



THE FOOD INSECTS NEWSLETTER

NOVEMBER, 1988

VOLUME I, NO. 2

A QUERY

Are processed insect food products still commercially available in the United States?

Marston Bates, the eminent zoologist, wrote in 1960 in *The American Scholar* (29:43-52): "In our household, I am left in complete command of one department - the things to eat with drinks. In the store where I do most of the buying, there is a wonderful assortment of temptations: fish eggs of many kinds other than the authentic but impossibly expensive caviar; fish themselves of many species, prepared in many ways; a wide variety of cheeses and sausages, of crispy fried things, of olives and nuts and minced clams and smoked oysters. Lately several kinds of insects have appeared on the shelves - canned ants and silkworm pupae from Japan, maguey worms from Mexico, fried grasshoppers - the can doesn't say where they are from. Insects are an important element in human diet in many parts of the world, but they have long been taboo in European civilizations. It is possible that they will get back into the Western diet by way of the cocktail hour."

Bates continued: "The maguey worms [larvae of the giant skipper butterfly, *Aegiale hesperiaris*] have been canned for the local market in Mexico for some time, and now they are being imported into the United States by the stores that specialize in fancy foods. The canned worms are best if eaten hot; they have a pleasant, nutty flavor, which blends as well with a martini as with mescal, the potent drink that the Mexicans distill from the fermented pulque. In my home we have been trying these worms on cocktail guests. As yet we haven't found anyone who disliked them, although our guests have shown considerable variation in the degree of their enthusiasm. The worms at least provide a topic of conversation."

In concluding this particular bit of discussion, Bates said, "From these experiments of ours with guests, I get the idea that while Americans may be prejudiced, they are far from being proud of their prejudices."

Lucy Clausen of Columbia University and the American Museum of Natural History, and author of *Insect Fact and Folklore* (1963), also mentioned maguey worms but by another name, saying that people in the United States are eating fried "gusanos" [=maguey worms] with relish. "Close to the Mexican border, 'gusanos' are served as thirst-producers at cocktail parties. In recent years Mexico has been canning and exporting 'gusanos' and they may now be purchased in the better delicatessen and department stores of our larger cities. They are advertised as "delicious delicacies, especially with cocktails."

In 1960, Hocking and Matsumura, of the University of Alberta noted that a product canned in Japan under the name "Baby Bees" (fried bee pupae with soy sauce) had been available for some time on the Canadian market at a price of \$2.20 per 2 ounces (Bee World 41:113-120).

James Trager, in *The Food Book* (1972), after discussing several insects that are classed as delicacies in other countries, stated: "But the only insects in American supermarkets, at least the only kinds offered for sale [italics added], are fried grasshoppers, Japanese ants, bees and silkworm pupae, and Mexican maguey worms.... All are sold in cans, ostensibly as cocktail snacks but basically for their entertainment value. Americans' propensity for 'impulse purchases' is prodigious." Trager's book, by the way, was formerly titled, "The Enriched, Fortified, Concentrated, Country-fresh, Lip-smacking, Finger-licking, International, Unexpurgated Foodbook."

Finally, Ronald Taylor devoted 14 pages in his book, *Butterflies in My Stomach* (1975; pp. 83-96), to a description of 19 processed, mostly canned, insect foods available in the American marketplace. Most of these products (11 of them) were offered by Reese Finer Foods, Inc., who imported them from Japan. They were sold primarily as novelty items with highest sales around the New Year.

In view of the above, we were surprised to find a couple of years ago that imported insect products could not be found in specialty food shops here in Madison, Wisconsin. A number of long-time residents to whom we mentioned this were also surprised, saying that such products were formerly available. A more superficial search in Minneapolis-St. Paul was also unsuccessful. A letter to Reese, Inc., brought the information that they no longer import these products. We heard from a Chicagoan that, until recently at least, the Marshall Field Company catalog listed several insect food products, but the Madison store knew nothing about this.

I should say that our question results more from curiosity than from any sense of urgent need. Taylor (*loc. cit.*), an avowed advocate of the palatability of insects, states: "Personally, I find most canned insects unpleasant tasting - some worse than others - or, at the very least, insipid. If, however, you want to eat a canned insect, my suggestion is that you begin with the agave worm [yet another name for the maguey

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Rice with Cooked WASPS: An Emperor Hirohito's Favorite Dish

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Recently some Japanese weekly journals have reported the following story:

The Emperor had a surgical operation on his pancreas last September (1987). Although he is said to have recovered completely from the operation, he seems to have lost his weight and appetite. However, he reportedly finished all of the wasp-rice dish even when he had no appetite and left most of the other dishes.

