the central nervous system was predicted by H. E. Webb and C. E. G. Smith[25] and the possible mechanisms explained. There is no reason to suppose that such lesions cannot be caused by any virus which can gain access to the central nervous system (and which need not be capable of causing acute encephalitis). Indeed, there is recent evidence that repeated infections with the same virus may cause subacute and chronic diseases of the central nervous system in experimental animals in which it does not cause acute disease.[26]

Perhaps the most important question is whether live measles vaccine can cause this disease. If it does it is likely to be a rare complication which will become apparent some considerable time after vaccination. It is therefore essential that in future trials of measles vaccination careful and long-term surveillance should be maintained, and the same consideration should apply to any new live vaccine. This risk must not be exaggerated, particularly in areas of the world where measles is a severe and lethal illness,[27] but when the risk can be assessed it must be balanced against the risks of measles itself.[28] Inactivated measles vaccines have already been abandoned because they can aggravate disease due to subsequent natural infection.[29-31]

Benign Sixth-nerve Palsy in Children

An external rectus palsy in a child raises the suspicion of serious neurological disease—raised intracranial pressure, an infiltrating glioma of the pons, and tuberculous meningitis being possibilities. D. L. Knox, D. B. Clark, and F. F. Schuster,[1] however, have drawn attention to the benign sixth-nerve lesions that can occur in children after minor febrile episodes or upper respiratory infections. They report 10 patients aged between 1 and 15 with this condition seen in the course of 13 years at Johns Hopkins Hospital. There was a history of febrile or respiratory illness from 7 to 21 days before the onset of the external rectus palsy in eight of the ten patients. Two of the children had had recent otitis media, and one had scarred ear drums, but in none of them was there pain in the ear or eye when the sixth-nerve palsy appeared. In none of these ten cases were other abnormal neurological signs found ; in six in whom lumbar puncture was done the cerebrospinal fluid was normal, and in five there was a relative lymphocytosis in the peripheral blood. The prognosis was good. Improvement started within three to six weeks and complete recovery had occurred within ten weeks in all except one child, who recovered completely in nine months.

The aetiology of this condition remains uncertain. The authors suggest that it may be comparable to Gradenigo's syndrome,[2] in which otitis media is complicated by an ipsilateral sixth-nerve lesion. C. P. Symonds[3 4] suggested that the cause of the sixth-nerve lesion in this condition was thrombosis in the inferior petrosal sinus. The sixth nerve and the sinus pass from the posterior to the middle fossa through a tightly fitting dural sheath, Dorello's canal, and compression of the nerve could readily occur if the sinus became thrombosed. Function in the nerve would return with organization and canalization of the clot. The alternative explanation for the benign palsies suggested from Johns Hopkins is that the nerve lesion is due to a viral neuritis.

The practical problem remains: how far should investigations be carried out in a child with an isolated external rectus palsy of sudden origin ? If there is a history of a preceding febrile illness and if there are no other abnormal neurological signs, normal *x*-rays of the skull and sinuses, no abnormality in the cerebrospinal fluid, and no response to pharmacological tests for myasthenia gravis, it is reasonable to delay other investigations and keep the child under observation for three to six weeks, when improvement should be starting if he is suffering from this type of " benign sixth-nerve palsy."

Heatstroke

Since John Davy[1] measured the penetration of sunlight through the cranium we have learnt a great deal about heatstroke. Though many uncertainties remain,[2 3] there is now a broad area of agreement about its causation, prevention, and treatment.[4] Heatstroke results from an imbalance between heat gain and heat loss, with a rise in body temperature and subsequent collapse.[5] This imbalance may be due to inadequate mechanisms for heat loss, excessive heat production, and high environmental temperatures—alone or in combination. The mechanism of the collapse, with loss of consciousness, delirium, and convulsions, is uncertain.

Hyperpyrexia causes cellular damage, the severity of which is related to its duration. Death may occur in the acute phase of heatstroke, without recovery of consciousness, or it may occur later, after the body temperature has been restored to normal and consciousness has been temporarily regained. The later deaths are the result of profound cellular damage and haemorrhage into the brain and elsewhere.

This sequence of events makes the principles of the prevention and treatment of heatstroke clear. The occurrence of heatstroke, like that of frostbite,[6] implies that preventive measures have been allowed to break down. Thus excessively hot or humid environments should be avoided, or adequate protection provided,[7] and energy expenditure should be limited. Heat loss from the body should be aided both by the choice of suitable clothing and by prior training of the thermoregulatory mechanism by acclimatization.[8] The subject who is to work in a hot environment should be fit for his job, free from disease, well hydrated, and without an alcoholic hangover.

