unusual at Niah). *C. salangana* made its first clicks when the wing was 113+ mm long (adult wing 119–129 mm). The onset of clicks occurred despite the loss in the weight and deprivation of food, and was apparently "instantaneous", without preliminary clicking "trials". Clicking was only heard when the wings were fluttering, either for exercise or in flight; this was confirmed for adults of both species. They do not click if the wings are pinioned, but do so readily if handled with wings free. Clicking can be turned on "at will" in adult flight and is used more widely than has been supposed—for example, in daylight sweeping over water, in courtship and "play" flights, and when traffic is dense in the cave mouth at any time of day.

Eyesight is more accurate than echo-location in the light. The third Niah cave swiftlet, *C. esculenta*, which keeps to the fully lit cave mouths and cannot echo-locate, is readily caught in mist nets by day, whereas during 4 months only two adult *C. salangana* and no *C. maxima* were netted in any cave in daylight. These two "echo-location species" start hitting the nets at dusk and continue to do so until dawn. They are easily netted anywhere in the cave by night (940 were taken at selected spots during the period under review). It is interesting that of the only two albino *Collocalia* recorded at Niah in the period 1957–65, one was caught just outside the West Mouth in a mist net during daytime. It was a *C. salangana*—presumably with defective vision.

There is also a tendency to aim echo-location towards the roof of the cave. When there is a large, clear exit showing the light, which is below an upper dark area, birds frequently fly up to explore the top sections. They may not find the visually "obvious" outlet for 0·5 h, sometimes 10 h, although they frequently pass a few feet over it. Experiments on Javanese *C. fuciphaga* gave similar results (personal communication from Medway).

No general theory for the mechanism of echo-location in these *Collocalia* has yet been offered[7]. I suggest that the clicks are related to wing movement, perhaps with a direct nerve and muscle linkage connecting both wings to the jaw, mouth, tongue and beak assemblage. The uniquely developed sublingual glands which supply saliva essential for all *Collocalia* which nest in caves may form part of the same complex[8,9].

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New Approach to the Study of Rumen Absorption

THE processes of production, transformation, dilution, absorption and transport proceed simultaneously in the rumen, and the concentration of substances in the fluid of the rumen is influenced by some or all of these processes. Only a limited amount of information about the course of these processes *in vivo* can be obtained from measurements of the fluid concentrations. Thus I have tried to investigate absorption through the rumen wall after isolating the process in the following way.

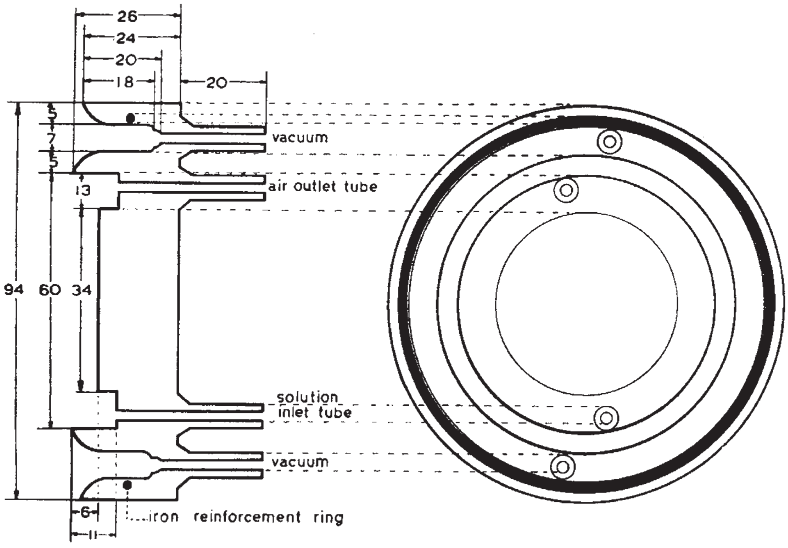

Fig. 1. Rumen "sucker"; the dimensions are given in mm.

A device which could be attached by suction inside the rumen was made from polyvinyl chloride. This "sucker" (Fig. 1) has a central cup which is firmly pressed against the epithelium of the rumen. Solutions for absorption through the wall can be introduced and extracted through small bore plastic tubes attached to the cup.

This method has the disadvantage that it can only be used when the cow possesses a large rumen fistula through which the sucker can be introduced. The tubes attached to the cup and to a vacuum pump (in my experiment a milking machine) pass through the fistula. It is important to arrange the sucker on the rumen wall with one of the tubes at the lowest point of the cup. 15 ml. portions of the solutions to be tested are introduced into the cup, using a syringe.

Table 1

Time in sucker	No. of determinations	Acetic acid (g/l.)	Propionic acid (g/l.)	Butyric acid (g/l.)
	Original solution	4	1	1
5 min	2	3·66	0·88	0·83
10 min	2	3·52	0·81	0·73
15 min	3	3·15	0·63	0·55
30 min	3	2·35	0·41	0·32
Standard deviation		0·054	0·044	0·033

The rapid absorption of volatile fatty acids determined by this method at low *p*H can be seen from Table 1, which gives the results obtained using a solution of volatile fatty acids, with *p*H adjusted to 4·5 by dilution with sodium hydroxide.

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Ribonucleic Acid Degrading Activity of Rat Liver Microsomes following Partial Hepatectomy

THE mechanism of cellular proliferation following tissue injury is unclear. Cytochemical and biochemical investigations have shown that the onset of mitotic activity in injured tissues is preceded by an early regressive phase when ribonucleoprotein and RNA are affected[1]. Clear structural changes in the ergastoplasm of rat liver have been observed in the first hours after partial hepatectomy[2,3]. These changes are accompanied by a sharp decrease in the ability of RNA to bind basic dyes[3]. There are also some data indicating that the injury induced changes in RNA may be due to an activation of latent RNA degrading enzymes[1,4]. Ribosomes from different