unlikely that this parameter is responsible for the dimunition in ammonia liberation with increasing calcification of the shell. Again, in keeping with the hypothesis that ammonia facilitates carbonate formation[1], we interpret these results as indicating that in the earlier stages of calcification, more ammonia is being elaborated onto the surface membranes of the egg to facilitate calcium carbonate deposition. Once calcification ceases (at around 2 g calcium), little or no ammonia is being elaborated in vivo and subsequently only a small amount is liberated from the eggs in vitro. Ammonia liberation decreases exponentially with increasing calcification; a plot of log ammonia liberated per 24 h times 100 vs. the amount of calcium deposited for several eggs is shown in Figure 2. The correlation coefficient (r) for these two parameters in such a plot is -0.868.

If ammonia is in fact involved in proton neutralization and/or transport in the avian shell gland[7] there is the question of whether the resulting ammonium ion leaves the shell gland via the venous blood supply or is in some way recycled to an ammonia-yielding substrate in the shell gland tissue. The urinary excretion of ammonium ion is quite high during the laying cycle and this has been attributed to the response of the renal compensatory mechanism to the metabolic acidosis imposed by eggshell formation[8]. As shown in Figure 3, there is also an increase in the plasma ammonium ion content which corresponds with the laying cycle. The maximum plasma concentraion of ammonium ion occurs approximately 8 h prior to oviposition; at this point, ammonium ion excretion by the kidney is also maximal and urine pH, minimal[1,8]. In the dog, the renal venous ammonium ion content shows very little increase even in severe metabolic acidosis[9]: the normal ammonium ion content is about 1.8 µg per ml and with the arterial infucion of 100 µmole ammonium lactate per min, decreases to about 1.7 µg per ml. With the infusion of 300 µmole ammonium lactate per min, the venous value increases to only 2.3 µg per ml. If the same renal mechanism is operative in the chicken, it thus seems unlikely that the increased plasma concentrations of ammonium ion observed during the laying cycle are due to the addition of this cation to the renal venous blood by the kidney. As shown in the Table, there is a small but significant addition of ammonium ion to the shell gland venous blood when an egg is present in the shell gland which does not occur when an egg is absent. In the experiment for the Table, the amount of calcium deposited on eggs taken from the shell gland ranged from 7.9 mg to 2.12 g. However, there was no correlation ($r = 0.002$) between the amount of calcium deposited and the shell gland venous ammonium ion content[10].

Zusammenfassung. Mittels biochemischer Daten wird der Nachweis erbracht, dass im Ovidukt des Huhnes während der Schalenbildung zwar vermehrt NH_4^+ freigesetzt wird, jedoch eine negative Korrelation zwischen NH_4^+-Produktion und Ca^{++}-Abscheidung besteht.

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Importance of the Anti-Serotonin Effect for Mounting Behaviour in Rats

The effect of parachloropenylalanine (PCPA) on sexual behaviour in animals has been extensively explored in recent years. It was shown that mounting behaviour in male rats was facilitated by PCPA[1-3]. Copulative behaviour in male rats[4] and oestrous behaviour in female rats[5] was facilitated by PCPA. Contradictory results are available[6]. The essential role of testosteron for the stimulative effect of PCPA on mounting behaviour[7] and copulative behaviour[8] in male rats was also shown. PCPA inhibits the biosynthesis of serotonin[9]. The question must be raised whether mounting behaviour induced by PCPA was prompted non-specifically by lowering the serotonin brain level or specifically by the compound PCPA. Thus we were interested in this study to observe the effect of serotonin-antagonists on mounting behaviour in rats compared with PCPA.

Testosteron pretreated rats were given PCPA and the serotonin-antagonists mesorgydine[10], methysergide[11] and WA 335-BS[12]. The antiserotonin effect of mesorgydine was described by VOTAVA and LAMPLOVA[13]. The antiserotonin agent methysergide is used in the prevention of migraine. Also the new compound WA 335-BS has an antiserotonergic effect besides an antihistaminic activity[14].

