necessary to grind twice for about 2 minutes. It is advisable to interrupt the grinding during 1 minute after the first 2 minutes.

The efficiency of extraction and hydrolysis were checked by PFLÜGER's method: liberation and isolation of glycogen by treatment of the tissue with 60% KOH, precipitation and washing of the glycogen with ethanol, followed by hydrolysis with *N* sulphuric acid in a boiling waterbath for 2 hours.

The results are assembled in Table I. It is clear from the good agreement observed between the results obtained by both methods, that the lengthy procedure of PFLÜGER may be replaced by this rapid determination, which offers great advantages for routine analyses.

TABLE I

GLYCOGEN IN RAT LIVER AND MUSCLES

Rat No.	Condition of rat	Tissue	% glycogen	
			Extraction with trichl. acet. acid; glucose determ. without previous hydrolysis (duplicates)	Isolation of glycogen according to PFLÜGER; glucose determ. after hydrolysis (duplicates)
1	normally fed	liver	2.74; 2.67	2.40; 2.51
2	normally fed	liver	4.55; 4.47	4.25; 4.39
3	24 hrs fast	liver	1.09; 1.12	1.08; 1.12
4	24 hrs fast	liver	0.59; 0.59	0.53; 0.57
5	24 hrs fast	liver	0.97; 0.99	0.96; 0.97
6	normally fed	abdominal muscle	0.95; 0.90	0.85; 0.85
7	normally fed	abdominal muscle	0.51; 0.48	0.52; 0.58
8	normally fed	abdominal muscle	0.67; 0.65	0.60; 0.63
9	24 hrs fast	abdominal muscle	0.19; 0.21	0.18; 0.18
10	normally fed	leg muscle	0.24; 0.25	0.28; 0.23
11	normally fed	leg muscle	0.35; 0.34	0.32; 0.35
12	24 hrs fast	leg muscle	0.09; 0.09	0.08; 0.08

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FRACTIONATION OF THYROID CELLS

by

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From the earlier cytomorphological work about thyroid certain deductions have been made, concerning the rôle of cell organoids in the intracellular elaboration of the hormone[1,2]. A possibility to study the properties of isolated organoids on analytical way was recently demonstrated by fractionations of liver cells[3,4,5]. Thus, in order to investigate the chemical topography of the cell of thyroid gland, experiments have been performed in which the fractions of thyroid organoids were isolated and subjected to analytical procedures.

Fresh swine thyroids were used and the isolations were made according to the method of DOUNCE AND BEYER[6] which was modified for the present purposes. Individual fractions containing pure nuclei, mitochondria, visible microsomes, and cytoplasm were isolated by differential centrifugation in a series of experiments. Thyroxine, diiodotyrosine, both pentose and desoxypentose nucleic acid (PNA and DNA) were found to be present in variable amounts within all the fractions. In respect of the percentage distribution, the majority of thyroxine and diiodotyrosine are held in the cytoplasmic fraction, but both compounds are present in greater quantity inside of the nucleus as in the chondriome:

TABLE I

Fraction	Thyroxine mg/100 g of dry gland	Diiodotyrosine mg/100 g of dry gland
Nuclei	4.85	8.07
Total chondriome	0.97	1.04
Cytoplasm	145.12	165.52

From this fact some conclusions concerning the origin of the secretion and the rôle of the cell nucleus in sense of the "nuclear theory" can be drawn. These conclusions will be given together with a detailed description of the present experiments in a subsequent paper.

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QUATERNARY AMMONIUM SALTS AS INHIBITORS OF ACETYLCHOLINESTERASE

by

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Previous investigations on acetylcholinesterase[1,2,3] have revealed that the active surface of the enzyme contains an "esteratic" group, surrounded by—at least—two negative charges of unit magnitude. This led us to the assumption that the esteratic group is similar in all esterases and that the specificity of the true choline esterase is a result of the strong negative field at the active surface. This has now been tested by comparing various types of inhibitors on the latter enzyme and on liver esterase. Quaternary ammonium salts which act on cholinesterase as reversible, competitive inhibitors by blocking the approach of acetylcholine to the negative sites, are ineffective on liver esterase,