Loosening of the tissues. Replace the fixing fluid with a cooled mixture of 1 part of concentrated hydrochloric acid (sp.gr. 1·27) + 2 parts of 95 per cent alcohol. Roots are treated for 8–10 min. For leaves the character of the tissues will decide the concentration and time: *Beta*, 1 : 2 for 7–8 min.; *Pisum*, 1 : 4 for 5 min.; *Pyrus* and *Betula*, 1 : 1 for 10 min.; flower-buds, 1 : 10 for 5–8 min.

Washing. Replace the loosening fluid with distilled water and preserve in a cool place for 15–30 min. (thick leaf tissues and body complexes for 60 min.).

Staining. Place four or five roots on an object glass. Cut away portions not showing divisions; suck off. For a leaf specimen, take a *small* piece from the base of a leaf on a quickly growing part of the stem. Squeeze flower-buds into pieces so that large portions of the bracts are picked off with a pincette. One drop of staining solution is added. With an ordinary piece of stiff eraser rubber (*a*) tap gently on the cover glass, (*b*) press fairly gently over the whole cover glass, (*c*) press hard with short vibratory movements, (*d*) lift the cover glass until the staining solution flows in over the tissues. Considerably less pressure is used for leaves. Pollen mother-cells are pressed still more gently. For roots the staining time is 1–2 min. The staining fluid should be cool. Leaves of *Pisum* are stained for 30 sec., *Beta* 40 sec., those of *Pyrus* and *Betula* for 45–60 sec. For these types of tissues, 4 per cent staining fluid is used; for buds, 3 per cent solution. The pigment colours the chromosomes quite black and the plasm a faint grey.

After staining, pass a rubber roller to and fro some ten times over the cover glass, on which a filter-paper is laid.

Staining fluid. Prepare a 4 per cent solution as follows: dilute 50 c.c. of concentrated (98 per cent) acetic acid with distilled water to 100 c.c. Heat to boiling-point. Add, continuously stirring the while, 4 gm. of spirit-soluble nigrosine[1]. Boil for 3–5 min. to a weak tarry consistency. Cool and filter immediately. Keep the solution in a closed glass vessel at room temperature for about 10–14 days before use.

Two girls previously quite unacquainted with cytological and similar technique are using this method at Hilleshög. To-day their capacity is 100–120 plant-counts on root-tips per working day of seven hours. Leaf-counts can be made even more quickly than root-counts (150–200 plants per day).

GÖSTA VON ROSEN

Beet-Breeding Institute,
Swedish Sugar Company,
Hilleshög, Landskrona,
Sweden.
April 18.

[1] *Stain Tech.*, **10**, 73 (1935).

Feeding Mechanism of Water-bugs

AN account has been given by H. D. Slack of the cibarial suction pump of Corixidæ, in which a modification producing the effect of chitinous jaws was noted[1]. A full account of the head and mouth parts of *Rhamphocorixa acuminata* has been previously given by M. E. Griffith[2]. Further, H. B. Hungerford[3] has found solid food in the alimentary canal of Corixidæ, in particular, jaws of rotifers, filaments of *Oscillatoria* sp. and *Mougeotia* sp., slime diatoms, etc. In an investigation begun in 1943, I have confirmed much of this work, and, in addition, have found legs of Crustacea, *Anabæna* sp., undamaged filaments of *Spirogyra* sp., an unexploded nematocyst, pollen grains, etc. I have also made observations on the feeding of *Sigara striata*, *S. falleni*, *Corixa punctata* and *C. panzeri*, on chironomid larvæ, Mayfly nymphs and daphnids. In all cases the live food was pierced and anchored by the mouth parts, probably by the mandibular teeth described by M. E. Griffith[2]. The food thus seized was held for periods varying from five to twenty minutes, during which time some of the contents of the living animal were sucked into the corixid. On one occasion black pigment from the eye of a daphnid was observed streaming through the pharynx.

H. D. Slack suggests that the cibarial 'teeth' probably have the function of comminuting the solid food ingested, a function also attributed to the masticator described by Griffith. This may be so; but in many instances the contents of the mid-gut are found to be remarkably intact, while the finely comminuted food there is usually identical with the detritus upon which corixids frequently feed.

That there is a difference in chitinization between early instar nymphs and adults is in agreement with observations made by me on the instars of *C. panzeri*[4]. The general chitinization of the first and second instars is much less intense than in later instars and adults. An investigation of the gut contents of early instars indicates little difference in food ingested compared with that of later instars and the adult. Possibly, therefore, the heavier chitinization of the cibarial teeth in the adult is not due to a change in diet, but is part of a general increase in body chitin. An investigation of the histology of the alimentary canal and nutrition of Corixidæ was begun in 1943, and the results are shortly to be published.

MURIEL SUTTON

Department of Biology,
Chelsea Polytechnic,
Manresa Road,
London, S.W.3.
May 9.

[1] *Nature*, **159**, 605 (1947).
[2] Griffith, M. E., *Univ. Kansas. Sci. Bull.*, **30**, Part II, No. 14 (June 1945).
[3] Hungerford, H. B., *Univ. Kansas Sci. Bull.*, **11**, 1 (1933).
[4] Sutton, M. F., *Proc. Linn. Soc.*, **158**. Pt. 1, 51 (1947).

Individual Activity of Ants

FOLLOWING the publication of my note on the "Division of Labour in Ants"[1], Dr. T. Cunliffe Barnes of Philadelphia has directed my attention to his paper on "The Rhythms of Activity in Ant Colonies"[2], of which I was previously unaware.

In the course of his experiments, Dr. Barnes observed "that certain restless individuals in the group [of ants] were constantly arousing inactive individuals to activity by touching them with the antennæ". Brief details of the occurrence of this phenomenon in two experiments are given. These restless 'catalyst' ants of Dr. Barnes are the equivalent of the 'excitement centres' in my theory of the division of labour. Although Dr. Barnes did not study the behaviour of his ants in relation to the division of labour, but was only concerned with the activity or inactivity of individuals and groups, it is of considerable interest that when the ants were placed in artificial nests where they had no occupation (or queens ?) certain individual ants showed greater