Table 1. BREAKING OF REST IN GRAPE CUTTINGS AFTER VARIOUS TREATMENTS

Treatment	Percentage of cuttings showing growth activity at 36 days	Days required for 50 per cent of cuttings to show growth activity
	St. Emilion, 1961–62	
Cold water (control)	0	*
Benzyladenine	53	22
Warm water	30	27
Thiourea	23	28
	Thompson Seedless, 1962–63	
	Percentage of cuttings showing growth activity at 21 days	Days required for 50 per cent of cuttings to show growth activity
Cold water (control)	0	30
Benzyladenine	33	24
	Tokay, 1962–63	
	Percentage of cuttings showing growth activity at 32 days	Days required for 50 per cent of cuttings to show growth activity
Cold water (control)	3	†
Benzyladenine	31	‡

* Only 13 cuttings out of 30 showed growth activity after 150 days.
† Only 10 cuttings showed growth activity when experiment was terminated at 70 days.
‡ Only 12 cuttings showed growth activity at 70 days.

Previous experiments with dormant grape cuttings demonstrated that gibberellins markedly delayed breaking of rest, and that an auxin, α-naphthaleneacetic acid, usually produced some delay[6]. An examination of the interaction of the three classes of growth regulators on bud rest might yield fruitful results in helping to explain the mechanism of rest.

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Phyllosoma Larvæ associated with Medusæ

ON four occasions phyllosoma larvæ of the scyllarid lobster *Ibacus* have been found intimately associated with scyphozoan medusæ. In May 1960, a number of purple semæostome medusæ (*Pelagia panopyra*) were found in Sydney Harbour. Each medusa had a phyllosoma larva of *Ibacus* firmly attached to the ex-umbrellar surface of the bell. The larvæ clung tenaciously to this surface and were difficult to remove without injuring them. In aquaria, larvæ were repeatedly removed and placed among the tentacles of the medusæ to see if they would be eaten, but on all occasions they were unharmed and rapidly climbed back to the upper surface of the bell.

In October 1962, a large number of semæostome medusæ with associated phyllosoma larvæ of *Ibacus*, at a late stage of development, were taken in a prawn trawl off Ballina, New South Wales, at a depth of three fathoms. The following evening a similar trawl in thirty fathoms yielded many medusæ but no semæostome species, and no phyllosoma larvæ.

The reference collections of the Australian Museum, Sydney, contain a specimen of the phyllosoma of *Ibacus* taken in 1925 from the sub-umbrellar surface of a medusa, *Catostylus mosaicus*, in the estuary of the Hawkesbury River, New South Wales. There is also a detailed record from 1896 of an *Ibacus* phyllosoma clinging to the ex-umbrellar surface of a medusa.

The association could provide the phyllosoma with protection, transportation and possibly food. These larvæ are known to be carnivorous; but it was not clearly demonstrated that they were actually feeding on the medusæ. Yet, the fact that the general body structure of the late stage larvæ was coloured with the same purple pigment as that in the medusa suggests that they were. Dr. D. I. Williamson, who identified these larvæ, informed me that he has recently been able to feed the phyllosoma of *Jasus lallandei* on hydromedusæ.

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ENTOMOLOGY

'Proterandry' in Solitary Wasps

OBSERVATIONS on the nest-building of *Eumenes esuriens* Fabr., a vespoid mud-building wasp, were made in Bhubaneswar by H. Spurway and myself during September, October and November, 1962. We have complete records of the building of three nests and less-complete records for three others. Four of these nests have yielded offspring.

Nest 5 was the only one which produced wasps of both sexes, and in this nest, which consisted of 13 cells, all five eggs which produced males were laid before all seven eggs which produced females. The remaining cell, which was intermediate between those which produced males and those that produced females, was found, on dissection, to be empty except for a large number of larvæ and a few imagines of a Chalcid parasite. Nests 2 and 4 each produced five females only and nest 6 produced two males only. All three cells of nest 1 and three cells of nest 4 were parasitized by Chrysids, and the only cell of nest 3 was deserted without fully provisioning or sealing it.

These observations suggest the hypothesis that, in this species, given male haploidy, a female, during her imaginal life, produces a series of unfertilized eggs, followed by a series of fertilized eggs, with no overlap. The sex of the missing wasp in nest 5 would have no effect on this hypothesis.

Given that 5 males and 7 females are produced, the sequence observed in nest 5 would occur, by chance, once in 792 cases, which itself is highly significant. In addition, we must consider the results obtained in the other three nests. There are 77 ways in which one can obtain 7 males and 17 females from 4 nests producing 2, 5, 5 and 12 wasps respectively, in such a way that in each nest all the males are produced before all the females. Each of these can occur by chance once in 346,104 times. The total probability of obtaining such a result is, therefore, 77/346,104 = $2{\cdot}2 \times 10^{-4}$. Allowing for a male or a female in the empty cell this probability becomes 2,098/8,652,600 = $2{\cdot}4 \times 10^{-4}$.

Further, there is a similar record for one nest of the Sphecoid mud builder, *Sceliphron madraspatanum* (Fabr.)[1], in which all 4 eggs which produced males were laid before all 5 which produced females. The probability of this result occurring by chance is 1/126. The over-all probability for the two species is 2×10^{-6}.

Kohl[2] states that in many predatory wasps (*Raubwespen*) there is an earlier hatching and emergence of males than of females, but does not discuss whether this is because of the order in which the eggs are laid. Olberg[3] states that males of the European species of solitary wasps emerge earlier than females. It will be interesting to see whether the same rule holds for the solitary bees.

This change, presumably from unfertilized to fertilized eggs, could occur for three reasons. (1) Copulation takes place only after several eggs have been laid. (2) A considerable interval occurs between copulation and fertilization. (3) Fertilization can be controlled by a sphincter, as it appears to be in some social hymenoptera. European species are reported to copulate soon after emergence[4].