were, however, obtained in a single band or peak without further differentiation. Our gradient, which subdivides the density region between 0.9 *M* and 1.4 *M* sucrose into 5 separate steps, permits a more detailed analysis of synaptosomal subpopulations (see also [12]). It appears that with such a gradient distinct subpopulations of synaptosomes can be partially separated.

Zusammenfassung. Für die Verteilung von H^3-Glycin und H^3-L-Glutamat auf einem 10-Stufen-Gradienten nach Aufnahme in Katzenrückenmarkschnittchen werden unterschiedliche Muster erhalten, die auf verschiedene Synaptosomenpopulationen schliessen lassen.

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DNA and RNA Concentration in the Liver of Japanese Quail (*Coturnix coturnix japonica*) During Growth

On the basis of results obtained in various studies, it may be concluded that DNA concentration in the liver and other organs and tissues is relatively stable. RNA concentration, on the other hand, sensitively reflects the changes in the physiological, but especially in the metabolic processes which are developed as a result of the action of various internal and external factors[1–5]. During animal growth, as well as at its end, great changes in protein metabolism occur. DNA concentration in the liver of growing animals does not change[2], whereas the content of RNA is closely correlated with the intensity of protein synthesis[1–3]. However, on the basis of some experiments it has been found that in growing animals there is a significant change in DNA concentration in the liver[6]. Our experimental work, which deals with the progress as well as with the changes of DNA and RNA concentration in the liver of Japanese quail from the time of their hatching until they have reached sexual and body maturity, is intended as a contribution to this specific problem.

Materials and methods. The problem was investigated in Japanese female quail. These were kept in very good condition and fed a mixture of protein containing 28% of N-substances. Beginning with the day of their hatching until they had reached the age of 70 days, the quail were slaughtered in groups of 5 at intervals of 7 days and their liver DNA and RNA concentration was determined by Schneider's method[7]. The quail began laying eggs when they had reached the mean age of 48 days.

The values obtained from DNA and RNA concentration have been evaluated by a mathematical-statistical method in the following way: The homogenity of variances among the age groups was determined by Cochran's[8] G-test. If the G-test was not significant, the results were then evaluated by the analysis of a variance. If the G-test was significant, the inter-group differences were tested by Student's *t*-test[9], or in the case of heterogenity of the group variances by Welch's *t*-test[10].

Results and discussion. The values obtained from DNA concentration in the liver as well as from the live weight and the weight of the liver are shown in Table I. From the values it can be seen that DNA concentration does not change in the liver of the growing animals and is marked by a low variability. On the other hand, RNA concentra-

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Table I. Live weight, weight of liver and DNA concentration in the liver ($n = 5$)

Age (days)	Mean weight (g)		DNA concentration (μg/100 mg of tissue)	
	Quail	Liver	Mean ± S.E.	C.V. (%)
0	6.90	0.21	24.01 ± 0.09	0.77
7	16.23	0.57	24.17 ± 0.08	0.64
14	24.85	0.93	24.23 ± 0.11	0.91
21	46.57	1.64	24.27 ± 0.09	0.74
28	56.93	1.70	24.15 ± 0.12	0.96
35	84.87	2.85	24.26 ± 0.05	0.45
42	96.25	3.04	24.28 ± 0.05	0.40
49	117.92	3.47	24.26 ± 0.16	0.33
56	123.59	3.50	24.33 ± 0.03	0.28
63	117.42	3.37	24.25 ± 0.12	0.28
70	112.61	3.90	24.28 ± 0.08	0.67
G-test			not significant	
F-test			not significant	

n = number of animals in a group, *c.v.* (%) = coefficient of variation.

Table II. RNA concentration in the liver ($n = 5$)

Age (days)	RNA concentration (μg/100 mg of tissue)		Significancy of intergroup differences (age of the quail in days)									
	Mean ± S.E.	C.V. (%)	0	7	14	21	28	35	42	49	56	63
0	12.84 ± 0.69	10.74										
7	16.10 ± 0.82	10.18	+									
14	19.66 ± 0.96	9.76	+++	+								
21	21.22 ± 0.36	3.34	+++	++	−							
28	33.63 ± 1.15	6.80	+++	+++	+++	+++						
35	50.86 ± 4.11	16.15	+++	+++	+++	+++	++					
42	67.82 ± 1.70	4.99	+++	+++	+++	+++	+++	++				
49	57.22 ± 5.95	20.78	+++	+++	+++	+++	++	−	−			
56	54.76 ± 7.80	28.45	+++	+++	++	++	+	−	−	−		
63	55.74 ± 2.66	9.62	+++	+++	+++	+++	+++	−	++	−	−	
70	56.88 ± 1.60	5.62	+++	+++	+++	+++	+++	−	++	−	−	−
G-test			significant									

n = number of animals in a group; +, $0.05 > P < 0.01$; ++, $0.01 > P < 0.001$; +++, $P < 0.001$; −, $P > 0.05$.

tion (Table II) increases progressively from the time of hatching up to the age of 42 days. This is then followed by a marked decrease lasting until the 56th day of age and subsequently a period of stabilization. The increase in RNA concentration is probably correlated with animal growth and the growth of the liver or, respectively, the increase is related to the intensity of protein synthesis by which this growth is mediated. The relatively low decrease of RNA concentration after the 42nd day may be caused by a lower level of protein synthesis in the retarded phase of growth. On the other hand, the stabilization of RNA concentration, which is on a relatively high level after the 56th day may be related to egg-laying which was present in the quail. It is also to be pointed out that RNA variability is considerably higher than DNA variability and that large and significant differences are also observed among the individual age groups. It can be presumed that a high variability of RNA concentration is closely related to the variability in growth intensity, as well as to the degree of egg laying.

In this study we have confirmed the observation that DNA concentration under normal conditions does not change and is relatively stable, even after initiation of egg-laying[2]. This contradicts the results of DAWSON[6], who reported that between the first and the third month of age there occurs a rapid decrease in DNA concentration in the liver of the rats. Regarding RNA concentration and its variability, our resulte confirm those previously reported[1–5].

Zusammenfassung. Während des Wachstums der japanischen Wachtel, *Coturnix coturnix japonica*, ändert die DNA-Konzentration der Leber nicht; die RNA-Konzentration ist hingegen erhöht. Die letztere ist mit der Eiweissynthese bei Wachstum und Eiproduktion korreliert.

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Decrease of Arylsulfatase A Activity in Plasma in Hemorrhagic Shock

Elevation of plasma lysosomal enzyme activity in shock is known since JANOFF's studies[1]. In hemorrhagic shock, labilization of lysosomes was first observed by BITENSKY[2]. In the past decade, changes in the level of lysosomal enzymes in shock have been studied by several authors[3–8].

In the course of our hemorrhagic shock experiments, together with other lysosomal enzymes we have measured the activity of arylsulfatase A (ASA) and have found that its activity decreases rather than increases during hypotension. To our knowledge, no decrease of any other lysosomal enzyme activity in shock has yet been reported.

The experiments were performed on 52 dogs of both sexes (mean body weight: 11 kg). In sodium pentobarbital anesthesia, polyethylene cannulae weer introduced into both femoral arteries and a femoral vein for the purpose of bleeding, blood pressure measurement, sampling and reinfusion. The animals were given 500 U of heparin per kg body weight. After a 30 min control period, bleeding was begun from the femoral artery into a glass reservoir and mean arterial blood pressure was lowered to 40 mm Hg. Blood pressure was maintained at this level for 90 min

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