It was because of the apparent unreliability of the glycogen method that the more recent index procedure was put into use.

Ingle objected to the index method because his graph, in which he plotted index values against percent of glycogen, did not indicate a uniform relationship. The figure clearly proves his point, and in doing so should suggest the obvious conclusion that there is no reason for expecting the two methods to give comparable results. It would be very surprising should they do so, in which case the need for the index method would not have arisen.

In applying this method, calculations are also made of the ratio of meats undrained and drained to the volume of the shell cavity. However, it has been found consistently that, because of osmotic effects from changes in salinity, the condition of an oyster, or of a group of oysters, as usually employed, may well be expressed by the equation referred to by Ingle, namely,

$$\text{Index} = \frac{100 \times \text{Dry weight (g)}}{\text{Volume shell cavity (cc)}}$$

The index method was specifically designed to give a picture, not of the glycogen cycle throughout the year, but of the actual quality of meat when reduced to a dry basis, in order to eliminate errors due to osmotic effects, maturation of gonads, and spawning.

In further support of this point it is of interest to mention the following figures on analyses of oyster meats (Chatfield, C., and Adams, G. *U. S. Dept. Agr. Circular No. 549*, 1940): "protein, 9.8%; fat, 2.0%; carbohydrate (glycogen), 5.9%." These figures definitely refer to drained oysters during the winter season as used commercially, but they indicate that glycogen constitutes only about one-third of the tissue substance. The method of glycogen analysis ignores proteins completely, though they are nearly double the glycogen; while the index method measures the entire amount of meat.

A. E. HOPKINS

*Biloxi Oyster Laboratory, Biloxi, Mississippi*

## Effect of Dioxane and Sodium Hydroxide upon Lens Capsule and Cortex (*Squalus* sp.)

The use of these chemicals in conjunction with the study of the lens may complement certain laboratory activities in physiology and comparative anatomy. To demonstrate specific peculiarities of the lens the following procedures can be followed during the regularly scheduled laboratory periods without interrupting the prescribed requirements.

A certified grade of dioxane should be used for optimum clearing of the lens structures. Appreciably fine results may be obtained from salvaged dioxane, if it is dehydrated with CaO and filtered before using. Dioxane and water are miscible in all proportions, but a more uniform infiltration occurs if the lenses are suspended in the medium rather than allowed to rest on the base of the vial. This caution should be observed if reclaimed dioxane is used.

The type of lens utilized in these procedures may be obtained from the commercially preserved dogfish. The lens must be carefully removed from the eye to avoid injuring the lens capsule. It is then immersed in the dioxane for 10 min, removed, and air-dried.

A lens so treated will appear as a clear, pale amber, uniformly homogenous structure. In this condition it is impossible to distinguish the capsular, cortical, or nuclear components because of their uniform transparency. Very faint striations and suture lines may, however, be observed on the surface of the capsule with the aid of a hand lens. This preparation, because of its clarity, serves most efficiently for the demonstration of the refracting and focusing powers peculiar to lenses.

If the capsule is mechanically scratched or broken, and the specimen again immersed in dioxane for 25 min, white opacities, comparable to cataracts, appear upon the cortical surface. Excessive exposure to dioxane will render the entire specimen white.

Further observations pertaining to the cortex may be facilitated by the use of 20% NaOH solution. The lens should be placed in the alkali for 15 min, then washed and dried. This treatment will clearly reveal the capsular suture lines.

If the alkaline-treated lens is observed before drying, the lamellated character of the slightly swollen cortex is readily seen; and it may easily be peeled. The removal of the cortical strata will expose the nucleus, which is a transparent, amber, homogenous unit, free of striations and lamellations.

By holding the moist lens against the light before removing the cortex, the shiny nucleus may be seen almost centrally located within the gelatinous cortical envelope.

Prolonged exposure of the lens to the alkali, 24 hr, will cause a gross swelling of the cortex and of the nucleus, and a change from the clear state to a uniformly hazy condition.

This procedure provides a means of more completely utilizing the lens when the structure of the eye is studied in comparative anatomy; and a means, also, of demonstrating the refractive powers, cataracts, and other lens characteristics in physiological applications.

*D'Youville College, Buffalo, New York*

D. S. PO-CHEDLEY