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.

retardates from the diagnostic category "undifferentiated" or "congenital cerebral deficiency" (*3*) who were not suffering from any known metabolic disturbances. All subjects were on the same institutional diet and other environmental conditions were similar. None were receiving any medication known to affect serum uric acid. Uric acid in the serum was determined by the method of Eichhorn *et al.* (*4*). Optical density was measured at 640 mμ in a Bausch and Lomb Spectronic 20 exactly 10 minutes after the addition of phosphotungstic acid. The results of duplicate determinations on each serum are shown in Table 1. The maximum difference between any duplicate values was 0.20 mg/100 ml, and the average difference was 0.06 mg/100 ml. The average serum uric acid level in the mongoloids was 6.36 mg/100 ml, which is significantly higher ($P < .01$) than the average level of 5.06 mg/100 ml in the other retardates (*2*).

Sobel *et al.* (*5*) were unable to find significant differences in serum uric acid levels of mongoloids and normal controls. However, their study included only 15 mongoloids and 18 normal controls and did not include other institutionalized retardates receiving the same diet as the mongoloids.

In considering the significance of the increase in serum uric acid observed in our mongoloids, a number of previous reports may be relevant. There is an increased frequency of leukemia in mongolism (*6*). Leukemia is characterized by altered leukopoiesis, which leads to shifts in differential counts of white blood cells. In leukemia there is also an increase in serum uric acid level, perhaps because of the augmented nuclear metabolism resulting from the formation and destruction of leukocytes (*7*).

W. Kluge (*8*) reported a left shift in leukocyte differential counts in mongolism. Elevation of beta-amino-isobutyric acid, another nitrogen-base catabolic product, in the urine of leukemics (*9*) and mongoloids (*10*) has been reported, although the latter finding was not corroborated in another study (*11*). In mongolism there is trisomy, or effective trisomy of chromosome 21 (*12*), and in some leukemia cases, a chromosomal abnormality in the leukocytes involving a small acrocentric chromosome, possibly number 21, has been observed (*13*). On the basis of these observations one might speculate that in mongolism there is a common denominator accounting for the increased serum uric acid, left shift in leukocyte count, and increased frequency of leukemia and that this common denominator results from trisomy of chromosome 21.

There may be increased formation of uric acid or decreased uricolysis in mongolism. Since maldevelopment of many organs of the mongoloid is common, a decreased renal efficiency in excretion of uric acid is also a possibility. The fact that the increase in serum uric acid is slight, and noticeable only when average levels of groups are compared, may be related to the apparent etiologic mechanism in mongolism (trisomy of chromosome 21) which is not an "all or none" defect such as occurs when single genes are deficient. We are now investigating the possible causes and the significance of this biochemical abnormality in mongolism (*14*).

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2. Statistical evaluation by analysis of variance and *F* tests was carried out by S. R. Miles, research statistician, Purdue University.
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16 April 1962

Ovulation, Implantation, and Fetal Sex Ratio in Impala

Abstract. Impala embryos implant in the right uterine horn regardless of whether ovulation has occurred from the right or left ovary.

Impala (*Aepyceros melampus*) were collected in the Southern Rhodesia lowveld on the adjacent Doddieburn and Manyoli ranches of Henderson and Sons (Pvt.) (Ltd.). These ranches are located approximately 120 miles south of Bulawayo (21°S., 29°E.).

All 58 pregnant females whose reproductive tracts were collected had their single young in the right horn of the uterus. In this respect, impala are like Uganda kob (*Adenota kob*) (*1*). In addition, three parous nonpregnant uteri had their right horns stretched more than the left. Nine virgin uteri, all that had these data recorded for them, had right uterine horns which were noticeably longer or larger than the left horns.

Ovulation occurred from both ovaries as evidenced by gross examination for corpora lutea: 28 recent ovulations from the left ovary and 27 from the right. No signs of egg wastage or of embryo resorption were observed.

Twenty-five males and thirty-four females occurred among the embryos that were old enough for sex to be determined macroscopically. This is not significantly different from a 1 : 1 sex ratio.

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28 June 1962