Summary

Pendant tout le développement embryonnaire, l'œuf de *Zootermopsis* se gonfle progressivement par imbibition d'eau. Chez *Kalotermes*, par contre, cette augmentation de volume s'effectue subitement entre le 18e et le 20e jour. L'œuf double alors son poids. Cette rapide résorption d'eau est probablement réalisée par osmose à travers la cuticule qui, jusqu'au 18e jour, a été secrétée par la séreuse.

Le développement des termites se distingue de celui des Orthoptères qui ont également des germes courts, par la position nettement superficielle de l'embryon et par un autre mode de métamérisation, peut-être plus primitif, qui, comme il a été dit, progresse d'avant en arrière à partir du segment préantennaire.

Summary.

The embryonic development of two termite species, *Kalotermes flavicollis* and *Zootermopsis nevadensis* is described. At a temperature of 26°C it lasts 54 days for the first species, while it is completed within only 29 days for *Zootermopsis*. For both species the development proceeds mainly in the same way; it differs only in the position of the germ before it starts to move, which takes place in about the middle of the developmental process. While the embryo of *Kalotermes* lies close to the ventral side of the egg and shows only a caudal curve, that of *Zootermopsis* is S-shaped inside the egg. The head section arches over the posterior pole; the germ thus shows, in addition to its ventral caudal curve, a strong dorsal curve of its anterior region.

The termite germ represents the extreme short type ("Kurzkeimtyp" after KRAUSE) which, during the whole period of its development, lies on the surface of the yolk. The germ disposition originates in a clustering of cleavage nuclei directly under the numerous micropyles between 0% and 13% of the egg length. This clustering is caused by a peripheral streaming of yolk. After the epibolic formation of the inner layer the lateral and especially the posterior edges of the germinal disc fold, thus forming superficially the amnion. At the same time single cells detach from the inner layer which later on dissolve in the yolk to form the vitellophages. The germ now forms a small globular vesicle, appearing as a ring in optical sections. In *Kalotermes* this vesicle then moves around the posterior pole towards the ventral side of the egg. This movement does not occur in *Zootermopsis*. The extremely short germ, not yet showing either anterior or posterior polarity, becomes first an unsegmented germ band, at the anterior end of which head lobes are formed. The various metameres are then developed from front to back.

After the segmentation is completed the germ movements begin; they are divided into two phases. The first corresponds to the unrolling of the invaginated or immersed germ in other insect groups. In the case of the termite the embryo slides, head first, behind the retracting serosa around the posterior pole towards the dorsal side of the egg. Strong contractions, the centre of which lies at the posterior edge of the dorsal organ, i.e. of the retracted serosa, initiate the second phase of germ movement: the embryo slides round the whole yolk towards the ventral side, rotating 180° around the egg axis. Now the germ has reached its definite position which differs from the original position in so far as the head now lies in the anterior pole of the egg.

During further development the dorsal organ is reduced and the embryo grows gradually on both sides covering the yolk until it fuses dorsally. Shortly after this the first contractions of the heart set in. Strong movements of the heavily developed head muscles tear the chorion at the anterior pole and the larva emerges from the egg.

During the whole embryonic development the egg of *Zootermopsis* swells gradually from day to day, due to water absorption. *Kalotermes* shows this increase of size suddenly between the 18 and 20th days. The weight of the egg is doubled. This rapid water absorption probably occurs by osmose through a cuticule which is gradually secreted by the serosa before the 18th day.

The development of termites differs from that of Orthoptera (also characterized by short germs) by the superficial position of their embryo and by their course of segmentation progressing from the preantenal segment backwards. It is possible that the germ type of termites is the less evolved of the two.