



HOKKAIDO UNIVERSITY

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**DISTRIBUTION OF HEAT-RESISTANT *CLOSTRIDIUM WELCHII* IN
FECES AND ALIMENTARY TRACTS OF VARIOUS ANIMALS**

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(Summary of Masters thesis written under direction of Dr. S. HAMADA)

The incidence of heat-resistance *Clostridium welchii* in 1,176 samples of feces or contents of alimentary tracts of such animals as cows, pigs, fowl, dogs and rats was investigated in the summer and winter seasons. The results obtained were as follows:

1) Total number of strains isolated was 325 and all of them were identified as heat-resistant *Cl. welchii*.

2) The frequency of detection of heat-resistant *Cl. welchii* in dogs is 60.7% (102/168), in pigs 49.0% (167/341), in rats 25.8% (8/31), in cows 8.8% (27/307) and in fowl 3.6% (12/329).

3) The frequency of occurrence of heat-resistant *Cl. welchii* in these animals is inclined to be higher in the summer season than in winter.

**STUDIES ON THE INFLUENCE OF TEMPERATURE, LIGHT AND
GAS UPON THE GROWTH AND BEHAVIOUR OF THE
FREE-LIVING FORMS OF PEAFOWL'S *STRONGYLOIDES***

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(Summary of Masters thesis written under direction of Dr. J. YAMASHITA)

The author observed, experimentally, the growth and behaviour of free-living forms of *Strongyloides* sp. of peafowls. The results obtained are as follows:

1) The number of filariform larvae migrated from the culture ground into the water in one day and the total number of them obtained throughout the experimental term (2 weeks) were maximum at 28°C. These numbers rise or fall depending upon as whether or not the temperature was high or low. The day having the maximum number of filariform larvae at each temperature was delayed at lower temperatures than at high temperatures, and the migration of the

parasites was almost not at all influenced by irradiation with a fluorescent lamp (650 lx on the surface of culture ground) while migration was influenced by irradiation with a germicidal lamp ($400 \mu\text{w}/\text{cm}^2$ on the surface of culture ground). The occurrence of the parasites was almost normal or a little better than the control in high O_2 tension, but it falls in high CO_2 tension.

2) The growth of the body and oesophagus of the larva and the completion of the reproductive organs of the female in the free-living generation, were longer in cultivation at 20°C than at 28°C . By the irradiation of the germicidal lamp, the growth of the filariform was very late, and almost no larva developed to the adult stage. Their growth is not influenced by high O_2 tension while it is definitely influenced by high CO_2 tension.

3) In the experiment, the temperature was gradually raised from 0°C to 50°C . The head-swinging movement of the filariform larva became rhythmical at 18°C , it became so active that its frequency shows an average of 326.32 per minute at $41^\circ\sim 45^\circ\text{C}$ and it gradually became inactive at the higher temperatures. In the experiment the temperature was also lowered from 50°C to 0°C , and the frequency of the head-swinging movement exhibited the most activity at the same degree of temperature, thereafter it gradually decreased and the swinging movement became inactive at 10°C .

REFLEX CONTROL OF GASTRIC MOTILITY BY THE VAGAL AND GREAT SPLANCHNIC NERVES IN THE DOG

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(Summary of Masters thesis written under direction of Dr. A. OHGA)

1) The experiment was designed to investigate the reflex control of the stomach with the vagal and great splanchnic nerve, in intact, decerebrated and spinal dogs, prepared with transection of spinal cord between C_1 and C_2 or C_2 and C_3 .

2) In every preparation, except a few cases, the stimulation of both nerves resulted in an inhibition of motility and a fall of tone of the stomach.

3) The reflex inhibitory responses of the stomach to an afferent fiber in the dorsal vagal nerve stimulation, were mainly accomplished by the following reflex arcs, that is; (a) dorsal vagal nerve trunk \rightarrow brain stem \rightarrow ventral vagal nerve trunk \rightarrow stomach and (b) dorsal vagal nerve trunk \rightarrow brain stem \rightarrow spinal cord \rightarrow small and