ZOOLOGY

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Effect of Light and Density on Post Weaning Growth of Deermice. T. J. McNitt, R. D. Lyng, and M. Balestra, Department of Biological Sciences, Indiana University-Purdue University of Fort Wayne, Indiana 46805.——Many biochemical and physiological activities are controlled by photoperiod. Certain activities of animals can adapt to light-dark cycles of less than or greater than 24 hours. We investigated the effects of a shortened daylength (21 hours) and density of animals on the post natal growth of *Peromyscus maniculatus bairdi.* Two separate populations of mice were maintained; one on 24-hour days (LD 16:8), the other on 21-hour days (LD 14:7). At weaning, offspring from the 24-hour group were randomly assigned to cages containing 3, 4, 5 or 6 animals per cage. The same procedure was followed with offspring from the 21-hour day group. All of the offspring were from comparable litter sizes. Individual weights were taken at weaning and at weekly intervals for five weeks after weaning. The weaning weights of the animals on 21-hour days were significantly higher than those on 24-hour days. The highest growth rate was found in the animals on 24-hour days at all densities. The mean increase in weight from weaning to five weeks after weaning was 7.3 ± 0.3 g for animals on 24-hour days and 4.9 ± 0.4 g for animals on 21-hour days. The density effect was less pronounced. Animals housed 3 per cage had the least weight gain and animals at 6 per cage had the highest weight gain. The interaction between light treatment and density showed that 4 animals per cage on 24-hour days had the highest growth rate followed by 6, 5, and 3 animals per cage. The post weaning growth rates of juvenile deermice are different depending upon the density of animals and the daily light-dark cycles under which they are reared.

Occurrence of *Argulus appendiculosus* Wilson 1907 (Crustacea: Branchiura) in Indiana. Robert S. Benda, FWS, Cooperative Fishery Research Unit, South Dakota State University, Brookings, South Dakota 57007.——During the summer of 1969 a single specimen of *Argulus appendiculosus* Wilson 1907 was collected in the White River from a longnose gar *Lepisosteus osseus* host. The area of collection was in Pike County near Petersburg, Indiana, below the confluence of the East and West Forks. The specimen was identified by R. F. Cressey, Curator of Crustacea, National Museum of Natural History, Smithsonian Institution, and is in the Institution's collection.

Argulus Appendiculosus was described by Wilson in 1907. According to Cressey its recorded distribution was Vermont, Michigan, Kentucky, Iowa, Wisconsin, Texas, Wyoming and South Dakota.

Transient Hyperinflation After Brief Period of Artificial Ventilation in Rabbits. Thomas A. Lesh, Department of Physiology and Health Science and Muncie Center for Medical Education, Ball State University, Muncie, Indiana 47306.——Dynamic lung compliance (Cdyn) and arterial blood-gas tensions were measured in 5 anesthetized New Zealand White rabbits: a) during natural respiration as a control; b) after 10 minutes of intermittent positive-pressure ventilation (IPPV); c) continuing with IPPV, following a transient large hyperinflation (with expiration blocked for 4-5 sec and several increments of air added to the lungs, finally accumulating 3.2 ± 0.3 (SD) times the normal tidal volume). During IPPV, the ventilator was set to produce mild hyperventilation in order to suppress natural respiratory drive. Accordingly, arterial carbon dioxide tension ($PaCO_2$) decreased significantly (15%) from control in 10 minutes; however, oxygen tension (PaO_2) changed only insignificantly (5%) from control. Cdyn decreased by 24%. After hyperinflation, Cdyn rose again to a value at or slightly above control; $PaCO_2$ showed no significant further change; and PaO_2 became significantly higher than both the control and preinflation values. These results point to an early onset of decreasing lung compliance when IPPV is begun, and to a beneficial effect of transient lung hyperinflation on compliance and pulmonary oxygen exchange.

