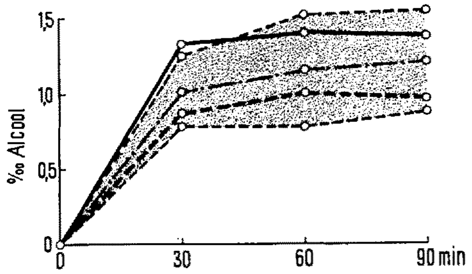
Student. Notre hypothèse s'est confirmée, cette valeur est non significative comme les autres.

Ainsi donc, ni la morphine, ni le phénobarbital n'ont une influence significative sur le taux de l'alcool sanguin chez le cobaye. Le taux de l'alcoolémie est très individuel[2].

Discussion et conclusions. Nos résultats chez le cobaye confirment ceux de DILLE et AHLQUIST[3] chez le rat mais sont en contradiction avec ceux de WHITTLESEY[4] chez le chien. Il semble bien, chez le cobaye et le rat, que l'inhibition qu'exercent soit l'alcaloïde de l'opium soit le barbiturique sur les phénomènes oxydatifs n'exercent aucune influence significative sur l'alcoolémie provoquée.



Influence de la morphine et du phénobarbital sur le taux de l'alcoolémie chez le cobaye.

—— Alcool + Phénobarbital (10 animaux). – – Alcool + Morphine (10 animaux). –·– Alcool seul (Témoin, 10 animaux). Zone hachurée = limite fiduciaire témoin alcool.

Il est intéressant de noter que ce même problème s'est posé pour la chlorpromazine qui, selon certains auteurs, n'interfère pas sur l'alcoolémie[5] chez le rat, alors que d'autres trouvent que ce tranquillisant freine le catabolisme de l'éthanol chez le lapin, le chien et l'homme[6,7].

Summary. Neither morphine nor phenobarbital affect the degree of induced alcoholemia in the guinea-pig. The hypnotic effect of these two substances is increased by ethanol, this increase may be due to potentiation or to an increase of sensitivity in the central nervous system[8].

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Evaporative Cooling in the Zebra Finch[1]

Most of the evidence available for small birds, obtained mainly from investigation of North American fringillids[2,3], has heretofore supported the concept that desert birds have not evolved habitat-specific thermoregulatory adaptations, but possess essentially the same capacities for thermoregulation and water conservation as related non-desert forms. Because, with few exceptions, birds cannot escape the heat and dryness of the desert by burrowing, their survival evidently depends upon supplies of drinking water or succulent food, tolerance of hyperthermia, and behavior patterns which minimize heat stress and water loss[3,4]. However, several recent investigations have suggested the existence of special physiological adaptations to xeric conditions in some avian species not previously investigated[5-7]. In order to extend these observations, we selected the zebra finch, *Taeniopygia castanotis* (= *Poephila guttata*) for investigation because the reproductive timing, tolerance of water deprivation, and abundance of this species indicates an extensive evolutionary adjustment to arid and semi-arid regions of Australia[8].

Methods. Twelve birds were used. Seven were feral birds obtained near Perth, Western Australia, and five were progeny of Australian stocks held one or more generations in captivity[9]. We did not find any physiological differences between the groups. In the laboratory the birds were confined in a room at 18–23°C and 15–40% relative humidity. They were adjusted to an inverted photoperiod (lights on 1700–0600) and thus were in a nocturnal, postabsorptive phase during the day when measurements were made. The birds were maintained on a restricted water intake. Experimental measurements were begun after stabilization of body weight indicated adjustment to 0.25 ml/48 h (ca. 5% of *ad libitum* intake). Respiratory water loss and O_2 consumption were measured concurrently for 30 min periods in an open system, following exposure of the birds to the experimental temperatures for at least 40 min. Water loss was determined gravimetrically by adsorption in activated alumina. The drying train was monitored by appropriate controls. Total O_2 consumption was measured by integrating the record from a Beckman paramagnetic analyzer. Air flow through the respiration chambers was measured by a precision rotameter, and was maintained at a rate (700–775 cm^3/min) at which O_2 concentration was greater than 20%. Data were accepted

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only from animals which were quiescent throughout the period of measurement. A layer of mineral oil on the floor of the chamber trapped any droppings and prevented distortion of the data by evaporation of water from this source. Chamber temperature (T_a) was monitored within ± 0.2°C, and relative humidity in the chambers was estimated by the use of mixing ratios[3]. The rate of O_2 consumption was computed from appropriate equations[10], and the ratio of evaporative heat loss to heat production, hereafter called the e/p ratio, was calculated on the basis of 0.58 g-cal/mg of water evaporated and 4.8 g-cal/cc O_2 consumed. It was not feasible to measure body temperature (T_b) and respiratory exchange concurrently. In conditions duplicating the respiratory measurements but employing a quick-access chamber, core body temperature was determined to ± 0.05°C by a fine thermocouple inserted 1 cm into the cloaca. Measurements were made in a darkened room within 50 sec after opening the chamber.

