

## Counting Perikymata Using a Low-power Stereomicroscope

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Detailed studies of perikymata and enamel hypoplasia defects have considerable potential, but are both time consuming and difficult to carry out. The normal method for constructing chronologies of perikymata on the surfaces of tooth crowns is to count them on photomicrographs taken with a scanning electron microscope. This involves the production of epoxy replicas of the crown surface, together with the use of expensive equipment which is not universally available. At spacings of 120  $\mu\text{m}$  down to about 20  $\mu\text{m}$ , the grooves of perikymata can be made out clearly with a high quality, but otherwise ordinary, stereomicroscope under reflected light. The more coarsely spaced perikymata grooves near the occlusal surface of the crown need only magnifications of x10 or so to see them, and x40 is at least adequate for distinguishing the finer grooves. For most studies, the main reason for using scanning electron microscopy to examine them is the much greater depth of field which makes photomicrography much easier. Camera attachments are available for many stereomicroscopes and, with a little practice, photographs of crowns seen in reflected light can be taken. The difficulty is that the strongly curved surface of the crown can only be properly focused in one small part of the field of view, so that a very large number of photographs is needed to cover one crown adequately.

In previous studies, the present author found photomicrographs essential for keeping a proper count of perikymata grooves, and maintaining a sense of position on the tooth crown. This made the scanning electron microscope indispensable. With the arrival of a new Wild stereomicroscope, complete with a drawing tube assembly, it was found possible to avoid photography altogether. The drawing tube makes it possible to follow, superimposed over the image of the specimen being examined, the movements of a hand and pencil on a sheet of paper taped to the bench beside the microscope. At low magnifications, an outline of the crown can be drawn, with the positions of hypoplastic defects and particularly prominent perikymata grooves marked and annotated. At higher magnifications, perikymata groove counts can be made simply by moving the tip of the pencil in the eyepiece image in a transect down a particular part of the crown and making a tick in the position of each groove.

With carefully illumination, the original teeth can be examined in this way, although dental enamel is rather too glossy and reflective for comfortable study. To counteract this, teeth can be coated, either in a sputter coater or using Jerome Rose's ammonium chloride method (see *Yearbook of Physical Anthropology* 33, page 95). These coatings can be cleaned off simply by wiping. It is also possible to examine epoxy replicas under a stereomicroscope, with either reflected or transmitted light.