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weeks with increases in body weight from 34 to 44 weeks of age of 17.3, 33.6, 48.2 and 53.9% for groups 1, 2, 3, and 4, respectively. At 50 weeks of age all groups of previously control fed males were significantly ( $P < .05\%$ ) heavier than originally full fed males.

Semen volume from 30 through 34 weeks of age was superior ( $P < .05\%$ ) in group 1. Males full fed or control fed 250 g/bird/day showed no significant difference in semen volumes produced while semen volume was poorest ( $P < .05\%$ ) in males control fed 200 g/bird/day. At 40 weeks of age, 6 weeks after being returned to full feed, increases in semen production were observed in all the previously control fed groups while semen volume declined from 40 through 50 weeks of age in the originally full fed males.

and ventral feather tracts) and the extremities (alar, caudal, crural, and humeral feather tracts).

A total of 193 birds were processed by microwave. All of the feather tracts were tested for feather release and tissue damage on each bird. A statistical discriminant analysis was done and it was concluded that proper feather release can be achieved, depending upon the bird's weight, the power used and the time stressed, and depending also on which area of the bird the feather release is observed (either extremities or torso feather tracts).

An estimation of energy consumption indicated hot water scalding would require about 200 BTU per bird, compared to 132 BTU using microwave feather release, a potential energy savings of 34%.

**MASTER OF AGRICULTURE—A PROFESSIONAL DEGREE IN POULTRY SCIENCE**

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Engineering, education, business administration, and architecture have long recognized the importance of graduate professional training. Growth, technical change, and business sophistication in the agricultural complex of which the poultry industry is a part require that today's graduate have a broader expertise than is offered with a bachelor of science or a master of science degree.

A Master of Agriculture degree in Poultry Science has been developed at Texas A&M University to offer advanced training for individuals who have as their goal management skills versus technical skills in industry and certain of the professions. The Master of Agriculture degree program in Poultry Science offers specific emphasis in feed mill, processing plant, or poultry farm management with background training in finance, personnel, and business management. These training programs require practical experience through a professional internship with industry.

The Master of Agriculture degree in Poultry Science is part of the professional graduate studies program in the College of Agriculture at Texas A&M University.

**ONTOGENY OF BODY TEMPERATURE REGULATION IN LEGHORN AND BROILER CHICKS**

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Two experiments were conducted to investigate the development of temperature regulation in growing chicks. The purpose of the first study was to determine body temperature ( $T_b$ ) of chicks from day of hatch to 8 weeks of age. Three treatment effects were analyzed: broilers vs. Leghorns, males vs. females, and fully-fed vs. postabsorptive chicks. A second study was designed to determine the onset of true homiothermy in growing chicks. Growing male Leghorns were compared to broilers subjected to ambient temperatures ( $T_a$ ) of 10, 20, 25, 30, and 35C. A total of 384 and 400 chicks were used in Experiments 1 and 2, respectively.

Results showed that average  $T_b$  of chicks approximately 12 hr posthatching was 39.0C. Mature  $T_b$  of 41.5C was not attained until chicks were 3 weeks of age. No differences in  $T_b$  were detected between the sexes or types of chicks throughout the 8-week study. However,  $T_b$  was significantly lower in postabsorptive Leghorn and broiler chicks ( $P < .01$ ). The second experiment showed that broilers had lower  $T_b$  compared to Leghorns when held at 10, 20, and 25C. Differences were particularly clear at 10C  $T_a$  and suggest that broilers take a slightly longer period of development to attain true homiothermy.

**EFFECTS OF MICROWAVES ON FEATHER RELEASE IN CHICKENS**

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Currently large quantities of water and energy are used to scald poultry. Microwave energy offers an alternative means of achieving the same goal without the water pollution or the potential contamination, while simultaneously reducing energy consumption.

A standard of 3.5 newtons was established as the maximum force permissible for good feather release. In the first trial it was found the feather tracts could be divided into two groups which responded similarly to microwave feather release: the torso (spinal, femoral,

**GROWTH AND MORTALITY RESPONSES OF FIVE BREEDS OF CHICKENS TO ACUTE GAMMA RADIATION STRESS**

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Growth and mortality responses were recorded for 541 chicks, representing five different breeds, following acute exposure to gamma radiation at two days of age. Although there were no statistically significant differences in the  $LD_{50/30}$  of the five breeds studied, Cobb broilers showed the highest (1580R) and White Leghorn Bantams the lowest (980R) levels, respectively. Other breeds studied included the standard White Leghorn, Athens Randoimbreds, and a strain of Feral Bantam. Body weights seem to be proportionately more depress-



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