The wasp-rice is a mixture of cooked rice and canned wasps. The canned wasp is a speciality of Nagano Prefecture. It is a cooked wasp (a mixture of larvae, pupae, and adults of

kill it and leave it in the open. They also take a small piece of meat from the frog, and attach it with a small piece of floss-silk. Then they may wait for some time, probably drinking *sake*, until a wasp comes to the frog cadaver to get meat. While the wasp is cutting a meatball from the cadaver, people substitute the meatball with the one they prepared previously. Then the wasp flies back to its nest, they run after it by watching the mark of floss-silk on the meatball. In this way they can easily find wasp nests.

The nest of the wasp is built underground. People light fire-crackers near the entrance of the nest. Soon the nest is filled with smoke, and the wasps are paralyzed. Then, people dig out the nest and collect the wasps while they are motionless.

<p><i>Vespa lewisi</i>; sometimes male larvae of bees, <i>Apis mellifera</i>, are used) with soy sauce and sugar. In my experience, the wasp-rice tasted good. It was somewhat sweet and nutty. The shortcoming is that the shapes of dark adults with wing, pupae, and white maggots are well preserved. If one doesn't care about the appearance, it is really good.</p>	<p>The wasp is a protein-rich food and contains B-group vitamins and iron, 10 times as much as ordinary food. For the above reason, it is supposed to stimulate hematopoiesis. The old Chinese Pharmacopoeia said that wasps are effective in curing damages to internal organs and in preventing people from getting old when the wasps are administered continuously.</p>
<p>People in Nagano Prefecture have developed an interesting method for collecting the wasp. First they catch a frog. They</p>	<p>At present a can of the cooked wasps (about 65 g) is sold at 1,000 yen, (ca. US \$8.00).</p>

EDITOR'S CORNER

The kind of delay that sometimes (like very often) occurs in the international mails delayed receipt of the "Program Profile" intended for this issue of the *Newsletter*. The lead article on availability (or lack) of imported products in the United States was put together to fill the unexpectedly open space.

We are indebted to Dr. D. L. Ragge of the British Museum (Natural History) for sending a copy of the new reprint of Vincent Holt's 1885 booklet, *Why Not Eat Insects?* See page 3.

The Declaration of Belem (page 5) should be of interest to readers. It is the indigenous peoples of the warmer climates who have made, and continue to make, the greatest use of insects as food, and these are the populations for whom edible insects continue to be nutritionally important. Not only is the well-being of these populations important per se, but edible insects are not an insignificant part of the biological and genetic diversity that is threatened by continued destruction of tropical forests and other fragile ecosystems and the consequent extinction of plant and animal species. It is becoming increasingly apparent on the ecological front that, even in the short run, we who are geographically removed from the tropics can no better afford the loss of these global

life-sustaining resources than can the indigenous peoples who are already bearing the brunt.

As Volume 1, No. 2 of the *Newsletter* goes into the mail, completed Address Forms have been returned by somewhat fewer than half of those to whom Volume 1, No. 1 was sent. We presume that individuals who have not responded fall into one of four categories: 1) Not interested, 2) *Newsletter* was sent to an outdated address, 3) Deceased, or 4) Procrastinating. If you are among the procrastinating and interested in receiving the *Newsletter*, but haven't returned the Address Form (page 7), please do so. It is the only way we have of verifying your interest. It is presently planned that the 1989 *Newsletter* will be mailed in March, July and November, and that the July issue will either consist of, or be accompanied by, a Directory listing the names of persons who have an interest of some kind that is related to insects as food or animal feed. We want to include in the Directory only the names of those whose interest and address have been confirmed. Also, costs will eventually become a factor; printing costs for the *Newsletter* are approximately \$0.35 per copy, to which must be added postage of \$0.25 to U.S. addresses and \$0.63 to many overseas addresses. Thus, to make room for new recipients (there have been more than 100 new requests) it will be necessary to drop from the mailing list the names of those who have not confirmed their interest before the next mailing. GRD

BOOKS

Why Not Eat Insects?

