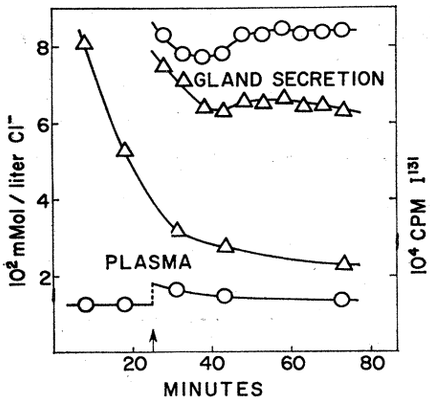

Fig. 1. Relative concentrations of chloride and iodide in the plasma and in the secretion from the nasal gland of a herring gull. Circles and left ordinate, chloride concentrations; triangles and right ordinate, iodide concentrations. Arrow at 25 minutes indicates the time of stimulation of gland secretion by intravenous injection of sodium chloride.

concentration of the secretion remained at an even level. The chloride concentration of the secretion was about 800 m*M* against 140 in the plasma, that is, the secretion concentration to plasma concentration ratio (*S/P* ratio) was about 6. The *S/P* ratio for iodide was about 2.5, showing that chloride was being removed about twice as effectively as iodide. In a second experiment the chloride level, and the fluid it produced *S/P* ratio was 3.5.

In another experiment, a toxic dose of 10 m*M* of tracer-free NaI^{127} was administered. The osmotic effect of this amount of NaI was sufficient to cause a short period of secretory activity by the nasal gland and it also produced salivary secretion and several urinations. The secretion produced in response to NaI contained considerable amounts of iodide, but was rather low in chloride (Table 1). After the secretion in response to the NaI had ceased, 17 m*M* NaCl was injected and the gland resumed activity at a low, irregular rate. This injection of salt elevated the plasma chloride level, and the fluid it produced had a typical high chloride content (700 to 800 m*M*). Despite the irregular volume of secretion, the chloride and iodide concentrations remained relatively constant. The *S/P* ratio for iodide in this experiment was greater than that in the tracer experiment but never equaled that for chloride.

Our results demonstrate that the sea gull nasal gland has a definite ability to concentrate and eliminate iodide. They also show that the gland exercises some degree of discrimination toward the anionic component of its secretion, as the secretion to plasma concentration ratio for chloride was never less than 130 percent of that for iodide. Thus, chloride seems to be preferred in the secretory process.

The chloride concentration in the urine samples which were collected in this experiment was equal to that in the plasma, while the iodide level was similar to that in the nasal gland secretion, which indicated that proportionately less iodide than chloride was being resorbed from the kidney tubules. It may be assumed that chloride resorption in the gull kidney, as in the mammalian kidney, is a passive movement following active sodium uptake. The preference for chloride over iodide shown in kidney reabsorption and nasal gland secretion may have a common basis, not in a specific mechanism for chloride transport, but perhaps in some physical property of these two ions which results in different rates of movement through cell barriers. The size of the hydrated ion is probably not a factor, for, as indicated by their ion conductivities (Cl^- 62.2, I^- 66.2) (*5*), chloride and iodide are quite similar in this respect (*6*).

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6. This work was supported by grant No. H-2228 from the National Institutes of Health.
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1 May 1962

Ellobiopsidae from the Pacific

Abstract. The parasite *Amallocystis capillosus* has appeared on the shrimp *Pasiphaea pacifica*. This is the first report of this group of parasites from the northeastern Pacific Ocean. The parasite causes a morphological modification of the rostrum of the host.

Members of the family Ellobiopsidae Coutiere, 1911, are known to parasitize various crustaceans from the North Atlantic (*1, 2*), the Antarctic region, and the southwestern Pacific (*1*). Organisms which may belong to this group have been reported from most of the world, but none of them have been adequately described and none have been placed definitively in the group (*1*). None have been reported from the northern or eastern Pacific.

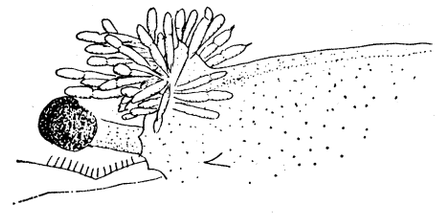

Fig. 1. Rostral portion of *Pasiphaea pacifica* parasitized with *Amallocystis capillosus.*

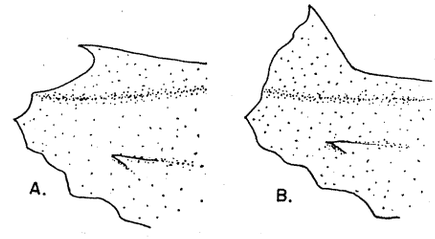

Fig. 2. The rostrum of *Pasiphaea pacifica. A*, Normal rostrum of a nonparasitized specimen. *B*, Distorted rostrum of a specimen parasitized with *Amallocystis capillosus.*

The phylogenetic position of the group is vague. Caullery (*3*) thought that certain of the species were related to the parasitic peridinians. Others have suggested that these parasites should be placed elsewhere among the flagellates (*4*), or that they might have affinities with unspecified fungi (*2*). Boschma (*1, 2*), Grasse (*5*), and others have chosen to retain these organisms near the parasitic peridinians although they realize that the evidence for such placement is extremely weak. In a review of the genus *Amallocyctis* Fage, Bergan (*6*) summarizes the literature on the group and concludes that there is not enough information to permit definitive placement of the ellobiopsids. Retention of these organisms in a doubtful position is preferable to transferring them to another on the basis of equally weak or weaker evidence.

