hymena to create conditions favorable for heavy feeding. Approximately the same amount of food was introduced into 8 tubes by means of a platinum loop. The 8 tubes were divided into two series. Series A contained 1–3 *Tokophrya* in each of 4 tubes. Series B contained about 40 *Tokophrya* in each of 4 tubes. In the tubes of Series A no young *Tokophrya* were found after 48 hr. There were present only giant individuals with characteristic short tentacles, and some of the individuals had already disintegrated. A large number of *Tetrahymena* available as food was still present. On the other hand, the tubes of Series B were filled with embryos and young adult *Tokophrya,* and had no traces of *Tetrahymena.* Repetition of these experiments gave the same results. After 48 hr about 30 *Tokophrya* were added to each of the tubes of Series A containing only giant *Tokophrya* and abundant food. During the next 48 hr these tubes contained embryos and healthy-looking individuals. The giant *Tokophrya* had disintegrated. These experiments indicate that amount of food, not accumulation of waste products, causes the cessation of reproduction.

Preliminary studies show also that food influences the longevity of individual *Tokophrya.* Since the species reproduces by endogenous budding and the same reproducing adult remains, the possibility exists of controlling the effect of food on the length of life of the individual. Without food an individual is able to survive for 2 weeks or more. Evidently underfeeding favors longevity in *Tokophrya.* These experiments agree with the results on underfed mice reported by Tannenbaum (*2*).

It is of great interest to note that the amount of food ingested is an important factor in the reproduction rate and longevity of individuals both in the Mammalia and in the Protozoa. Since this relationship exists in these two far-separated phylogenetic groups, it may be a fundamental and basic biological factor affecting the life of all living organisms.

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Photoelectric Spot Analysis of Antimony and Bismuth

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The application of photometry to spot analyses was first studied by Bull (*1*) and Black (*2*). We have used a photometer having a photoelectric tube for spot analyses of antimony and bismuth ions. Two-stage amplification was used, and the intensities of light were recorded by a microammeter. Storage batteries and a small bulb were used as a source of light. A solution filter is placed before the phototube for the purpose of obtaining nearly monochromatic light. For antimony ion, potassium chromate solution was used, and for bismuth ion, copper sulfate solution gave properly monochromatic light. The reagents used and the colored products are given in Table 1.

First, a filter paper is immersed in the reagent solution; then one drop of the test solution is dropped on it, and the colored spots are obtained on the filter paper. In the case of antimony ion, the molybdenum blue does not develop well at room temperature; hence the filter paper on which the antimony test solution is dropped is put into a steam bath for about 5 min. Molybdenum blue is produced only by the trivalent ion of antimony, so the antimony solution was made carefully, and the content of trivalent antimony ion was analyzed by ordinary chemical analysis.

TABLE 1

Elements	Reagents	Product (color)
Sb	$H_3PO_4 \cdot 12MoO_3 \cdot nH_2O \cdot 5\%$ sol	Molybdenum blue (blue)
Bi	Cinchonine KI sol*	$BiI_3 \cdot B \cdot HI$† (pink)

* Cinchonine 1 g+; KI 2 g+; H_2O 100 ml+; HNO_3 a few drops.
† B: organic base.

The filter paper showing a colored spot is placed between the bulb and photoelectric tube, and a screen having a small round hole (12 mm in diameter) is inserted between the bulb and the filter paper. The colored spot on the filter paper is centered on the hole, and part of the light is absorbed by the colored spot. The indicated value of the microammeter is recorded when the light transmitted through the colored spot is smaller than that through the rest of the filter paper. The value of the former is shown as I and that of the latter as I_0. The error caused by variations of thickness of the filter paper is corrected by a blank test of each filter paper.

The results with solutions of the various concentrations of antimony and bismuth are shown in Table 2.

TABLE 2

Content in one drop* γ		I/I_0†, %	Metallic ion	Content in one drop γ		I/I_0, %	Metallic ion
0.18	Sb	93.8	Sb only	12.8	Sb	19.7	Sb only
.30	"	89.0	" "	0.60	Bi	97.0	Bi "
.45	"	88.7	Sb and Bi	1.48	"	94.9	" "
.6	"	85.1	Sb and Bi	3.0	"	86.7	" "
0.9	"	75.5	Sb only	4.0	"	83.6	Bi and Sb
1.8	"	61.3	" "	4.8	"	81.1	Bi and Sb
3.6	"	43.9	" "	5.9	"	77.7	Bi only
6.4	"	35.1	" "	11.9	"	69.9	" "
9.0	"	23.9	" "	29.7	"	54.0	" "

* The volume of one drop is 0.032 ml.
† Mean value of 3 determinations.

Interference between Bi and Sb was not noticeable. The writer applied this method to an analysis of Bi ~ Sb

sulfide mineral from the Horobetsu sulfur mine (Hokkaidô, Japan) with success.