Vincent M. Holt. E. W. Classey, Ltd. 1885. 99 pp. Reprinted 1988 with an introduction by Lawrence Mound. British Museum (Natural History), Cromwell Road, London SW7 5BD. (Paperback, price £3.95; available in the U.S. from International Specialized Book Services, 5602 NE Hassalo St., Suite 45, Portland, OR 97213, \$7.95 plus \$2.50 for shipping.)

In the introduction of this reprint, 100 years after the original printing, Lawrence Mound, the Keeper of Entomology at the British Museum (Natural History) suggests that "*Why Not Eat Insects?* is not just a fascinating Victorian book, full of humour and ideas, it is also an interesting - indeed, profound - question about human behaviour." Mound observes that food habits in Britain are increasingly adventurous, and "perhaps the time is now ripe for insectivory to invade Chelsea. . ."

Vincent Holt is extraordinarily forthright in his promotion of insects as food. The title of his little book puts the question bluntly, "Why Not Eat Insects?" Then, he summarizes the reasons for eating insects. The herbivorous insects (the only ones he recommends) are clean-feeding compared to the lobster, crab, eel, and pig; "The lobster, a creature consumed in incredible quantities at all the highest tables in the land, is such a foul feeder that, for its sure capture, the experienced fisherman will bait his lobster-pot with putrid flesh or fish which is too far gone even to attract a crab" (p. 12). Relative to aesthetic appearance, Holt says (pp. 18- 19), "As things are now, the chance caterpillar which, having escaped the careful eye of the scullery-maid, is boiled among the close folds of the cabbage, quite spoils the dinner appetite of the person who happens to receive it with his helping of vegetable, and its loathsome (?) form is carefully hidden at the side of his plate or sent straight out of the room, so that its unwonted presence may no further nauseate the diners. Yet probably these same

are nourishing and suggests (p. 15) that farmers could be aided in their battle against insect pests if the insects were collected by the poor as food (not that he suggests the poor could live entirely on insects). After calling attention to the consumption of insects by the Greeks and Romans of yore and by people in far-away lands, Holt concludes the second of his three chapters as follows (p. 47): "We pride ourselves upon our imitation of the Greeks and Romans in their arts; we treasure their dead languages: why not, then, take a useful hint from their tables? We imitate the savage nations in their use of numberless drugs, spices, and condiments: why not go a step further?"

In the final chapter, Holt mentions a number of insects in Britain that would be suitable for the table. Relative to the Orthoptera, he relates the following: "The Rev. R. Sheppard, many years ago, had some of our common large grasshoppers served up at his table, according to the recipe used by the inhabitants of Morocco in the cooking of their favorite locusts. Here it is. 'Having plucked off their heads, legs, and wings, sprinkle them with pepper and salt and chopped parsley, fry in butter, and add some vinegar.' He found them excellent. From personal experiment I can fully endorse his opinion; and there are few who would not, if they would but try this dish The above recipe is simple; but any one with a knowledge of cookery would know how to improve upon it, producing from this source such dishes, say, as 'Grasshoppers au gratin,' or 'Acridae sautes a la Maitre d'Hotel.'"

From among the Coleoptera, Holt mentions in particular the grub of the stag beetle, *Lucanus cervus*, and the larva and adult of the common cockchafer, *Melolontha vulgaris*. Mentioning the pest importance of the latter, he states, "Literally tooth and nail we ought to battle with this enemy, for in both its stages it is a most dainty morsel for the table. . . . Again I endorse from personal experience. Try them as I have; they are delicious. Cockchafers are not only common, but of a most serviceable size and plumpness, while their grubs are, when full grown, at least two inches in length, and fat in proportion.... What a

