deltaic category, without any intent to mislead, foresets exposed for only a few feet vertically and overlain by current-bedded deposits, in some exposures reaching a considerable thickness, such as are illustrated in Pirsson and Schuchert's "Textbook of Geology," Part I, Fig. 95. 1929 Edition. It is true, however, that current-bedding predominates in a majority of the exposures. The writer has roughly estimated at 25 per cent. the proportion of exposures showing undoubted deltaic structure, whereas Professor Johnson would make the figure much lower.

As far as the lake- or stream-origin of a considerable part of the material composing the terraces in the Connecticut and Quinnipiac valleys is concerned, the presence of varved clays and silts in quantity beneath the sands in the lower terraces seems clearly to indicate lacustrine deposition. In at least two excellent exposures the clays grade upward through varved silts into sands, which in turn exhibit delicate current-bedding. A detailed and specific study of the relation of clays to sands throughout the valley might bring to light important additional data.

The facts indicated by Professor Johnson involve significant reinterpretations in the conclusions reached earlier by the writer, but they do not appear to the writer to preclude the belief that the lower terraces like those at higher elevations were formed while remnants of the last ice sheet still lay in the valley. The discrimination of topographic features whose relief is scarcely perceptible or imperceptible to the eye is admittedly a difficult matter and it is to be hoped that further study may establish more clearly the details of the late-glacial history of the Connecticut Valley.

RICHARD FOSTER FLINT
YALE UNIVERSITY

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A MODIFICATION OF THE OSBORNE-MENDEL SALT MIXTURE

NUTRITION workers who have used the Osborne-Mendel salt mixture[1] in the preparation of experimental diets for rats will agree that this is a bothersome mixture to prepare. Not only must great care be exercised in the addition of the strong acids to the carbonate mixture, but a slow evaporation process is necessary. The removal of the hard mass of dehydrated salts and subsequent grinding present further difficulties.

The authors have developed a salt mixture which, in so far as the metallic elements and mineral acids are concerned, is of the same composition as that of Osborne and Mendel. The mixture is prepared from readily available salts, and requires no evaporation or dehydration. Its content of water of crystallization is slightly higher than that of the Osborne-Mendel mixture. The latter, when prepared according to the original directions (in the proportions required for 10 kilograms of diet), yields about 435 gm. of dried mixture, whereas the equivalent weight of F. R. L. mixture here described is 480.5 gm. Hence in experimental diets prescribing 4.0 per cent. of the Osborne-Mendel salt mixture, 4.4 (or 4.5) per cent. of the F. R. L. salt mixture may be substituted.

Protracted feeding experiments in which the two salt mixtures were fed to divided litters of albino rats, both consecutively and in parallel, showed no differences in growth response.

The composition of the F. R. L. salt mixture is as follows:

Ca Citrate · 4 H_2O		309.67
Ca $(H_2PO_4)_2 \cdot H_2O$		113.25
K_2HPO_4		219.72
KCl		125.29
NaCl		77.41
$CaCO_3$		68.90
$MgCO_3$		33.43
$MgSO_4$ (anhydrous)		38.50
Fe Citrate $1\frac{1}{2}$ H_2O	94.18	
NaF	3.68	
$MnSO_4$	1.17	
$K_2Al_2(SO_4)_4 \cdot 24\ H_2O$	0.67	13.80
KI	0.30	
	100.00	
		1,000.00

The weighed quantities of salts are thoroughly mixed (a McClellan batch mixer is recommended), and then finely ground in a steel mill.

PHILIP B. HAWK
BERNARD L. OSER
FOOD RESEARCH LABORATORIES, INC.,
NEW YORK CITY

A STAIN FOR FIBRIN, GRAM POSITIVE BACTERIA AND BASAL BODIES IN TISSUES

THIS stain is a modification of the Weigert and Gram-Weigert methods for fibrin and gram positive bacteria, respectively.

