[5] Kamhi, E, and MacEwen, G D, *Journal of Bone and Joint Surgery*, 1975, **57A**, 651.
[6] Salter, R B, and Bell, M, *Journal of Bone and Joint Surgery*, 1968, **50B**, 436.
[7] Petrie, J G, and Bitenc, I, *Journal of Bone and Joint Surgery*, 1971, **50B**, 54.
[8] Axer, A, *Journal of Bone and Joint Surgery*, 1965, **47B**, 489.
[9] Canale, S T, *et al*, *Journal of Bone and Joint Surgery*, 1972, **54A**, 25.
[10] Lloyd-Roberts, G C, *Annals of the Royal College of Surgeons of England*, 1975, 57, 25.

"Happy death day"

A recent paper by Alderson[1] shows that old people are less likely to die in the months preceding their birthdays than they are in those which follow. Using mortality data for England and Wales in 1972 he found a statistically significant cyclical change in the death rate in both men and women over the age of 74. Below that age, however, there was no apparent relation between death date and birth date.

The lowest mortality rate occurred two months before the month of birth. During the birth month itself deaths were slightly more frequent than expected, and the rate reached a peak a month later. These changes were evident in all the marital groups in both sexes but were more pronounced in men than in women and in married, separated, or divorced than in single or widowed.

Though the findings affected only 1% of the deaths, they confirm the clinical observation that some people seem able to influence the time when they die. One old lady, for example, had a bet with her minister that, contrary to her doctor's prediction, she would survive until Christmas. She won her bet and on Christmas Day demanded payment of the debt; she then died peacefully.

Evidence from research certainly supports the view that psychological factors can play a part in determining the length of survival. Weisman and Worden[2] recently compared patients with cancer who survived for longer than survival statistics would suggest with others whose death occurred sooner than predicted. They found that motivation to survive, as expressed in "rising resentment" as the illness progressed and a positive attitude to treatment, was associated with longer survival. Conversely patients who expressed a wish to die or a ready acceptance of death died sooner than expected. Similarly, several studies[3 4] suggest that patients with coronary thrombosis who are prone to depression or become depressed after an infarction are less likely to survive than those who are not melancholic.

All in all it seems that attitudes of determination and hope prolong life, whereas acceptance of death or attitudes of gloom and despondency shorten it. Hence, perhaps, the increased death rate which has been found after the death of a spouse.[5-7]

A birthday is a social phenomenon whose importance changes with age. In childhood it is regarded with enthusiasm as a sign of increasing maturity and a cause for celebration. In middle life age is no longer a cause for pride and the birthday declines in importance. In old age, however, it again becomes significant: each birthday is an achievement, a source of esteem, evidence that the old man or woman has cheated death for another year. In many cases, therefore, the motivation to stay alive rises during the months preceding the birthday and drops away sharply thereafter. Whether this change in attitude leads to self-neglect or whether other, more subtle psychosomatic influences account for the change in the death rate remains unknown.

Whatever the explanation for these findings, they emphasise the importance of psychosocial factors in the care of the dying. If old people are willing and able to stay alive for the sake of something as trivial as a birthday then it should not be too difficult to help them to find other reasons. An example was set by one patient with an advanced cancer who knew that she had little chance of surviving until her birthday. With the encouragement of one of the doctors in the hospital she held a "death day party"; champagne flowed and a good time was had by all. So successful was this party that the patient decided to stay around for several more. The advantage of a "death day," as she explained, was that, since any day can be our last, any day of life can be a cause for celebration.

[1] Alderson, M, *British Journal of Preventive and Social Medicine*, 1975, **29**, 151.
[2] Weisman, A D, and Worden, J W, *Omega, Journal of Death and Dying*, 1975, **6**, 61.
[3] Bruhn, J G, and Wolf, S, *Journal of Psychosomatic Research*, 1971, **15**, 305.
[4] Lebovits, B Z, *et al*, *Psychosomatic Medicine*, 1967, **29**, 265.
[5] Young, M, Benjamin, B, and Wallis, C, *Lancet*, 1963, **2**, 454.
[6] Parkes, C M, Benjamin, B, and Fitzgerald, R G, *British Medical Journal*, 1969, **1**, 740.
[7] Rees, W D, and Lutkins, S G, *British Medical Journal*, 1967, **4**, 13.

Susceptibility to cholera

No one fully understands why in a population apparently equally exposed to an infecting organism some become infected while others do not nor why some of those infected remain asymptomatic while others have symptoms of varying severity. Strictly speaking, susceptibility to infection refers to infection regardless of symptoms, but here we will also consider the presence or absence of symptoms and their severity.

People living in areas endemic for cholera are less susceptible than those in non-endemic areas, and in endemic areas children are more susceptible than older persons—though infants tend to be relatively immune. This resistance in older persons is related to the level of vibriocidal antibody in the serum, and it is tempting to suggest that swallowing organisms repeatedly maintains a protective level of vibriocidal antibody; the observation that a single dose of vaccine protects older persons whereas two are required for children supports this view. In addition, the higher the titre the more likely is the infection to be asymptomatic. The closer the contact to a patient (household, neighbourhood, community) the more likely is infection. This may be a manifestation of size of ingested dose, since in volunteers the larger the dose the more likely is infection and where symptomatic the shorter the incubation period.

In the 1974 Italian outbreak[1] only a small proportion of those who had eaten presumably infected food developed symptoms; of 70 who did, 24 (34%) had undergone gastric resection, while in 30 others considered fit for investigation 14 had histamine-fast achlorhydria and others were thought to respond subnormally. The incubation period was less than 24 hours in the patients who had had a gastrectomy; 37 hours in those with achlorhydria; and 72 hours in those with normal secretion. Whereas two-thirds of patients with either a gastrectomy or achlorhydria had severe illness, this occurred in less than half of those with normal stomach acid. In volunteers given cholera vibrios by mouth, bicarbonate given simultaneously profoundly affected the results[2]; 44 out of 52 given bicarbonate became infected and 20% of these had severe diarrhoea, whereas only 5 of 19 given no alkali became infected and then only mild diarrhoea ensued. Vibrios survive much longer in the gastric juice of those with achlorhydria than in normal gastric juice.