Prof. D'Ancona's objections are mainly due to misunderstanding and are met by my original paper[1], where not directly by a necessarily condensed text, implicitly through the literature cited.

(1) His divergent assessment of the silver eel depends upon his experience being confined to eels in the early stages of transformation. Schnakenbeck[2] and Berndt[3] have described autolysis and phagocytosis of the gut tissue by tissue, while Bertin[4] concludes his readily available (and illustrated) summary of their work by remarking: "Such, broadly, is the state of dilapidation to which the digestive tubes of the silver eel are reduced".

The occlusion of the vent reported by Schnakenbeck[2] in a North Sea specimen was not represented as other than a unique observation. But the condition of this eel, with its normal genital papilla, has been accepted as a typical and non-pathological continuation of a process the later stages of which are generally concealed from our study and is to be taken as representing the state attained in European continental waters by eels which survive thus far.

My remarks concerning regression of the gonad were intended to refer to cytological, physiological and metabolic phenomena rather than to gross morphology.

The whole point of my comparative discussion of the American and European migratory eels was that the advanced modifications of the European eel appear to be ill-adapted to the time-table of a presumed return journey. We may indeed know that a motorist is in the best of health but, as we watch him driving down a mountain road, intoxicated and without brakes, we can still legitimately say that his celebration was premature and that he is unlikely to reach his destination.

(2) Here I must ask Prof. D'Ancona to re-read my original paper. I did, in fact, suggest that the temperature conditions over the spawning-area of the eels admitted of the possibility of environmental determination of the somite-numbers; the suggestion stands as a hypothesis, not as an alleged fact or dogma, and its further treatment appears to be a matter for observation and experiment rather than for mere expressions of opinion. Prof. D'Ancona's remark about the "gradual variation . . . of only 4 deg. C." confirms my belief that he has not appreciated the four-dimensional nature of my argument.

I cannot agree that my interpretation requires the admission of many new hypotheses. It requires, admittedly, that a great deal of evidence which we have been accustomed to viewing in one familiar pattern must now be re-arranged into a drastically new one. But, as I showed in a comparison of Schmidt's ideas and my own, I make only one unfounded assumption: that the eel somite-numbers may be affected by temperature in the same way as those of numerous other fishes. The basic idea, once grasped, is so simple that anticipation was a constant fear while the paper was in preparation. Whether it is ingenious, or merely ingenuous, must, in the absence of any more convincing citation of available evidence, be a matter now for research rather than for philosophical speculation.

Two further points may be mentioned which have recently come to hand. First, Carlisle and Denton[5] have shown that in the metamorphosis of the visual pigments, as in several other characters already discussed[1], the European silver eel is more advanced than the American eel. Secondly, Dr. Winifred E. Frost has kindly brought to my attention a paper[6] on the age and length of the American eel.

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Number of Fibres in the Optic Nerve and the Number of Ganglion Cells in the Retina of Anurans

Using a light microscope, Bruesh and Arey[1] found that there were about 15,300 myelinated and 13,700 unmyelinated fibres in the optic nerve of the frog (*Rana pipiens*), and about 10,200 myelinated and 5,500 unmyelinated fibres in the optic nerve of the toad (*Bufo americanus*). However, in my electron microscope study of the optic nerve of these and other Anurans (*Rana catesbeiana*, *Bufo terrestris* and *Hyla cinerea*) I have found[2] that the unmedullated axons are in a considerably larger number, having been underestimated by a factor of 30 or more, and that most of them could not have been resolved with the light microscope. My observations, though, do not greatly contradict the earlier numbers of myelinated fibres, for these can be counted with reasonable accuracy after myelin stain. In the present communication I only wish to report about the general arrangement of the unmyelinated axons and their number. The full description of the fine anatomy of the optic nerve is deferred to an extensive article now in preparation.

Optic nerves were fixed in buffered (*p*H 7·4) osmium tetroxide and embedded in methacrylate. In all species studied, the unmyelinated axons are 0·15–0·6μ in diameter, and under the electron microscope appear in bundles of many closely packed axons, surrounded by glial cell expansions and myelinated fibres (Fig. 1). No glial cell intrudes between the unmyelinated axons of a bundle, and they remain separated from each other only by a gap of extracellular space 100–200 A. wide; a similar gap separates the unmyelinated axons from the surrounding glia or adjacent myelinated fibres. This space is continuous with that between the glial membranes which form mesaxons. Due to such close packing, the unmyelinated fibres cannot be adequately resolved with the light microscope, for while most of the unmedullated axons are within the limits of resolution of this instrument, the distances which separate them are very much less.

Both under light and electron microscopy, myelinated and unmyelinated fibres appear (in the gross) uniformly distributed across the nerve, with no sign of regional differences in density of one or the other. In these circumstances the number of unmyelinated axons can be calculated by multiplying the ratio of unmyelinated to myelinated fibres by the number of medullated axons counted in myelin-stained material. Random sampling in a cross-section of a nerve gave a ratio of 31/1 (*S.E.* = 3) unmyelinated to myelinated axons in the frog (*Rana pipiens*). The different field samples varied between ratios of 21/1 and 57/1; a total of about 4,000 fibres were thus counted in fifteen fields. A similar procedure gave a ratio of