TABLE 2

AGGLUTINABILITY OF A-, B-, AND O-ERYTHROCYTES BY HEMOLYMPHS OF *Samia cecropia*, *Halisidota caryae*, AND *Sibine stimulae*

Species from which hemolymph was obtained	Test erythrocytes	Final dilution of hemolymph							
		1:10	1:20	1:40	1:80	1:160	1:320	1:640	∞
Samia cecropia	A	++++	++++	++++	++++	+++	+	0	0
" "	B	++++	++++	++++	++++	+++	+	0	0
" "	O	++++	++++	++++	++++	+++	+	0	0
Halisidota caryae	A	0	0	0	0	0	0	0	0
" "	B	0	0	0	0	0	0	0	0
" "	O	+++	+	0	0	0	0	0	0
Sibine stimulae	A	++	0	0	0	0	0	0	0
" "	B	+	0	0	0	0	0	0	0
" "	O	+	0	0	0	0	0	0	0

agglutinins and taxonomic position is evident, hemagglutinins being present in larvae representing 7 different families. Although the origin and function of the agglutinating substances are not known, the possibility should not be overlooked that the agglutinins may be associated, in some species, with a state of parasitism, for all examples tested of *Protoparce sexta, Ceratomia undulosa,* and *Actias luna* contained hymenopteran or dipteran parasites. Information is lacking as to whether agglutinins are present in unparasitized examples of these species.

TABLE 3

SPECIFICITY OF AGGLUTININS OF *Halisidota tessellaris* AND *Halisidota caryae* FOR GROUP O CELLS

Test erythrocytes	Source of hemolymph			
	*H. tessellaris,** Specimen No. 1	*H. tessellaris,** Specimen No. 2	*H. caryae,*† Specimen No. 1	*H. caryae,*† Specimen No. 2
O, M, Rh_1	+++	++	+++	+
O, N, Rh_2	+	+	0	0
O, –, –‡	+++	++	++	+
A, MN, Rh_z	0	0	0	0
A, N, Rh_1	0	0	0	0
A, –, –	0	0	0	0
B, MN, rh	0	0	0	0
B, M, Rh_1	0	0	0	0
B, –, –	0	0	0	0

* Final dilution of hemolymph, 1 : 5.
† Final dilution of hemolymph, 1 : 10.
‡ Dash indicates M, N, or Rh character unknown.

Hemolymphs from some of the larvae listed in Table 1 were tested for agglutination of A- and B- as well as O-erythrocytes. The results (Table 2) indicate that *Samia cecropia* and *Sibine stimulae* agglutinins fail to differentiate the blood groups, but that *Halisidota caryae* agglutinin acts specifically on O-cells. Further evidence for the specificity of *H. caryae,* as well as of *H. tessellaris,* agglutinin is shown in Table 3. In an additional experiment in which 9 cell suspensions were prepared and coded by an assistant, the three O-suspensions among the 9 were correctly identified by use of *H. caryae* hemolymph. In a few instances, *H. caryae* hemolymph caused a relatively weak and delayed agglutination of A- and B-cells, owing apparently to heterozygosity or to antigen A_2.

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First Report of the Presence of a Dermatitis-Producing Marine Larval Schistosome in Hawaii[1, 2]

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Marine snails, identified as *Littorina pintado* Wood, were collected from Moku Manu ('Bird Island'), near Kaneohe, Oahu, Hawaii, on Nov. 24, 1950, and were found to be infected with a species of larval schistosome. The degree of infection among the 40 specimens of *L. pintado* examined was 10%. Because of the difficulty in landing on this island, another bird refuge area known as Manana ('Rabbit') Island, offshore from Oahu, was later investigated. *L. pintado* (Fig. 1), collected from this locality at two different times (March and April 1951), was infected with the same species of marine larval schistosome at a rate of 0–5%, depending on the proximity of the snails to bird droppings washed down from the hillside where various species of marine birds nest. All the *L. pintado* snails containing schistosomes were found in tidal pools. Recent investigations (July 1951) on Mokulua Island, Oahu, indicate that *L. pintado* on the leeward side of this island was not infected with the schistosome, although many dark-rumped petrels (*Pterodroma phaeopygia sandwichensis* Ridgway) were nesting there at the time of investigation.

Penner (*1*) described a marine larval schistosome,

[1] Contribution No. 13, Hawaii Marine Laboratory.

[2] Acknowledgment is made to Wray Harris, marine malacologist, of the Bishop Museum, Honolulu, T. H., for the identification of the marine snails; to J. Donald Smith, game conservationist, of the Territorial Board of Agriculture and Forestry, Honolulu, for the identification of the bird specimens; and to John L. Pelgen and Charles E. Cutress, graduate assistants, of the Department of Zoology, University of Hawaii, for technical assistance.

