From the library

Remembrance of things past

"Her most disturbing feature, nevertheless, is that she is slightly cross eyed, an ageless sign of erotic secrecy. The woman stares at you with the eyes of a basilisk. A forbidding vamp, la Dama De Elche, by breaking her classical purity with strabismus and barbarian features, sends us back to the elemental truth that all original earth goddesses are mysterious, two faced, tender and demanding, mother and lover, virgin and temptress." Carlos Fuentes. *Buried Mirror.* New York: Houghton Mifflin, 1992:27.

Can polio be eradicated?

In 1988 the World Health Organisation initiated a campaign to eliminate polio from the face of the earth. The target date for that goal is the end of this year, 2000. It now appears likely that this goal will not be met. Both medical and political problems obstruct the goal of polio eradication. Civil unrest in developing countries presents the political problem of how to carry out an effective vaccination programme in dangerous and unstable environments. The use of oral vaccine has a major disadvantage in the tropics since it spoils when it is exposed to heat. There are also growing concerns that even if the wild polio virus can be eradicated other enteroviruses might evolve and have the ability to affix to the polio virus receptor causing disease.

In January, WHO sponsored a meeting in Geneva to discuss how to control outbreaks of polio in the post-vaccination era. A particular interest was the development of alternative vaccines. A new vaccine developed at the University of Reading shows no propensity to mutate back to neurovirulence. Experiments suggest that this vaccine would be safer than the oral vaccine developed by Sabin. *The Sciences* 2000;**40**:25–31.

How the brain codes visual experience

Recent studies of how the eye and brain process visual information have led to the conclusion that the human brain encodes information with the utmost efficiency. It would appear that retinal neurons somehow know about the nature of their perceived visual environments and have arranged their input-output functions accordingly. It is not clear if this is an evolutionary adaptation or the result of continuous adjustments throughout the lifetime of the organism. At the visual cortex, neuroscientists have concluded that the brain attempts to represent the structure of images both in space and spatial frequency. Evidence suggests that the cells of the visual cortex are actually tuned to respond to certain patterns in natural scenes, such as edges, that are typical of these images. All of this suggests that even at the higher levels of the visual systems the principles of efficient coding describe the human visual pathways. *American Scientist* 2000;**88**:238–45.

Latest eye implant bypasses the retina

Although several artificial eye devices have been reported lately, a new device developed at the Catholic University of Louvain, Belgium, will bypass the retina altogether. Other experimental implants either stimulate the cells of the retina directly or the visual cortex of the brain itself. The new implant from Belgium has a coil that wraps around the optic nerve. Video signals come from an external camera, and the Belgian investigators hope that the coil connection to the optic nerve will provide better detail than previous implants. The first experimental implantations of this device will begin within the next 4 months. *New Scientist* 2000;**166**:10.

How does atropine prevent myopia

The growth of the vertebrate eye is known to be controlled by visual experience. Depriving young eyes of sharp high contrast vision may produce myopia. This is a species specific phenomenon. Atropine has been widely used clinically as a cycloplegic agent and some reports have suggested that its chronic use will prevent progression of human myopia. The rationale for its use has traditionally been that atropine paralyses accommodation and prevents the accommodative induced myopic changes.

Recent evidence suggests, however, that atropine seems to intrude massively into the vital functions of the retina. Atropine appears to induce spreading depression in experimental models, the exact opposite of what muscarinic agonists appear to do. This research concludes that atropine may prevent myopia by inducing spreading depression, which boosts neurotransmitter release from cellular stores, which in turn cancels out a presumed retinal signal that controls eye growth. *Visual Science* 2000;**17**:165–76.

Recommended reading

Xeno: the promise of transplanting animal organs into humans. David K C Cooper, Robert P Lanza. Oxford: Oxford University Press, 2000.

Xeno is a serious scientific work although it begins as if it were a novel. The authors effectively describe the variety of patients who today would benefit from xenotransplantation (the insertion of cells, tissues, and organs from other species). They review the historical use of sheep blood transfusions, dog bone grafts, and baboon heart and liver transplantations among other examples. They do not sidestep the ethical and complex issues surrounding the use of other species for medical purposes. They are also realistic enough to admit that xenotransplantation will almost certainly be only a transitory therapeutic option that is eventually replaced by successful cloning and stem cell research. This is a fascinating book that is well written and provocative in its detailing of xenotransplantation research.

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