Die dann folgenden Erscheinungen des allmählichen Zerfalles schreiten von der Wurzel nach der Spitze hin fort, und betreffen nicht nur die Cuticula sondern erstrecken sich auch auf die Rindenschicht und das Mark.

In einzelnen größeren oder kleineren Schuppen löst sich die Cuticula los, wodurch schon ein für das bloße Auge bemerkbares unreines Aussehen des Haares bedingt ist, welches noch durch die anhaftenden Fremdkörper vermehrt wird.

Bald werden auch die Rindenschicht und das Mark angegriffen. Während die gesunden Zellen des letzteren immer als deutlich umgrenzte Polygone sehr in die Augen fallen, verschwinden bei dieser Krankheit allmählich ihre scharfen Umrisse, die Zellwände lockern sich und die vorher intracellulär vorhandene Luft tritt aus, bis endlich das ganze Mark eine überall gleichartige granulöse Masse bildet.

Nun bricht das Haar ab, einen kurzen Stummel in der Haut zurücklassend.

Hervorgerufen werden diese Erscheinungen durch einen Pilz, Trichophyton tonsurans Malmst., dessen Mycel bei der als Herpes tonsurans bekannten Krankheit die Haare von Menschen und Thieren befällt, und, wie in zahlreichen Fällen constatiert wurde, von letzteren auf den Menschen übertragen werden kann.

Die Infection wird manchmal vermittelt durch thierische Parasiten, an deren Körper die Pilzsporen hängen bleiben und so auf einen anderen Wirth verschleppt werden.

3. Further Observations on the Dorsal Gland in the Abdomen of Periplaneta and its allies.

By Edward A. Minchin, Keble College, Oxford.

eingeg. 20. December 1889.

A short time ago a pair of glands, previously unnoticed, lying in the intersegmental membrane between the fifth and sixth abdominal terga of *Periplaneta orientalis*, was described by me in the Quarterly Journal of Microscopic Science for December 1888. At that time it was impossible to obtain specimens of other species of *Blattidae* to dissect, but since then freshly killed specimens of *Periplaneta americana* (♂), *P. decorata*, Brunner (one male nymph) and *Blatta* (*Phyllodromia*) *germanica* (♂ and ♀) have come into my hands, showing interesting variations in this organ in some of the species.

In *Periplaneta americana* there is no departure from the condition described for *P. orientalis*. In *P. decorata* the glandular pouches have

a similar structure, though slightly different in detail, being a little shallower, and of greater lateral extent. There are the same branched hairs present in their interior as in *P. orientalis* and *P. americana*. But there is in this species an additional gland, opening by a tubular duct under the intersegmental membrane between the fifth and sixth terga above the glandular pouch of each side, and extending forward into the body cavity. The gland and its duct are proliferations of the hypodermis, and there is no invagination of the cuticle.

It is in *Blatta germanica* that the greatest complication of structure occurs. In this species there appears to be no trace of the organ in the female. But in the male it is relatively of enormous size, extending over the sixth and seventh somites, as well as projecting far into the body cavity; it is quite visible externally in the ordinary condition of the animal.

An external view of the dorsum of the abdomen of the male shows the following peculiarities. The first four terga are alike and unmodified. The fifth is slightly larger and marked by a transverse furrow, deepest towards the middle line. The sixth is much larger, and shows two very large, oval depressions of considerable depth, separated from one another by a median septum. Each of these depressions is further divided in two by a transverse ridge, which is broad and shallow towards the lateral edges of the tergum, but becomes narrow and deep towards the middorsal line where the ridges of either side are confluent and produced into a rod or cirrus, which projects freely upwards from the surface of the tergum. The depressions with their ridges extend nearly to the extreme lateral edge of the tergum.

The seventh tergum is still larger than the sixth and emarginate in the middle line posteriorly. Close under the projecting edge of the sixth tergum it shows a large median opening divided in two by a median longitudinal septum which does not quite reach the level of the surface of the tergum. Externally these openings do not reach more than a third of the way from the middorsal line to the lateral edges of the tergum. Sections show that these two openings lead into large tubular invaginations of the cuticle and hypodermis which extend inwards in a postero-lateral direction to end blindly close to the stigmata of the sixth somite.

