

cysts becoming detached at any time during the staining process, and prevents injury to the cysts due to transference. Obtaining accurate data regarding age of individual cysts is also made possible by this method.

A study of (1) living material and (2) stained preparations of cysts in various stages has brought out the following facts: During some period of encystment external organelles disappear. With excystment a redifferentiation of these structures occurs. The nuclear apparatus undergoes a reorganization process during encystment which is similar to that taking place in binary fission and conjugation in this species.

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Regeneration of Peridental Membrane in the Cat.*

T. D. BECKWITH AND ADRIENNE WILLIAMS.

From the Department of Bacteriology, University of California.

Recently we¹ have shown that regeneration of the peridental membrane takes place in the guinea pig and rabbit following artificial destruction of this tissue. The sequence of events leading up to this repair was outlined. Injury had been induced by passing a dental bur through the alveolar process across the peridental membrane and into the upper incisor tooth on its lingual surface. Thus, the peridental fibres were severed at this point. The rodent was chosen for that work since it has continuously growing teeth with the result that uninjured tooth surface will move forward to a position opposite to the site of injury to the alveolar bone. Thus repair may be followed more easily by microscopic technique.

A similar series of experiments then was performed upon cats. This was done in order to learn whether a like sequence of repair may be demonstrated in an experimental animal still higher in scale and in which the tooth is stationary. The animals were 4 or 5 months old and had received the usual animal house diet. The operation was performed by Dr. F. V. Simonton of the College of Dentistry of this university and his cooperation is thus acknowledged.

* Aided by grant from the Carnegie Corporation, the American Dental Association and the Associated Radiograph Laboratories of San Francisco.

¹ Beckwith, T. D., Williams, Adrienne, and Fleming, W. C., *Proc. Soc. Exp. Biol. and Med.*, 1927, **xxiv**, 562.

Following the operation, the animals were killed with chloroform as follows: 10 days, and 7, 8, 13, 17, and 20 weeks. The experimental tissues were then dissected out and sections cut according to the method outlined by one of us (A. W.).²

Examination of the sections made shows a picture closely similar to that found in rodent tissue. In certain of our animals killed at the close of the 7 and 8 week periods, it was evident that infection had developed. This had resulted in destruction of tissue adjacent to the site of the cut and both hard and soft tissues had been involved.

Destruction in turn had been followed by repair. New cementum had been laid down upon the external surface of the eroded dentine. As this cementum was formed fibroblastic migration took place upon the cementum surface. Fibroblasts in turn developed into true fibrous structure. These fibres extended across the field to newly forming alveolar bone and as the bone repaired these fibres had become incorporated within it. Repair of the alveolar bone progressed in the usual manner by osteoblastic activity. It is of interest to note that the alveolar tip extended into the area of previous destruction rapidly but, on the other hand, growth of the bone

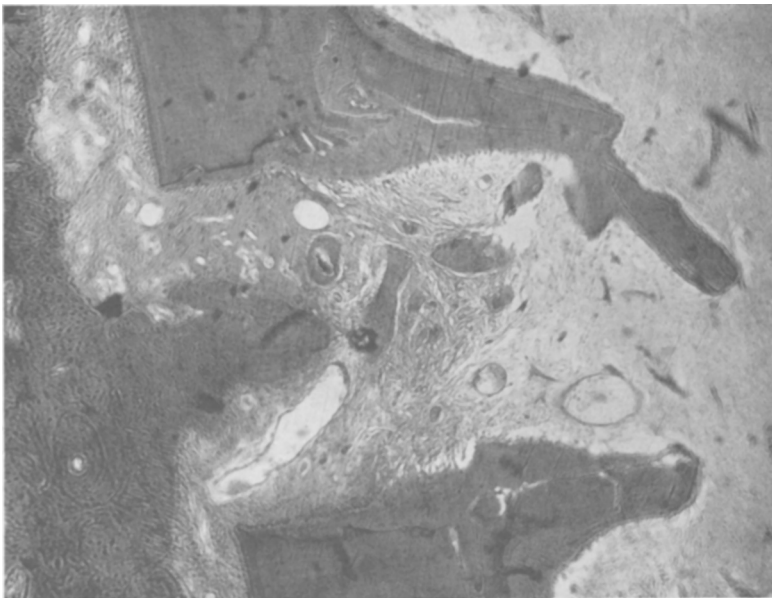


PLATE 1.

Repair of periodontal membrane in cat. Note extension of alveolar bone into the cut area. Cat. 8 weeks.

² Williams, Adrienne, *Dental Cosmos*, July, 1927.

towards the tooth was a slower process. This resulted in a longer exposed span for the newly formed peridental fibres. It was evident, however, that the new fibres were becoming incorporated within this bone.

Plate No. 1 indicates repair fundamentally like that noted just previously. In this animal a thick formation of cementum had been laid down upon the cut wall of dentine. In this instance, however, the alveolar wall has extended into the cut and thus an hypertrophy of the alveolar bone has been produced. Peridental fibres connect the newly formed cementum with this projection of bone.

Replacement of true peridental membrane and not merely scar formation thus has been shown in the cat following initial destruction by artificial means.

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Hypertrophy of Mammary Gland in Adult Male Rats with Experimental Ovario-testes.*

EARL T. ENGLE.

From the Department of Anatomy, Stanford University.

In a previous report¹ it was stated that typical ovario-testis could be produced in adult male rats by grafting the ovaries of immature females into the testis, subsequently giving daily transplants of the anterior lobe, using Smith's technique.²

Eight to 12 days of treatment is sufficient to produce numerous ovarian follicles of mature condition in the ovarian graft, but no changes have been observed in the host animal. If the daily transplants are continued for 18 days, the ovarian mass engrafted in the testis is greatly increased. The large follicles are more numerous, and in many cases, the thecal cells have hypertrophied, forming a layer of lutein cells around the periphery of the follicle.

As shown in Fig. 2, the response in the tissue of the mammary gland of the treated male rat bearing an ovarian graft is markedly different from that of its litter-mate (Fig. 1), which had received the same number of daily transplants of anterior lobe, but which did not bear an ovarian graft.

* Aided by a grant from the National Research Council Committee for Research in Problems of Sex.

¹ Engle, E. T., *Proc. Soc. Exp. Biol. and Med.*, 1927, xxv, 83.

² Smith, P. E., *Am. J. Physiol.*, 1927, lxxx, 114.