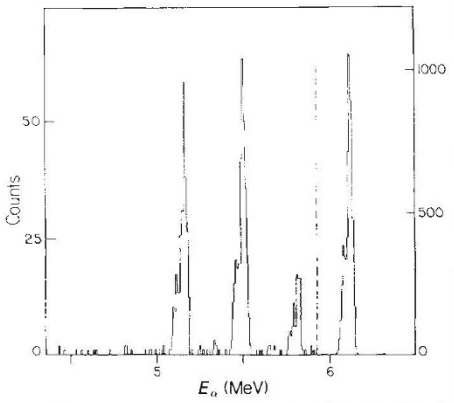

Fig. 2 Energy spectrum of α particles emitted by the hot particle on the Minsk shoe. The spectrum has been taken after dissolving the particle in HCl and precipitating the radionuclides on a stainless steel disk by electroplating.

While our measurements say nothing quantitative about the degree of contamination of the area or the percentage of the core that has been emitted, the presence of at least five hot particles on the trousers from Kiev and the fact that at least one hot particle was collected during a twelve-hour stay in Minsk in August indicate that the situation warrants further investigations.

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Microtubule assembly in the axon

SIR—Solomon's interpretation of our data[2] is possible but, as we have stated, it requires microtubule assembly at the cell body to be resistant to the application of antimitotic agents to an unprecedented degree. It was pointed out many years ago that phemomena involving ongoing microtubule polymerization (such as mitosis and axonal elongation) are extremely sensitive to colchicine and related drugs[3]. Therefore a region that displays a more than 100-fold greater sensitivity to such drugs over other parts of the cell must be considered to be a prime candidate for the assembly process.

Evidence in favour of the widely accepted alternative model of assembly at the cell body is also indirect. Essentially, it depends on the observation that newly synthesized tubulin molecules rapidly enter a form in which they are non-diffusible and not extracted by non-ionic detergents (for example, refs 4, 5). The nature of this form has not, however, been characterized further.

More experiments are certainly needed. We hope that our observations, together with Dr Solomon's cogent comments, will lead to an early resolution of this intriguing question.

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Biochemical basis of cystic fibrosis

SIR—Readers of Maynard Case's *News and Views* article[1] on cystic fibrosis (CF) may be interested in our *in vitro* studies of protein secretion from submandibular tissues in CF.

We have reported[2-4] a markedly decreased stimulation of protein secretion in two CF submandibular glands by the β-adrenergic agonist isoprenaline, and have since confirmed this observation with a third sample[5]. We have also shown[3,4] that in the CF tissues isoprenaline increases cyclic AMP levels to the same extent as in control tissues and that β-adrenergic responsiveness is partially restored by the cyclic nucleotide phosphodiesterase inhibitor, 3-isobutyl-1-methyl-xanthine.

On the basis of these results, we proposed that the CF defect was at an intracellular regulatory site, distal to the generation of cAMP, possibly in cAMP phosphodiesterase activity. In view of observations of defects in calcium homeostasis in various cell types from CF patients[5] and that cAMP phosphodiesterase represents a point of interaction of the cAMP and Ca^{2+} regulatory pathways, we further proposed that the defect may reside in altered function of a Ca^{2+}-dependent regulatory protein, such as calmodulin. To test this hypothesis, we have isolated calmodulin from control and CF submandibular glands and found that control and CF calmodulins run with identical elution time on reversed-phase high pressure liquid chromatography, suggesting that there is no marked structural alteration in CF calmodulin.

In addition calmodulin activation of cAMP phosphodiesterase by crude extracts from CF cells is increased relative to control extracts, suggesting an alteration in a specific modulator of calmodulin function in CF cells. This could affect cAMP-mediated responses which interact with Ca^{2+} but not necessarily other Ca^{2+}-mediated events such as Ca^{2+}-activated K^+ channels in airway epithelia, which have been reported to be normal in CF[7].

The finding of defective β-adrenergic stimulation of Cl^- transport[6,7] and protein secretion[2-5] in affected CF tissues suggests that alteration in a common intracellular mediator or inhibitor protein is more likely to cause this disturbance than an abnormal site on the Cl^- channel itself.

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Silver foils gravitational principles

SIR—Walter Gratzer, in his review of Irving Klotz's book (*Nature* **322**, 781; 1986) quotes some examples of credulity and ignorance among which Klotz writes, it seems, that "From experience with non-science college students, I know that the majority predict that if a silver dollar and a silver dime are simultaneously dropped from the top of the Sears Tower the former will hit the ground first".

But if a silver dollar and a silver dime *are* dropped from the top of the Sears Tower (or from the top of the Leaning Tower of Pisa) the silver dollar *will* hit the ground first, the silver dime will get down second and a disk of silver foil will flutter to the ground a poor third.

College students, whether of science or non-science, may sometimes be right without knowing why and their teachers may sometimes be wrong.

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