being woken from sleep more than twice a month, usually by cramp in the calf muscles.⁴ We studied the incidence of muscle cramp in adults in The Netherlands.

Telephone ownership in The Netherlands is universal. After a pilot study to estimate the incidence of muscle cramp and indicate the extent of the sample, 780 numbers were randomly selected from the telephone directory by a computer (95% confidence interval 17.5% to 22.5% for an estimated frequency of 20%). These numbers were dialled by a single interviewer. Numbers answered by people under 18 years or not Dutch were disregarded and a new randomly drawn telephone number was dialled. Telephone numbers of businesses, shops, institutions, foundations, corporations, societies, and unions were excluded and new numbers were dialled. The interviewer continued to call numbers at different times of the day and week until all could be contacted. When co-operation was refused by a subject, another number was dialled. No record was kept of the refusal rate but we estimated it to be less than 5%. Non-respondents may have been selectively less likely to have symptoms. Thus minimum estimates of incidence were calculated. Interviews were made on weekdays from 0800 hours until 2100 hours, from 12 November until 5 December 1988. In total 240 men and 540 women were interviewed (median age 44 years). Sampling was inherently biased because of an under-representation of the working population, who are mostly not at home during office hours. It probably over-represents women, non-working, ill, and disabled people. Data were therefore corrected for the sex and age distribution of The Netherlands in 1988, though this would not correct for illness and occupation.

Subjects who agreed to fill out a questionnaire and admitted suffering from cramp more often than 20 times in 1988 received a form. An equal number of subjects who agreed to fill out a questionnaire but did not suffer from cramp received a questionnaire as an internal standard. A random sample of subjects who agreed to fill out a questionnaire but suffered from muscle cramp less often than 20 times a year also received a form. The overall response rate for the postal survey was 82% (90 men, 245 women). Seventeen questionnaires were filled out by persons other than the subjects interviewed by telephone, and seven were not filled out correctly. A total of 311 questionnaires were analysed. In the telephone interviews and questionnaire, cramp was defined as a sudden involuntary painful muscle contraction accompanied by hardening of muscle but lasting no longer than 10 minutes. The telephone interviewer excluded other types of muscle or limb pain by repeatedly emphasising this definition. Writer's cramp and other occupational cramps probably represent task-specific dystonias and were excluded from the study.

The incidence calculated from telephone interviews and questionnaires was adjusted for age and sex distribution (I_{int}). Sensitivity and specificity of data collection by telephone interview were 86% and 71% respectively, compared with data collection from the questionnaires. The real incidence of muscle cramp in the general population (I_{real}) was computed from equations, $I_{int} = I_{real} \times \text{sensitivity} + (1 - I_{real}) \times (1 - \text{specificity})$
 $I_{real} = (I_{int} - 0.29)/0.57$.

The table shows the real incidence of muscle cramp calculated from the telephone interview study.

Reported incidence of at least one muscle cramp in Dutch adults in 1988

	Men	Women
18-39 years	26%	48%
40-59 years	31%	32%
≥60 years	26%	52%
Total	28%	44%

Muscle cramp is difficult to diagnose in a community survey. The criteria we used, however, were fairly stringent.¹ The proportion of the adult population of The Netherlands that had at least a single muscle cramp in 1988 was estimated at 36%. This high incidence agrees with empirical data from previous studies.³ Occurrence of cramp may thus be considered as nothing unusual in otherwise healthy adults. Age adjusted incidence ratios showed a 3:2 female preponderance, which was not accounted for by pregnancy associated muscle cramp, as women beyond childbearing age were particularly affected (table). Age had little effect on the proportion of the population suffering. Nevertheless, older people suffering from cramp had attacks more often than younger people (data not shown). At any age, muscles in calves (84%) and feet (39%) were most often affected. Men showed a slight tendency for cramp in calves (88% v 78%) and arms and hands (25% v 11%) whereas women more often suffered from cramp in feet and toes (53% v 25%). Wearing high heeled shoes may in part account for this. Pregnancy was the most important risk factor predisposing to muscle cramp (odds ratio 6.3; 95% confidence interval 1.0 to 38.6). Musculoskeletal pain and stiffness also correlated with muscle cramp (2.8; 1.1 to 7.2). Irritation from diseased, overloaded, or overburdened joints, tendons, or muscles may provoke cramp.⁵ Subjects with generalised muscle twitching and fasciculations are prone to developing cramp.⁶ In our survey, however, the correlation between fasciculations and muscle cramp was insignificant (1.6; 0.9 to 2.8).

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BOOK REVIEWS

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Yearbook of Neurology and Neurosurgery 1991. Edited by RD CURRIER AND RM CROMWELL. (Pp 407; Price: £41.00.) 1991. London: Wolfe Publishing Ltd. ISBN 0 8151 2466 X.

This well known annual round-up of neuroscience topics has continued since 1902. An invaluable collection, it retains its customary format, but the style of Currier's comments shows even more informality than before, containing pertinent remarks and many personal chatty asides which considerably enliven the text.

Any attempt to capsule the literature in Neurology and Neurosurgery can be seen as tempting a neurological Armageddon. There are now available many publications of abstracts, advances and trends; the individual reader's preference rests with his assessment of the articles selected, the adequacy of the abstract, and the presentation. Once again the Year Book seems to have forgotten nothing of significance. The skill required to produce such intelligible, readable abstracts and commentaries is self-evident.

The preface records the sad passing of Russell DeJong on August 21, 1990:

"In northern Michigan there was a most unusually beautiful shimmering display of northern lights . . . it was not hard to believe, as probably the Indians did, . . . that there was a message intended, or perhaps a signal of some happening, such as the death of a great chief."

With such touches, it is irresistible.

JMS PEARCE

Neurobehavioural Aspects of Cerebrovascular Disease. Edited by R A BORNSTEIN AND G BROWN. (Pp 367; Price £40.00.) Oxford, Oxford University Press, 1991. ISBN 0 19 505431 8.

As the editors of this multi-author text rightly point out much of the early work on cerebral localisation was based on study of patients with cerebrovascular lesions. The title of this volume might lead one to expect an update on this but, in fact, it covers a much wider field. There is a good section on cerebrovascular pathophysiology, blood flow, metabolism and imaging. There follows an overview of the clinical situation including epidemiology, the relationship with cardiac disease and a summary review of current management.