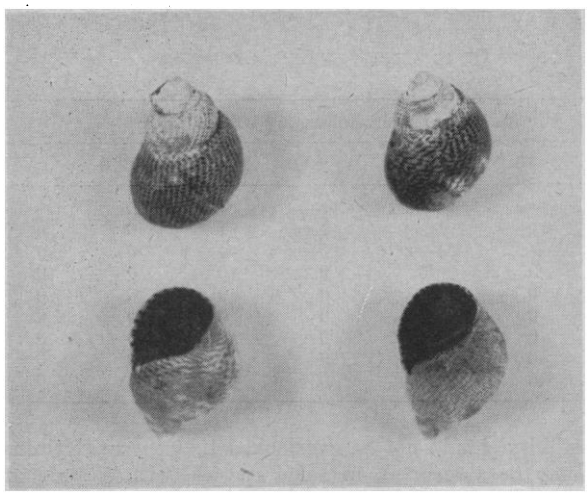

FIG. 1. *Littorina pintado* Wood (Manana Island). Approx 3 × natural size.

Cercaria littorinalinae, from *L. planaxis* Philippi obtained from the Coronado Islands, in Mexico, and from Bird Rock, near La Jolla, Calif. Comparative measurements (as shown in Table 1) between *C.*

TABLE 1

COMPARISON OF MEASUREMENTS, BASED ON AN AVERAGE OF 50 SPECIMENS, OF THE SCHISTOSOME CERCARIAE FROM MANANA ISLAND AND THOSE REPORTED BY PENNER FOR *C. littorinalinae* PENNER 1950

	Schistosome cercariae from Manana Island (in mm)	*C. littorinalinae* Penner 1950 (in mm)
Length of body	0.248	0.271
Width of body	.091	.079
Length of head organ	.088	.060
Length of tail stem	.202	.288
Length of furca	.108	.157
Diameter of ventral sucker	.028	.023
Distance from ventral sucker to posterior end of body	0.086	0.083

littorinalinae Penner 1950 and the schistosome specimens obtained from Manana Island indicate similarity of the two forms, although there are variations in size. At present, a careful study of the internal anatomy of the schistosome cercariae from Manana Island has not revealed any differences in structure from those described by Penner. The Hawaiian marine larval schistosome has been identified tentatively as *C. littorinalinae* Penner 1950 until the adult stage is known (Fig. 2).

According to Richardson and Fisher (*2*), who made a survey of the birds on Moku Manu and Manana islands, there were six breeding species, three migrants, and eight visitants on Manana, and ten breeding species, three migrants, and four visitants on Moku Manu. In Penner's report previously mentioned,

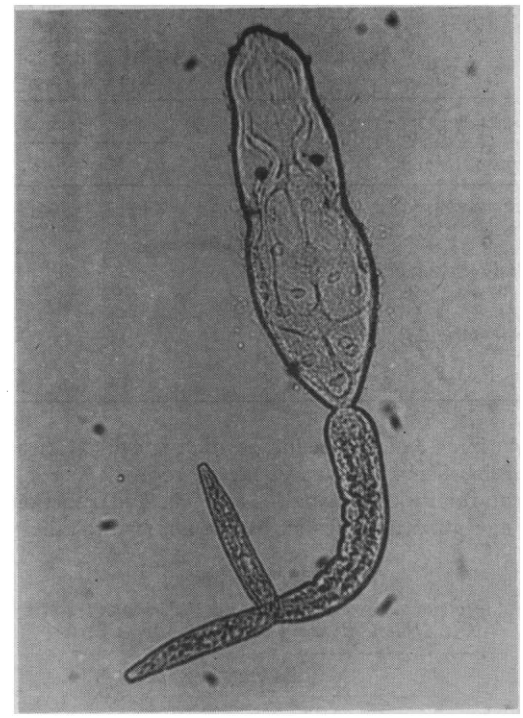

FIG. 2. *C. littorinalinae* Penner 1950 from *L. pintado* Wood. (Manana Island). Approx 210 × natural size.

the Wyman western gull (*Larus occidentalis wymani* Dicky and Van Rossem) was considered a possible natural definitive host, since adult schistosomes were observed in it. In view of the fact that the Wyman

