Table 2. THE RELATIONSHIP BETWEEN THE OPACITY OF THE WATER AND THE AVERAGE CATCH PER HAUL IN THE ROBENE POINT AREA DURING THE PERIOD SEPTEMBER TO DECEMBER 1958

Secchi disk-range (m.)	Average No. per haul	N.
0·5–0·9	26	18
1·0–1·4	28	23
1·5–1·9	25	33
2·0–2·4	23	40
2·5–2·9	16	18
3·0	>3	4

it is interesting to note that over a five-day period in June, when the water in the Robene Point area was exceptionally clear, a nylon net gave a catch-rate of 110 lb. per hour and a tanned hemp net 33 lb. per hour when fished in turn from the same boat; the difference disappeared when the disk readings fell below 3·5 m.

J. C. D. WATTS
Fisheries Development and Research Unit,
Freetown,
Sierra Leone.

[1] Bainbridge, V., *J. Ecol.* (in the press).

The Amphipod, *Hyperia galba*, an Ectoparasite of the Jelly-fish, *Cyanea capillata*

VERY few real facts are known concerning the relationships between the amphipod *Hyperia galba* (Montagu) and the various jelly-fish with which it is associated. Some writers have referred to *H. galba* as a parasite[1–4] but without providing any direct proof. Orton[5] assumed *H. galba* to be a food parasite, and Hardy[6] was inclined to accept this view. Stephensen[7] maintained that no amphipod except the cyamids is a true parasite, and this is the view adopted in current parasitological works of reference.

Recently, I had the opportunity to examine histologically the digestive tract of twenty-five specimens of *H. galba* from Bergen, Norway, which were obtained from *Cyanea capillata* (L.). I was immediately struck by the presence of empty nematocysts in virtually all the formed food remains encountered in the gut. As *C. capillata* frequently catches other medusae, especially *Aurelia aurita* (L.) and hydromedusae, it remained to settle whether the nematocysts came from *C. capillata* itself or from its prey. Few nematocysts pass the mouth-parts of *H. galba* undamaged, but in one specimen a number of well-preserved, discharged nematocysts were found in the atrium oris. Several of these nematocysts could be identified as heterotrichous microbasic euryteles of the type characteristic of scyphozoan medusae. Three of them which could be accurately measured were 13·2, 13·4 and 14·1μ long and 8·6, 8·6 and 9·4μ wide, respectively. Papenfuss[8] gives the average of 50 discharged euryteles of *C. capillata* as 13·6μ × 8·1μ and the normal (length ?) variation as ± 2μ. Thus the three nematocysts in question fall well within the normal range of *C. capillata* but outside that of all other scyphozoan medusae occurring in the area. One further discharged nematocyst could be identified as a haploneme measuring 17·0μ in length × 11·2μ in width. Nothing can be seen of any possible armature of the thread. The size agrees fairly well with that of the atrichous haploneme *A* of *C. capillata*, which averages[8] 18·0μ × 13·2μ. Although the hundreds of empty nematocyst capsules found in the gut cavity could not be accurately measured, they give the same general impression as a slide of macerated nematocysts of *C. capillata*, while a similar sample from *A. aurita* looks rather different, the capsules being much smaller. A very small number of nematocysts pass the intestine undischarged. Generally, they are rather distorted, and in no case has it been possible to measure them with satisfactory accuracy. Some of them could be identified as euryteles.

On the evidence presented above, it seems safe to conclude that *H. galba* is a true ectoparasite of the jelly-fish with which it is associated. A more comprehensive account of the observations will be published elsewhere.

The material for the present study was collected at the Marine Biological Station of the University of Bergen.

ERIK DAHL
Zoological Institute,
Lund, Sweden.
Feb. 24.

[1] Sars, G. O., "An Account of the Crustacea of Norway", **1**, 7 (1895).
[2] Scheuring, L., *Biol. Centralbl.*, **35**, 182 (1915).
[3] Chevreux, E., and Fage, L., "Faune de France", **9**, 12 (1925).
[4] Poulsen, E. M., "Vort Lands Dyreliv", **2**, 207 (Copenhagen, 1950).
[5] Orton, J. H., *Nature*, **110**, 178 (1922).
[6] Hardy, A. C., "The Open Sea", 128 (London, 1956).
[7] Stephensen, K., "Tierw. d. Nord u. Ostsee", **14**, X.f. 21 (1929).
[8] Papenfuss, E. J., *Acta Univ. Lund*, N.F. Avd. 2, **31**, No. 11, 5 (1936).

Evidence on Growth-rates obtained from Two Marked Humpback Whales

RECENT estimates of the age at which whales reach sexual maturity have depended primarily on the interpretations placed on the rate of accretion of recognizable zones in certain structures such as baleen and ear plugs. Several workers[1,2] have pointed out that none of the ageing methods for any species has yet been standardized against organs from whales of known age. Only whales marked as calves would be of accurately known age at the time of capture, but no such animals have yet been recovered. However, two marked humpbacks caught in Cook Strait, New Zealand, have each provided material from immature animals of known minimal age.

A male humpback (mark No. 12092), was marked in Foveaux Strait, 46° 25′ S. on November 7, 1955, when it was travelling southwards, presumably towards the antarctic feeding grounds. At the time of marking it was estimated to be 36 ft. in length, a figure which later proved too high yet confirmed that the whale was not one of the young suckling calves often encountered in Foveaux Strait[3] at the time of southward migrations. It is therefore very probable that this animal had been born in the subtropical or tropical breeding areas not later than the second winter preceding its marking, and it would therefore have been in its second year at a minimum at the time of marking. On recovery at Cook Strait when it was northbound 19 months later[4] (June 18, 1957) this specimen could be assigned a minimum age of 3 years. The baleen showed three well-defined zones (Fig. 1) consistent with the now generally accepted

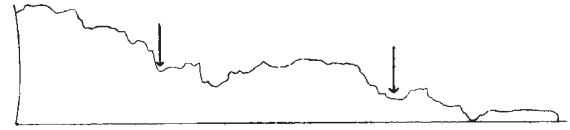

Fig. 1. Baleen tracing from a male humpback of 34 ft. 7 in. showing the three zones regarded as annual increments