The following points of structure and histology can be readily made out from sections. All the depressions and invaginations are lined by a tough brown cuticle of some thickness. Over the ridge and cirrus it differs from the rest in being thinner and staining red with borax carmine. It is noticeable, however, that the foliate expansions of the 10th tergum in the males of *Blatta germanica* and *Periplaneta ameri-*

cana, which are greyish white in the living condition, also stain red in the same manner. Hairs are present, of two kinds; (I) stiff, straight, pointed hairs of the kind found all over the body; these are scattered sparingly over the cuticle covering various parts of the organ; (II) very minute short and fine sensory hairs, confined apparently to the ridges dividing the depressions of the sixth somite, and connected each to a nerve filament. The hypodermis lying between the cuticle and basement membrane is enormously thickened in the organs of both the sixth and seventh somites. There is also a small isolated thickening on the intersegmental membrane between the fifth and sixth terga, perhaps the homologue of the organ in the various species of *Periplaneta*. The ridge and cirrus are formed as sharp folds of the cuticle, hypodermis, and basement membrane, and transverse sections show a similar folding of the hypodermis and basement membrane all along the middorsal line of the sixth and seventh somites. The thickened hypodermis contains the following elements; (I) lying close under the cuticle is a layer of small darkly staining nuclei, each belonging to a narrow elongated cell which extends inwards about half way to the basement membrane; (II) close to the basement membrane is a layer of nuclei lying at varying distances from it, each large round and granular with a nucleolus; these nuclei belong to large, elongated, granular cells, which rest on the basement membrane, and at their inner ends are enlarged and in contact with one another, but more externally they narrow into tapering processes extending up almost to the cuticle, and appearing to interdigitate with the cells of the outer layer; (III) interspersed with these elements are numerous slender nerve filaments, with elongated fusiform nuclei at intervals. They either end in the cuticle in a manner not determined, or in minute hairs, and in the latter case the filament either runs directly to the hair, or first swells out under the cuticle into a small nucleated ganglion cell from which a delicate filament is given off to the hair. In some sections the filaments have been observed springing from a nerve lying under the basement membrane beneath the ridge of the sixth tergum.

Want of leisure prevents me at present from working out the structure and development of these organs more fully, but I hope to do so later on, and any one who would be kind enough to send me in the mean time living or well preserved specimens of different species of *Blattidae* (other than *Periplaneta orientalis* and *americana* and *Blatta germanica*) would render me a great service [1].

[1] It is possible that these organs may occur in other Orthoptera allied to Blattidae, such as Mantidae and Acrididae. M. J. Künkel has described in the larva of the hemipterous *Cimex lectularius* 3 odoriferous glands, each with paired openings

Professor Westwood has very kindly looked through the literature of the *Blattidae* and has shown me a drawing of the abdomen of the male *B. Germanica* in Brunner von Wattenwyls »Nouveau Système des Blattaires« (1865), but owing apparently to the contracted state of the abdomen in his specimen the openings above described were not seen by the author. Professor Westwood also directed my attention to a figure (Tab. I Fig. 1 D) in the same work of the abdomen of the male *Ectobia lapponiea,* in which the sixth tergum is shown to be greatly enlarged and with a median oval opening of considerable size partly covered by the fifth tergum.

The Museum, Oxford, 11th December 1889.

4. Zur Parthenogenesis beim Seidenspinner.

Von E. Verson, Padova.

eingeg. 22. December 1889.

In Folge der Bemerkungen, welche Herr Dr. Tichomiroff über diesen Gegenstand in No. 282 des Zoolog. Anzeigers an mich richtete, habe ich im verflossenen Herbste die Eier von 49 jungfräulichen Schmetterlingen des Seidenspinners (*Bivoltini*), kurz nach ihrer Legung der Einwirkung der Electricität ausgesetzt, deren Anwendung, wie ich zuerst gezeigt habe[1], unter bestimmten Verhältnissen die Grains selbst einjähriger Rassen zur sofortigen Ausbrütung geeignet macht.

Aber auch im gegebenen Falle ist meine Bemühung ganz resultatlos geblieben.

Während aus den befruchteten Controlleiern innerhalb 10 Tagen die Räupchen bei 18° R. schon sämmtlich ausgeschlüpft waren, blieb die gleiche Behandlung ohne jede Wirkung auf die Eier der 49 unbefruchteten Weibchen, welche theils ganz ungefärbt, theils mehr oder weniger gefärbt, nach einem Aufenthalt im Brutofen von 28 Tagen bis auf einen kleinen Rest von 0,4 % gänzlich vertrocknet sich ergaben.

Die wenigen noch vollen Körner wurden nach Selvatico's Methode mit heißem Wasser abgebrüht, eröffnet, und mit Safranin gefärbt: die seröse Membran, sowie die Dotterkügelchen bieten nichts

situated on either side of the median dorsal line, and arranged transversely at the margin of the first, second and third tergites of the abdomen. The invaginated cuticle lining these glands is continuous with that of the integument, so that they would appear to be somewhat similar to the organs described in *Periplaneta*. When the *Cimex* undergoes its final moult the abdominal glands disappear and are replaced by sternal glands situated in the thorax. See Annals of Natural History, 5th Series, Vol. XVIII. 1886. p. 167; Compt. rend. Vol. CIII. 1886. p. 81.

[1] Verson e Quajat, Sullo strofinamento dei semi di razza annuale. Stazione Bacologica di Padova, 1873.