<p>diners have, at the commencement of the meal, hailed with inward satisfaction the presence on the board of dozens of more loathsome-looking oysters, and have actually swallowed perhaps a dozen of them raw and living as quite an appetizer for their dinner!" Frustration shows on pp. 16-17: "It may require a strong effort of will to reason ourselves out of the stupid prejudices that have stood in our way for ages; but what is the good of the advanced state of the times if we cannot thus cast aside these prejudices just as we have caused to vanish before the ever-advancing tide of knowledge the worn out theories of spontaneous generation and barnacle geese?" A few pages later (pp. 29-30): "Fashion is the most powerful motive in the world. Why does not some one in a high place set the common-sense fashion of adding insect dishes to our tables? The flock would not be long in following." Holt states that chemical analyses indicate that insects</p>	<p>godsend to housekeepers to discover a new <i>entre</i> to vary the monotony of the present round! ... Here then, mistresses, who thirst to place new and dainty dishes before your guests, what better could you have than 'Curried Maychafers' - or, if you want a more mysterious title, 'Larvae Melolonthae a la Grugru?'"</p> <p><i>Edible Insects of the World</i></p> <p>Jun Mitsuhashi. Publisher: Kokinshoin, Kanda-S urugadai 210, Chiyoda-ku, Tokyo 101. 1984. 270 pp. (In Japanese, hardcover, price - yen 2,000)</p> <p>When Dr. Mitsuhashi's book was outlined in the July 1988 <i>Newsletter</i>, the publisher and price were not known.</p>
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Recently in the popular press:

The western aversion to insects as food may not be unshakable -

A news release (written by University of Wisconsin staff writer Margaret Pelzmann) through the UW News Service last June was picked up by the Associated Press and carried far and wide. Feedback was received from Asia (China and the Philippines), Africa (Zimbabwe), *The London Daily Mirror*, and from radio stations, newspapers and magazines all across the United States and Canada. As a result of the original release and a subsequent "ripple effect," there have been more than 75 followup interviews from such sources, including BBC, Irish Radio, Canadian CBS, Public Radio, Chronicle of Higher Education, *Christian Science Monitor*, and a variety of other news and educational outlets. It wasn't surprising that the story was carried far and wide. It's easy to get the attention of the public if you want to talk about eating insects. What was surprising was that, despite the great potential for editorial license out there, the message in this press release managed to retain its intended focus. The message was that Americans should be more aware that insects are palatable, and that they are traditionally used and nutritionally important in many Third World rural populations that are increasingly vulnerable to protein-energy malnutrition.

It was pleasing to learn, both from the print media feedback and as a guest on more than 20 live call-in radio programs, that this idea makes sense to Americans. The attitude of callers was invariably positive, suggesting that our aversion may not be as unshakable as has been presumed. With surprising frequency, in fact, people expressed the opinion that there is no reason why we Americans shouldn't include insects in our diet, instead of dousing the world with insecticides.

In the followup contacts, a few media people, but only a few, were disappointed to learn that I was not going to be so eccentric as to pop a couple for the camera. People magazine aborted an article when they were informed that, no, I would not pose "in action" for their photographer. Our rationale was that such "showmanship" distracts from the real message and becomes merely entertainment, not education.

In conclusion, I can say that this type of activity is not without honor and remuneration. I was awarded tickets for dinner for two at the local Pizza Hut by a Milwaukee radio station and honored by a Ponca City, Oklahoma, radio station with their Breakfast Club Award, which is given only 52 times per year to the individual who has created the most interesting headline of the week.

Pesticides in Food - New Twist to an Old Problem
(Reprinted from *theSanFrancisco Chronicle*, September 22, 1988. Thanks to Dr. Chris Merritt, UW Entomology)

Swarms of locusts attacked the western coast of Saudi Arabia after flying across the Red Sea from Sudan and Ethiopia. Strong winds may carry the locusts from the 600-mile-long strip near Jiddah north to Jordan, where the military has been placed on alert to combat the invasion. The worst locust plague in 25 years has provided a gastronomical delight for some Saudi Arabians who have taken to grilling them like shrimp. Health officials, however, warned them to stop eating the insects because they may be tainted with lethal insecticides.

Ecologically Speaking ...

Professor David Pimentel, Cornell University, points out that the estimated average biomass weight of arthropods in the United States is about 1000 kg/ha compared to less than 100 kg/ha for livestock (Pimentel *et al.* *Energy and Land Constraints in Food Protein Production*, Science 190:754-761, 1975; *Environmental Quality and NaturalBiota*, Bioscience, 30:750-755, 1980). These numbers are averages, of course, and biomass of different groups varies considerably with habitat type, but the discerning reader will have no trouble relating the implications of these estimates to Brian Hocking's 1960 prediction that "We have about 50 more years of steaks...."

