stained core (which tapers away into invisibility before the dermo-epidermal junction is reached) and of a blue sheath, which terminally remains visible as a delicate band and carries on to fuse with the blue subepidermal basement membrane.

Thus it appears that the epidermis is attached to the corium by continuity of the dermal elastic plexus with the subepidermal basement membrane, which itself must either be cemented to, or actually incorporate, the cell membrane of the inferior surface of each basal cell.

Finally, as basement membranes stain more strongly with alcian blue if the bleaching procedure is first performed, they may also contain that elastic tissue component which binds alcian blue after oxidation by permanganate. Basement membranes and elastica may form a morphological and chemical continuum analogous in some ways with the reticulin–collagen system.

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Demethylation of Dimethylnitrosamine in Rats and Mice

Dimethylnitrosamine is a powerful liver poison and carcinogen[1,2], the mode of action of which is being studied in these Laboratories. As part of this programme, we have investigated the metabolic products from rats and mice using (^{14}C) dimethylnitrosamine[3].

From both rats and mice the main radioactive product is expired carbon dioxide. Thus 50 mgm. of dimethylnitrosamine/kgm. were injected subcutaneously into a mouse, and 6 hr. after injection 65 per cent of the injected carbon-14 was recovered as expired carbon dioxide. The carbon-14 recovered as carbon dioxide from rats injected at the same dose-rate is shown in Table 1. About 40 per cent is recovered in the first 8 hr., after which only trivial amounts are expired. The remainder of the carbon-14 appears to be fairly evenly distributed in the tissues at the end of the experiment, except for some 7 per cent which appears in the urine.

Table 1. Percentage of Total Carbon-14 injected into Rats recovered as Expired Carbon Dioxide

Time (hr.)	0·5	1	2	4	8	12	24
Per cent recovered	1·1	4·1	11·3	29	41	42	45
	0·9	3·3	10·5	21	37	42	44·4

These results indicate that dimethylnitrosamine is demethylated, presumably via formaldehyde, which would explain the expiration of much of the carbon-14 and the very general distribution of the remainder. The metabolism is thus closely analogous to that of the several N-methyl substituted aminoazobenzenes studied by Miller *et al.*[4].

The rapidity with which dimethylnitrosamine is metabolized makes it necessary to consider the possibility that the biochemical lesion is produced by a metabolite, and not by dimethylnitrosamine itself. The first signs of histological damage[1] to the liver have been observed only at a time when the degradation of dimethylnitrosamine is practically complete, which is not inconsistent with such a hypothesis.

It is hoped to publish this work more fully elsewhere.

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Active Secretion of Sodium Ions from Isolated Sodium-rich Skeletal Muscle

The isolated sartorius of the frog, when immersed in Ringer fluid with normal potassium content, loses potassium and gains sodium rather rapidly at room temperature[1]. This also occurs at 0° C., but at a slower rate, the gain of sodium being greater when potassium-free Ringer is used[2]. When this potassium-free Ringer fluid has the same average inorganic composition as frog plasma[1] with a sodium content of 104 mM, the change in muscle sodium overnight is from its normal content of 24 m.equiv./kgm. to 47 m.equiv./kgm. (the average change in weight being only −1·2 per cent). If companion muscles are similarly treated and then immersed at room temperature for 2 hr. in similar fluid containing 10 m.equiv. potassium / litre, but the same concentration of sodium, there is no appreciable excretion of sodium. Steinbach's conclusions[3] to the contrary have been shown to depend very largely, if not altogether, on a faulty statistical procedure.

Similarly, if the potassium-free fluid contains 120 m.equiv. sodium/litre and the re-immersion fluid has the same sodium concentration but 10 m.equiv. potassium/litre, there is no net excretion after two hours[4].

Confirming the observations of Desmedt[5], on the other hand, we found that if the potassium-free Ringer fluid contained 120 m.equiv. sodium/litre and the companion muscles are re-immersed in fluid containing 104 m.equiv. sodium/litre with 10 m.equiv. potassium/litre, there is a marked excretion of sodium, far beyond what could be explained simply by passive diffusion from interspace fluid or injured fibres.

The magnitude of the changes are shown in the accompanying diagram (Fig. 1, *A*, *B* and *C*). The heights of the columns express the average sodium content of the fibre water. In calculating this concentration, an effective interspace volume of 0·13 litre per kilogram muscle is assumed[1]; also an additional 8 m.equiv. of sodium is considered as held in some external fibre region[4]. The total sodium external to the fibre water and represented as m.equiv./kgm. muscle is thus approximately 20 per cent of the external sodium concentration. (For the relative changes described here it makes no essential difference whether the above procedure is adopted or whether one regards the total sodium minus the interspace sodium as existing in the fibre water.)

The number of experiments and muscles used in Fig. 1 is as follows: *A* (120/120) 12 experiments,