Our collection contains one pelagic carid shrimp, *Pasiphaea pacifica* Rathbun, which is parasitized by *Amallocystis capillosus* Fage. This shrimp was taken, probably in the upper 200 m, with a midwater trawl (Isaacs-Kidd) from a research vessel *Acona* (*7*) about 15 miles west of the mouth of Coos Bay, Oregon (43°20.4′N, 124° 45.8′W).

The parasite is located on the rostrum of the shrimp and resembles a feathered cap (our specimen has been known as the "Woody-Woodpecker Shrimp"). It consists of a plaque embedded in the rostral tissue of the host with a tuft of stalked sacs arising from either side of the rostrum (Fig. 1). There are approximately 30 sacs on either side, but the exact number cannot be discerned because some have been lost. Many of these sacs, or trophomeres, bear a terminal gonomere separated from the trophomere by a constriction and septum.

The rostrum of the shrimp shows considerable alternation due to the parasite. In the normal, nonparasitized shrimp the rostrum has a nearly horizontal dorsal margin that terminates in an anteriorly directed tooth (Fig. 2*A*). But the rostrum in the parasitized specimen is swollen, the dorsal margin is inclined at an angle of about 50° from the horizontal, and the tooth is vertically directed (Fig. 2*B*). According to Sivertsen and Holthius (*8*) the same situation prevails in specimens of *Pasiphaea tarda* Krøyer and *P. multidentata* Esmark parasitized with *Amallocystis capillosus*.

All characteristics of the material in our collection agree with the description of *A. capillosus*. This species has been described previously as a parasite of several species of shrimps from the North Atlantic, including *Pasiphaea tarda* (from the Skagerrak and Trondheim Fjord) (*9*), *P. multidentata* (*8*), and *P. principalis* Sund (*6*), and as a parasite of *P. acutifrons* Bate from the Strait of Magellan (*1*). This work adds *P. pacifica* as a host and extends the known range of this parasite to the northeastern Pacific (*10*).

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29 May 1962

Serum Uric Acid in Mongolism

Abstract. A highly significant increase ($P < .01$) in average uric acid level was found in the blood serum of mongoloids when levels were compared with those in normal control subjects or nonmongoloid, mentally retarded subjects. The possible relationship of these findings to other abnormalities known to exist in mongolism is discussed.

The study of levels of biochemically important constituents in blood and other body fluids often leads to an increased understanding of pathological conditions. Such studies in mongolism have not been particularly revealing, and relatively little is known about biochemical abnormalities in this condition which has such characteristic physical stigmata. This report presents the finding of an elevated serum uric acid level in mongoloids.

All mentally retarded subjects in the study were residents of the Fort Wayne State School. The normal controls were volunteers, most of whom were employees at this institution. Serum specimens were collected after overnight fasting.

The initial observation that uric acid is increased in blood serum of mongoloids stemmed from a biochemical survey of a heterogeneous group of mental retardates and normal controls. Uric acid was determined by the method of Block and Geib (*1*). The average serum uric acid level of 87 nonmongoloid mental retardates was 1.97 mg/100 ml, which is significantly lower ($P < .01$) than that of 40 normal controls, 2.42 mg/100 ml (*2*). Since the former was a nonhomogeneous group, the most likely explanation is an environmental effect such as a low purine diet. In contrast, the average uric acid level of 40 mongoloids (from the same environment as the other retardates) was 3.05 mg/100 ml, which is significantly high when compared with values for either of the other two groups (*2*).

A further study was set up to clarify these findings. Twenty male mongoloids and 20 female mongoloids were matched with respect to sex and age to mental

Table 1. Serum uric acid levels in mongoloids and undifferentiated mental retardates (mg per 100 ml).

Males			Females		
Age	Mongoloid	Others	Age	Mongoloid	Others
6	4.56	4.23	7	7.05	3.72
	4.52	4.32		6.93	3.70
9	5.38	4.44	8	5.16	4.18
	5.22	4.44		5.28	4.08
14	4.12	2.60	13	7.58	3.80
	4.14	2.68		7.58	3.82
14	6.83	5.69	16	7.50	5.22
	7.03	5.67		7.39	5.14
14	5.22	3.30	18	4.96	4.66
	5.20	3.30		4.96	4.58
17	7.41	5.02	20*	9.16	7.58
	7.41	5.14		9.10	7.70
19	7.54	6.62	20	6.34	4.79
	7.54	6.62		6.34	4.66
20	8.22	4.23	20	5.06	3.70
	8.22	4.23		5.02	3.68
21	5.84	5.50	21	4.90	4.94
	5.88	5.52		4.90	5.02
22	6.30	6.08	22	6.95	7.20
	6.34	6.00		6.99	7.26
24	6.95	5.12	23*	6.73	5.22
	6.95	5.10		6.83	5.36
24	7.94	6.78	23	5.32	3.88
	7.94	6.69		5.34	3.76
25	5.92	7.58	25	4.81	4.60
	5.92	7.58		4.86	4.60
26	8.41	6.60	27	6.52	3.86
	8.26	6.52		6.48	3.80
27	8.55	4.52	27	6.04	4.21
	8.72	4.52		6.00	4.36
31	5.82	5.22	31*	5.96	5.18
	5.76	5.20		5.80	5.16
37	7.33	4.06	34	5.80	5.86
	7.26	4.06		5.63	5.73
38	6.60	3.84	35	6.60	5.26
	6.52	3.76		6.52	5.26
39	4.30	5.71	39*	6.91	3.96
	4.30	5.71		6.78	3.86
45	6.28	8.35	47*	5.76	5.22
	6.40	8.28		5.69	5.30
Range	4.12–8.72	2.60–8.35		4.81–9.16	3.68–7.70
Average†	6.48	5.27		6.24	4.85

* These patients were also included in the preliminary study. † Average all mongoloids, 6.36; all others, 5.06.