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Synthesis of Enantiomeric α-Cephalins[1]

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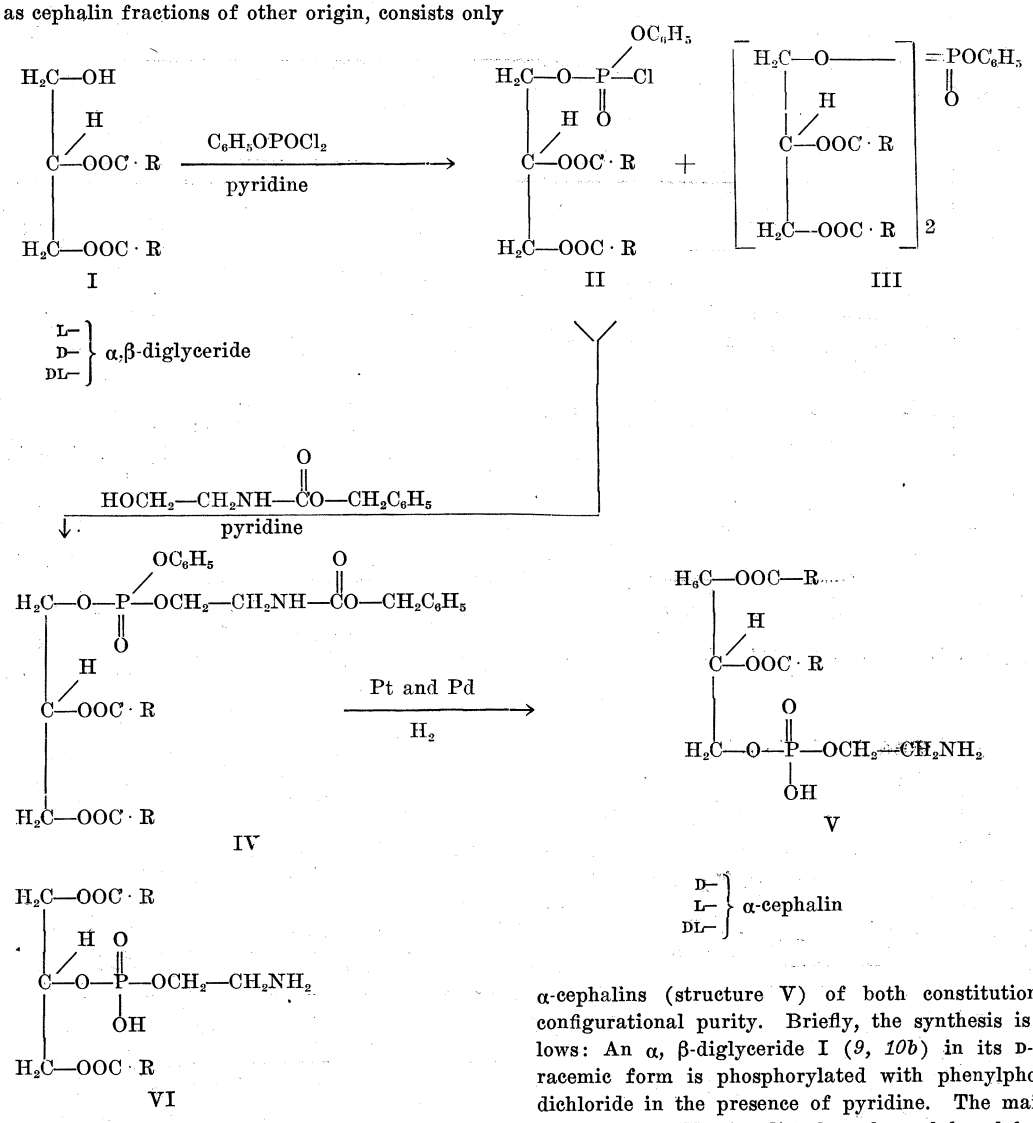
Folch (*1–4*), Wooley (*2, 5*), Hutt (*6*), and their associates have shown that Thudichum's ox brain cephalin, as well as cephalin fractions of other origin, consists only partially of phosphatidyl ethanolamine, which is known classically as cephalin and to which have been assigned structures V and VI. Associated with it are variable amounts of phosphatidyl serine and other complex phosphoric acid esters containing inositol, galactose, and as yet unidentified nitrogenous constituents. A study of the biological role of the various components of the "cephalin fraction" requires accessibility to the pure substances. The difficulties encountered in isolating pure individual cephalins (phosphatidyl ethanolamines) from natural sources have prompted several attempts (*7, 8*) to obtain these compounds by synthesis. None of these attempts to synthesize the α-cephalins, however, can be considered truly successful.

The authors herein report a procedure which is generally applicable to the synthesis of fully saturated



α-cephalins (structure V) of both constitutional and configurational purity. Briefly, the synthesis is as follows: An α, β-diglyceride I (*9, 10b*) in its D-, L-, or racemic form is phosphorylated with phenylphosphoryl dichloride in the presence of pyridine. The main reaction product II, the diacyl α-glycerylphenylphosphoryl chloride, without isolation from III, is immediately

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