that dipping eggs in *o,p'*DDD solutions will significantly reduce hatchability[6]. At hatching there were no significant differences in body weight, or weights of the bursa, spleen, or adrenal glands. All birds hatched from eggs injected with *o,p'*DDD responded normally to later injections of ACTH by exhibiting significant increases in the number of absolute heterophils and a significant depletion of adrenal cholesterol. On the other hand, the adrenal cholesterol of birds injected i.m. with ACTH and previously injected 3 times with *o,p'*DDD was significantly higher than comparable controls (Table II). The adrenals of birds receiving ACTH and previously treated with lipomul exhibited extensive vacuolization of the fuchsinophilic cells of the adrenal cortex while the adrenals of birds pretreated with *o,p'*DDD before ACTH administration showed only occasional vacuoles in the fuchsinophilic cells of the adrenal cortex. Two i.v. injections of *o,p'*DDD did not significantly influence the chicken's response to ACTH as measured by adrenal cholesterol or adrenal histology. Intramuscular injections of 20 mg *o,p'*DDD for 16 days increased the level of steroids in the adrenal gland[7]. The adrenal cholesterol and histological data of this study demonstrate that adrenal cortical response to ACTH is significantly altered by 3 i.v. injections of *o,p'*DDD.

Table II. Micrograms of cholesterol per mg of adrenal tissue 12 h after an i.m. injection of 8 IU ACTH per 100 g body weight into birds pretreated with lipomul or *o,p*-DDD[a]

Saline		ACTH	
Lipomul + PG 1 ml-3X	*o,p*-DDD 10 mg-3X	*o,p*-DDD 10 mg-3X	Lipomul + PG 1 ml-3X
24.3	25.3	17.9	11.7
Lipomul + PG 1 ml-2X	*o,p*-DDD 10 mg-2X	*o,p*-DDD 10 mg-2X	Lipomul + PG 1 ml-2X
25.5	27.4	13.6	10.1

[a] 6 birds per mean.

All means not underlined by the same line are significantly different at the 5% level[8].

The serum antibody level to BSA of birds pretreated with 10 mg of *o,p'*DDD (58.8 μg antibody N/ml serum) was significantly less than birds pretreated with lipomul (100.6 μg antibody N/ml serum). A reduction in phagocytosis or interference with the immune response of immunologically competent cells might explain these results. All birds initially treated with an i.v. injection of *o,p'*DDD exhibited symptoms of anaphylactic shock that ranged from muscular weakness to convulsions. The lipomul birds did not exhibit these symptoms. The second and third i.v. injections of *o,p'*DDD were less effective in illiciting an anaphylactoid response. Apparently, *o,p'*DDD caused the release of histamine or some other pharmacological agent capable of producing anaphylactic shock[9,10].

Zusammenfassung. Die Ausbrütbarkeit von Hühnereiern wird durch die Injektion von *o,p*-DDD signifikant reduziert. Durch die Behandlung mit *o,p*-DDD wird die Nebennierenrindenfunktion der ausgeschlüpften Küken nicht beeinflusst. Verabreicht man 3 Wochen alten Küken 30 mg *o,p*-DDD, dann wird die Ansprechbarkeit der Nebennierenrinde auf ACTH signifikant verändert. Eine Vorbehandlung der Küken mit 10 mg *o,p*-DDD reduziert die Bildung der Antikörper im Serum gegenüber Rinderserumalbumin.

B. GLICK and SANDRA WHATLEY

Poultry Science Department, Mississippi State University and Mississippi Agricultural Experiment Station, State College (Mississippi, USA),
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A Contribution to the Temperature Sensitivity of Lorenzinian Ampullae of Elasmobranchs

Ampullae of Lorenzini of Elasmobranchs are bulb-like and jelly-filled sense organs which are located under the skin of the head. They are connected with the skin surface by thin, jelly-filled tubes, sometimes several centimetres long. The biological function of these sense organs remains uncertain. They are sensitive to thermal[1-3], mechanical[4-6], chemical[7,8], and electrical[8-10] stimulation. All these types of stimulation may be active under normal biological conditions. Behavioural studies[11] seem to indicate that the Ampullae of Lorenzini are used for the perception of electrical signals. The location of the Ampullae might also be of importance for their function[10].