All that is needed is to find more efficient ways of harvesting some of these insects. Chickens and fish will gladly accept any that we don't want.

Before leaving this subject, it should be added that, although insects aren't the only form of animal life that averages far greater biomasses than vertebrates, a strong point in their favor is that tens of millions and probably hundreds of millions of people are already accustomed to the idea of utilizing insects and, furthermore, they like them. And the processing is simple. The same two points cannot be made for other ecologically efficient groups that are, or might be, candidates for expanded food use.



Research Request Department: I am seeking information and would welcome correspondence on the following: 1) The utilization of plastic bags as substrate containers for insect larvae culture; 2) Use of insects in pisciculture; 3) Pesticide residues in insect larvae.

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<p>[Extracted from copies of a press release and the "Declaration of Belem" supplied by Dr. Darrell Posey, Chairman of the Congress.]</p> <p>Approximately 600 ethnobiologists from 35 countries in Asia, Africa, Oceania, Europe, and the Americas, along with representatives of 16 indigenous peoples from 5 continents met in Belem, Para (Brazil), 19-24 July, 1988, to discuss the current status of ethnobiological research and the application of indigenous knowledge towards finding new solutions to growing ecological and social problems of the planet. Leading anthropologists, biologists, chemists, and sociologists participated.</p> <p>Ethnobiology is the study of the overall interactions between humankind and the biosphere. Major concerns outlined by conference contributors were the study of the ways that indigenous and peasant populations uniquely perceive, utilize, and manage their natural resources and the development of programs that will guarantee the preservation of vital biological and cultural diversity. The principal objectives of the Congress were to point out the richness and complexity of traditional knowledge; to show how such knowledge is important to the development of viable alternatives for the</p>	<p>survival of the planet; and to sound an urgent alarm about the catastrophic loss of bio-, eco-, and ethnodiversity throughout the world.</p> <p>Through millennia of experience, traditional and indigenous societies have developed their respective scientific/cultural systems, which were shown during the Congress to offer new ideas and models for sustained, ecologically-sound development and conservation. These knowledge systems form the basis of one of the greatest treasures of the planet.</p> <p>Indigenous peoples were shown to be the "in situ" guardians of 99% of all of the biological diversity of the planet, yet are not recognized nor adequately compensated for these vital services. Members of the Congress emphasized that the remaining 1% of genetic diversity preserved in "ex situ" germplasm banks is held under precarious conditions that cost an estimated 1 billion US dollars per year to maintain.</p> <p>The Inaugural Assembly of the International Society for Ethnobiology, formed during the congress, issued its first official document, "The Declaration of Belem," articulated as follows:</p>
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<p>As ethnobiologists, we are alarmed that:</p> <p>SINCE</p> <ul style="list-style-type: none"> -tropical forests and other fragile ecosystems are disappearing; -many species, both plant and animal, are threatened with extinction; -indigenous cultures around the world are being disrupted and destroyed <p>and GIVEN</p> <ul style="list-style-type: none"> -that economic, agricultural, and health conditions of people are dependent on these resources; -that native peoples have been stewards of 99% of the world's genetic resources, and -that there is an inextricable link between cultural and biological diversity <p>We, members of the International Society of Ethnobiology, strongly urge action as follows:</p> <p>1) henceforth, a substantial proportion of development aid be devoted to efforts aimed at ethnobiological inventory, conservation, and management programs;</p>	<p>2) mechanisms be established by which indigenous specialists are recognized as proper authorities and are consulted in all programs affecting them, their resources, and their environments;</p> <p>3) all other inalienable human rights be recognized and guaranteed, including linguistic identity;</p> <p>4) procedures be developed to compensate native peoples for the utilization of their knowledge and biological resources;</p> <p>5) educational programs be implemented to alert the global community to the value of ethnobiological knowledge for human well being;</p> <p>6) all medical programs include the recognition of and respect for traditional healers and the incorporation of traditional health practices that enhance the health status of these populations;</p> <p>7) ethnobiologists make available the results of their research to the native peoples with whom they have worked, specially including dissemination in the native language;</p> <p>8) exchange of information be promoted among indigenous and peasant peoples regarding conservation, management, and sustained utilization of resources.</p>
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The Food Insects Newsletter

