

This valediction to the late Sir Harold Ridley commemo-
rates the 50th year of his first publication in the St Thomas’s
Hospital Report, describing his pioneer undertaking to
research, design, and implant an intraocular lens to correct
aphakia.

Dissatisfied with the poor acuity and loss of binocular
single vision following unilateral cataract extraction and
the poor outcome, particularly in children, with the contact
lenses then available, he had early in his career envisaged
using an artificial lenticulus. His research was catalysed by
the now famous remark of a medical student, that it was a
pity that the cataract he had seen extracted could not be
replaced by a clear lens. In his paper Ridley described his
threefold problem. Firstly, he had to find an inert material
for what would be an intraocular foreign body. In this he
was inspired in his choice of poly(methylmethacrylate) which
became the gold standard of implant materials. Ani-
mal experiments were rejected by Ridley, although they
might have added to the surgical techniques proposed, on
the grounds of adding little to the known intraocular toler-
ance of the material. This lack of inflammatory response to
glass and plastic intraocular foreign bodies, provided they
did not touch the iris, had been observed in the eyes of
injured aircrew who survived aerial combat in the second
world war. Optical laboratory benchwork was not under-
taken. To sterilise the implants he used cetrimide solution
which unbeknown to him could be absorbed by and later
leached from the poly(methylmethacrylate), causing ante-
rior uveitis, which was attributed wrongly to the implant
material itself. Later, sodium hydroxide was used before
present day gas sterilisation.

To solve his second problem, of implant design, Ridley
copied too closely the radii of curvature of the human lens
and his first two prototypes resulted in high myopic pseudo-
dophakia. Redesigned, subsequent implants produced
remarkably little anisometropia with refractions of about 2
dioptres sphere difference compared with the fellow eye.
He was also prophetic of preoperative biometry and of
implantation, the development of which might
have ceased save for the resolute inventiveness of
Binkhorst, Worst, Choyce, and Fyodorov. That this
condemnatory attitude, albeit softening, persisted into the
1980s is unsurprising, when implants were patented,
trademarked, and some fatuously labelled as “one size fits
all” and “a lens for all seasons,” and even as late as 1983 a
publication from Moorfields Eye Hospital expressed reser-
vations about implants.

That Ridley chose to initiate his work in secret without
any previous experimental research, at St Thomas’s
Hospital, rather than at Moorfields, may have led to
resentment on the part of Sir Stewart Duke-Elder whose
immense power of influence and support as director of
research at the Institute of Ophthalmology and Moorfields
Eye Hospital, was thereafter denied to Ridley. Today it is
difficult to imagine to what extent Ridley’s idea became
professionally scorned and dismissed. Had his concept of
pseudophakia originally been openly presented, sup-
ported, further researched, and scientifically developed,
the collateral loss of sight suffered by patients in those early
years might have been avoided with probably little loss of
the time it has taken for the safety, efficacy, and validity
of the device to become so self evident. Ridley recognised
posterior lens capsular opacification and the prevention of
this and the correction of pseudophakia presbyopia remain
as challenges for the future.

A decade ago Sir Harold underwent successful bilateral
lens implantation at St Thomas’s Hospital. He thus

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became not only one of very few men to benefit from his own operation, but also to have had it done in the same hospital where he pioneered it—a fact which always greatly pleased him.

In this tribute to Sir Harold Ridley, whose vision has been truly vindicated, let us hope that his additional aspiration, written in his first publication—namely, that “this operation may be the best that is possible until finally biochemical and endocrinological research teaches us how to prevent cataract developing,” will be achieved and acknowledged.

HUGH P WILLIAMS, FRCS FRCOPHTH
Moorfields Eye Hospital, City Road, London EC1V 2PD, UK