Tissues are fixed in Zenker's solution (with 5 per cent. acetic acid) or Zenker-formalin (90 cc Zenker's plus 10 cc of 10 per cent. formalin); they are mounted in paraffin and sectioned at 5 μ. After a very light hematoxylin stain they are thoroughly washed in tap

[1] Osborne and Mendel, *J. Biol. Chem.*, 15, 311, 1913; 37, 557, 1919.

water, then dipped into a one half per cent. aqueous eosin (Grubler's *wasserlich*) for a half a minute and washed quickly again. (Washing is done in large volumes of water.) They are then stained in Weigert's aniline methyl violet made up as follows:

SOLUTION 1

Absolute alcohol	33 cc
Aniline oil	9 cc
Methyl violet in excess	

SOLUTION 2

Sat. aqueous solution of methyl violet
(For methyl violet use Grubler's 6B only)

One part of Solution 1 is used to nine parts of Solution 2 for the stain. The two solutions will keep separately, but after mixing, the stain will only last about ten days. It seems to be best about three to eight days after making.

The tissues are stained in the methyl violet about two hours, washed well in tap water and put into Lugol's solution for ten or fifteen minutes, after which they are again washed. Each slide is then blotted thoroughly with filter-paper and subsequently differentiated in a mixture of one part aniline oil to two parts xylol. After washing in several changes of xylol they are mounted in balsam.

The fibrin and gram positive organisms as well as ciliary basal bodies are stained a deep purple; the dark blue nuclei are well differentiated. All outlines of cells can be seen distinctly due to the counter-stain. Blood corpuscles are generally of a pale blue color, though at times they remain pink.

This method has been used particularly in the study of fibrin and of pneumococci (though other gram positive organisms have been stained as successfully) and has proved of special value in the determination of intracellular bacteria.

HELENE MYNCHENBERG WALLACE
DEPARTMENT OF MEDICINE,
UNIVERSITY OF CHICAGO

SPECIAL ARTICLES

AN OVO-TESTIS IN THE YELLOW PERCH (PERCA FLAVESCENS)

HERMAPHRODITISM occurs fairly regularly in some genera of Teleost fishes (Serranus and Chrysophorous) and teratological hermaphroditism has been observed and described in the Burbot, Carp, Cod, Eel, Top Minnow (Fundulus, Lebistes, Xiphophorus), Stickleback, Herring, Ling, Perch (Perca fluviatilis), Salmon, Sargus, Shad, Whiting, Wrass, Sheepshead, Croaker, Trout and Loach. In the latter cases the testis and ovary are seldom both full sized and normal. Occasionally both gonads are developed to a point which would make functional hermaphroditism possible but usually one gonad is fully formed and normal while the other is partially developed or fragmentary and recognizable only by histological examination. Secondary sex characters such as colors, gonapods, internal structures and behavior are in some instances profoundly affected. In other instances no such modifications are present.

Non-functional hermaphroditism has been observed in the European Perch (Perca fluviatilis) by Halbertsma, Hoek, Ivanzov, Skogman and Chevey, but no record appears in the literature of any similar condition in the American Perch (Perca flavescens).

In the case described here the specimen was discovered by an employee of the Johnson Fish Company, of Green Bay, Wisconsin, in early February and the entire gonad was preserved in alcohol.

The ovarian portion of the gland is 52 mm long and appears to be normal in every respect. It is located in the normal position. An abundance of large ovocytes were plainly visible before dissection and on histological examination the usual arrangement within the ovary of fully formed ovocytes and of undeveloped germ cells was demonstrated. The stroma and tunica were also normal. The testicular mass is somewhat larger than that of a normal testis and is located anterior to the ovary and while it is immediately adjacent to the ovary, it is marked off sharply by texture and color. The testis is abnormal in position, therefore, and superficially appears to be tumorous and misshapen. Several large and many small lobes appear, none of which have the shape of the normal testis. Microscopic sections of the testis, however, show little that could be called abnormal. All lobes are filled with masses of spermatozoa. Each lobe is subdivided by connective tissue septa into cysts just as in the normal testis. At the peripheral margins of the lobes there are flat, lens-shaped cysts of large spermatogonia or primordial germ cells, a relationship which also exists in mature normal testes in February. The only unusual histological feature is the thickening of the walls between some of the lobules and between the testicular and ovarian portions of the gland.

Special attention was given to the region between the ovarian and testicular portions of the gland in order to discover any possible transitional zone. No transition occurs. On both testicular and ovarian sides of the connective tissue junction the line of demarkation is abrupt and there is no evidence of anything but normal tissue.