Results and Discussion. The data in the Table show that the zebra finch has a capacity for evaporative cooling (maximum e/p = 1.37) greater than that known for any other passerine. These species attain maximum e/p ratios of ca. 0.5 or less when $T_a \leq 40°C$[4,11], and often exhibit decreasing e/p ratios at higher T_a, at which evaporative capacity is maximal but metabolic rate continues to increase with hyperthermia. The zebra finch shows a similar cooling capacity at $T_a \leq 40°C$, but a continued exponential increase to at least $T_a = 43.3°C$. At this T_a, and at any greater than 36.5°C, the birds sustain a moderate hyperthermia which maintains a positive gradient for heat transfer, or at least minimizes heat loading when $T_a > T_b$. Thermoregulatory performance at higher T_a was not systematically investigated because of apprehension about heat death of irreplaceable birds of the imported stock, but at mean $T_a = 43.9°C$, mean T_b of 6 birds was 43.4 ± 0.1°C; a maximum difference of 1.2°C was observed in one bird at $T_a = 44.2°C$.

The standard metabolic rate of the zebra finches was 3.28 ± 0.12 cm^3 $O_2/g \times h$ (mean body weight = 11.7 g), compared with a predicted weight-relative value of 3.17 $cm^3/g \times h$[11]. The thermoneutral range extended from 30°C to ca. 40°C; metabolic rate increased to 4.86 ± 0.40 $cm^3/g \times h$ at $T_a = 43.5°C$. Heat production as a function of ambient temperature is thus similar to that of other passerines of comparable size and does not exhibit the adaptive diminution found in certain caprimulgids[7]. The unusually great capacity for evaporative cooling in the zebra finch results, rather, from a relatively large capacity for pulmocutaneous evaporation of water.

Pulmocutaneous water loss, evaporative cooling (e/p), and cloacal temperature (T_b) as functions of ambient temperature (T_a)

T_a °C	% R.H.	T_b °C	Pulmocutaneous evaporation mg H_2O/cm^3 O_2	e/p
20.4	21	39.8 ± 0.4[a]	1.93 ± 0.06[a]	0.23
30.3	10	40.8 ± 0.2	2.39 ± 0.06	0.29
36.5	7	41.5 ± 0.2	3.50 ± 0.31	0.42
40.0	8	42.4 ± 0.1	4.35 ± 0.33	0.53
43.4	24	43.3 ± 0.1	11.31 ± 1.06	1.37

[a] Mean ± standard error.

Zusammenfassung. O_2-Verbrauch und Gesamt-Wasserverdunstung wurden bei australischen Zebrafinken gemessen. Bei geringem Wärmeaustausch zwischen Körper und Umgebung durch Strahlung, Konvektion und Ableitung können diese Wüstenvögel den für die Wärmebilanz erforderlichen Wärmeabfluss einzig durch Verdunstung auf dem normalen Niveau halten. Eine solche Fähigkeit ist bei Passeres bisher nicht beobachtet worden.

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Spinal Cord Transection and CCl_4-Toxicity

In rats, cervical transection of the spinal cord markedly reduces the hepatotoxic effects of a single dose of CCl_4[1–4]. Spinal cord transection has manifold effects on the animal. The manner in which it protects in CCl_4 intoxication has not been fully elucidated[4,5], although elimination of sympathetic centers in the brain has been suggested[1,2].

We have observed that as the level of cord transection is lowered, the degree of protection conferred diminishes[3,4]. Furthermore after cervical transection the rats become poikilothermic; this response also becomes less marked as the level of transection is lowered. These observations prompted an investigation into the possible role of hypothermia as a factor in the protective effect of spinal cord transection.

Male Holtzman rats weighing from 180 to 260 g were used throughout the study. The animals were subjected to light ether anesthesia for spinal cord transection at the level of C-7. Twelve cord-sectioned rats were placed in an incubator (34°C) immediately after surgery. These were to be compared with a second group of twelve similarly sectioned rats maintained at ambient laboratory temperatures (about 24°C). 1 h after surgery both groups received 0.625 ml/kg CCl_4, p.o. 24 h later liver sections were taken and fixed in cold, neutral-buffered formalin for histological examination[6]. The level as well as the complete-

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