Methods. Male Sprague-Dawley rats, weighing 250–300 g were used. The rats were isolated 4 days before in a room with artificial light. The light was extinguished at 18.30 for 12 h. At this time the observation of mounting behaviour was started by 2 observers. Just before the beginning of the observation 4 isolated rats were placed together in a cage. The number of mountings over 3 h were added in periods of 15 min. Testosteronpropionate

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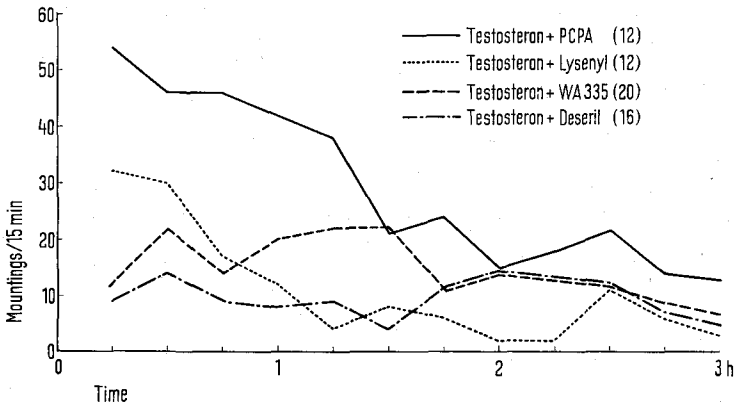

Observation of mounting behaviour for 3 h. Number of rats in parentheses brackets. There were 4 rats in each cage. After testosteron alone (12 rats) 2 rats exhibited mounting behaviour only very occasionally – on an average of once every $^1/_4$ h. The curves demonstrate all of the respective averaged values for the number (in parantheses) of rats.

(10 mg/kg) was given s.c. 4 times in periods of 24 h, the last dose being $5^1/_2$ h before the beginning of the observation. Testosteron-propionate was dissolved in sesame oil. PCPA ester (100 mg/kg) was injected i.p. thrice in periods of 24 h; the last dose being 24 h before the beginning of the observation. Methysergide (1 mg/kg i.p.) was injected 2 h, mesorgydine (0.5 mg/kg i.p.) 2 h and WA 335-BS (0.1 mg/kg i.p.) 2 h before the beginning of the observation.

Results. It was shown (Figure) that testosteron plus PCPA induce the strongest increase in mounting behaviour. Mountings are especially frequent in the first $1^1/_2$ h. After mesorgydine, WA 335-BS and methysergide in the combination with testosteron mountings were less frequent in the first $1^1/_2$ h compared with PCPA. In the last observation period, mounting behaviour decreased slowly. 12 rats received testosteron only; 2 rats exhibited mounting behaviour only very occasionally – on an average of once every $^1/_4$ h. After PCPA, mesorgydine, WA 335-BS and methysergide alone the rats showed significantly less frequent mounting behaviour than after combination with testosteron.

Minimally increased sexual behaviour was also seen after mesorgydine only by PODVALOVA and DLABAC[15]. After the treatment with parachloromethylamphetamine, which has been shown to decrease rat brain serotonin, testosteron-pretreated rats also displayed sexual excitement[16]. Mounting behaviour in male rats was also observed after lowering brain serotonin level with reserpine in combination with a peripheral DOPA-decarboxylase inhibitor (Ro 4-4602) plus L-DOPA[17].

Our results and the observations quoted tend to the conclusion that the antiserotonin effect (in combination with testosteron) could have a causative import in the activation of mounting behaviour in male rats. This would imply that the mounting behaviour cannot be solely caused by the specific effect of PCPA.

Zusammenfassung. «Mounting behaviour» bei Ratten wird nicht nur durch die Kombination Testosteron plus Parachlorphenylalanin hervorgerufen. Auch durch die Gabe von Testosteron in Kombination mit den Substanzen Mesorgydin, WA 335-BS und Methysergid, die unter anderem antiserotonergen Effekt haben, wird «mounting behaviour» bei männlichen Ratten ausgelöst. Aufgrund dieser Ergebnisse und zitierten Beobachtungen ist eine ursächliche Bedeutung zwischen dem Anti-Serotonin-Effekt und der Aktivierung des «mounting behaviour» bei männlichen Ratten anzunehmen. Die spezifische Wirkung der Substanz PCPA allein kann für dieses Verhalten nicht verantwortlich gemacht werden.

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Dissociation of Vertical and Horizontal Components of Activity in Rats Treated with Lithium Chloride

JOHNSON and WORMINGTON[1] have shown that lithium chloride reduces the frequency of vertical rearing activity exhibited by rats. In the present experiments lithium-induced effects on vertical rearing are contrasted with effects on horizontal locomotory activity in the same subjects, and the relationship between rearing and environmental stimulation is examined.

Materials and methods. Experiment 1. The experimental subjects were 20 100-day-old Roman control strain (RCA) rats. The apparatus consisted of a vertical transparent tube, 46 cm tall, 23 cm internal diameter. The ceiling and floor of the tube formed the 2 plates of a capacitor which was linked to a proximity meter giving a voltage output linearly related to the distance between the tube ceiling and the head of a subject placed in the tube. This voltage was recorded on a moving pen recorder, producing an analogue print-out curve of the animal's rearing activity. Rearing frequency was determined as the number of peaks on this curve in a 5-min-test-session.

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