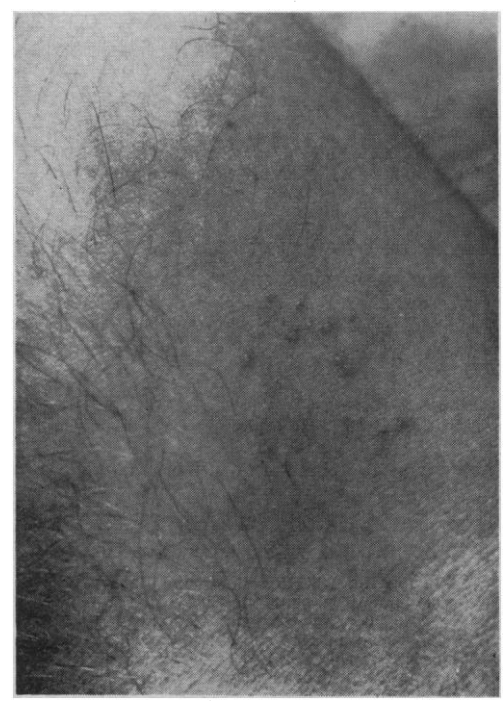

FIG. 3. Dermatitis caused by marine schistosome cercariae, result of patch test.

western gull is not found in the Hawaiian area (*3*), the natural definitive host for the marine schistosome here remains unknown at present.

Although *L. picta* Philippi breeds in the same areas on Manana Island as does *L. pintado,* so far in thousands of snail examinations *L. picta* has not been found to be an intermediate host for this marine schistosome.

That this schistosome cercaria is capable of producing dermatitis in man is confirmed by experimental infection of human volunteers. Patch tests (made by placing in a piece of double-layer cotton gauze $2 \times 1\frac{1}{2}$ cms in size about 80–100 schistosome cercariae suspended in sea water) on the forearms of five volunteers showed that all individuals experienced the sensation of itching as a result of exposure. Two were observed to have typical schistosome dermatitis macules, with one person having as many as 17 lesions (Fig. 3); two developed erythema around the macules, lasting only a comparatively short time (6 and 12 hrs); and one individual did not develop a visible reaction. Controlled patch tests (made with sea water without schistosome cercariae) were all negative in these individuals.

"Swimmers' itch" in Hawaii was reported recently by Arnold and Bonnet (*4*). These cases of swimmers' itch, known locally as "Pearl Harbor itch," were most frequently observed in sea bathers in two areas—the West Loch of Pearl Harbor and certain sections of the Ala Wai drainage canal in Honolulu. Recent inquiries indicate that other widely separated areas on Oahu might be places where the Hawaiian swimmers' itch can be contracted. Sea bathers' eruptions, as reported by Sams (*5*) in Florida, appear to be similar to the Hawaiian swimmers' itch, although in both cases the cause has been attributed to an unknown agent. Investigations are proceeding to determine whether the Hawaiian marine schistosome is the causative agent of these dermatitis cases in man in Hawaii.

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Comments and Communications

Conditioning of the Palmaris brevis Muscle

IN THE spring of 1924 a fellow-student showed me how one could induce wrinkling of the skin of the ulnar side of the palm by direct pressure upon the ulnar nerve near the wrist just above and slightly lateral to the styloid process of the ulna. Such pressure causes contraction of the palmaris brevis muscle, with resulting wrinkling of the skin on the ulnar side of the palm.

As a teacher of anatomy I demonstrated this phenomenon to students and others over a period of some twenty years—I should say about 100 times—until in 1944 I noticed that, as I approached my thumb to press on the ulnar nerve, the wrinkling phenomenon occurred without my even touching the skin. Apparently I had conditioned the response to the subjective idea of pressure upon the nerve. Repeated experiments confirmed this, for even when I could not see my hand and did nothing more than think of producing the wrinkling, the response occurred.

The interesting thing about this conditioning is that I cannot produce it when my wrist is covered by the sleeve of a coat. The original stimuli were always given with the forearm bare. Another fact of interest is that the conditioning is entirely limited to the palmaris brevis of my left hand. Pressure was always applied to the ulnar nerve of the left forearm by the thumb of my right hand. Indeed, pressure upon the ulnar of my right forearm has elicited very poor responses and sometimes of the weakest kind. I have, in fact, rarely attempted such pressure, largely, I suppose, because I am right-handed and it is more convenient to use the right thumb in exerting such pressure.

The palmaris brevis response is easily elicited, and I have had difficulty in elicting it in very few persons. Those who may be interested in experimenting with this muscle will, perhaps, be assisted by the knowledge that even the gentlest stroking of the little finger may elicit the palmaris brevis response, and that in many cases even very slight movements of the little finger may produce it or a reasonable facsimile thereof.

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Indoxyl Acetate

IN SCIENCE, November 30, 1951 (p. 579), Barrnett and Seligman mention the Pharmaceutical Laboratories of the National Aniline Division, Allied Chemical and Dye Corporation, as the source of chemicals used in the investigation. James J. McMahon calls attention to the fact that indoxyl acetate can be supplied, but sodium indoxyl alkali flux cannot, because of the hazards involved in shipment.—EDITORS.