“I say that vision occurs when the image of the whole hemisphere of the world that is before the eye is fixed on the reddish white concave surface of the retina. How the image or picture is composed by visual spirits that reside in the retina and the optic nerve, and whether it is made to appear before the soul or the tribunal of the visual faculty by a spirit within the hollows of the brain or whether the visual faculty like a magistrate sent by the soul goes forth from the administrative chamber of the brain into the optic nerve and the retina to meet the image, as though descending to a lower court – this I leave to be disputed by the physicists.” (Johannes Kepler (1604) as translated by Lindberg DC. Al Hazen’s Theory of vision and its reception in the West. Isis 1967; 58:321–41)

Scientists at the Virginia Polytechnic Institute have combined tiny particles of cobalt or magnetite with a silicone based fluid that has magnetic properties and can be injected into the eye. By using a magnetic band placed around the eye the magnetic nature of the fluid could assist in maintaining retinal reattachment. Thus far, the material has only been tested in glass eyeballs and is just now undergoing in vitro toxicity testing. The scientists, however, insist that animal studies should begin within a year. (Scientific American 2002;286:29)

Combinedafatin-A4 (CA-4) is an anti-vascular tubulin binding agent currently undergoing clinical investigation for the treatment of solid tumours. CA-4 is not tumour specific but elicits antivascular effects in non-neoplastic angiogenic vessels. Investigators at the University of Cambridge have utilised a mouse model to demonstrate that CA-4 inhibits retinal neovascularisation in vivo. Moreover, histological and immunohistochemical analysis indicated that CA-4 permits the development of normal retinal vascularisation while inhibiting aberrant neovascularisation. (American Journal of Pathology 2002;160:1097–103)

In 1996 the American Academy of Ophthalmology initiated a national eye care outcome study. The AAO’s outcomes initiative began with the design and launch of a prospective observational registry of patients undergoing cataract surgery. Between 1 January 1996 and 30 March 2002 a total of 249 ophthalmologists submitted data on 17 876 patients who underwent cataract surgery; 93% of patients achieved a best corrective visual acuity of 20/40 or better. It is unfortunate therefore to report that the National Eye Care Outcomes Network sponsored by the academy was discontinued at the end of March 2001 because of lack of participation and demand by its own members as well as third parties. (Joint Commission Journal on Quality Improvement 2002;28:108–14)

Although transplant technology has improved greatly over the past several decades most recipients of organ transplantation face a lifelong course of immunosuppressive therapy. Now investigators at Stanford University Medical Center have reported the results of four patients who underwent kidney transplantation 12–18 months ago. These patients received immunosuppressive drugs to prevent organ rejection immediately after surgery. However, they then received multiple small doses of radiation targeted to the immune system combined with a drug to reduce the number of cells capable of an immune attack. They then received blood stem cells from the kidney donor. This therapy apparently led to the patient’s immune cells recognising the donated kidney as their own. As a result all four patients were weaned off immunosuppressive drugs and remain so at the present time. (JAMA 2002;287:2645)

Although surgical replacement of hip joints have proved to be very effective over the long term surgical correction of osteoarthritis of the knee has proved somewhat more difficult. A search for appropriate medical therapy to relieve the pain associated with osteoarthritis of the knee has therefore been undertaken. One such drug is hyaluronate sodium (a drug well known to ophthalmologists), which can be safely injected into the knee joint in patients with osteoarthritis. Now a randomised double blind clinical trial conducted in London, Ontario, reports that for resting pain relief, hyaluronate sodium seems to be as effective as non-steroidal anti-inflammatories. Furthermore, for pain with physical activity and increased functional performance hyaluronate sodium may be superior to placebo alone or to non-steroidal anti-inflammatories alone. Long term studies are under way. (Archives of Internal Medicine 2002;162:292–8)

The rapid rise and risk of developing malignant melanoma continues in many developed nations. It is estimated in 1930 that an American’s lifetime risk of developing an invasive malignant melanoma was one in 1500. It is now estimated that the risk for Americans is one in 68. Malignant melanomas appear to most frequently affect people with a fair complexion who have three or more blistering sunburns and or lengthy outdoor exposure before age 20, plus intermittent sun exposure later in life. Minimising sun exposure by wearing protective clothing and routine use of sunscreens can lower the risk of malignant melanoma. Some of the increased risk of malignant melanoma may be due to the longer life expectancy, especially in men. Nevertheless, malignant melanoma remains a major public health hazard in many countries. (JAMA 2002;287:2201)

Various public health pronouncements have insisted on the necessity of 8 hours of sleep in order to maintain excellent health. A study performed at the University of California in San Diego calls this into question. Using the data from the Cancer Prevention Study No 2 of the American Cancer Society, these investigators documented the sleep patterns of the 1.1 million men and women who were participants. Best survival was found among those who slept 7 hours per night. Those who slept 8 hours or more showed an increased mortality risk, as did those who slept 6 hours or less. Somnolence did not seem to be associated with excess mortality although the use of sleeping pills was. (Archives of General Psychiatry 2002;59:131–6)

Some authorities, especially those interested in dietary therapy for chronic diseases, have suggested that type 1 diabetes is associated with increased oxidative stress and/or low levels of antioxidants. In a study from the clinical nutrition research section at the University of Uppsala in Sweden, 38 subjects with type 1 diabetes were studied. Blood and urine samples were obtained and analysed. Total antioxidant capacity in plasma was 16% lower among subjects with type 1 diabetes compared to the control group. However, lipid corrected levels of tocopherol in serum were significantly increased in type 1 diabetic subjects. These results do not support the hypothesis that oxidative stress is essential in type 1 diabetes. (Journal of Internal Medicine 2002;251:69–76)