The Production of Antisperm Antibodies in Vasectomized Male Mice. EDWARD N. MENDELSON and LARRY R. GANION, Department of Physiology and Health Science, Ball State University, Muncie, Indiana 47306.——The immunological response of Swiss ICR mice to vasectomy has not been previously studied. The adult male rodents were divided into 3 groups: bilateral vasectomized, sham vasectomized, and unoperated controls. In preparing the vasectomized animals the vas deferens were exposed via abdominal incisions, ligated, cut, and returned to the body cavity. A similar surgical procedure was followed in the preparation of the sham group, but the vas deferens were left intact. The Kibrick macroscopic gelatin agglutination technique was employed to detect the presence of antisperm antibodies in the sera of the 3 groups. The presence of sperm antibodies was signified by the development of a precipitate in the agglutination tubes upon the addition of sera to the gelatin suspended sperm. After 12 weeks, circulating sperm agglutinating antibodies were present in 18 (90.0%) of 20 bilateral vasectomized Swiss ICR mice. There were no incidences of sperm agglutinins in either the 8 sham vasectomized or 13 unoperated control animals. These data indicate that Swiss ICR mice produce antisperm antibodies in response to vasectomy.

Behavior and Comfort of Calves Housed in Elevated Metal Stalls or Straw Bedded Pens. JACK L. ALBRIGHT and RICHARD L. MILLER, Department of Animal Sciences, Purdue University, West Lafayette, Indiana 47907.——A comparison of calves on elevated metal stalls with those housed in conventional pens was made. In the study 32 male and female Holstein-Friesian calves < 40 days of age were housed in a conventional calf barn in either (A) Elevated metal stalls and metal rod flooring .54 x 1.24 x .91 meters (21 x 48 x 36 inches) or (B) Conventional calf pens 1.2 x 2.17 x 1.2 meters (48 x 85 x 48 inches). Elevated pen flooring consisted of 5/16-inch round metal rods with approximately one inch from the center of the rod to another. Sixteen calves were on each treatment and two 24 hour continuous observations in March and April were taken for the time spent standing and lying. In both 24 hour watches, calves in elevated stalls (A) stood significantly ($P < .01$) more than those in regular pens (B). The percentage of time spent standing for the first watch was (A) 36.5 (8.8 hours) and (B) 23.2% (5.6 hours) and for the second watch (A) 37.5 (9.0 hours) and (B) 20% (4.9 hours). The average number of times each calf stood was not significant in the first watch (A) 10.2 and (B) 10.4 and approaches significance ($P < .10$) in the second watch (A) 8.3 and (B) 10.0. When 2.54 cm (1 inch) plastic mats were placed in the front portion of the elevated stalls, this did not significantly aid in terms of comfort. The calves on mats stood an average of 16 minutes more per day than those without mats. This is a matter of interpretation. These calves may have been more comfortable and able to stand longer. Related information on feed consumption (milk replacer, calf starter and water) and miscellaneous factors (turning around in stalls, moving from foot to foot, chewing, sleep, scours, etc.) were taken.

In comparing these calves on feed consumption data, all calves were fed once-daily in the afternoon. The elevated stall calves were much slower drinking their milk replacer-21.4 vs. 1.5 min. for the conventional housed calves. Grain consumption was shorter—27 vs. 49.5 minutes and water intake of 6.6 vs. 13.5 minutes/day/calf.

Such miscellaneous behavioral traits as play (jumping and kicking) were less in the elevated stalls-1 instance vs. 8 where the calves had more room. Turning around in the stalls was a real problem in the elevated stalls with 18 instances vs. 1 in the conventional stalls. Rating restlessness or moving from foot to foot showed 4 vs. 1. Chewing on ears and tails was 7 vs. 4. Sleep was in favor of the conventional reared calves-13 vs. 8. Scours were difficult to measure but 1 case was observed for the elevated stall calves and none for the conventional calves. Previous to this experiment, considerable difficulty had occurred with the elevated stalls and our herdsmen had been bedding them with straw. Also, scours were such a problem that management dictated their removal and they are no longer in use. These data are for metal stalls with metal rods which may not be as conducive to the animals' overall well-being, foot structure, hocks, lower and upper leg, sternum etc. as perhaps elevated stalls that are of wood construction or expanded metal.