てきわめて重要な問題であるので、筆者らは卵塊の大きさと幼虫の集合性との関係について現在追究中である。

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Retardations of Development and Reproductive Power of an Ichneumon Fly, *Nemeritis canescens* GRAVENHORST (Hymenoptera), in Relation to the Parasitizing Stage of Its Host.^{1,2}

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Nemeritis canescens, an ichneumon wasp, can oviposit on the whole instars of larvae of the almond moth, *Ephestia cautella*. But the duration from the oviposition to the emergence of wasp is different; it is short when the fully grown larva of host is parasitized and is long when the young larva of host is parasitized (TAKAHASHI, 1957).

When *Nemeritis* was bred only with the young host larva from generation to generation (Y-strain), the strain could easily be continued to breed for twenty-four generations (about two years), whereas when it was bred successively only with the fully grown host larva (F-strain), the rate of reproduction of wasp decreased gradually in the progress of generation, and the wasp population could hardly be kept in long series of generations, in one case it ended at the 13th generation and another was at the 17th generation. Here, the comparison of both strains was made on the change of the percentage of parasitism in each generation.

MATERIAL AND METHOD

Nemeritis canescens and its host, *Ephestia cautella*, used in the experiment were the strain which were bred under the condition of 30°C for about seven years in the laboratory. This experiment was also continued in the same condition of 30°C and about 70% of relative humidity.

Nemeritis canescens is obligatorily parthenogenetic (thelytokous) and each generation consists entirely of females (DOUPT, 1959).

A hundred eggs of host were bred with twenty grams of rice-bran in a glass vial (11 cm in diameter, 7 cm in depth). The wasps of the F-strain were introduced into the vials which contained the final instar larvae of host, about three weeks old from their oviposition. The wasps of the Y-strain were also introduced into the vials which contained the young larvae of host, about one week old. The duration of adult life of wasp was a few days under this condition.

RESULTS AND DISCUSSION

The influences of the host age at the introduction of wasp, on the duration from the wasp introduction to the first appearance of adult wasp, the number of the progeny of wasp and the number of the moth emerged in each generation are shown in Table 1.

- 1 寄主の寄生令期の違いによるヒメバチ *Nemeritis canescens* の發育遅延と増殖力の低下 高橋史樹
京都大学農学部昆虫学研究室
- 2 Contribution from the Entomological Laboratory, Kyoto University, No. 353.
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As the percentage parasitism is calculated by $\frac{\text{No. of wasp emerged} \times 100}{\text{No. of wasp progeny} + \text{No. of moth emerged}}$, it decreases in the progress of generation in F-strain and does not in Y-strain as expected from the author's experience on routine culture.

It was observed (TAKAHASHI, 1957) that the rate of development of wasp is fast and the percentage of parasitism is high when the wasp parasitized on the fully grown larvae of host, and then the author concluded from this observation that the power of population increase should be high in such case. But this conclusion is only limited in the relation to one or two generations. The result obtained in the present experiment throughover several ten generations seems to be different from the conclusion mentioned above, namely the percentage of parasitism of wasp decreased gradually from generation to generation by repeated parasitizations on the fully

grown host larvae.

When the wasp parasitizes on the young larvae of host, as shown in Table 1 the retardation of wasp development is clearly seen. This retardation may not be necessary process for the development. But it can be thought that the retardation of development of *Nemeritis* is necessary for maintaining its population in long term of generation, and that the significance of retardation of development is not restricted in avoiding the harmful condition.

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Table 1. The change of percentage parasitism from generation to generation when the wasp, *Nemeritis canescens*, parasitizes only on the fully grown larvae of *Ephesia cautella* (F-strain) or only on its young larvae (Y-strain).

Generation	F-strain							Y-strain					
	1	2	3	4	5	6	7	1	2	3	4	5	6
Degree of host development in days	17 ~ 19	17 ~ 19	16 ~ 20	18 ~ 20	17 ~ 20	20 ~ 23	20	8 ~ 9	8 ~ 10	4 ~ 6	6	6 ~ 7	6 ~ 11
Number of breeding vial	10	10	8	10	8	9	1	2	10	6	10	10	10
Number of wasp introduced in one vial	1	2	2	2	1	1	1	1	2	2	2	2	1 or 2
The duration from the wasp introduction to the first appearance of wasp progeny	18	18	18	18	19	19	—	22	21	25	27	25	24
Total number of wasp progeny	28	38	23	8	9	1	0	19	65	123	65	47	65
Total number of moth emerged	593	598	552	737	426	693	72	132	575	584	691	743	683
Percentage of parasitism	4.51	5.97	4.00	1.07	2.07	0.14	0.00	12.58	10.16	17.40	8.60	5.95	8.69