

Editorial

From the Editor's Desk



Ocular Optics: Sculpted and Harmonized for Vision

Optics synonymous with human eye function, is a pure science of geometry and physics. Human eye on the other hand while following most dictates of optics, deviates often for convenience of vision. The asphericity of cornea with its antecedent aberrations, crystalline lens curvature and photoreceptor alignment to optimize vision, formation of inverted image on fovea depending on the brain to set it right being some examples.

Human eye has been sculpted for vision par excellence with all structures resonating in harmony. Witness the severe scalpel of anatomy in removing all extraneous objects from the path of vision like blood vessels, nerves even at the cost of inability to repair from harm. Admire the physiological refinement of yoking of two eyes, crossing of fibres, the explicit dance of extraocular muscles and implicit one of intraocular muscles. Marvel the biochemical wizardry of retinal photoreceptor alterations being transformed to electrical impulses. Human eye is truly an optical wonder where science and evolutionary refinements harmonize to create the most faithful interpreter and most appropriate representative of the soul.*

Optics has been the foundation stone for all ocular inventions. The journey started from couching to clear the optical pathway by Sushrut (Sushrut- Samhita) in 5th century BC, contact lens neutralizing cornea by Leonardo da Vinci (Codex of eye), deciphering of optical laws by Rene Descartes in 16th century to replacement of crystalline lens for optical restoration by intraocular lens use by Harold Ridley in the 20th century. Building on blocks of optics has led to invention of ophthalmoscope (von Helmholtz), gonioscope (Trantas, Salzmann & Koeppe), perimeter, tonometer (Hans Goldmann) to name a few. It is only fitting that the only ophthalmologist to be honoured with the Nobel Prize, Alvar Gullstrand in 1911, for on optics of eye which ultimately led him to design his masterpiece, the slit lamp.

Optics remains the cornerstone of understanding of human eye, the foundation of ophthalmologist's education and genesis behind most inventions. Issac Newton overturned the prevailing dogma of his times claiming sunlight to be "pure white" by demonstrating its rainbow hues using optics of prisms. (Classic book opticks) In current times, many inventions like operating microscopes, advances in perimeter, advanced designs in IOL and interventions like corneal crosslinking rely on optics to both unearth nature's mysteries and undo her mishaps. To rephrase Claude Debussy, optics maybe the geometry of light but human eye optics is a tapestry of geometry, physiological adaptations and artistic creativity in vivo.

This issue of Delhi Journal Ophthalmology deals with "i optics" in its theme section from slit lamp to prisms, perimetry to electrophysiology, bio-microscopy to operating microscopes, IOL designs to cross linking techniques.

Keeping in mind the academic pulse of our ophthalmic fraternity we have included a special feature on Competency Based Medical Education implementation and assessment including logbook for the benefit of our members involved in undergraduate teaching.

References

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- Kansupada KB & Sassani JW. Sushruta: Father of Indian surgery & Ophthalmology Doc Ophthalmol 1997; 93(1-2):159-67
- * Charlotte Bronte. The soul, fortunately, has an interpreter – often an unconscious but still a faithful interpreter – in the eye.

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