Environmental Physiology

DO CLIMBS TO EXTREME ALTITUDE CAUSE BRAIN DAMAGE?

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The history of mountaineering, like so many other human activities, is one of continual attempts to better the achievements of others. The primary goal used to be to conquer the world's highest peaks. Now this has been done, climbers set themselves new objectives. They want to reach the summits without oxygen, during the winter, by the most difficult routes, or unroped.

The past few years have seen a fashion for climbing without supplementary oxygen. Reinhold Messner has so far conquered all but two of the fourteen 8000 m (26 200 feet) peaks in the world without supplementary oxygen. Other climbers have made winter attempts to reach the summit of Mount Everest without oxygen. Apart from the obvious disadvantages of cold and violent weather, winter poses substantial additional hypoxic stress because of the lower barometric pressure.

Many climbers and doctors have asked whether brain damage occurs under these extremely hypoxic conditions. There are two separate issues. One is whether central nervous system (CNS) function is impaired at high altitudes; all the evidence indicates that it is, though there are few controlled measurements. The other issue is more interesting: does exposure to the extreme hypoxia of these great altitudes cause residual impairment of CNS function? Although this question has been hotly debated, Townes and colleagues' 1984 study strongly supports the occurrence of brain damage, at least for many months after such climbs in some people. Many climbers, and even some of their doctors, have been reluctant to accept these unpalatable conclusions, and it seems important that the medical community should be better informed about these possibilities.

M. MUGHAL AND OTHERS: REFERENCES—continued


### Round the World

**China**

*FAMILY PLANNING*

A new programme which offers further training in management to China's 5000 senior family planning administrators has been developed by the state family planning commission of the People's Republic with financial help from the UN Fund for Population Activities (UNFPA) and the World Health Organisation. A new training college has been established at Nanjing. 130 students are admitted annually for a 2-year residential course; 1500 students follow a 3-year correspondence course administered via 14 satellite training centres; and there are short courses of 1–2 months. UNFPA has contributed over US$2 million in technical guidance to the programme. WHO has recruited a series of consultants as guest lecturers to visit Nanjing for short periods. In addition, senior administrators and faculty staff of Nanjing have visited training centres overseas.

**India**

ORS: "ESSENTIAL" BUT NOT A DRUG?

CAMPAIGNERS for a rational drug policy in India have pointed out that oral rehydration salts (ORS) find no place among the 9 drugs named by the Government in its essential drugs list. Although ORS should definitely fall in the essential category, a fundamental point is: should ORS be defined as a drug at all? The question before the rational health movement is: should the demand inclusion of ORS as an essential "drug", or should the demand recognition of the fact that ORS is not a drug in the conventional sense and therefore its production should not be hampered by drug policy regulations?

According to LOCOST, a Baroda-based health group promoting rational therapeutics, the fact that ORS is classified as a drug has made it difficult to organise increased production by small units which could ideally take up ORS production. In the experience of this group, there is virtually no state encouragement for production of ORS and many Government health officials are not even aware of ORS. They also point out that ORS production requires a drug-manufacturing licence, which means satisfy such preconditions as a work premises of 800 sq ft and 5 requirements as a dehumidifier and an air conditioner. It has been suggested that if ORS were classified as a food rather than a drug, its production in sufficient quantities and at a low cost would be more feasible. At present the electrolyte packs on the market are brand-name manufactured products by the big firms and highly priced. The packs are also being promoted "thirst-quenchers" for hot days. In fact the Indian edit MIMS (Monthly Index of Medical Specialties) lists the electrolyte products not under "antidiarrhoeals" but in the "nutrition" section with Coated tablets, salt substitutes, and vitamin products. It has been suggested that such preconditions as a work premises of 800 sq ft and 5 requirements as a dehumidifier and an air conditioner.

Even going by this logic, an ORS pack (without any ketchup ingredients) would qualify well as a food rather than as drug. Itself emphasizes that oral rehydration is a vital "non-drug" for diarrhoeal disease. If classifying ORS as food instead would result in cheaper and higher production, the pros and cons of such a move need to be seriously examined.

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J. B. WEST: REFERENCES—continued


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### Taps per 10s

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<td>After expedition</td>
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### Finger tapping and short-term memory tests

Results of finger tapping and short-term memory tests before, immediately after, and 1 year after an expedition to Mount Everest. The data from the American Medical Research Expedition to Everest were collected and analysed by Dr. F. H. Samquist, Dr. B. D. Towers, Dr. T. F. Hornbein, and Dr. R. B. Sctte. The data means and standard errors. P values for comparisons with pre-expedition measurements by Wilcoxon signed-rank tests, from Townes et al.

Not everyone has found postexpedition abnormalities. For example, Clark et al. tested 22 mountaineers before and 16–221 days after Himalayan climbs above 5100 m with a battery of psychological and neuropsychological tests but found no evidence of persistent cerebral dysfunction. Other physicians have also claimed that exposure to high altitude does not cause residual damage, though not on the basis of neuropsychological testing.

### DANGERS OF MOUNTAINEERING

Mountaineering is a dangerous sport, especially in the very high mountains of the Himalayan range and the Andes. For example, there have been over 100 deaths on expeditions to Mount Everest, an average of approximately 2 people per expedition. Most of the deaths have been caused by falls, accidents in the unstable icefall, or exposure following exhaustion.

In the light of these statistics, it could be argued that a small degree of residual brain damage is insignificant. Yet it seems important to point out that the risks exist, particularly since the sport attracts many professional people. Many doctors believe that professional boxing should be discouraged because of the possibility of brain injury. Perhaps the present fashion for climbing to extreme altitudes without supplementary oxygen falls into the same category.

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