with observations that thiocyanate methods give results between 2 and 3 times the theoretical[6]. We did not establish this proportionality with larger amounts of soya: with these, when destruction of peroxide occurred, there was no corresponding decrease of diene, suggesting that the products of hydroperoxide destruction remain conjugated. A full account of this work will be published elsewhere.

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Reduction of Coenzyme Q by Succinic Acid Dehydrogenase

It has been pointed out to us that our recent communication under this title[1] could be misunderstood as a claim of having first shown the insensitivity to antimycin A of reduction of ubiquinone. The credit of this observation belongs to Drs. A. M. Pumphrey and E. R. Redfearn[2]. The purpose of our communication was to show that this reduction could be obtained with a non-particulate soluble preparation, simpler than those which have mostly been used hitherto.

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PHYSIOLOGY

Functional Interpretation of Cerebellar Histology

The nature of the transformation of patterns of excitation within the cerebellar cortex may be explained by the following argument, based mainly on histological evidence and on some simple physiological assumptions.

For all vertebrates studied the following facts emerge[1–5]: (*a*) The cerebellar cortex is a sheet of grey substance with anisotropic structure. Entirely different histological pictures are obtained in sections cut in frontal and sagittal planes. (*b*) All output fibres arise from one type of neurons (Purkinje cells) the dendritic fields of which are characteristically flattened in the laterolateral direction. (*c*) One set of input fibres (climbing fibres) is connected one-to-one with the set of Purkinje cells. (*d*) Another set of input fibres (mossy fibres) reaches the output (Purkinje) cells via long (about 5–10 mm.), very thin (about 0·2μ), unmyelinated fibres, the so-called

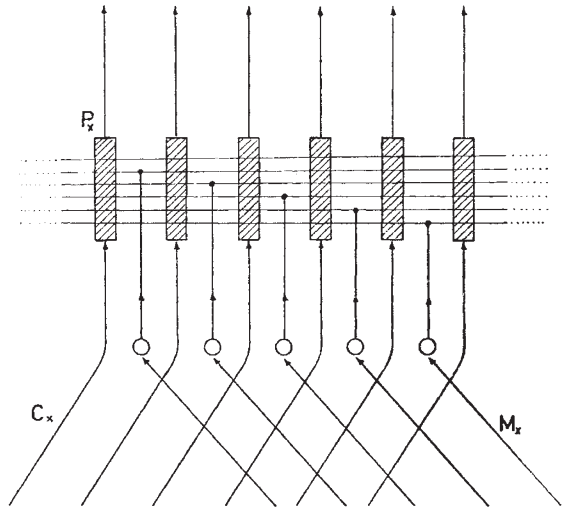

Fig. 1

parallel fibres, oriented exclusively in the laterolateral direction, each making the same kind of histological contacts with a long row of Purkinje cells (about 130 in the human cerebellum). Fig. 1 shows diagrammatically a fragment of such a laterolateral row with incoming and outgoing fibres.

It has been pointed out[5] that the organization of the cerebellar cortex as it appears in sections cut in the frontal plane becomes understandable if interpreted as a specialization for accurate timing of impulses.

Taking into account the well-known relation between diameter of fibres and velocity of conduction, and interpreting the histological connexion of climbing fibres–Purkinje cells as well as that of parallel fibres–Purkinje cells as an indication of synaptic connexions, this histology allows one to predict widely varying delays interposed between the input in one fibre system (the mossy fibres) and the arrival of activity at different laterolateral distances from the point of input, while, on the contrary, the other input system (the climbing fibres) should influence Purkinje cells after a fixed, short time delay.

Direct physiological support for this interpretation is provided in a paper by Calne[6], who found, in the frog, for some sites of stimulation a fixed delay between stimulus and response in the cerebellar cortex, and for other sites of stimulation delays varying between 20 and 260 msec.

Let $P_x(t)$, $M_x(t)$ and $C_x(t)$ be three sets of functions of time with common indices x. We may interpret them as representing activity in Purkinje cells, mossy fibres and climbing fibres of one laterolateral row, such as those in Fig. 1, with x representing the distance of the elements from an arbitrary origin. For convenience I assume all functions to assume only the values 1 and 0, and consider only integral values of x and t, since these simplifications do not significantly alter our argument. Neglecting the short, fixed synaptic delay between climbing fibres and Purkinje cells, our physiological hypothesis becomes:

$$P_{x_0}(t) = f\left[M_x\left(t - \frac{|x_0 - x|}{v}\right), C_{x_0}(t)\right]$$

where v represents the velocity of conduction in parallel fibres which we suppose to be constant. For