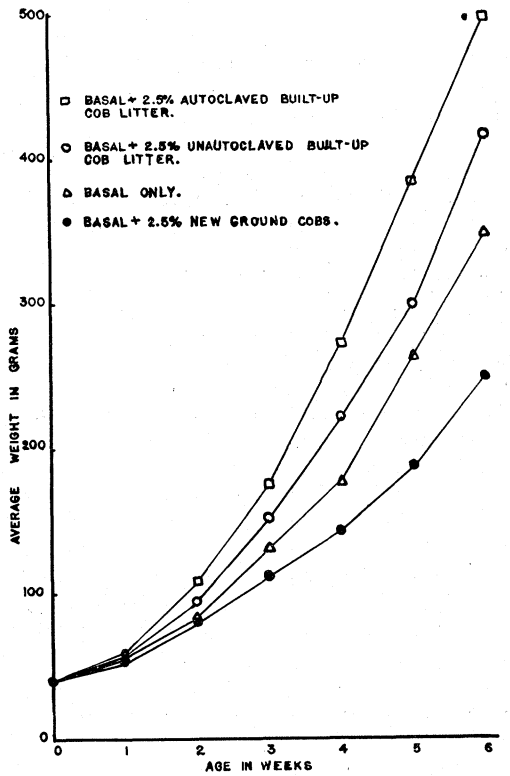


FIG. 1. Chick growth on all-vegetable vitamin $B_{12}$-deficient basal diet vs. basal plus 2.5% of various kinds of litter.

$B_{12}$-deficient diet. The autoclaving of this built-up litter for 15 min at 15 lb pressure made it decidedly more effective at the higher levels and produced a growth stimulation of 49, 121, and 142 g for the 1%, 2.5%, and 5% levels, respectively. Addition of ground corncobs to the basal diet, at the rate of 2.5% and 5%, decreased growth by 95 and 80 g, respectively (Fig. 1).

Autoclaving of the built-up litter may release a bound form of vitamin $B_{12}$, or it may destroy a toxic factor in unautoclaved litter that has a counteracting inhibitory effect on chick growth used at fairly high levels. The increase in growth obtained upon adding 1% of unautoclaved built-up litter as compared to 2.5% tends to support the theory that a toxic factor is present in the litter that has an inhibitory effect on growth, and that this factor is destroyed by autoclaving.

### References


1. KENNARD, D. C., and CHAMBERLIN, V. D. *Poultry Sci.*, 1948, **27**, 240.
2. ———. *Ann. N. Y. Acad. Sci.*, 1949, **52**, Art. 4, 583.
3. KENNARD, D. C., BETHKE, R. M., and CHAMBERLIN, V. D. *Poultry Sci.*, 1948, **27**, 477.
4. MCGINNIS, J., STEVENS, J. M., and GROVES, K. *Poultry Sci.*, 1947, **26**, 432.
5. MISHLER, D. H., *et al.* *Poultry Sci.*, 1946, **25**, 479.
6. MISHLER, D. H., CARRICK, C. W., and HAUGE, S. M. *Poultry Sci.*, 1949, **28**, 24.
7. RUBIN, M., BIRD, H. R., and ROTHCHILD, I. *Poultry Sci.*, 1946, **25**, 526.
8. SCHLAMB, K. F., and WINTER, A. R. *Poultry Sci.*, 1948, **27**, 492.


## Preliminary Results on the Crystal Structure of Some Ammonium Salts with Substituted Aliphatic Chains


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Because of renewed interest in the structure of aliphatic compounds, especially amines with straight and branched chains, preliminary investigations have been made upon the normal temperature modifications of the dodecyl-, tridecyl-, tetradecyl-, hexadecyl-, and *n*-methyldodecylammonium chlorides. Dodecylammonium, tetradecylammonium, and hexadecylammonium chlorides are monoclinic, space group $P2_1$ or $P2_1/m$, with $n=2$. Chemical considerations give preference to $P2_1$. Tridecylammonium chloride is orthorhombic, space group $C2ca$ or $Cmca$, with $n=8$. Cell dimensions of these compounds are:

| | $a$ | $b$ | $c$ | $\beta$ |
|---|---|---|---|---|
| $C_{12}H_{25}NH_3Cl$ | 5.66 A | 7.18 A | 17.73 A | 92° 30′ |
| $C_{14}H_{29}NH_3Cl$ | 5.67 A | 7.20 A | 20.13 A | 95° 52′ |
| $C_6H_{33}NH_3Cl$ | 5.71 A | 7.24 A | 22.56 A | 98° 21′ |
| $C_{13}H_{27}NH_3Cl$ | 7.57 A | 7.61 A | 56.49 A | 90° |

N-methyldodecylammonium chloride is triclinic, space group $P1$, with $n=2$. Cell dimensions are: $a=4.98$ A; $b=5.29$ A; $c=29.92$ A; $\alpha=90°\ 52'$; $\beta=91°\ 52'$; $\gamma=90°\ 45'$.

The Buerger precession camera was used almost exclusively for unit cell and space group determinations. Laue photographs of these compounds, especially dodecylammonium chloride, show strong diffuse reflections which will be further investigated.

Patterson-Harker projections have been completed, and Fourier analyses are under way on molecular configurations and bond lengths.


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## Growth Layers on the Teeth of Pinnipedia as an Indication of Age


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Government biologists engaged in research on the Alaskan fur seal, *Callorhinus ursinus* (L.), in recent years have marked 80,000 young seals by means of hot-iron brands or numbered metal tags. As a result, thousands of animals of known age are now available for study on the Pribilof Islands, in the Bering Sea, where the adult seals gather each summer to breed, and the young seals to rest. While examining the skull of a known-age specimen in 1949 we observed faint concentric ridges around the roots of the teeth. The age of the seal in