abolishes that of most other cells. Incubation in ribonuclease has no effect on the staining of erythrocyte nuclei.

The demonstration that physical factors may in some circumstances determine differential staining by binary dye mixtures of the methyl green/pyronin type does not of course mean that chemical factors are never important. It does mean that staining results must be interpreted with caution, and that purely chemical explanations may be insufficient.

D. J. GOLDSTEIN

Department of Anatomy,
University of the Witwatersrand,
Medical School,
Hospital Street,
Johannesburg.

Multiple Medullæ in Wool Fibres

A SAMPLE of Lincoln wool grown near Hamilton in the Western District of Victoria, Australia, has been found to contain a small percentage of the fibres with two medullæ and even, in rare cases, with a few fragments of a third one. They varied from almost continuous to fragmental, frequently one being more broken than the other. The contents were of an irregular fine lattice structure.

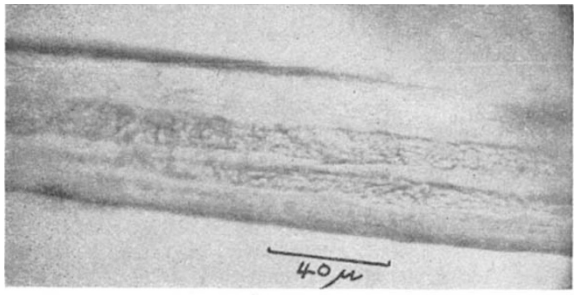
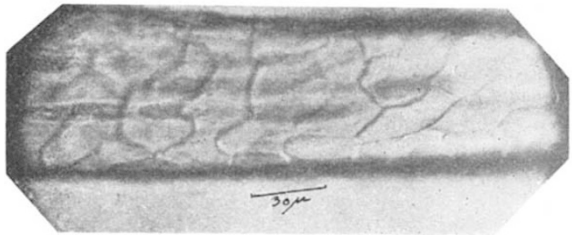


Fig. 1



A search of the literature has disclosed no previous reports of this feature except the one fibre mentioned by Brown and Onions[1].

Fig. 1 shows a typical portion of the two medullæ, one more frequently interrupted than the other. Photographing of a part containing fragments of three medullæ is more difficult since they each require a different focus. Fig. 2 is such an attempt, the middle one being out of focus all the way.

G. JONES

Textile College,
Gordon Institute of Technology,
Geelong, Australia.

[1] Brown, T. D., and Onions, W. J., *Nature*, **186**, 93 (1960).

Hæmoglobin Pattern and Chromosome Number of American, European, and Japanese eels (*Anguilla*)

ACCORDING to Schmidt[1] the Atlantic representatives of the genus *Anguilla* constitute two separate species, namely, the American eel, *A. rostrata* (Le Sueur), and the European eel, *A. anguilla* (Linnaeus), both of which migrate to a spawning area in the Sargasso Sea.

A radically different theory of taxonomy, and migration of Atlantic eels has been proposed recently by Tucker[2]. He assumes that the eels occurring on the two sides of the Atlantic Ocean belong to one and the same population, of which, however, only the American eels succeed in returning to the spawning ground. Those differences which actually exist between eels from the two areas, that is, the duration of the larval period and the number of vertebræ, are considered by Tucker as non-genetic and due to a temperature gradient within the breeding area. This gradient together with special current conditions is assumed to sort out one genetically homogeneous population into two phenotypically different groups.

A demonstration of genetic differences between eels of the two groups would obviously be incompatible with Tucker's hypothesis. Since no breeding experiments are yet possible with eels, the establishment of genetic differences must be based on the examination of characters which by analogy to other species can be presumed to be uninfluenced by environmental variation. This line of reasoning has led us to study the hæmoglobin electrophoretic pattern and the chromosome number of American and European eels. In addition, the Japanese eel, *A. japonica* Temminck and Schlegel, was included in the investigations for comparison.

Using a modified agar-gel electrophoresis technique recently described by one of us[3] the hæmoglobin patterns obtained in samples of American, European, and Japanese eels have been compared. The samples comprised 40 European eels from Danish waters, 40 American eels collected at the North American east coast, and 5 eels from Japan. The European eels varied in size from approximately 25 cm. to more than 1 m. and the others all fell within this range.

Each group proved to be monomorphic as to their hæmoglobin pattern. The pattern of the American eels could not be distinguished from that of the European ones, whereas the Japanese eels showed a different pattern (Fig. 1).

Chromosomes were counted in all three samples, using *in vivo* treatment with colchicine according to Fechheimer[4], followed by Feulgen staining of the corneal epithelium. The chromosome number of $2n = 38$ was established in all three groups. A previous count of the European eel by Rodolico[5] gave $2n = 36–38$. No intergroup differences with respect to size or shape of the chromosomes were detected.

Thus our two attempts to find genetical or cytological differences between American and European eels have failed. Whereas the establishment of such differences would have been fatal to Tucker's hypothesis, these negative results are fully compatible with both theories and consequently do not settle the argument.

We want to point out the possibilities and limitations of this line of approach to the Atlantic eel problem. If American and European eels can be shown to be genetically different, in a way that cannot be due to different selective forces acting on the two groups, then Schmidt's theory has to be accepted