If by misfortune heatstroke does occur the first aim of treatment is to restore the body temperature to normal as quickly as possible by cooling. Nevertheless, it should be remembered that vasoconstriction or shivering may prevent over-enthusiastic efforts. A most effective and easily available

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method of cooling is sponging the patient with tepid water in a cool, well-ventilated room.[9] Sedation, to lower the metabolic rate and prevent convulsions, has its place,[10] though it should be used cautiously, as severe liver damage may occur in heatstroke. Once the body temperature has been restored to normal treatment should be non-specific, with particular attention to restoring fluid balance, blood-clotting mechanisms, and renal function. The chances of full recovery seem to be governed by the duration of unconsciousness and hyperpyrexia, and recovery may take some weeks.

In the United Kingdom heatstroke is not common. Nevertheless, where the environment is excessively hot, such as in the steel or mining industry, operating theatres, or in situations where energy output is very high,[11] timely advice from a doctor who is aware of the possibilities of heatstroke will avoid the need for treatment.

Arsenic and Cancer

Inorganic arsenic has been used for over 200 years to treat conditions as diverse as anaemia, epilepsy, and skin diseases. Now that more effective drugs are available arsenic has been omitted from the *National Formulary*, and there are virtually no indications for prescribing it.

Though the immediate toxic effects of arsenic have long been recognized, the sinister long-term effects are only just coming to be appreciated. Of these generalized pigmentation is the best known but by no means the most important. It does not always have the well-known rain-drop appearance and may at times involve the mouth and so even more closely mimic Addison's disease. The commonest complication is the development of cutaneous neoplasms, both premalignant and malignant. In a survey of 262 patients treated with arsenic between six and 26 years before[1] the characteristic keratoses of the palms and soles were found in over 40%. These keratoses often show histological evidence of intra-epidermal carcinoma. Other effects of arsenic on the skin include the development of multiple superficial basal cell carcinomas, Bowen's disease (intra-epidermal squamous carcinoma), and invasive squamous and basal cell carcinomas. Patients with these lesions do not necessarily have palmar keratoses or other evidence of arsenic intoxication.[2]

The incidence of lesions depends on the total dose of arsenic taken. If the latter has exceeded 400 ml. of Fowler's solution lesions occur in about half the cases,[1] while a total of as little as 75 ml. is capable of giving rise to keratoses and carcinomas. The interval between starting arsenic medication and the appearance of lesions varies from three to 40 years ; thus many patients develop lesions when they are still young. By the time neoplasms have developed the levels of arsenic in the skin, hair, and nails may have returned to normal, and it is impossible to prevent the development of more lesions by removing residual traces of arsenic by treatment with dimercaprol.

Another even more important long-term effect of arsenic is that it probably gives rise to carcinomas in other organs, such as the lung.[3] The exact frequency of this complication is difficult to establish. Patients with Bowen's disease, especially on covered parts and not necessarily due to arsenic, are known to have an increased incidence of systemic cancer.[4 5] As many as one-third of these patients develop systemic cancer within 10 years of the time of diagnosis. Moreover, even patients with palmar keratoses resembling those due to arsenic but in whom no evidence for such a cause is found are more prone than usual to develop cancer.[6]

It is important that these toxic effects should be familiar not only to the medical but also to the pharmaceutical profession, and M. M. Black has recently reviewed the subject in the *Pharmaceutical Journal*.[7] He points out that arsenic is still being given not only in conventional doses as Fowler's solution for conditions such as psoriasis and dermatitis herpetiformis but also in much smaller, though significant, doses as skin and blood tonics. As it is not yet known whether any dose of arsenic, however small, is safe, such empirical prescribing should be condemned.

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Psychological Factors in Renal Transplantation

It is never easy for a patient with chronic renal failure to accept the fact that he must undergo regular haemodialysis if he is to stay alive. Once he does understand this, however, he is likely to develop anxiety and depression, while hostile, overdependent, or child-like behaviour may also occur. It is important that the staff of the renal unit should understand these reactions, and their task is easier the more they know about the patient, his relationship with his family, his finances, and his general security. Not only does the patient himself need sympathetic handling but his family may also need support and help. Patients most likely to make a good adjustment are of good intelligence and reasonably stable personality who receive strong support from their families.

Psychiatric assessment may also be helpful in advising which patient can adjust to long-term haemodialysis and which one should be considered for early renal transplantation. Moreover, W. A. Cramond and his colleagues[1 2] have recently suggested that the psychiatrist also has an important role in the selection of potential renal donors. Because the operation is more likely to be successful if the donor is a relative, complex relationships between the donor, the recipient, and the relatives are likely to occur. For example, Cramond and his colleagues found that the families of patients with chronic renal disease often preselected a donor from their midst. Those donors who openly refused risked rejection by their families. At least one young man put into such a position escaped operation, with his family honour preserved, by approaching one of the members of the medical team confidentially.

The implications of failure of the graft also have to be considered. Cramond and his colleagues rejected the brother of one of their patients as a donor because the relationship was coloured by hostility and resentment. They felt that,

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