THE APPLICATION OF JORES' METHOD OF PRESERVING TISSUES IN THEIR NATURAL COLOURS TO NATURAL HISTORY SPECIMENS

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Jores' method of preserving tissues in their natural colours consists in placing the specimen in the following fixing solution :

Sodium chloride . . .	1·0
Magnesium sulphate . .	2·0
Sodium sulphate . . .	2·0
Distilled water . . .	100·0
Formalin	·5 to 10 parts

In this solution the specimens are left for a time, depending on their size, the larger the specimen the longer being the time. In this solution the colour gradually becomes grayish, but on transferring the specimen to methylated spirit for from one to six hours the original colour returns, and the specimens are then put into a mixture of equal parts of glycerin and water, in which they are preserved. At no time during the course of the preparation are the specimens washed in water. Plenty of the fixing solution should be used.

Some seven or eight years ago it occurred to one of us (P. H. R.) to try whether the ordinary methods of preserving pathological specimens in their natural colours could not be applied to natural history specimens. A large brilliantly coloured praying mantis was prepared according to the method of Jores ('Centralblatt f. path. Anat.' Bd. VII. 1896, S. 134), and sent to the British Museum. Judging by the description of the colours on arrival at the British Museum, the method was entirely successful, so far as concerned the preservation of the colour.

Objections are raised against the use of formalin for natural history specimens, on the grounds (1) that the specimens become too stiff for examination ; (2) that though the colour may be retained, the markings are lost ; (3) that the specimens finally perish in formalin.

This may be true for specimens that are kept altogether in formalin, but does not appear to apply to specimens preserved by Jores' method. Some months ago specimens of *Tilapia mozambica,* brought by Mr. Graham from Lake Magadi, were preserved, some by this method and some in alcohol. At the present time the Jores' specimens are as fresh as when received, their markings and colour being as clear as ever, while the alcohol specimens have lost all their freshness and most of their colour.

More recently one of us (A. B. P.) collected a large number of specimens from the Northern Uaso Nyiro and district, some in alcohol, some in a mixture of salt solution and 5% formalin, the proper mixture of salts not being obtainable at the time. In these solutions the specimens remained for up to four months, and, on return to Nairobi, the formalin specimens were put through the spirit into glycerin and water (equal parts). All specimens appear as fresh as when caught, and such specimens, as fish, are no stiffer than when landed. The spirit specimens, on the other hand, have most obviously deteriorated in colour, even in these few months.

The final value of the method can only be told when sufficient time has elapsed for us to see the degree of permanence of the colour, but the marked superiority of the formalin over the spirit specimens after a few months is most marked, and the convenience of the Jores' method can only be appreciated by one who has tried carrying round quantities of spirit in a hot country, where transport is a constant difficulty and every pound has to be considered. The salts can be carried dry, the formalin in its usual form as 40% formaldehyde. Distilled water does not appear to be essential since the last specimens collected do not appear to have suffered from the salts and formalin having been mixed with whatever happened to be the drinking water of the place where the specimens were collected.

Naturalists, who intend making collections of fish, are strongly recommended to give this method of preservation a trial, as the results are most satisfactory.