and 30 *Periplaneta americana*. A few additional animals that survived no longer than 4 days are omitted, since they never fully recovered from the operation. Of the 37 animals, 10 underwent two postoperative molts, and six underwent three such molts. Although only five individuals reached the adult stage in the first postoperative molt, 18 reached this stage at subsequent molts.

Twenty-one of the *Periplaneta* nymphs were operated on at varying times from a few minutes to 35 days after the molt. Those operated on more than 10 days postmolt had about 60-percent longer first postoperative instars. From this it might appear that the intermolt period had been significantly lengthened by prothoracic gland extirpation; however, it seems more reasonable to conclude that this postoperative instar extension resulted from the operation itself and the subsequent wound repair. The second and third postoperative instars of 16 and six roaches, respectively, were not unduly long. The intermolt periods of many domestic roaches, even among litter mates reared under controlled conditions, are highly variable (*3*). Because of this and the small number of individuals involved in these experiments, speculation on apparent delay in molting is not justified. The sexual cycles of the *Cryptocercus* protozoans were not affected by the extirpations.

In most cases, examination of the excised gland and subsequent autopsy showed a partial removal of 50 to 98 percent of the gland. In the cases in which 98 percent or more was removed, it could not be determined with absolute certainty by either of these methods whether a small part of one or more ends was left within the animal. Further, the gland frequently forms small branches along fine tracheae. The ease with which these were torn away left some question concerning the possibility of complete removal and consequent reliability of the operation. Although no significant regeneration was noted, it was felt that very small sections of the gland might be sufficient to enable an animal to continue its growth and development. At the time of these operations, and in the light of Bodenstein's findings (*4*), additional experimentation was deemed necessary before publication of these results. The need for further study of this gland, the brain, and perhaps even unsuspected hormone sources, is becoming increasingly apparent. This report is intended as an added stimulus to this end.

Table 1. Prothoracic gland extirpations: molting in the first postoperative instar

Extirpation (%)	Total	Died	Molted to adults	Molted to nymphs	% molting
98 or more	5	0	0	5	100
50 to 98	39	7	5	27	82

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References and Notes

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2. This work was supported in part by a National Science Foundation grant.
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6 April 1955

Doverite, a New Yttrium Mineral

Doverite, a new yttrium fluocarbonate, has been discovered at the Scrub Oaks iron mine at Dover, Morris County, New Jersey. The mineral is named for the city of Dover. It was discovered during the course of work being undertaken by the U.S. Geological Survey on behalf of the division of research of the U.S. Atomic Energy Commission.

The new mineral occurs in aggregates mixed with xenotime, hematite, and quartz. The aggregates are irregular—some of them are as large as 1 in. in diameter, and some of them have rims of bastnaesite.

In parts of the mine, doverite constitutes several percent of the gangue. It is anisotropic and has indices of refraction in the range from 1.700 to 1.685. No detailed optical data can be presented because of the finely crystalline nature of the mineral. The marked similarity of the x-ray diffraction powder patterns of doverite and synchisite ($CeFCO_3 \cdot CaCO_3$) indicates that the minerals are in the same crystal system and have the same crystal structure. The three strongest lines of doverite are 9.7, 3.53, and 2.78 A, which are almost identical with those of synchisite 9.7, 3.56, and 2.80 A.

Doverite is very fine grained and physically inseparable from the other components of the aggregates. Hematite and doverite were leached from the aggregates with concentrated hydrochloric acid; a residue of quartz and xenotime was left. Interpretation of chemical analyses of the aggregates shows doverite to be an yttrium analog of synchisite with the general formula $YFCO_3 \cdot CaCO_3$, the Y in the formula including several elements of the rare-earth group.

Doverite is brownish red and constitutes the bulk of the aggregates, which have a nonmetallic luster and a brownish streak, are brittle, and break with an uneven to subconchoidal fracture. Their hardness is 6.5, and the specific gravity is 3.89.

Chemical analysis of the aggregates shows the following percentages: rare-earth oxides, 44.36 (including Ce_2O_3 7.40); ThO_2, 1.62; SiO_2, 9.70; Fe_2O_3, 8.90; CaO, 9.80; P_2O_5, 8.75; Al_2O_3, 0.54; UO_3, 0.22; TiO_2, 0.75; MgO, 0.53; total H_2O, 1.35; CO_2, 11.75; and F, 2.87; total 101.14; less O = F 1.21; total, 99.93. Spectrographic analysis by K. E. Valentine of the Geological Survey shows Y to be a major component. The rare-earth components include minor amounts of Ca, La, Gd, and traces of Dy, Er, Yb, Nd, Pr, Lu, Ho, Tm, and Eu. Further detailed work on the minerals of this deposit is in progress.

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29 April 1955

Orientation of Single-Crystal Silver Halides by Epitaxy

Attempts to orient single-crystal boules of AgCl and AgBr grown from the melt have been rather unsuccessful. These boules have the shape of cylinders and show no crystal faces. Orientation of the boules has been tried by (i) cleavage, (ii) punch figures, (iii) x-rays, and (iv) etch figures. Attempts to develop cleavage by striking a boule cooled in liquid nitrogen were not uniformly successful. These silver halides do not respond to the punch-figure technique of orientation because their glide elements $\langle 110 \rangle$ $\{1\bar{1}0\}$ do not lead to prismatic slip. Our attempts to have the boules oriented by x-rays have not been successful, probably because of the high x-ray absorption of these salts. Further, the x-ray method does not readily give information on whether or not the boule is a single crystal. Etching with 10 percent $Na_2S_2O_3$ solution will reveal the grain boundaries in a boule consisting of more than one crystal but does not reveal the orientation.

Boules of AgCl and AgBr can be readily oriented by epitaxy of NaCl on the boule surface. This epitaxy (parallel oriented growth of NaCl on the silver halide) is produced by completely immersing the boule in a water solution of NaCl (saturated at room temperature) and allowing the solution to evaporate slowly in a constant-temperature room. After the solution has evaporated for several days, the boule acquires a coating of fine NaCl cubes (0.1 mm to 2.0 mm in size) in a close parallel-growth arrangement. The orientation of any portion of the boule can be readily seen from the integrated reflections from the (100) faces of these small cubes and can be accu-