Hitherto, in all investigations, the temperature sensitivity of the Ampullae of Lorenzini has been described as being that of the cold-receptors of homoiotherms: cooling

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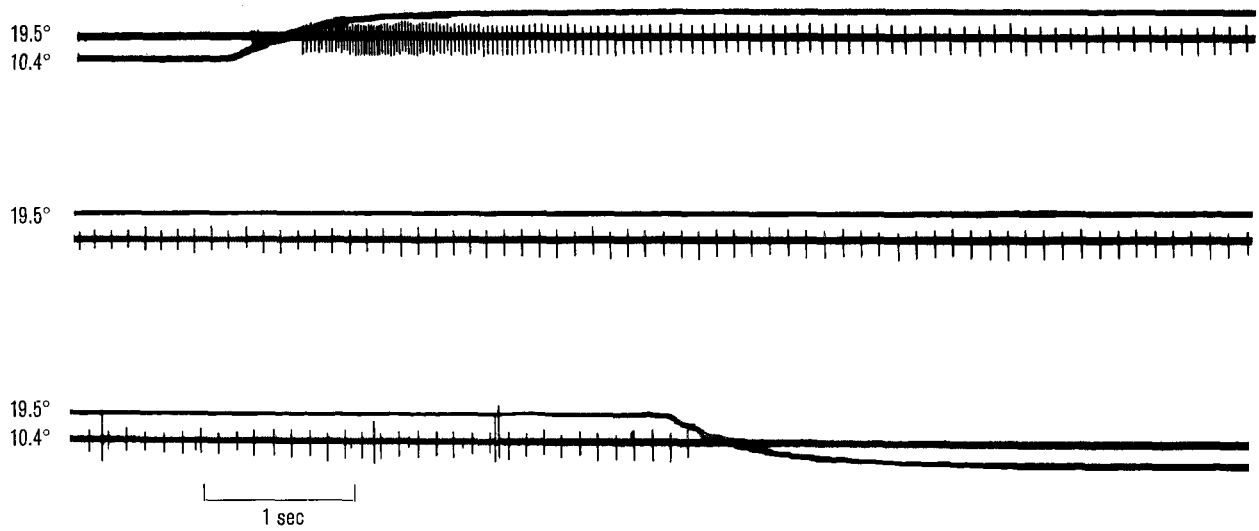

Fig. 1. Impulses from a thin strand of the afferent nerve of a Lorenzinian ampulla of the infraorbital group after rapid warming and cooling. Black line represents the temperature of the thermode.

is followed by a rapid overshoot of the afferent impulses, warming leads to a transitory blockage of spikes[2,3,9]. In most of our electrophysiological recordings, which were done on the afferent nerve of isolated infraorbital Lorenzinian ampullae of 24 dog fish (*Scylliorhinus canicula*), we found the same responses. In 2 animals, however, we observed the opposite behaviour in several ampullae (Figure 1), i.e. an increase in discharge frequency with rising temperature and an inhibition with cooling. Such a response resembles that of warm-receptors of homoiotherms[12].

At 25 °C, the discharge frequency for steady state temperatures was highest for these 'warm-receptors'. Our experiments revealed, furthermore, that one ampulla may contain 'warm'- as well as 'cold-receptors'.

In a great number of Ampullae of Lorenzini, the adaptation after rapid temperature changes was found to be different from what has been reported by other authors. The overshoot after a sudden cooling did not level off to a steady discharge, but instead was followed by a complete inhibition of impulses which lasted several minutes or, as in some cases, only seconds. After this blockage, the spike frequency resumed a new steady firing level (Figure 2A). The adaptation after rapid warming was similar. The inhibition was followed by an increase in discharge frequency which then fell to a steady value by, sometimes, passing through a minimum (Figure 2B).

Our results might be explained by the fact that we used ampullae of the infraorbital or supraorbital group exclusively for our experiments. In earlier investigations about the temperature sensitivity of ampullae of Lorenzini, however, ampullae of the mandibular group only had been explored. These differences in findings, therefore, seem to support the view of MURRAY[10] that the localization of the Ampullae might have a bearing on their biological function.

Zusammenfassung. In einigen isolierten infraorbitalen Lorenzinischen Ampullen von Katzenhaien wurden Rezeptoren gefunden, deren Erregungsmuster bei Temperatursprüngen dem Verhalten von Warmrezeptoren bei Warmblütern entspricht. Bei einer Reihe von Ampullen, die wie Kaltrezeptoren reagierten, wurde nach Kälte- oder Wärmesprüngen ein adaptives Verhalten beobachtet, das von der bisher beschriebenen Reaktionsweise der Lorenzinischen Ampullen bei Temperaturänderungen abweicht.

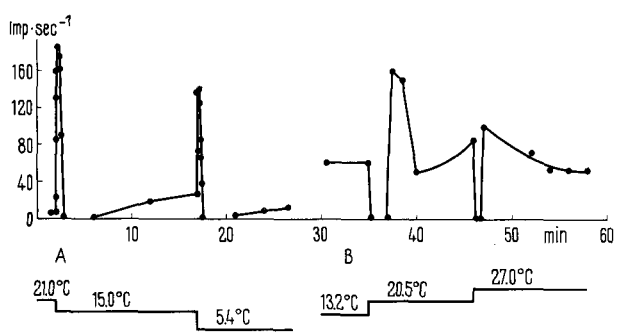

Fig. 2. Adaptation of an ampulla of Lorenzini after rapid cooling (A) and warming (B).

F.-K. PIERAU and H. D. MEISSNER

William G. Kerckhoff-Herzforschungsinstitut der Max-Planck-Gesellschaft, Bad Nauheim und Biologische Anstalt, Helgoland (West Germany),
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