



**Fig. 3** A group of flagella, two of which are lying parallel to each other, all show longitudinal fractures and hollow cores.  $\times 120,000$ .

the sites along the flagella, where the core is visible, the regular pattern on the surface of the cell wall is sometimes partly destroyed (Fig. 1a and b) indicating that these are regions of fracture. The majority of the flagella which show the cores are fractured in regions in which parts of the wall and cytoplasmic membrane have also been split away (Fig. 2a and b). The fact that the fractured flagella always appear as hollow half-cylinders is evidence that they were originally filled with etchable material. If densely-packed flagellin molecules had been present there would be an equal probability that they would either remain within the fractured regions and be seen protruding from the half-cylinders, or be removed with the half of the flagellum. Complete confirmation of this can be obtained by the study of complementary fracture faces<sup>4</sup>.

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## Alpha Rhythms and Hyperkinesia

In his comment on my report "Alpha Rhythms in the Hyperkinetic Child"<sup>1</sup>, Davidson<sup>2</sup> stated that my data support Lippold's hypothesis<sup>3</sup> that "Oscillation in striate muscle control systems is the source of alpha rhythm". He quoted the work of Mulholland and Evans<sup>4,5</sup> which suggested that presence or absence of alpha rhythms was not determined by the presence or absence of relaxed wakefulness, but by oculomotor function. Many arguments have been presented against such a hypothesis<sup>6-9</sup>, Butler and Glass<sup>10</sup> have presented findings inconsistent in a number of respects with the view of ocular tremor as a generator of alpha rhythm, and suggested that eye movements in their turn may be modulated by alpha rhythms when conscious control of fixation waned or was interrupted by eye closure. Chapman *et al.*<sup>11</sup> repeated the basic experiments of Mulholland and Evans<sup>4,5</sup>, taking care to eliminate effects of

differential visual input, and demonstrated that alpha activity was influenced by visual input and not by eye position.

Contrary to what Davidson states<sup>2</sup>, the article by Darrow *et al.*<sup>12</sup> does present data from a simplistic experiment showing that alpha returns with "automation" or habituation to a stimulus. Dempsey and Morrison's<sup>13</sup> concept of a sub-cortical thalamic pacemaker, Jasper's<sup>14</sup> work describing an intrathalamic pacemaking system, the theory of Andersen and Andersson involving recurrent inhibitory systems in the thalamus and the relation of all these to human alpha rhythms has been reviewed by Andersen and Andersson<sup>15</sup>. Barlow and Estrin<sup>16</sup> have recently presented evidence which suggested that alpha activity represented summated polysynaptic potentials under thalamocortical control.

Habituation of the alpha attenuation response has been studied in hyperkinetic children, and exaggerated initial response to novel stimuli and decreased capacity to disattend to redundant events has been demonstrated<sup>17</sup>. In a study of the alpha average, greater spread of frequency abnormalities and poor spatial organization has also been shown in such children<sup>18</sup>. In a current prospective study I have observed that about 60% of hyperkinetic children do not have well organized alpha rhythms in amounts appropriate for their age. Preliminary observations seem to indicate that with increasing age and decreasing hyperkinesia, alpha activity shows proportionate increase in amount and organization in these children. These observations in addition to the literature cited above lend some support to the contention that alpha rhythm in the human EEG is an index of relaxed wakefulness.

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## Amino-acids in Nectar and their Evolutionary Significance

It has been known since ancient times that nectar, usually secreted from specialized glands within flowers, is utilized by anthophilous (flower-visiting) animals for the energy-providing sugars that it contains. It is usually assumed that protein-making materials will be obtained elsewhere, from