<p>QUERY from page one</p> <p>worm]." Taylor, the author (with Barbara Carter) of <i>Entertaining With Insects; or Guide to Insect Cookery</i> [to be reviewed in the next <i>Newsletter</i>] states, "It is unfortunate that there aren't better prepared insect foods on the American market, and at reasonable prices." Similarly, Bates (<i>loc. cit.</i>) mentions that, "The Japanese now export canned fried ants to this country, but these canned ants seem to be quite tasteless, lacking the crisp, toasted quality that I remember from my South American experience." Bates was referring to the winged sexual forms of the leaf-cutter ants (<i>Atta spp.</i>) which are sold in movie theaters in Colombia and serve the same function as popcorn.</p> <p>Certainly, there is an abundance of testimonials expounding the palatability of various insects when properly prepared. I will mention only one here. Hocking and Matsumura (1960) subjected bee brood, prepared by shallow frying in butter or deep-fat frying in vegetable cooking fat, to an informal taste panel in Canada and reported: "Most reactions were favourable and some were eulogistic; initial prejudice proved easier to overcome than we had expected. When the tasters</p>	<p>was aware of the wide use of insects as food in Cultures Of non-European origin and was, presumably, personally willing to honor the preferences of their palates just as he wanted his own preferences honored. On the other hand, times change. With the earth's increasingly apparent vulnerability to ecological abuse, much of it committed in the name of agriculture, we can increasingly recognize the validity of predictions such as one by the late Professor Brian Hocking. "We have about 50 more years of steaks and then perhaps we'll have to explore other sources of animal protein" (quoted by Catherine Philip, <i>Amer. Bee Jour.</i> 100:444, 1960). Although there is indeed a feverish pitch of activity by food and agricultural scientists aimed at increasing the quantity and quality of food supplies, insects are as studiously ignored today as they were in Hocking's time. That should change - for more reasons than we have space to discuss here.</p> <p>To recognize the preferences of different national palates, borrowing from Curran's line of thinking, we can note that the giant water-bug <i>Lethocerus indicus</i>, a favorite food throughout southeast Asia from eastern India and Burma to Vietnam and southern China is now imported and sold (as whole bugs, paste, or alcohol extract known as "Mangdana essence") in southeast Asian community food shops in San Francisco, Oakland, and Berkeley (Pemberton, Pan-Pac. Entomologist</p>
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were asked to compare the material to some more familiar food, those most commonly mentioned were walnuts, pork crackling, sunflower seeds, and rice crispies." Joseph Alsop, in a *Saturday Evening Post* review of a Tokyo restaurant, mentioned that he very much enjoyed the appetizer of fried bees, the flavor being "halfway between pork crackling and wild honey."

The intent here is not to make or remake the case for promoting greater use of insects as food in the United States, Canada and Europe. Scores of respected western writers, both scientists and others, from the ancient Greeks onward have come down on the affirmative side of this question. Aristotle himself partook of cicadas and wrote (3rd century BC) that it is the last-instar nymph that "tastes best." One can partly agree and partly disagree with the statement by C. H. Curran in 1939 (*Natural History* 43:84-89): "During the past few years there have been a number of people who have suggested that we should eat insects. They are probably seeking notoriety or being facetious. Some of them have gone so far as to publish menus. There is no 'should' or 'should not' about the advisability of people eating insects. If they wish to do so there is no reason why they should not, since there are hundreds of different kinds that are perfectly edible. However, it is absurd to urge upon a people blessed with a superabundance of good, delectable food, the advantage of eating something which is likely to prove less agreeable to the palate than the things to which we are now accustomed."

Curran was not personally squeamish about eating insects, in fact, he liked to point out, and sometimes demonstrate, that we unknowingly eat many of them with our regular food. He

64:81-82, 1988). Such products from many lands might become an important new dimension in international trade if we Americans can learn to recognize and appreciate insects as the food resource that they deserve to be. They might also serve to create a whole new class of alternative crops for our hard-pressed small farms, alternative crops that are completely compatible with the principles of sustainable agriculture. Secondary benefits of a more relaxed attitude by Americans might include a reduced zealotry in the cosmetic use of pesticides on our food crops. But these are other stories. In the meantime, any information that this article may elicit on the present availability of commercial food insect products in the western world will be printed in the next issue of the *Newsletter*.

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