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Recommended Citation
Halstead, Bruce W. and Ryckman, Raymond (1949) "Injurious Effects from Contacts with Millipedes," Medical Arts and Sciences: A Scientific Journal of the College of Medical Evangelists: Vol. 3 : No. 1 , Article 5.  
Available at: http://scholarsrepository.llu.edu/medartssciences/vol3/iss1/5
INJURIOUS EFFECTS FROM CONTACTS WITH MILLIPEDES

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Millipedes are probably among the least mentioned of the so-called "medically important arthropods." Perusal of a number of the more common texts dealing with the entomological aspects of medicine (Belding, 1942: 600, Craig and Faust, 1940:511, Herms, 1946: 539, Mackie, Hunter, and Worth, 1945:515) revealed the concept, which is commonly believed, that millipedes are not capable of producing injurious effects. A recent experience of the senior author and additional investigation by both writers have prompted the writing of this paper in an effort to broaden scientific thinking regarding the medical significance of this animal.

REPORT OF CASE

At the Montemorelos Hospital y Sanatorio, in Montemorelos, Nuevo Leon, Mexico, on September 4, 1948, one of the workers of the institution complained of a skin rash which she said had been produced by a millipede. The patient stated that she was awakened that morning by an intense burning sensation on the inner aspect of each leg. Upon examining the area, she was surprised to discover a well-developed skin eruption. Thinking that the rash might have been produced by an insect, she searched through the blanket in which she had been sleeping and discovered a tightly coiled millipede (see illustration). The patient was fully convinced that this was the animal that had caused her trouble. The victim's bed consisted of a blanket spread on the floor of her house. Aside from the burning sensation, the patient did not complain of any other discomfort and denied having a history of allergy.

The patient was a twenty-four-year-old Mexican female who, aside from the rash, appeared to be enjoying excellent health. Examination of the lesion revealed a maculovesicular skin eruption covering an area of approximately four square inches, located on the inner aspect of each leg immediately below the region of the knee. The lesions ranged from small reddened blotches about the size of a quarter, with poorly defined borders, to sharply defined semilunar marks (see illustration). The semilunar markings varied in color from reddish macules to darkly pigmented vesicles. Tactile investigation of the pigmented vesicles gave the impression of the overlying skin being thickened, or hardened. Comparison of the morphological contours of the millipede with the general configuration of the semilunar markings revealed them to be quite similar. The healing process was uneventful and completed in about twelve days. After one month the woman still had dark colored areas which were barely discernable. No therapeutic measures were applied.

Because there was still doubt as to the etiology of the lesion, the arthropod, which was still alive, was placed on the volar surface of the right forearm of the senior writer and strapped into place with adhesive tape. The millipede was left on the arm for a total of thirty minutes. During the first ten minutes there was no discomfort; shortly after there was a sensation similar to that received from placing a drop of weak acid on the skin. There were no other symptoms, and the burning ceased shortly after removing the millipede. Scrutiny of the lesion revealed a semilunar, pigmented, vesicle surrounded by a reddened macular area having a diffuse border (see figure). The lesion on the arm of the writer was identical in appearance to some of those lesions seen on the patient.

While the millipede was still on the investigator's arm it was observed that small droplets of a brownish-colored fluid were being secreted by the millipede near the junction of the legs with the body. The fluid had a mildly disagreeable odor.

The lesion on the investigator's arm healed in about ten days. After an additional two weeks all traces of the episode had disappeared.

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The arthropod was sent to Dr. R. V. Chamberlin, of the University of Utah, for identification. Unfortunately, the specimen was a juvenile form; and because final identification depends upon comparative studies of the adult male genitalia, it was impossible to render a decision beyond the generic determination of *Orthoporus*.

...below, the appearance of a lesion of the forearm produced by contact.

**GENERAL DISCUSSION**

Millipedes are arthropods belonging to the class Diplopoda. They are commonly confused by the layman with centipedes, which belong to an entirely different group, the class Chilopoda. Diplopods may be further described as having long cylindrical bodies with two pairs of legs and two pairs of spiracles for each of the greater number of body segments. Chilopods differ from millipedes in having a flattened body, a single pair of legs, and one pair of spiracles for each segment. Furthermore, the specialized poison claws which are present in centipedes are absent in millipedes. Diplopods are principally vegetarian in their feeding habits and do not produce their injurious effects by biting. Centipedes are carnivorous, and are capable of inflicting painful bites which, in the case of the larger tropical forms, may result fatally. Both groups prefer living in a moist terrestrial habitat.

The Diplopoda have been divided into two subclasses: the Pselapognatha, in which the repugnatorial glands are absent; and the Chilognatha, in which the repugnatorial glands are present (Burtt 1947:8). There are other morphological features which are taken into consideration, but this one anatomical difference will suffice for a dissertation of this type. It is the presence or absence of these glands which makes it possible for millipedes to produce their injurious effects. Hence millipedes, which are of medical importance, are members of the subclass Chilognatha. The text by Smart (1944:255) is one of the few reference works on medical entomology to make mention of the irritative ability of the repugnatorial fluid of these animals.

An excellent review of the literature regarding the harmful effects of the exudate of millipedes has been written by Burtt (1947:1-8). The author points out "the fact that contact with this fluid may cause injury of a serious nature is not widely recognized." It is interesting to note that injury from diplopods does not necessarily depend upon actual contact with the organism. He lists instances where various members of the Juliformia which includes such genera as Julius, Spirobolus, Rhinocrichus and Spirostreptus, have been known to squirt their repugnatorial fluid a distance of several inches. Loomis (1941:192, 198) has observed *Rhinocrichus latespargor* Loomis discharging its secretion a distance of twenty-eight inches on one side and thirty-three inches on the other.
The first recorded injury produced by the exudate of millipedes was probably that experienced by Loomis (1936:70, 71) while he was collecting diplopods on the southern peninsula of Haiti. He received a discharge of fluid from a large specimen of *Rhinocrichus lethifer* Loomis, from a distance of eighteen inches, on his face, and area about the left eye. The eyelid and cheek became swollen and remained so for several hours. The pain was described as an intense burning or smarting sensation. A day later the injured areas became dark brown and vesicular. The vesicles persisted for about one week. Healing was uneventful and without scarring.

Although in the preceding case there was no injury to the eye, for it was probably protected by the action of the lid, it is a well-known fact among the natives of Haiti that this species of millipede is capable of producing permanent blindness among chickens and other small animals.

**SUMMARY**

The writers of this paper are of the opinion that entomologists should broaden their concepts regarding the medical significance of millipedes. A case of vesicular dermatitis is reported which was conclusively proved to be the result of a contact with the repugnatorial fluid of a diplopod of the genus *Orthoporus* juv. The incident occurred in Montemorelos, Nuevo Leon, Mexico. The only symptom was an intense burning of the lesions. Healing was uneventful and was completed in about twelve days after contact with the arthropod. The patient continued to bear pigmented areas at the site of the lesions one month later.

Brief mention is made of an article by Burtt regarding the injurious effects of the repugnatorial fluid of millipedes. Certain species of diplopods are definitely of medical importance. Some of the larger tropical forms are capable of producing a severe dermatitis and possibly blindness.

**REFERENCES**


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The authors wish to extend their sincere appreciation to Dr. R. V. Chamberlin, of the University of Utah, for his identification of the millipede; and to Mr. Horace Kelly, of the Montemorelos Hospital y Sanatorio, for his cooperation in supplying the follow-up information regarding the patient discussed in this report.